

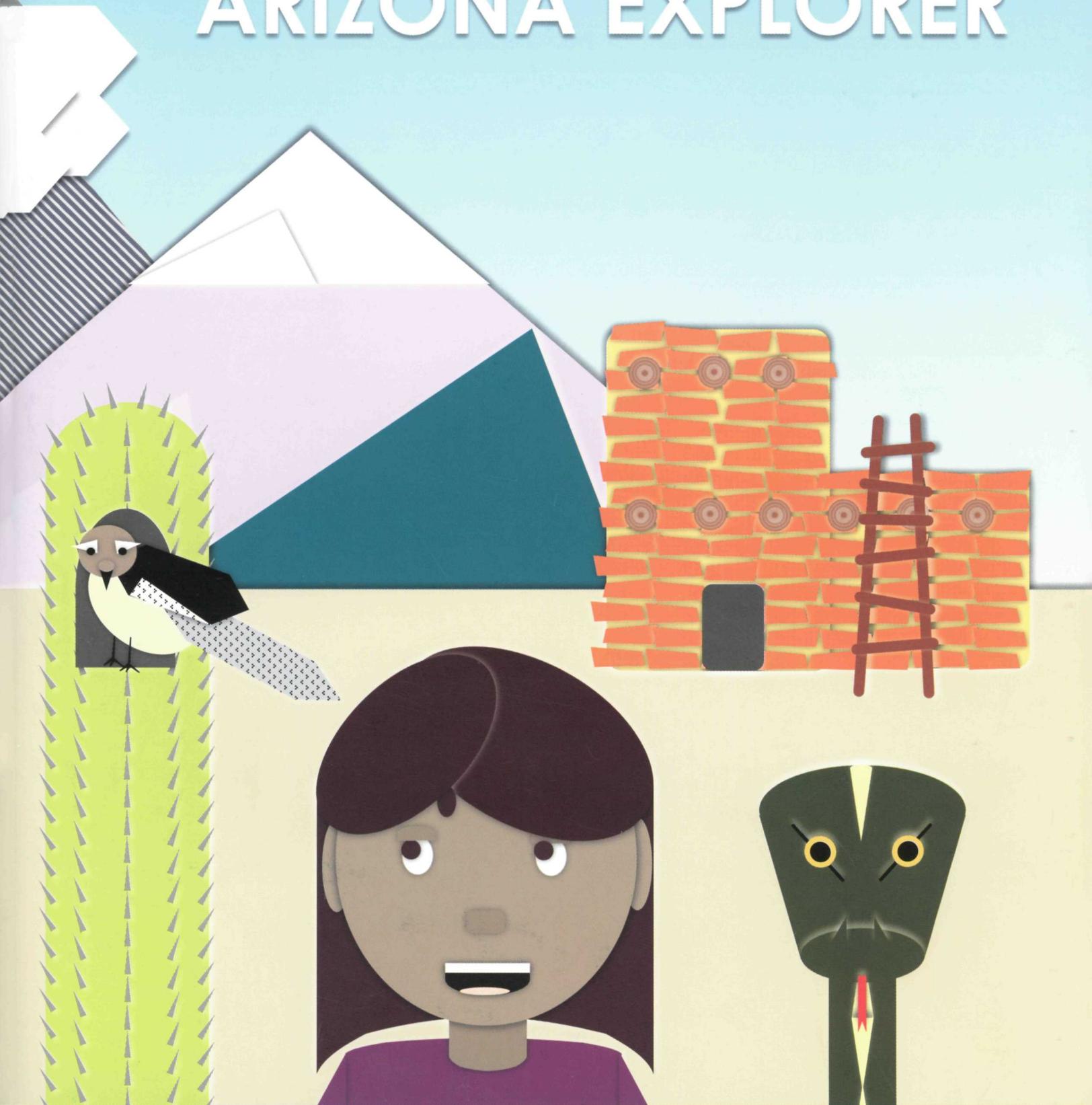
Arizona

National Park Service
U.S. Department of the Interior



National Monuments & Parks

JUNIOR RANGER ARIZONA EXPLORER

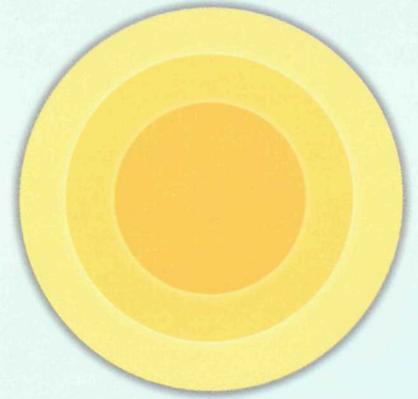


WELCOME, EXPLORER!

This book belongs to: _____

Age: _____

Hometown: _____

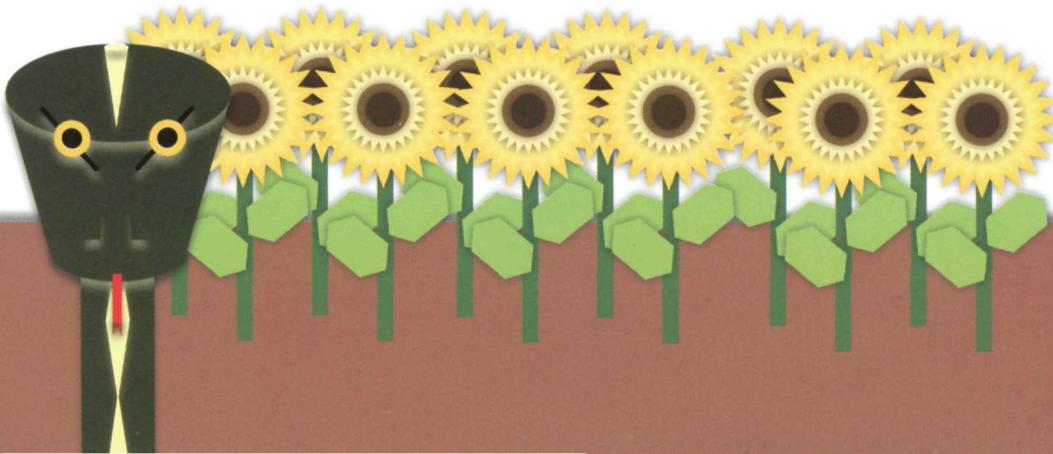


Are you ready to become an Arizona Junior Ranger Explorer?

To earn the patch, you must complete the following:

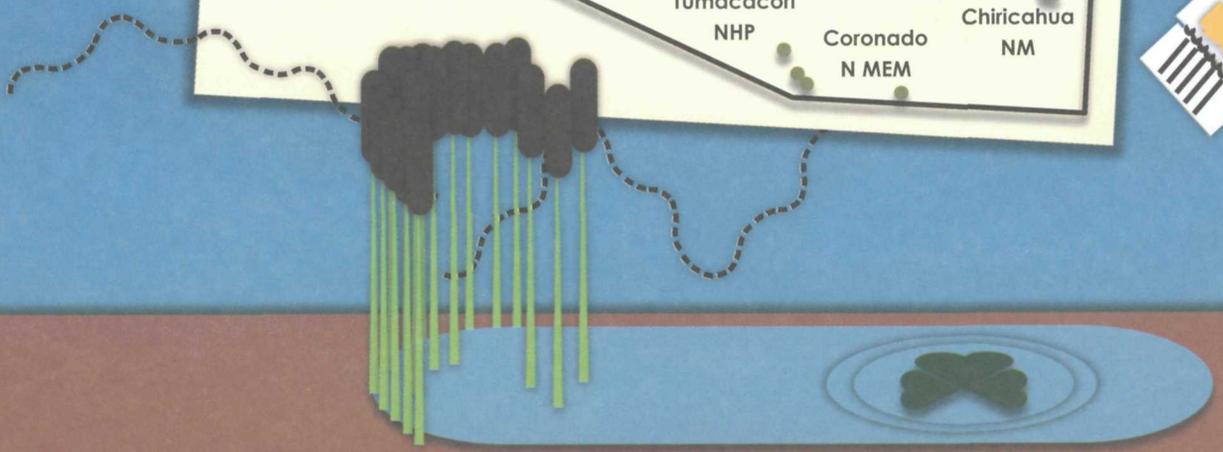
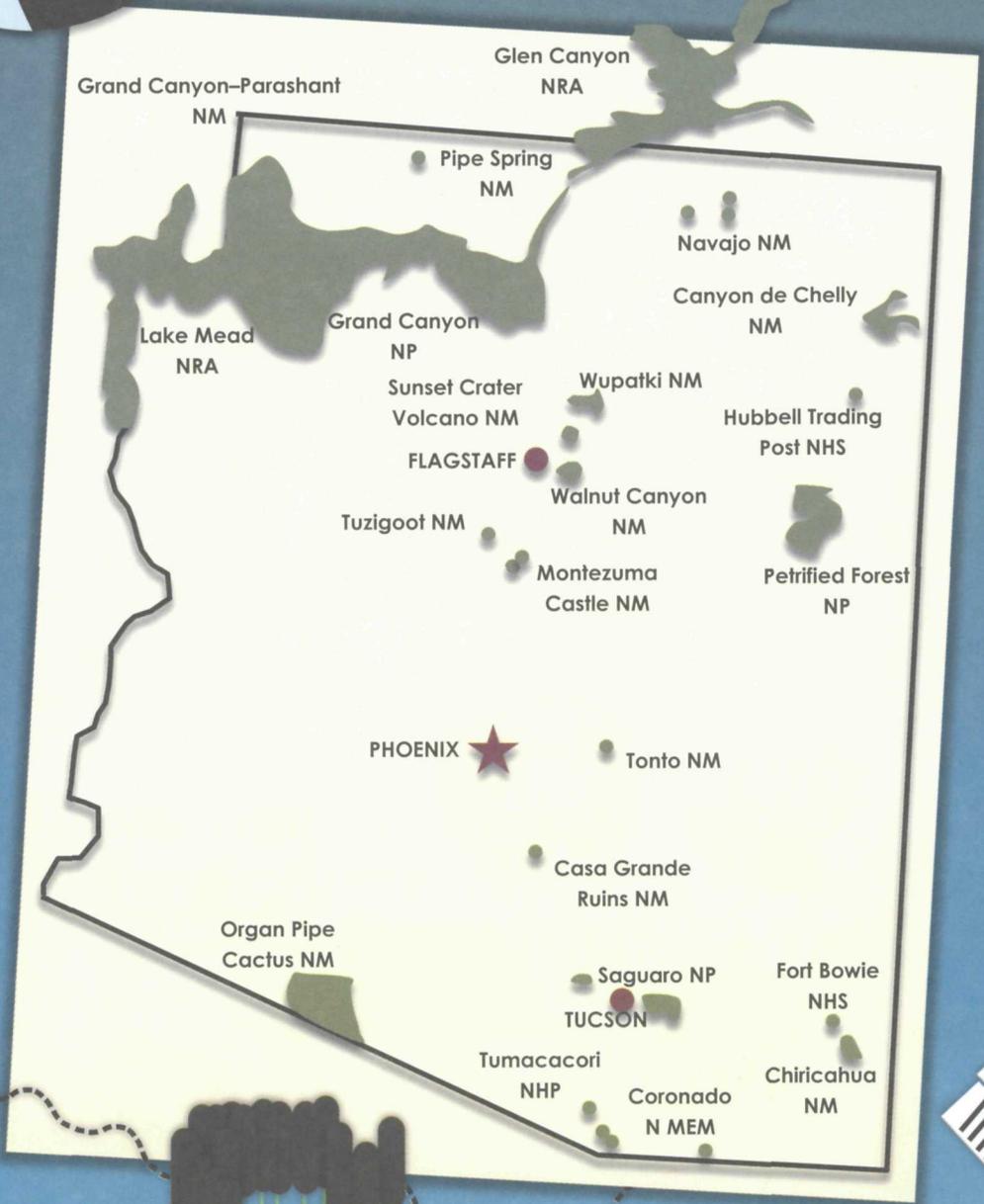
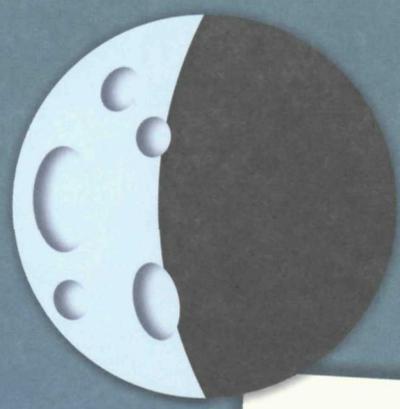


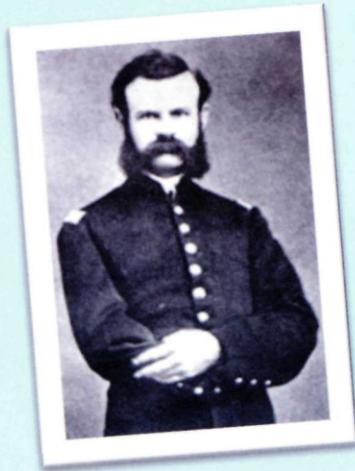
- Visit **4** National Park Service sites in Arizona. Fill out the **travel log** for each site that you visit and have a ranger sign your log. You have 22 parks, monuments, historic sites, and recreation areas to choose from!
- Complete the **John Wesley Powell** activity on pages **2 & 3**.
- Complete the **Leave No Trace** activity on page **28**.
- Complete **5** more activities. Each activity consists of 2 pages. For example: To complete the *Historic Archeology* activity, you must fill out pages 22 & 23.



MAP IT OUT

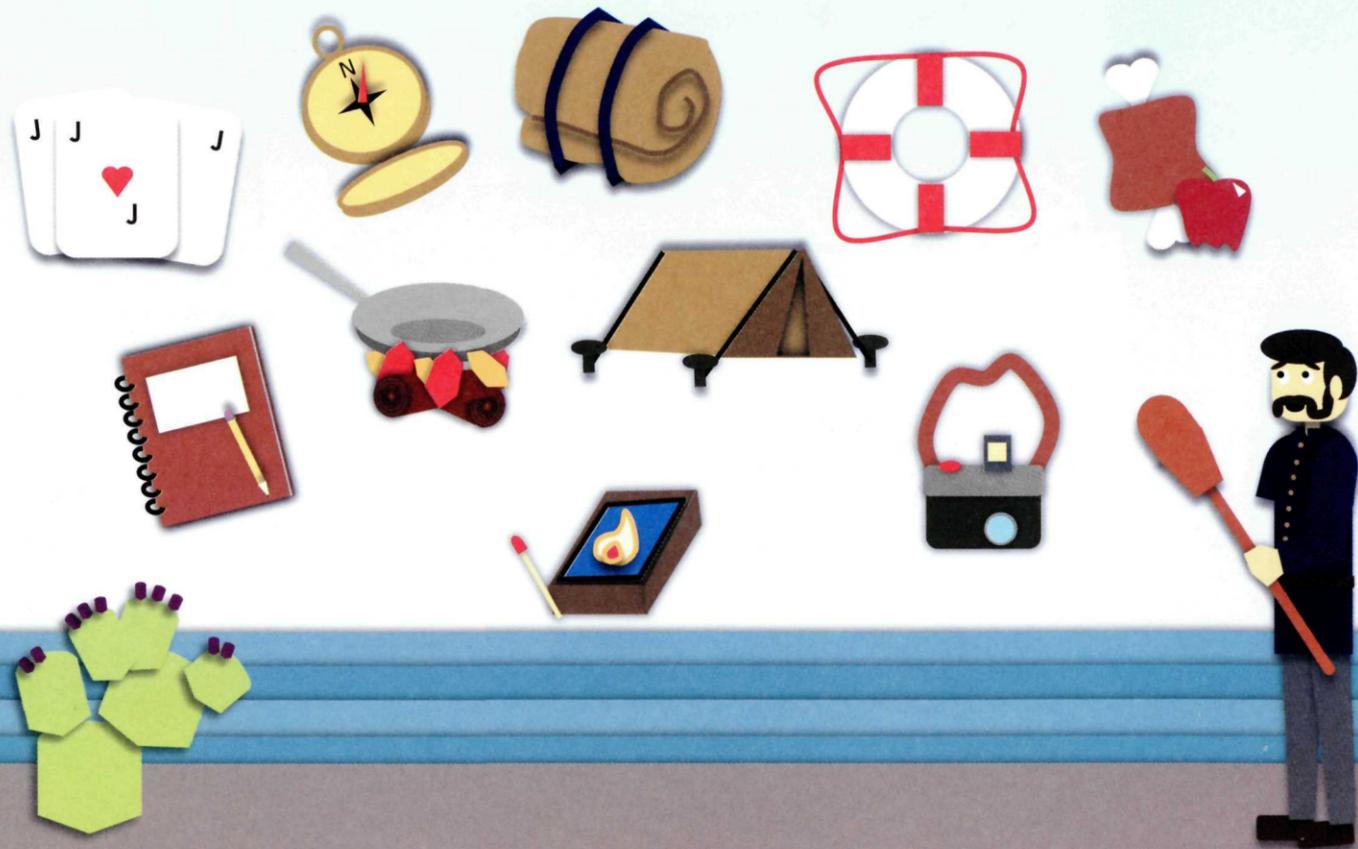
Arizona has 22 National Park Service units across the state. Use this map below to plan out an adventure of your very own! If you really want a challenge, fill in the highways and interstates that you used on your trip!





John Wesley Powell was no stranger to excitement and danger. After losing his right arm in the Civil War, he set off down the Colorado River in 1869 with 4 boats full of supplies. His goal was to document the whole river for science, but the expedition turned into a test of will. Four men left the expedition early and the rest of the crew made it out alive after 3 harsh months on the mighty river.

In order to prepare for his journey, John Wesley Powell had to plan out and pack everything he was going to need. Look at the items below and circle **5 things** that you think are the **most important** items to take on an expedition. Remember, you are going to be gone for 3 months. You have to eat, sleep, stay dry and safe, and document everything you find!



You are about to embark on an **Arizona Adventure** of your very own! Your family and friends are like your expedition crew, which means you all have to plan ahead for your trip, like John Wesley Powell. Sit down with your expedition crew and plan your next trip by answering the follow questions:

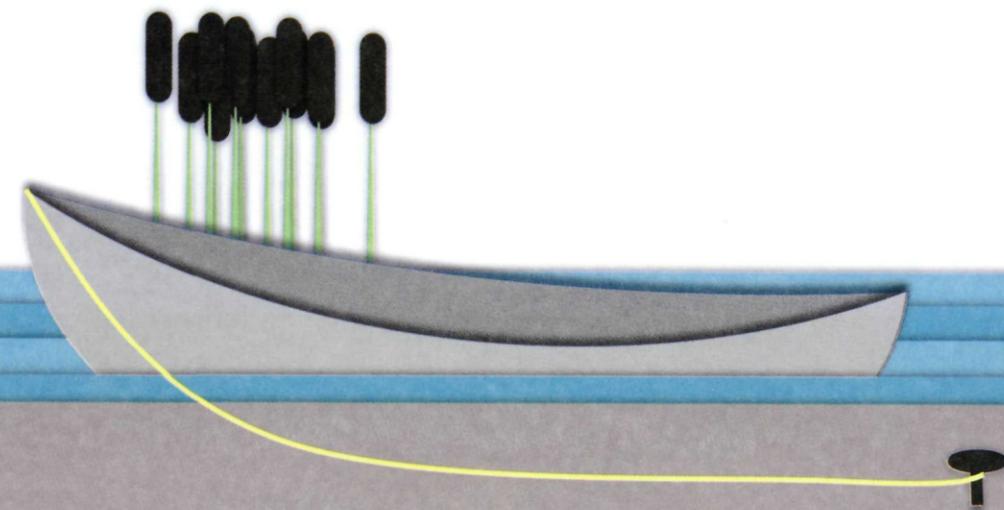
Which National Park Service site are you going to visit?

What's the closest city or town to that site?

What will the weather be like when you are there?

What kinds of things will you do when you visit?

Based on the questions above, make a list of at least **5 things** you should pack for your adventure!



TRAVEL LOG

Welcome to Arizona! Fill out this log, collect your **Passport Stamp**, and show a Ranger a photo of you at the **challenge location** to earn a **park specific rocker!** Remember, you must visit at least **four parks** to earn your **Arizona Junior Explorer Patch.**

Canyon de Chelly National Monument

Photo Challenge: Spider Rock

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Casa Grande Ruins National Monument

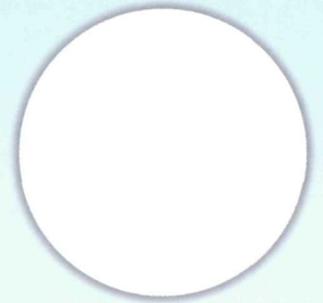
Photo Challenge: Hidden Room

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Chiricahua National Monument

Photo Challenge: A Hoodoo

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Coronado National Memorial

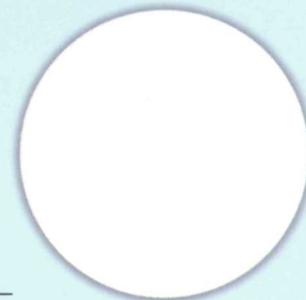
Photo Challenge: International Border

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Fort Bowie National Historic Site

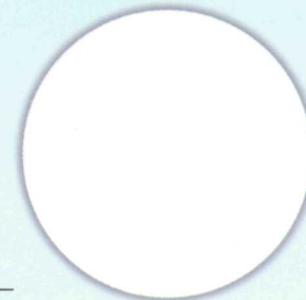
Photo Challenge: Grave Marker

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Glen Canyon National Recreation Area

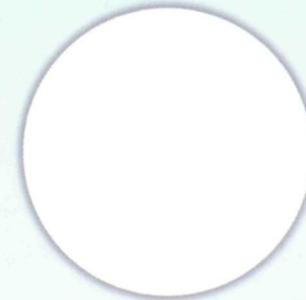
Photo Challenge: Lee's Ferry Peach Tree

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Grand Canyon National Park

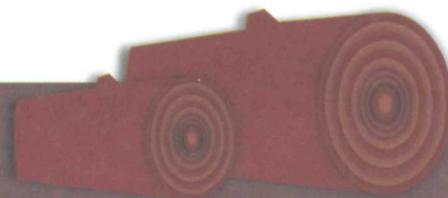
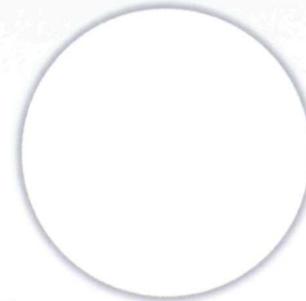
Photo Challenge: Kaibab Formation

This site was protected because:

I learned:

Ranger signature: _____

STAMP



6

Grand Canyon – Parashant National Monument

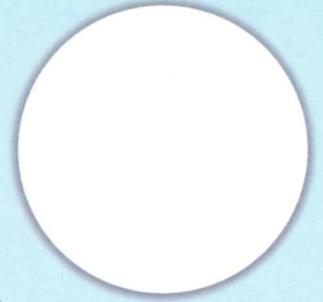
Photo Challenge: Historic Ranch

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Hubbell Trading Post National Historic Site

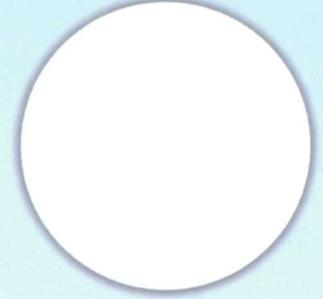
Photo Challenge: Navajo Rug

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Lake Mead National Recreation Area

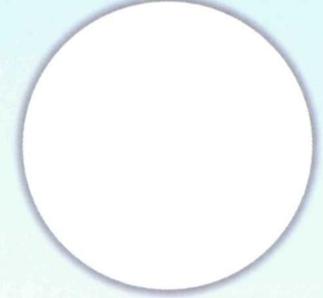
Photo Challenge: Joshua Tree

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Montezuma Castle National Monument

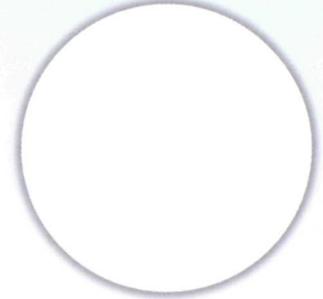
Photo Challenge: Historic Diorama

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Navajo National Monument

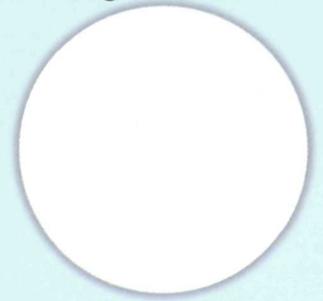
Photo Challenge: Betatakin Cliff Dwelling

This site was protected because:

I learned:

Ranger signature: _____

STAMP ⁷



Organ Pipe National Monument

Photo Challenge: Cristate Cactus

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Petrified Forest National Park

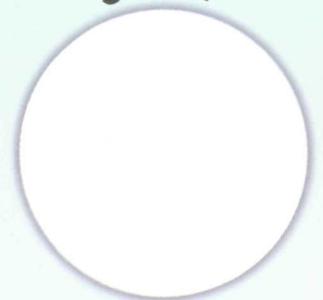
Photo Challenge: 1932 Studebaker

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Pipe Spring National Monument

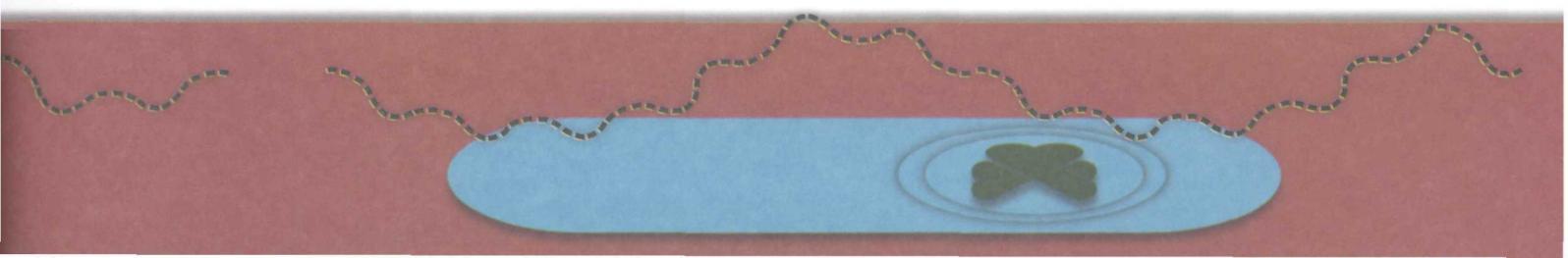
Photo Challenge: Livestock

This site was protected because:

I learned:

Ranger signature: _____

STAMP



8

Saguaro National Park

Photo Challenge: Saguaro Ribs

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Sunset Crater National Monument

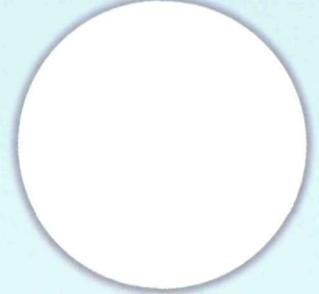
Photo Challenge: Ponderosa Pine Tree

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Tumacacori National Historic Site

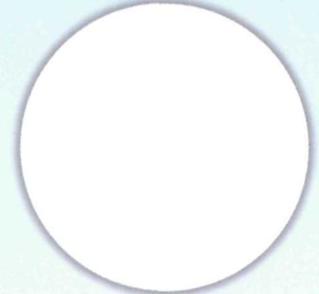
Photo Challenge: Kino Fruit Tree

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Tonto National Monument

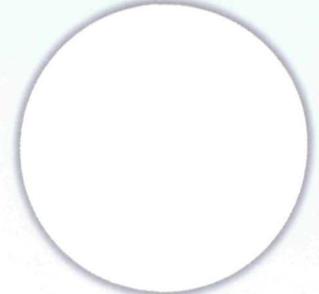
Photo Challenge: Salado Pottery

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Tuzigoot National Monuement

Photo Challenge: Prehistoric Doorway

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Walnut Canyon National Monument

Photo Challenge: Pit House

This site was protected because:

I learned:

Ranger signature: _____

STAMP



Wupatki National Monument

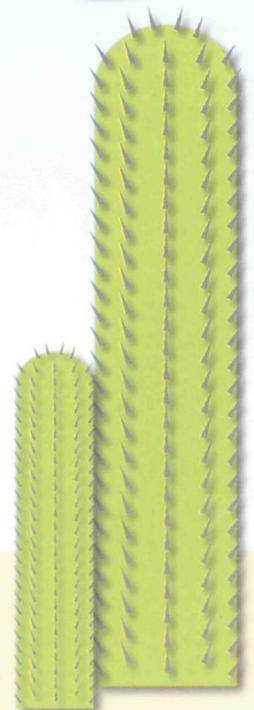
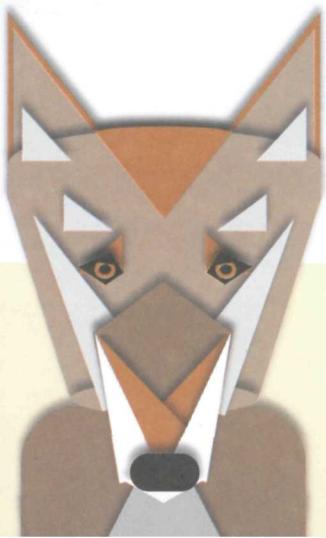
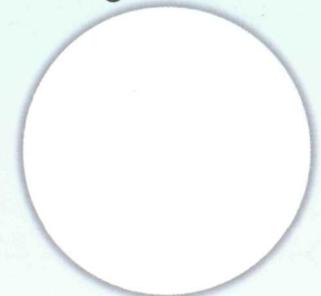
Photo Challenge: Blowhole

This site was protected because:

I learned:

Ranger signature: _____

STAMP



NATIONAL PARK SERVICE HISTORY

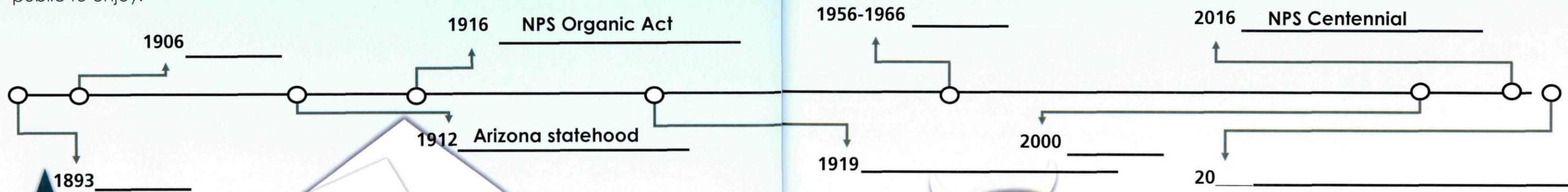
National parks have been called "America's Best Idea." It's taken a lot of hard work to get that idea started and keep it going. Some say it started when the U.S. Congress and Presidents started protecting lands through parks and **forest reserves in the late 1800s**. In **1906, the Antiquities Act** was signed by President Theodore Roosevelt, which gave the President the right to proclaim national monuments without Congress, to preserve important historic or scientific sites. **Two of the first four national monuments created are in Arizona!**

In fact, all three national parks in Arizona started out as national monuments, and were later converted by congress: Petrified Forest, Grand Canyon, and Saguaro National Parks! Protecting all these places became **challenging**. In 1916 President Wilson signed the **NPS Organic Act**, creating the National Park Service.

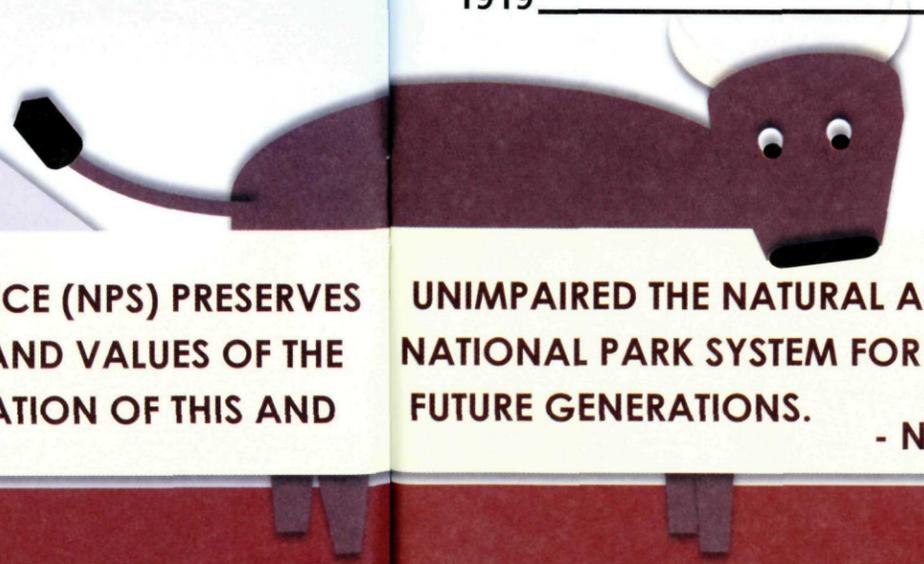
Along the way, the National Park Service changed how it preserves and protects these special places. For instance, in **1956 the Interstate Highway Act** was signed and **Mission 66** was started to get parks prepared for lots of new visitors. For the **100th Birthday in 2016**, the National Park Service focused on connecting kids to parks and new ways to preserve America's treasures. The National Park Service now protects over 400 national parks, monuments, historic sites and memorials for the public to enjoy!

Finish the timeline about how these events in NPS history affected Arizona. Use clues from the story to match the event with the date, or ask a ranger for help! Write the number of the event next to the matching date on the timeline.

1. Montezuma Castle National Monument and Petrified Forest National Park in Arizona are made two of the first four national monuments.
2. Three years after the NPS is founded Grand Canyon finally becomes a national park!
3. Grand Canyon is first protected as a forest reserve. Later it is protected as a national monument under the Antiquities Act.
4. Arizona's newest national monument, Grand-Canyon Parashant, was created!
5. To get ready for all the visitors that the new interstate roads would bring, over half of Arizona's National Park Service sites got brand new or remodeled visitor centers!



THE NATIONAL PARK SERVICE (NPS) PRESERVES CULTURAL RESOURCES AND VALUES OF THE EDUCATION, AND INSPIRATION OF THIS AND



UNIMPAIRED THE NATURAL AND NATIONAL PARK SYSTEM FOR THE ENJOYMENT, FUTURE GENERATIONS. - NPS Organic Act



Something from your trip!

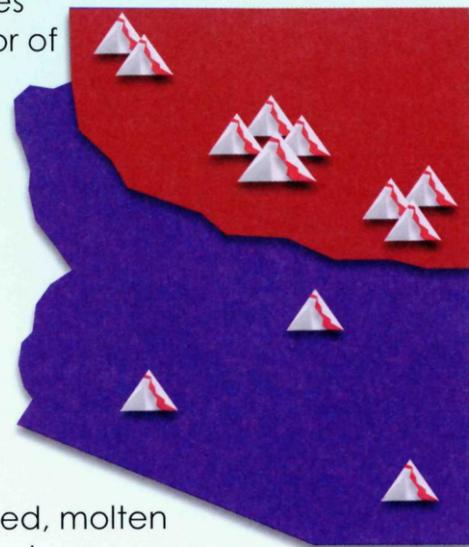
ARIZONA LANDSCAPES & GEOLOGY

Every landscape is shaped by forces of nature. Geologists are the scientists that study these Earth processes. In Arizona, there are three major types of landscapes formed by different forces of nature. **Erosion** is the force that removes earthen materials by water or wind. This is the final sculptor of the land.

The Colorado Plateau has many canyons and flat-topped mesas and buttes. Most of these formations are made of sedimentary rock and shaped by water erosion.

Basin and Range forms when the landscapes are pulled apart by faults or breaks in the Earth's crust. Imagine opening an accordion! Mountains (ranges) are pushed up and valleys (basins) fall down. In this complex landscape, you might find each of the three types of rock: sedimentary, igneous, and metamorphic.

Volcanic formations dot the Arizona landscape. The cooled, molten rock called **igneous rock** shows Arizona was fiery in the past.



Volcanic : 

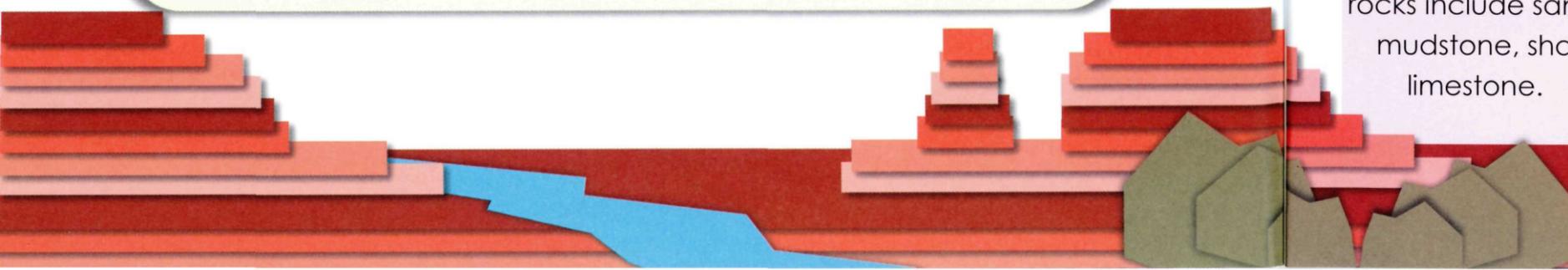
Reading the Landscape

Fill out this site report at an Arizona National Park Service location

Site Visited: _____ **Type of Landscape:** _____

Describe the natural forces that formed the landscape:

DRAW YOUR LANDSCAPE HERE



Rock Identification



Find a common type of rock at an Arizona National Park site. Remember to leave it where you found it, but take a picture for reference. Look for signs, a museum, or ask a park ranger for more information about the rock and fill out this site report.

What is the name of the rock formation it came from?

Which of the three types of rock is it? (see below)

Describe the rock. What color is it, how does it feel, etc.?

Describe how and when it formed:

LAYER CAKE!

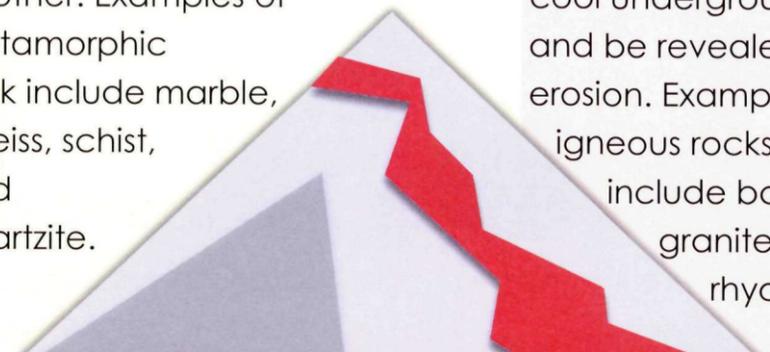
Sedimentary Rocks are formed by water, wind, and even living creatures, depositing layers of sediments like mud, sand, or calcium carbonate. Over time this hardens into rock. Today, sediments still build up on the bottom of the oceans, in swamps, on river beds, and in sand dunes. Examples of sedimentary rocks include sandstone, mudstone, shale, and limestone.

UNDER PRESSURE!

Metamorphic Rocks are formed by mountains colliding or rocks piled up pushing down. This heat and pressure transforms the original rock into a new type of rock. Sometimes the rocks actually look twisted. Metamorphosis means to change from one thing into another. Examples of metamorphic rock include marble, gneiss, schist, and quartzite.

FIRE BORN!

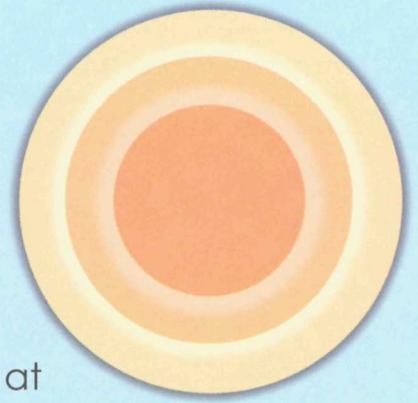
Igneous Rocks are formed by hot, molten rocks cooling and becoming solid again. Volcanoes are molten rock that came to the surface. Molten rock can also cool underground and be revealed by erosion. Examples of igneous rocks include basalt, granite, and rhyolite.



ETHNOBOTANY

Different plant parts can be used for lots of different things. Did you know that people eat cacti? The study of how people use plants is called **ethnobotany**. See if you can find these plants on your travels. Try your hand at matching the plant and its human use below.

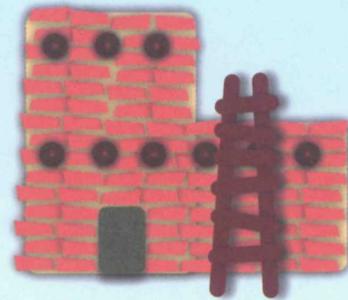
Remember, some plants can be used for more than one thing!



Medicine



Colorful Dye



Construction
Materials



Fibers for Clothing,
Shoes and Rope



Food



Sunflower



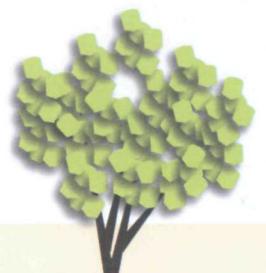
Yucca



Saguaro Cactus



Prickly Pear Cactus



Creosote

Use this space to record a plant that you find in Arizona. Remember to draw all parts of the plant that you can see - leaves, stems, flowers, or fruit. Ask a ranger how the plant was, or still is, used and write that in your description.

Draw and Describe Your Plant

Did You Know?

Many people keep journals just for the plants they encounter! They press leaves and flowers and write notes.

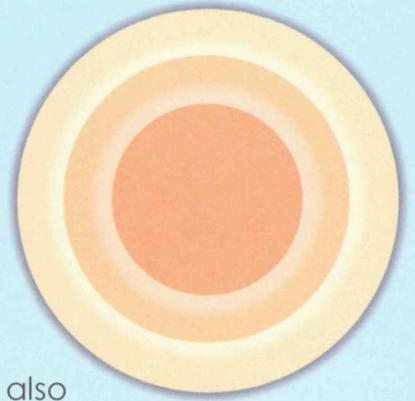
Since we're not allowed to collect plants in national parks, we can draw the parts of the plant, and record important information about it, including its uses.



FOOD LOG & CACTUS

People living in the American Southwest long ago farmed and ate corn, beans, and squash. It may surprise you to learn that their diet included wild native plants too! People gathered sunflower seeds, cactus fruit, cholla buds, mesquite beans, and amaranth. Edible plants that grow here in the desert are called **native foods**. People also learned to farm wild plants like agave. Evidence suggests that desert dwellers had access to exotic foods from what is now known as Southern Mexico. Chocolate was a pre-contact trade item. When the Spanish arrived in the Americas, they liked chili peppers so much that they brought them north during their expeditions!

Look at the ingredients on the food you eat during your Arizona explorations. Try to find some foods first grown in North America. Log your findings below!



Date	Place	Food I Ate	Native Ingredients



**An example cinquain
about a Saguaro:**

Saguaro

tall, pokey

living, growing, providing

a home to many

Cactus

Cinquain poems have 5 lines.

Write your own about a desert plant using the guidelines below:

Line 1. Title (noun) = 1 word

Line 2. Description = 2 words

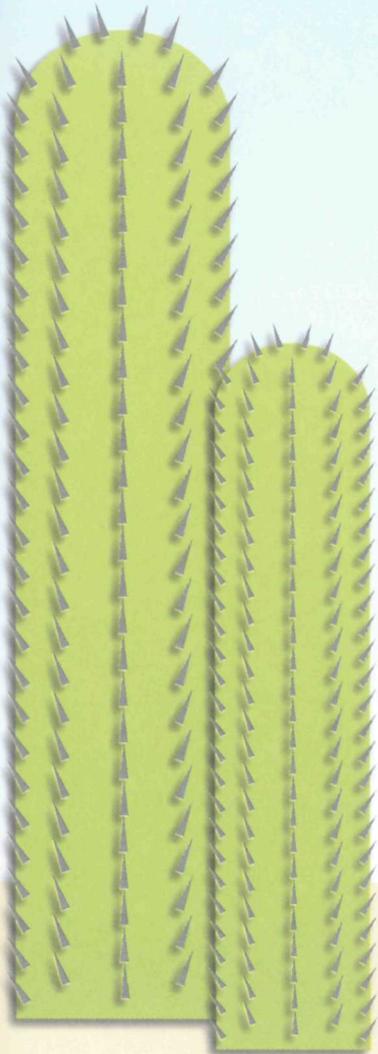
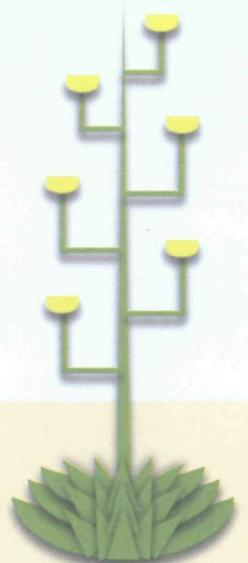
Line 3. Action = 3 words

Line 4. Feeling (phrase) = 4 or more words

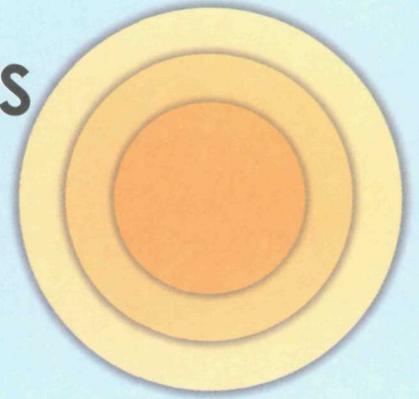
Line 5. Title (synonym for Line 1) = 1 word

Did You Know?

The **Tohono O'odham** people are believed to be descendants of the **Hohokam** culture. In the O'odham culture, the **saguaro** is a sacred plant to be given utmost respect. The calendar is based on the cycles of the saguaro, and includes ceremonies involving the saguaro and its fruits.



POLLENATOR PUZZLE & HABITATS

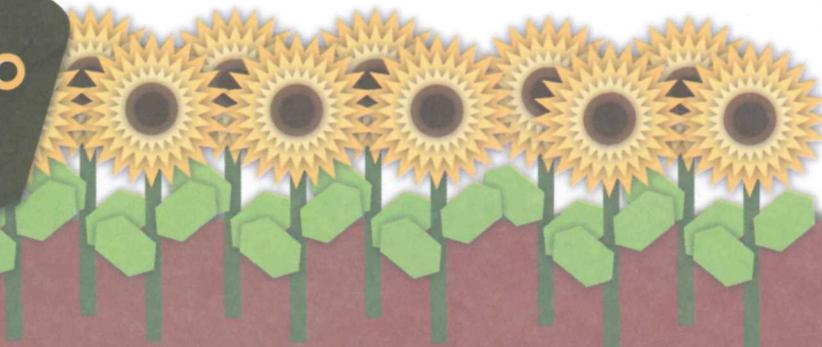


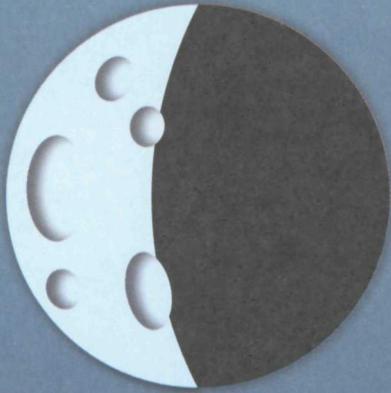
ACROSS

- 1. I am a really small bird. I have a long, narrow beak, and I can fly backwards.
- 4. I am the only flying mammal and I help pollinate saguaro cacti!
- 6. My queen lives underground with a colony of thousands. You may see me and my brothers at your next picnic, but we also like to eat the sweet nectar of flowers.
- 7. I am a small beetle with a red and black polka dot shield over my wings. I protect plants from harmful insects.

DOWN

- 2. I am a cousin of the butterfly. I also work the pollination night shift.
- 3. My beautiful, multicolored wings help me float from flower to flower.
- 5. I am not a bee, but I am yellow and have a stinger! I help produce sweet things, like figs.
- 8. I collect pollen on my black and yellow fuzzy body, and use it to make honey. Yum!





As Junior Rangers, it's our job to help Park Rangers protect natural **habitats**. Arizona is home to some of the most diverse habitats in the Southwest including deserts, pine forests, marshes, and grasslands. A healthy habitat should include everything that an animal needs to not only survive, but thrive.

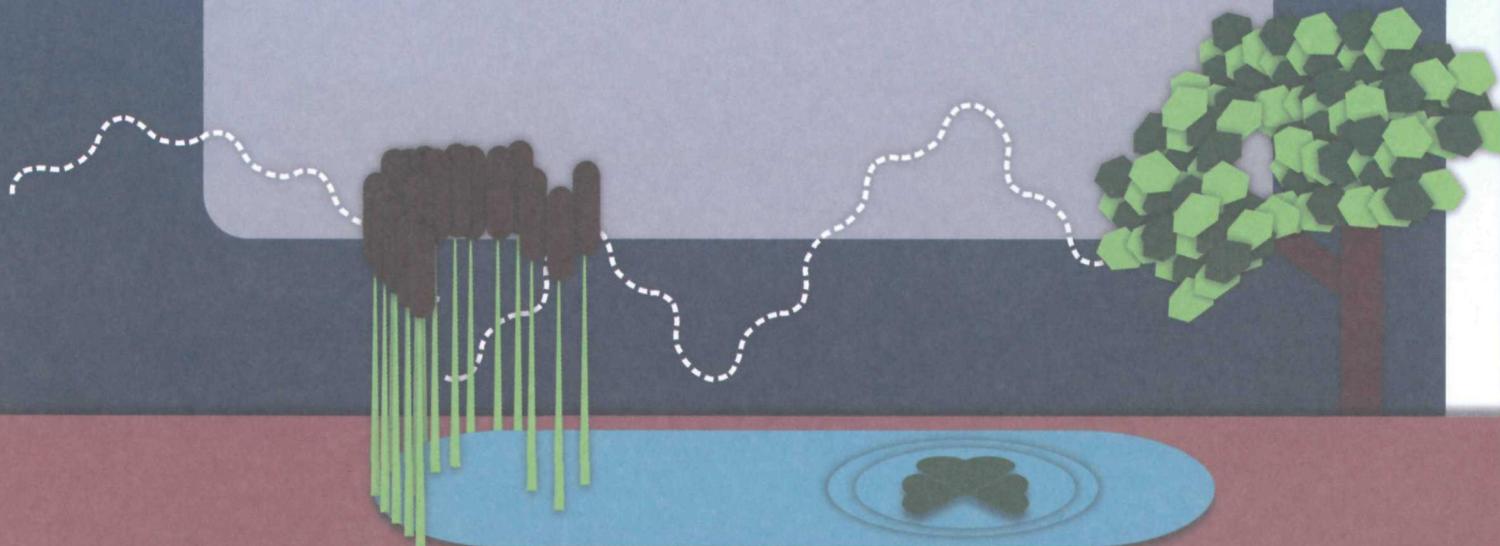
What are the things that you need to survive?

What is your favorite **wild** animal that lives in Arizona?

What kinds of things does your favorite animal need to live a healthy life?

What can you do to help Park Rangers protect natural habitats?

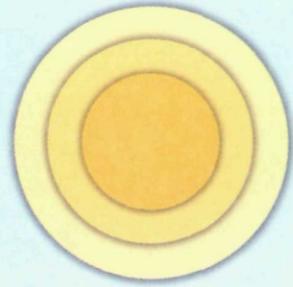
Draw your favorite Arizona animal in their natural habitat



WHO ARE ARCHEOLOGISTS?

Archeologists are scientists who study people from the past based on the stuff they left behind, called **artifacts**.

Some of the artifacts we find can be as small as an arrowhead, or as large as someone's house. Groups of people that made and used similar artifacts are called **cultures**. To learn more about a culture from the past, answer the questions below.

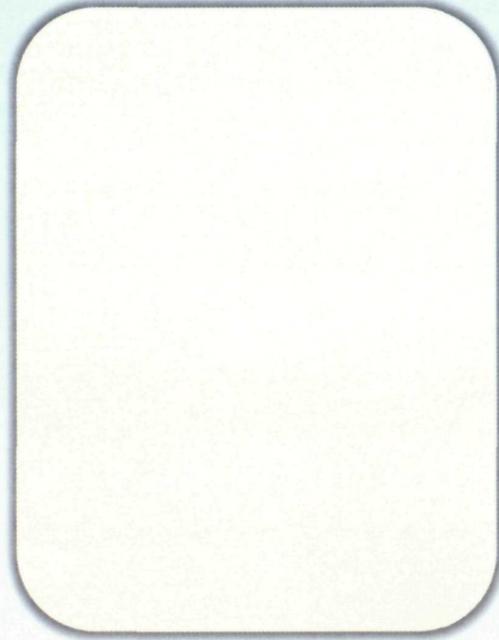


Name of Park: _____

Your Favorite Artifact

Name of a **prehistoric** culture that once lived in or near this park (ask a ranger or find the name in a museum):

Find 4 artifacts that represent the culture and list them below. Draw your favorite one in the blank space to the right.



BONUS QUESTIONS: What does the word **prehistoric** mean?

What does the word **pre-contact** mean?



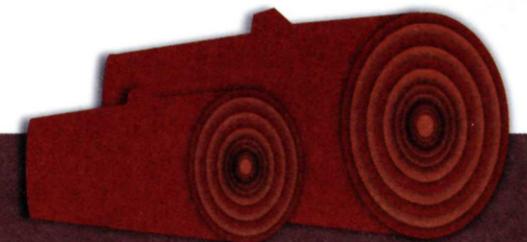
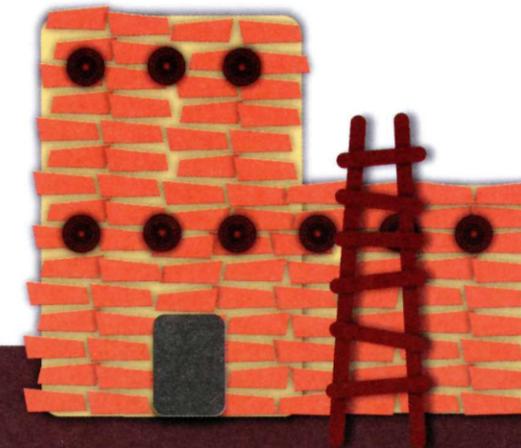
Archeological sites protected by the National Park Service haven't always looked like they do today. Hundreds of years ago, these ancient structures once housed living communities. Some rooms may have been bedrooms keeping people warm in the winters at night, while others held dried vegetables and grain. Others hosted events, bridging communities together. Once people left the dwellings for various reasons, they started on the slow path back to nature.

Find the remains of a dwelling you like and draw how it looks today.

Now draw how you think that dwelling might have looked when families occupied it.



What do you think caused the dwellings to fall apart over time?



HISTORICAL ARCHEOLOGY

Archeology is important to gain the full story of the past. For example, many Native American cultures of the past left no written record of what happened that archeologists can understand. As a result, many stories that are told in national parks are incomplete and are only told from the perspective of one group of people. The materials left behind by these groups and cultures give us a better idea of how people lived, survived bad times, and celebrated joys.

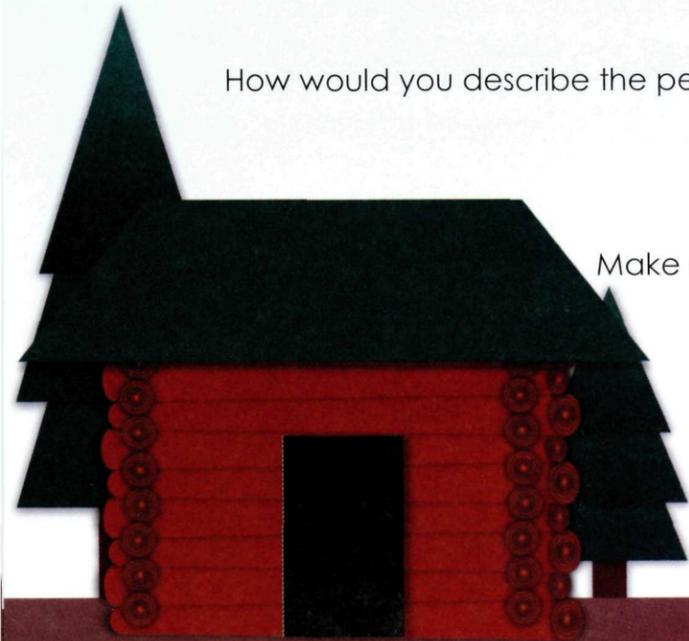
A historical archeologist does all the research that other archeologists do, but they also get to use materials like photos, journals, and letters to complete the story. U.S. soldiers wrote to their families while they were stationed at **Fort Bowie National Historic Site**. European Jesuit and Franciscan missionaries wrote about their ministry to local Native Americans while at Guevavi, a part of **Tumacácori National Historical Park**. Through studying ancient codices, historical archeologists discovered that the Aztecs were amazing mathematicians and had a very rich, complex religion.

Find a historic photograph in a museum or on a sign and answer the following questions.

What is your first impression of this photograph? What seems to be happening?

How would you describe the people? (age, clothing, facial expression, wealth)

Make a list of objects in the picture.



Archeologists do more than just look at old objects. They have to draw conclusions from those objects based on their **context**. Context refers to the geographic area and placement where an artifact was found. The surrounding objects can also give context. If artifacts are removed or damaged before an archeologist can study them, then that object is **out of context**. What remains can be misleading. Imagine your room 100 years from now. If someone came by and took all of your things except your books, an archeologist might think that your room was a library!

Think about the historic record (photograph) that you explored on the previous page. The objects, people, and color of the photograph give this historical record context. Let's try to draw some conclusions from that context below.

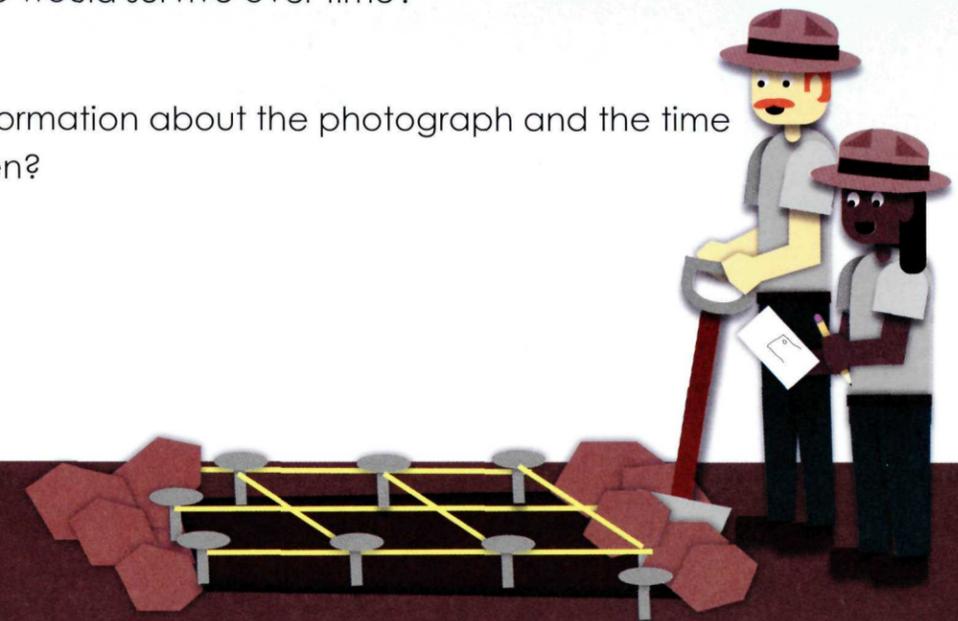
When do you think this photo was taken?

Why do you think this photo was taken? Do you think the photographer had a message to share?

What does the picture tell you about the past?

What objects in the picture would survive over time?

How can you get more information about the photograph and the time period in which it was taken?



SURFACE WATER & ADAPTIONS

Arizona is a dry place. Limited rainfall affects the amount and availability of water throughout the year. Water found on the surface of the earth is vital to plants, animals, and people. **Fill in the blanks below to learn more!**

Describe three types of surface water
year-round pools seasonal underground rivers snowmelt

Springs are found where water emerges from _____. They may look like _____ or flowing streams. Some springs flow year-round. Others are dry for part of the year. Springs often provide the only nearby water source for animals and people. **Streams** are channels of water that flow _____. They may be small creeks, large _____, or something in between. Because streams contain water all the time, they are home to many animals, including fish, turtles, insects, and snails. The trees and other plants that grow in and next to streams provide a good habitat for birds and mammals. **Washes** are channels that are dry most of the year, but flow after rainstorms or _____. Some washes have bedrock pools that store water after the rest of the wash has gone dry. Drought-tolerant trees are often found on the banks of washes. The _____ flow of water helps keep these plants alive.



National parks in Arizona include many different environments, from dry desert valleys up to temperate mountain ranges and streams. These habitats are home to a huge diversity of organisms. Over time, many plants and animals have developed special characteristics in response to their environment. These adaptations allow them to tolerate the hot climate and scarce water.

Match the animal to its adaptations



Jack Rabbit



Big Horned Sheep



Desert Tortoise



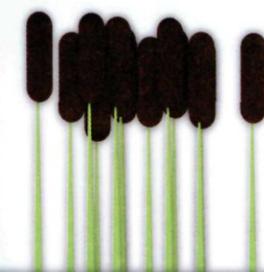
Spade Foot Toad

To avoid drying out, I spend most of the time in an underground burrow that I dig with my hind feet. After large monsoon storms, I emerge to lay eggs in temporary pools of water. The eggs hatch quickly, before the water dries up.

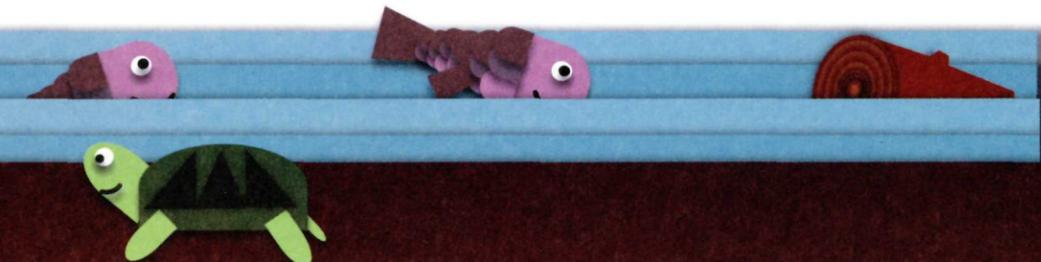
During winter and the dry parts of summer, I hibernate in a burrow on a rocky hillside. My eggshells are hard so they do not dry out. I get much of my water from plants. After rainstorms, I drink from temporary pools and can store 40% of my weight in water.

I am mainly active during the night when temperatures are cooler. My large ears have many blood vessels that help me shed excess body heat. When water is not available, I eat cacti and other plants that store water.

My large stomach can store enough water to last me several days. To get enough water in winter, I lick the dew off plants. In summer, I eat cactus and cactus fruit. I can withstand high body temperatures, but also like to spend time in shade and caves.

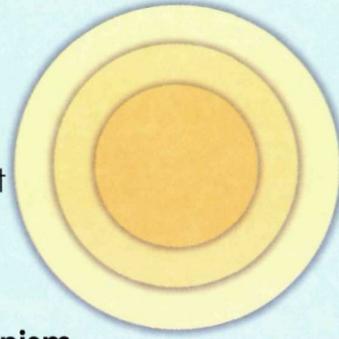


How do you adapt to the Arizona environment?

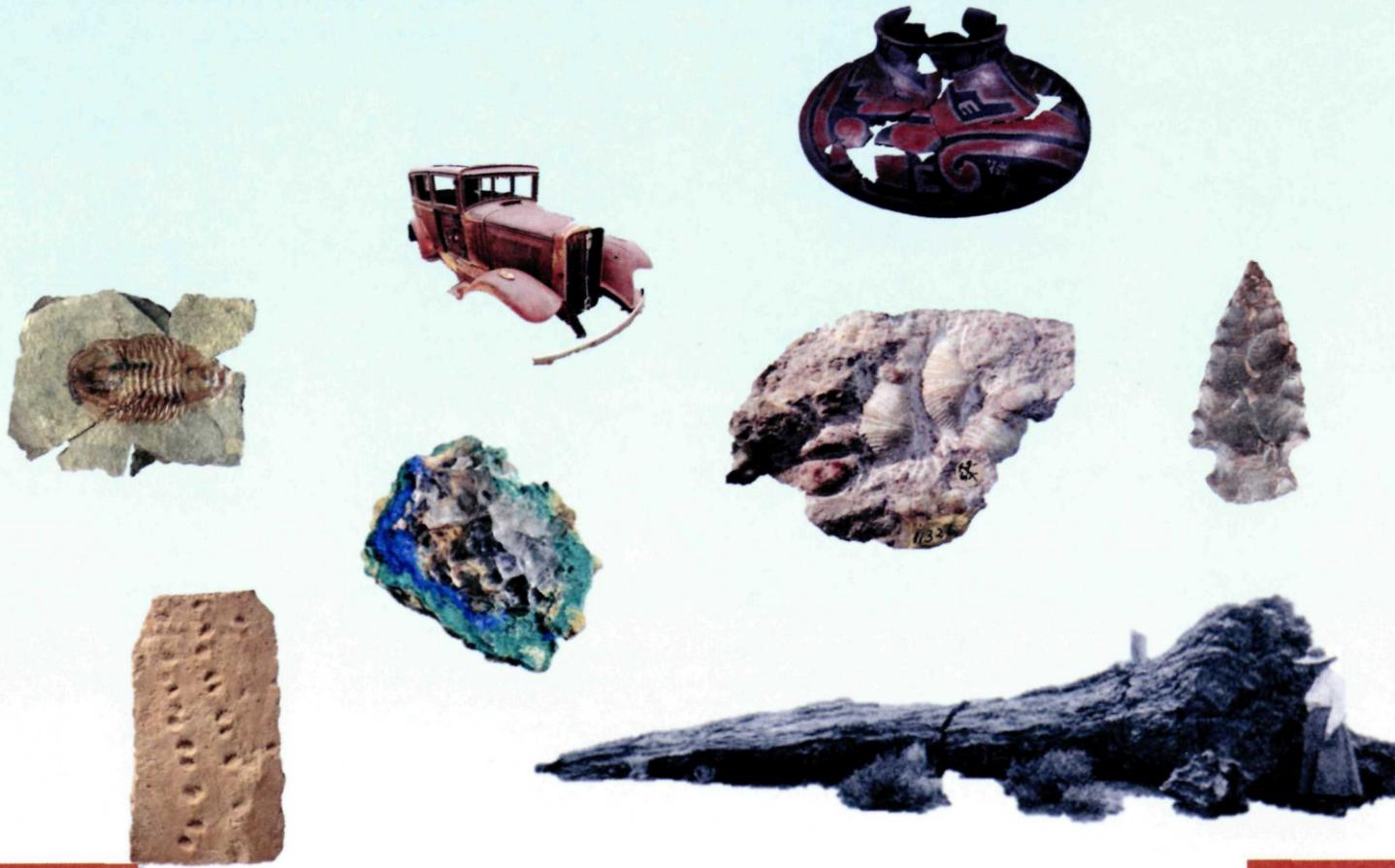


ANCIENT LIFE IN ARIZONA

A **fossil** shows something was alive in the distant past. Scientists that study fossils are called **Paleontologists**. Paleontologist use this evidence to imagine what life was like long ago. Fossils can be shells, skeletons, and rock impressions left behind anywhere from thousands to billions of years ago. Fossils are either part of an **organism** (a living thing) or some trace of an organism from past periods of geologic time. To be a fossil it has to be *at least 10,000 years old!*



Circle the items below that you think are fossils:



Paleontologists have been able to break up the past into geological time periods by looking at the type of plants and animals that existed, the point when they went **extinct**, and when new life forms emerged. Life first began on earth with small organisms like bacteria about **3.7 billion years ago**. Even though we know that dinosaurs were around a long time ago, they are not as old as plants and animals from the **Paleozoic era** or the **Hadean, Archean, and Proterozoic Eons**.

My Fossil Journal: Many national parks and monuments have fossils. They come from a variety of organisms, times, and landscapes. Look in the museums or ask a park ranger if any fossils were found at the places you visit. Record your findings below.

National Park site :

What kind of organism does this fossil represent?

What was the environment like when this fossil was preserved?

Which era do you think this fossil is from (put a check in the box)?

CENOZOIC ERA: Age of the Mammals
TIME: 66 million years ago to Today
ORGANISMS: Woolly Mammoths, First Hooved Animals, Grasses
FIND ME AT: Montezuma Well (Montezuma Castle National Monument)



MESOZOIC ERA: Age of the Dinosaurs
TIME: 252 million to 66 million years ago
ORGANISMS: Dinosaurs, Mammals, Flowering Plants
FIND ME AT: Petrified Forest National Park



PALEOZOIC ERA: From Water to Land
TIME: 542 million to 252 million years ago
ORGANISMS: Conifer Trees, Fish, Insects and so much more!
FIND ME AT: Grand Canyon National Park



HADEAN, ARCHEAN, and PROTOZOIC EONS: Life Begins
TIME: 4.6 billion to 542 million years ago
ORGANISMS: Bacteria, Stromatolites, Algae
FIND ME AT: Tonto National Monument



LEAVE NO TRACE



These suggestions will help you responsibly explore public lands.

1. Plan Ahead and Prepare

Think back to your John Wesley Powell page. Is there anything that you forgot to pack for your journey?

2. Travel and Camp on Durable Surfaces

As you walk or take a rest, look for designated trails, campgrounds, or picnic areas.

3. Dispose of Waste Properly

Use garbage and recycle bins whenever possible. If there are no garbage cans around, pack it out of the park! Draw a line to match the amount of time you think each item takes to degrade.



Aluminum Can

1 Month

2 Months

5 Years

20 years

200 years

500 years



Cigarette Butt



Banana Peel



Plastic Bag



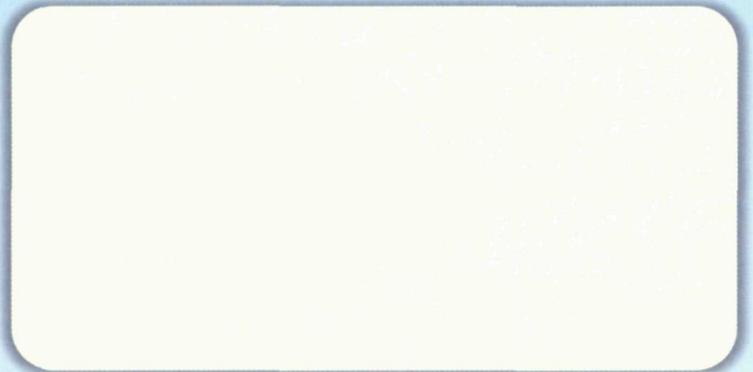
Paper



Plastic Bottle

4. Leave What You Find

Everything in a national park is special and protected. That means that everything should stay in the park. This includes flowers, leaves, and even rocks. Draw something special you discovered in a national park or monument that you want to everyone to be able to enjoy.



5. Minimize Campfire Impacts

Human caused wildfires can be devastating to a park. In some places trained firefighters manage fires for ecological benefit. Before you light a campfire, ask a park ranger if there are any fire restrictions in effect.

6. Respect Wildlife

Sit quietly for five minutes and observe a bird or other animal in a park. Make sure you stay a safe distance and you are not disturbing the wildlife.

What animal did you watch?

What did you notice?

7. Be Considerate of Other Visitors

Try doing something nice for another visitor, like hold open a door or make room on the trail for passing hikers. It will make their day and you will feel good about it too!

YOU DID IT!

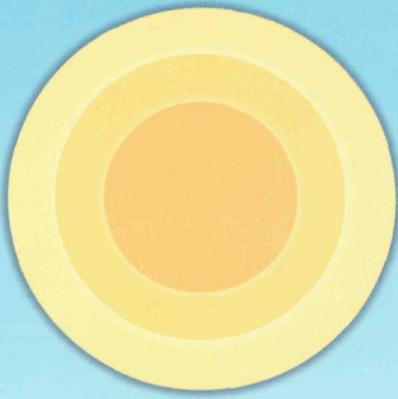
If you have completed your required activities, then you have earned an Arizona Junior Ranger Explorer patch! You are the next generation of park rangers, stewards, and visitors. We want to thank you for taking the time to get to know the beautiful, diverse, and adventurous state of Arizona.

Do you have a cool picture, funny story, or an interesting fact to share from your travels? Use **#AZJRExplorer** on Facebook, Instagram, and Twitter. Your stories will be seen by park rangers and other Arizona Junior Ranger Explorers!



#AZJRExplorer





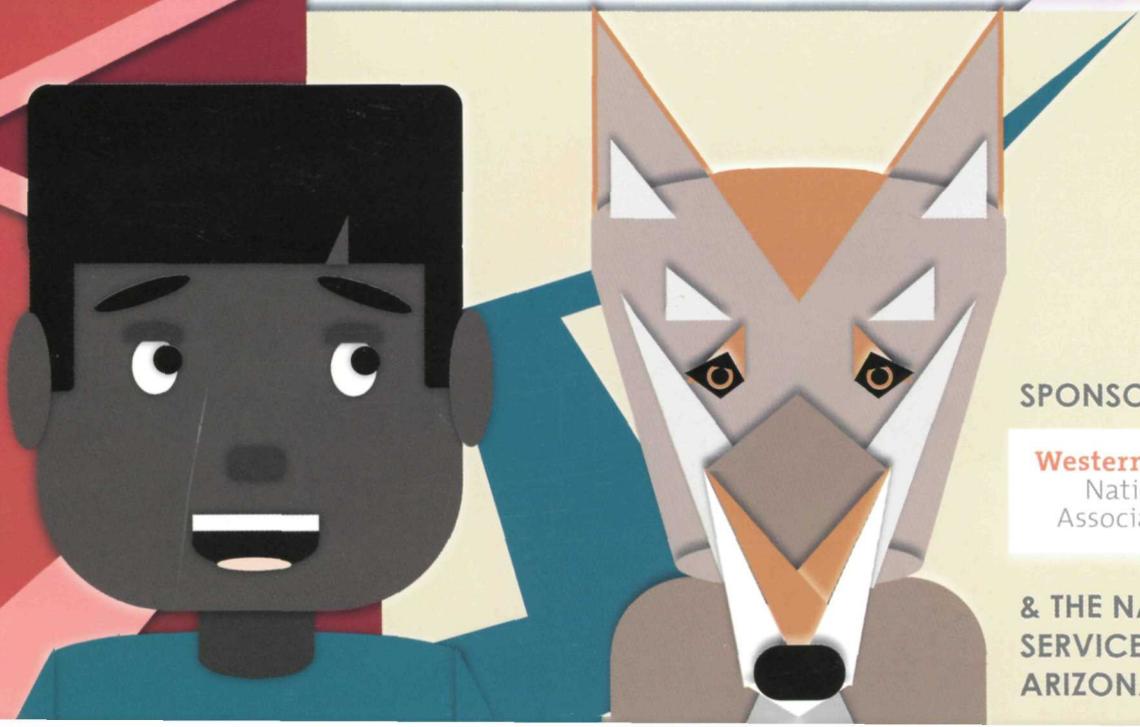
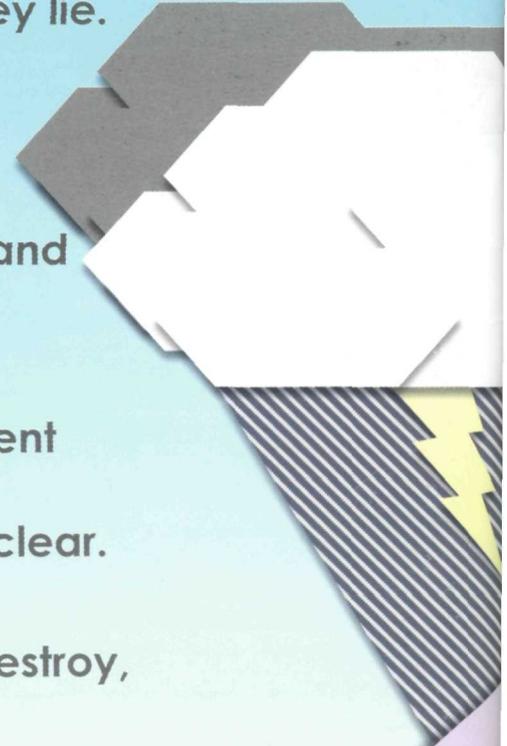
ARIZONA EXPLORER PLEDGE

From canyons, to mountains,
and cacti,
I will leave it all just where they lie.

In nature's beauty and
history's wonder,
I will stay safe from floods, and
lightning and thunder.

In every park and monument
adventure is near,
But on my trip, the mission is clear.

Preserve and protect, not to destroy,
So future Arizona Junior
Explorers can enjoy.



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