

*adventures in*

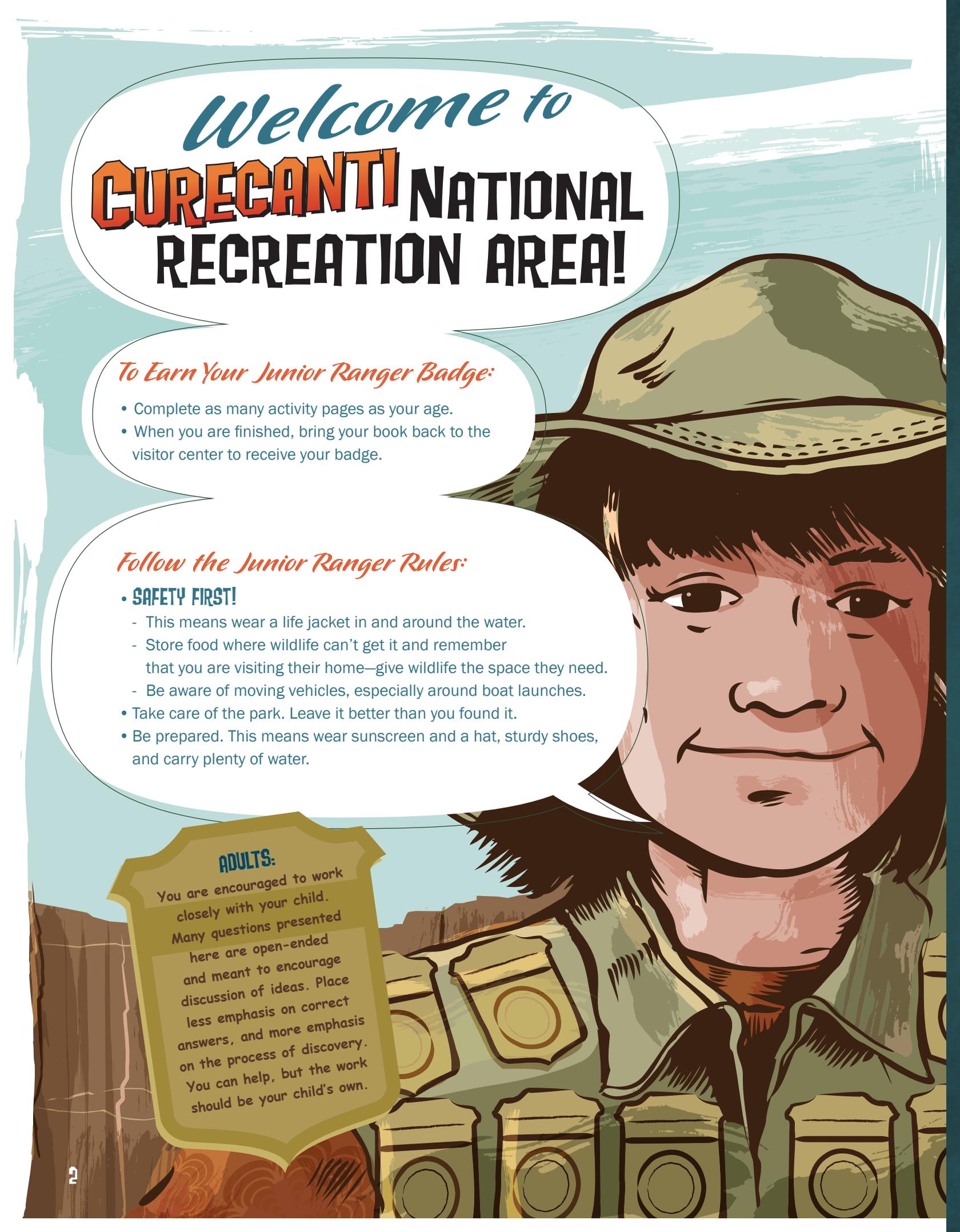
# CURECANTI



Curecanti  
National  
Recreation  
Area

*Curecanta II*

*Official*  
**JUNIOR  
RANGER**  
*Activity Book*



# Welcome to **CURECANTI** NATIONAL RECREATION AREA!

## *To Earn Your Junior Ranger Badge:*

- Complete as many activity pages as your age.
- When you are finished, bring your book back to the visitor center to receive your badge.

## *Follow the Junior Ranger Rules:*

- **SAFETY FIRST!**
  - This means wear a life jacket in and around the water.
  - Store food where wildlife can't get it and remember that you are visiting their home—give wildlife the space they need.
  - Be aware of moving vehicles, especially around boat launches.
- Take care of the park. Leave it better than you found it.
- Be prepared. This means wear sunscreen and a hat, sturdy shoes, and carry plenty of water.

### **ADULTS:**

You are encouraged to work closely with your child. Many questions presented here are open-ended and meant to encourage discussion of ideas. Place less emphasis on correct answers, and more emphasis on the process of discovery. You can help, but the work should be your child's own.

# BINGO!

<p><i>Find a sagebrush and sketch it below.</i></p> <p><i>Smell it!</i></p>	<p><i>Visit a beach.</i></p> <p>Using natural materials that you find there, create a picture of an elk. Take a photo to show a Ranger, and then scatter the evidence!</p>	<p><i>Visit Cimarron.</i></p>  <p>How many train cars did you see?</p> <p>_____</p>	<p>Find three different <i>spiny plants</i>. Sketch one below.</p> <p><i>Don't touch!</i></p>
 <p>Carry your own backpack for the whole day.</p> <p><i>Remember to pack out any trash!</i></p>	<p><i>Attend a Ranger program.</i></p> 	<p>Find food that a wild animal eats. Sketch it.</p> <p><i>Who eats this?</i></p> <p>_____</p>	<p><i>Hike a park trail.</i></p> <p><i>Try the</i> Dillon Pinnacles Trail or Curecanti Creek Trail. Hiking Pine Creek Trail to the Boat Tour counts, too!</p>
<p>Circle the colors that you see in <i>West Elk Breccia</i>. (Hint: The Dillon Pinnacles are this kind of rock.)</p> <p>Black   Purple   Blue Green   Yellow Orange   Red   White</p>	<p>Find an animal track and sketch it.</p> <p><i>Whose is it?</i></p> <p>_____</p>	<p>★ <i>Spot 3 constellations</i> in the dark night sky. Invent a new one you see and draw its stars.</p>	<p>Touch the water in a river or creek.</p> <p><i>Is the water cold?</i></p> <p>_____</p>
<p>Ask a Park Ranger a question.</p> 	<p>Wave to a <i>cottontail rabbit</i>.</p> 	<p>Ride in a boat.</p>  <p><i>Did you go for a swim?</i> Yes/No</p>	<p>Go fishing!</p> <p><i>Did you catch one?</i> Yes/No Draw it above.</p>

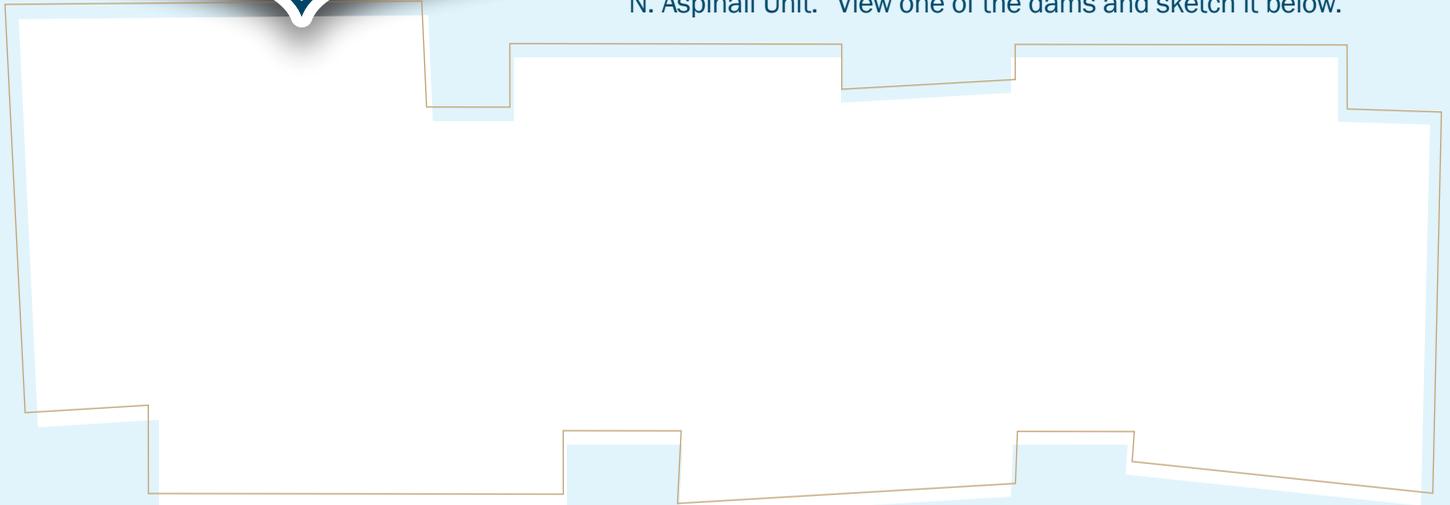
**CURECANTI!**

As you explore the park, try to get a **BINGO!** by crossing out four boxes in a row, either vertically, horizontally, or diagonally.

# BUILDING A LAKE!

## Blue Mesa, Morrow Point, and Crystal Dams

each create reservoirs within Curecanti. These dams produce electricity and store water for later use in Colorado and in the southwestern United States. Together they are named the “Wayne N. Aspinall Unit.” View one of the dams and sketch it below.



I sketched (circle):

Blue Mesa Dam  
(view from Highway 92 or by boat)

Morrow Point Dam  
(view at Cimarron)

Crystal Dam  
(view at East Portal)

► What *humanmade* and *natural* materials do you think were used to build this dam?

► We have many uses for the water stored in these reservoirs. Find them below.

W	R	G	Q	O	N	L	F	I	G	F
A	O	F	N	V	O	Z	P	P	N	A
S	L	F	V	I	I	E	Z	V	I	C
H	K	R	F	F	T	G	P	N	H	T
I	R	V	Q	S	A	A	F	N	S	O
N	K	B	D	A	G	J	O	X	I	R
G	N	I	K	N	I	R	D	B	F	I
Y	T	I	C	I	R	T	C	E	L	E
M	K	H	P	S	R	K	M	N	R	S
O	K	H	A	B	I	T	A	T	W	H
F	I	G	H	T	F	I	R	E	S	Y

### WORD BANK

- BOATING
- FISHING
- IRRIGATION
- HABITAT
- FIGHT FIRES
- WASHING
- DRINKING
- ELECTRICITY
- FACTORIES



- ▶ If you live on this map, draw a house 🏠 where you live. If you don't live on this map, draw a house 🏠 and an arrow ➡ pointing in the direction of your home.
- ▶ Is it faster to travel from your home to mountains or to an ocean? \_\_\_\_\_
- ▶ Using the map's scale, estimate how far Blue Mesa (Curecanti) is from the ocean: \_\_\_\_\_

Melting snow from the West Elk and San Juan Mountains joins the Gunnison River, which flows through Blue Mesa Reservoir and the Black Canyon, and then joins the Colorado River in Grand Junction. The Colorado River flows all the way to the Pacific Ocean. Imagine that you are a drop of water in Blue Mesa Reservoir traveling by river to the ocean.

- ▶ How many states do you pass through? \_\_\_\_\_ How many countries do you visit? \_\_\_\_\_

*In reality, the Colorado River no longer reaches the Pacific Ocean.* It has run dry in Mexico since 1998. There are two main causes for this change. One cause is that the southwestern United States relies heavily on the river for irrigation, drinking water, and electricity. The other cause is that we have had multiple years of drought and warmer temperatures, both effects of climate change. What are three things that you can do to conserve the water in the Colorado River and in the lakes, reservoirs, and rivers near your home?

- ▶ 1. \_\_\_\_\_
- ▶ 2. \_\_\_\_\_
- ▶ 3. \_\_\_\_\_

What a  
★ **VIEW!**

Visit the Dillon Pinnacles to complete this activity.

The best spot for viewing the Pinnacles is about 1.5 miles down the Dillon Pinnacles Trail, but this activity can also be completed at the Highway 50 pullout between mile markers *135 and 136*.

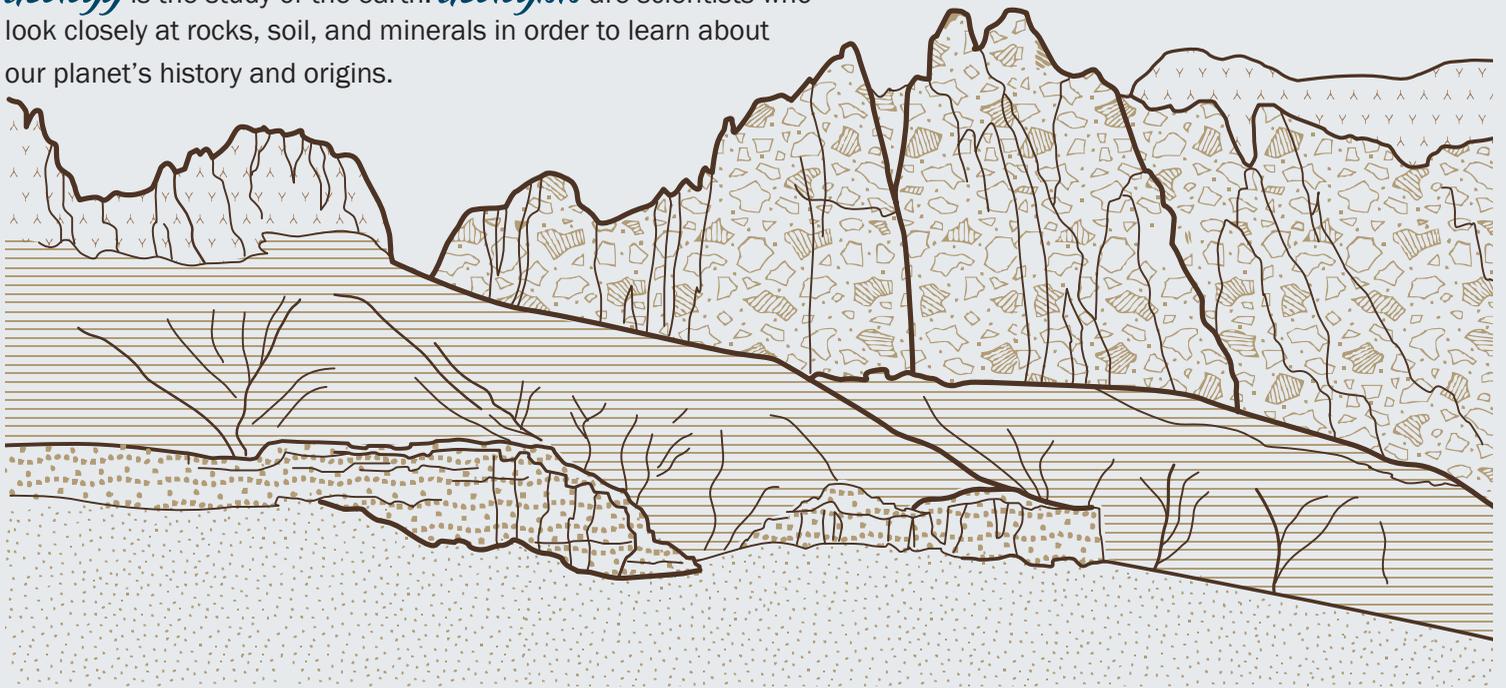
The Dillon Pinnacles are made up of *igneous* (volcanic) rock. A large volcano to the north (now the West Elk Mountains) spewed lava and created mudslides that were deposited here *30 million (30,000,000)* years ago. During these explosive events, a lot of surrounding volcanic rocks got picked up and transported along with the mudslides. This is why the rocks at the Dillon Pinnacles look like cement holding together smaller rocks. It also *erodes* (breaks apart) easily because the jumble of mixed materials is held together weakly. This has led to the interesting shape of the *pinnacles* (tall points)!



► Spend five minutes sketching the Dillon Pinnacles in the space below.

A large, empty rectangular area with a light blue background and a thin brown border, intended for sketching the Dillon Pinnacles. The area is divided into three sections by a horizontal line and a vertical line, creating a grid-like structure for the sketch.

**Geology** is the study of the earth. **Geologists** are scientists who look closely at rocks, soil, and minerals in order to learn about our planet's history and origins.



► Use the code to solve the puzzle below and learn about the geology that can be seen here at the Dillon Pinnacles.

**S**



**F**



**O**



**L**



**N**



**E**



**A**



**T**



**C**



**I**



**R**



Ash spewed from the volcanic San Juan Mountains; found at tops of mesas; appears grey:

W \_ \_ D \_ D \_ U \_ \_  
 ★ ☺ ★ ★ ★

Lava and mud flows from the volcanic West Elk Mountains:

W \_ \_ \_ \_ K B \_ \_ \_ \_ \_  
 ★ ☺ ★ ☺ ★ ☺ ☺ ☺ ☺ ☺ ☺

Ancient muddy sea floor; appears yellow:

M \_ \_ \_ \_ H \_ \_ \_  
 ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺

Ancient sandy rivers and valleys; appears white:

D \_ K \_ \_ \_ \_ D \_ \_ \_ \_ \_  
 ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺

Ancient hot and steamy river basin; appears striped with green, red, and grey:

M \_ \_ \_ \_ \_ M \_ \_ \_ \_ \_  
 ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺

# Become a ★ PALEONTOLOGIST!

**Sedimentary rock is made of sand, mud, or clay**

that was moved into place by forces like wind or water. , , and  on the previous page are sedimentary rock layers.

**Fossils** have been discovered in the sedimentary rock layers along Blue Mesa Reservoir. Fossils preserve the remains and traces of ancient **organisms** (living things). Many fossils found here formed when intense pressure for millions of years allowed minerals in the sedimentary rock to replace the original plant or animal. Evidence of ancient tracks, nests, and burrows are also preserved here. Learn about fossilization below.

► **Look at the pictures below and read their captions. They are not in the right order. Number each step to correctly show the process of fossilization.**



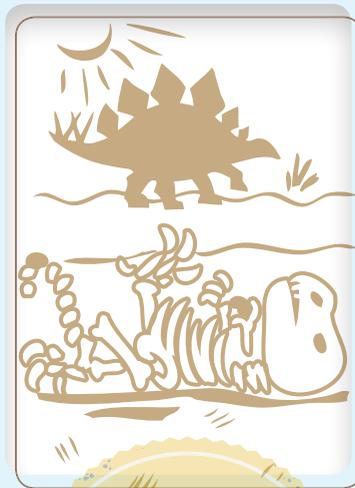
**Paleontologist**  
(a scientist who studies ancient life) discovers fossils!

**STEP #** \_\_\_\_\_



**Minerals**  
enter plant or animal and turn remains to stone.

**STEP #** \_\_\_\_\_



**Instead of**  
completely decomposing,  
remains are buried.

**STEP #** \_\_\_\_\_



**Ancient plant or**  
animal dies.

**STEP #** \_\_\_\_\_

► **Try making this fossil model at home with an adult! You will need an empty table, two paper napkins, a heavy book, one piece each of white and wheat bread, and a gummy worm.**

Imagine that you are standing at Blue Mesa, but traveling back in time 165 million years. A warm shallow sea flows over your toes. (Place the white bread on the napkin on the table. This bread represents sand.) What is today North America was located near the equator, and the warm water brings early life-forms like plankton, algae, worms, and trilobites. Find your worm, and make it swim in the warm ocean and then die and sink into the sand. (Place worm on white bread.) Before it is eaten there is a huge tropical storm that washes in the rich brown mud of the tropical landscape. (Cover your worm with the wheat bread.) Millions of years pass and more and more layers of sediment and volcanic materials are piled on top of this rich brown mud. (Place your napkin on top of the model and push down for ten seconds using the heavy book.) Time and pressure change the sediments into rock and turn the worm into a fossil. Now you arrive at present day. You are a paleontologist. Carefully peel apart the layers of bread. See if you can find two fossil molds (impressions), one body fossil (ancient life that turned to rock), and fossil fuels (oil from ancient plants and animals, visible in your model as staining in the surrounding rock).

# Let's Move OUTSIDE!



Humans have lived in this area for over 10,000 years.

Ancestors of the *Ute Indians* were some of the earliest inhabitants, living off of the plants that they could gather and the animals that they could hunt. In the 1800s, *miners* and *farmers* began moving to the area, looking for its natural resources. By the 1900s, people had begun to truly change the Black Canyon area, building the *Denver and Rio Grande Railroad*, the *Gunnison Diversion Tunnel*, and the three dams that now form the landscape of Curecanti National Recreation Area.

By visiting **CURECANTI**, you are adding to its story.

► Complete at least three activities on this page. Draw a star on the ones that you complete.

Count the stairs from the Pine Creek parking lot down to Morrow Point Reservoir.

*I counted \_\_\_\_\_ stairs.*

Play a fun, active game at the beach.

*We played \_\_\_\_\_*



Hike the entire Mesa Creek Trail or Neversink Trail.

*I spotted \_\_\_\_\_ different birds.*

Hike

*Curecanti Creek Trail.*

Ask a Park Ranger how a Gunnison Sage-grouse dances in the springtime.

*Then do the dance yourself!*



*Go fishing* at Blue Mesa, Cooper's West, or Beaver Creek.

*Check winter ice conditions,*

then ski, snowshoe, or ice fish on Blue Mesa.

Hike the Dillon Pinnacles Trail.

*I spotted \_\_\_\_\_ (but did not pick!)*

*different wildflowers.*



Go on a Ranger-led hike or the boat tour.

*I learned \_\_\_\_\_*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

► Which of the things that you did on your visit might have been done by a Ute Indian living here 150 years ago?

Remember, there was no highway or railroad yet, and the reservoirs weren't built until 1965 (Blue Mesa), 1968 (Morrow Point), and 1976 (Crystal).

\_\_\_\_\_  
\_\_\_\_\_

# HABITATS

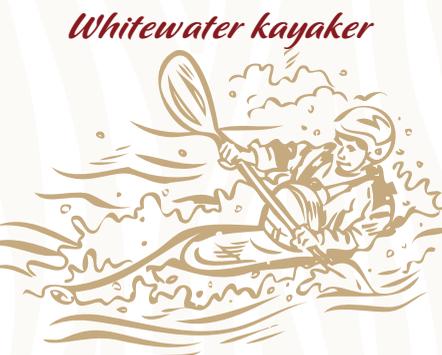
Then and Now

All living things need food, water, shelter, and space

to survive. Where they find these things is called their habitat. When the dams of Curecanti were built between 1965 and 1976, the Gunnison River flooded, destroying upland and riparian habitats, but creating a new aquatic habitat in the form of a humanmade lake. Sagebrush and cottonwood trees died when they disappeared underwater, while new fish were introduced and benefited from the deep, cold water that became a new habitat. Animals that depend on sagebrush for shelter had to find new homes, but those that like to eat fish found in lakes had a new source of food.

Decide if each living thing gained or lost its preferred habitat when the reservoirs were created.

- ▶ Draw a smiley face 😊 in the square for animals that gained habitat.
- ▶ Draw a frowny face ☹️ for those that lost habitat.

 <p><b>Cottonwood tree</b> (grows along rivers; best adapted to survive in wet soil)</p>	 <p><b>Sagebrush</b> (deep and shallow roots are adapted for dry soil)</p>	 <p><b>Fisherman in a motorboat</b></p>
 <p><b>Kokanee salmon</b> (an introduced/nonnative species; adapted to find food in deep water)</p>	 <p><b>Whitewater kayaker</b></p>	 <p><b>Sage-grouse</b> (adapted to use sagebrush for food and shelter)</p>
 <p><b>River otter</b> (adapted to eat small plants and animals found in rivers)</p>	 <p><b>American white pelican</b> (adapted to catch fish while swimming in lakes or other shallow water)</p>	 <p><b>Lake trout</b> (an introduced/nonnative species; adapted to find food in deep water)</p>

**BONUS:**

▶ Which animals above are aquatic species? Which are riparian species? Which are upland species? Which are humans? Label each with an A, R, U, or H.

## Vocabulary:

**species** – kinds of living things, **aquatic** – lives in water, **riparian** – lives along a river, **upland** – lives above high-water line, **adaptation** – a body part or behavior that helps an animal or plant survive in a specific habitat

# SAGEBRUSH

## Dancer ★

*Gunnison Sage-grouse were once plentiful here.*

Over the past 100 years these birds have lost some of their sagebrush and wet meadow habitat to the reservoirs, as well as to homes, ranches, roads, trails, and powerlines. Predators include owls, hawks, eagles, ravens, and dogs. Today, these birds are rare; most people never see them. Every spring, males dance to attract females in areas called leks.

► Learn more about this unusual bird by coloring the pair below by the numbers, using the key.

KEY	
←	→
1=	Black
2=	Brown
3=	Yellow
4=	White
5=	Blue

### Save the Last Dance.

You can help Sage-grouse by following these guidelines when in sagebrush country: honor all road, trail, and area closures; no bicycles March 15 – May 15; walk only after 9:00 AM March 15 – May 15; dogs on leashes.



# KEEPING IT ★ Clean

## Melting snow in the mountains flows downhill

to the Gunnison River, then flows into Blue Mesa (see page 5 to find out where it goes next). Imagine you are a drop of water flowing from the mountains to the river.

- ▶ Follow the maze to find out how people can pollute water.
- ▶ Try and find the clean path to the river.



- ▶ List all the animals you see in and around the Gunnison River or Blue Mesa that need clean water to survive:

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- ▶ What is your favorite thing to do in the clean water of the Gunnison River or Blue Mesa?

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**Boating is a very popular activity at Blue Mesa Reservoir.**

For now Blue Mesa remains healthy, but Park Rangers worry about Blue Mesa's future. A big danger for Blue Mesa's health is that boaters might transport veligers (microscopic larvae) from *Zebra* and *Quagga mussels* to here from other bodies of water (the past rivers and lakes that a boat has been used in). This is why boaters are required to have a boat inspection.

Help keep Blue Mesa safe by learning about the places that Zebra and Quagga mussels can hide out on boats! They may be in the form of full-grown mussels, may just feel like sandpaper on the side of a boat, or they may be invisible without a microscope as they float in standing water.

- ▶ **Find a real boat, and have an adult help you identify these places on the boat. Then, circle those locations on the illustration below. Add to or change the illustration if necessary!**

**Don't Move a**

**MUSSEL**



*Zebra mussel*



*Quagga mussel*

◀ **Boat** ▶

MOTOR	LIVE WELL	ANCHOR	
DOCK LINES	HULL	BILGE	STORAGE

◀ **Trailer** ▶

WHEELS	AXLE
FRAME	ROLLERS



**Why should we worry? *Invasive mussels* reproduce very fast. Introducing mussels would:**

- Disrupt fishing by taking away food sources for kokanee salmon and other fish;
- Damage or even destroy boats by covering the steering equipment and clogging the engines' cooling system;
- Litter the shore with very sharp, bad smelling shells that may carry harmful bacteria;
- Clog downstream drains that bring water to homes and farms.



To complete this page hike the *Pine Creek Trail* or the *Curecanti Creek Trail*. Both of these trails lead you down into the upper Black Canyon of the Gunnison within Morrow Point Reservoir.

▶ I hiked at (circle one) *Pine Creek* *Curecanti Creek*

▶ Find a plant that is the same height as you are. Sketch one of its leaves below.

*What does your plant smell like?*

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▶ Ask an adult or look in a book to identify your plant. It is a \_\_\_\_\_

Look for evidence that *humans* and *animals* have been here before. **Sketch what you find.**  
(If you hike the Pine Creek Trail, try looking for evidence of the train that once traveled through the canyon here.)



*When you are at Morrow Point Reservoir look and listen for birds.*

▶ Write down any bird calls or sounds that you hear or any interesting bird behaviors that you observe.



# PICK YOUR NEXT Adventure!

A WORLD OF JUNIOR RANGER ADVENTURES AWAITS YOU! There are over 400 national parks, monuments, preserves, recreation areas, seashores, lakeshores, historical parks, battlefields, and memorials in the United States. Whether you are continuing your travels or heading home, there is something exciting in your future! A few parks are featured here.

**MESA VERDE, CO**

**KATMAI, AK**

**SAGUARO, AZ**

**DEVILS TOWER, WY**

**MOUNT RUSHMORE, SD**

**YELLOWSTONE, WY**

**CAPE HATTERAS, NC**

**HAWAII VOLCANOES, HI**

**BLACK CANYON, CO**

**GREAT SAND DUNES, CO**

**ARCHES, UT**

**GRAND CANYON, AZ**

**STATUE OF LIBERTY, NY**

**EVERGLADES, FL**

**AMERICAN SAMOA**

**CURECANTI, CO**

**CHECK OFF THE ONES THAT YOU HAVE ALREADY VISITED.**

Rank the ones you would like to visit someday by placing a number next to your favorites (1, 2, 3...).

**COLOR them all!**

15

# CURECANTI

## National Recreation Area

"I, \_\_\_\_\_, PROMISE  
TO TEACH OTHERS ABOUT WHAT I LEARNED  
AT CURECANTI, PROMISE TO EXPLORE OTHER  
NATIONAL PARK SERVICE AREAS, AND PROMISE  
TO TAKE CARE OF THESE PLACES SO THAT ALL  
PEOPLE CAN ENJOY THEM FOREVER."



### OFFICIAL JUNIOR RANGER ACHIEVEMENT AWARD

\_\_\_\_\_  
Junior Ranger Signature

\_\_\_\_\_  
Park Ranger Signature

\_\_\_\_\_  
Date



You can also mail completed booklets to: Education Office, Curecanti NRA, 102 Elk Creek, Gunnison, CO 81230. We will mail your badge with your completed booklet.  
For more, visit: [www.nps.gov/cure](http://www.nps.gov/cure) [www.nps.gov/web/rangers](http://www.nps.gov/web/rangers)