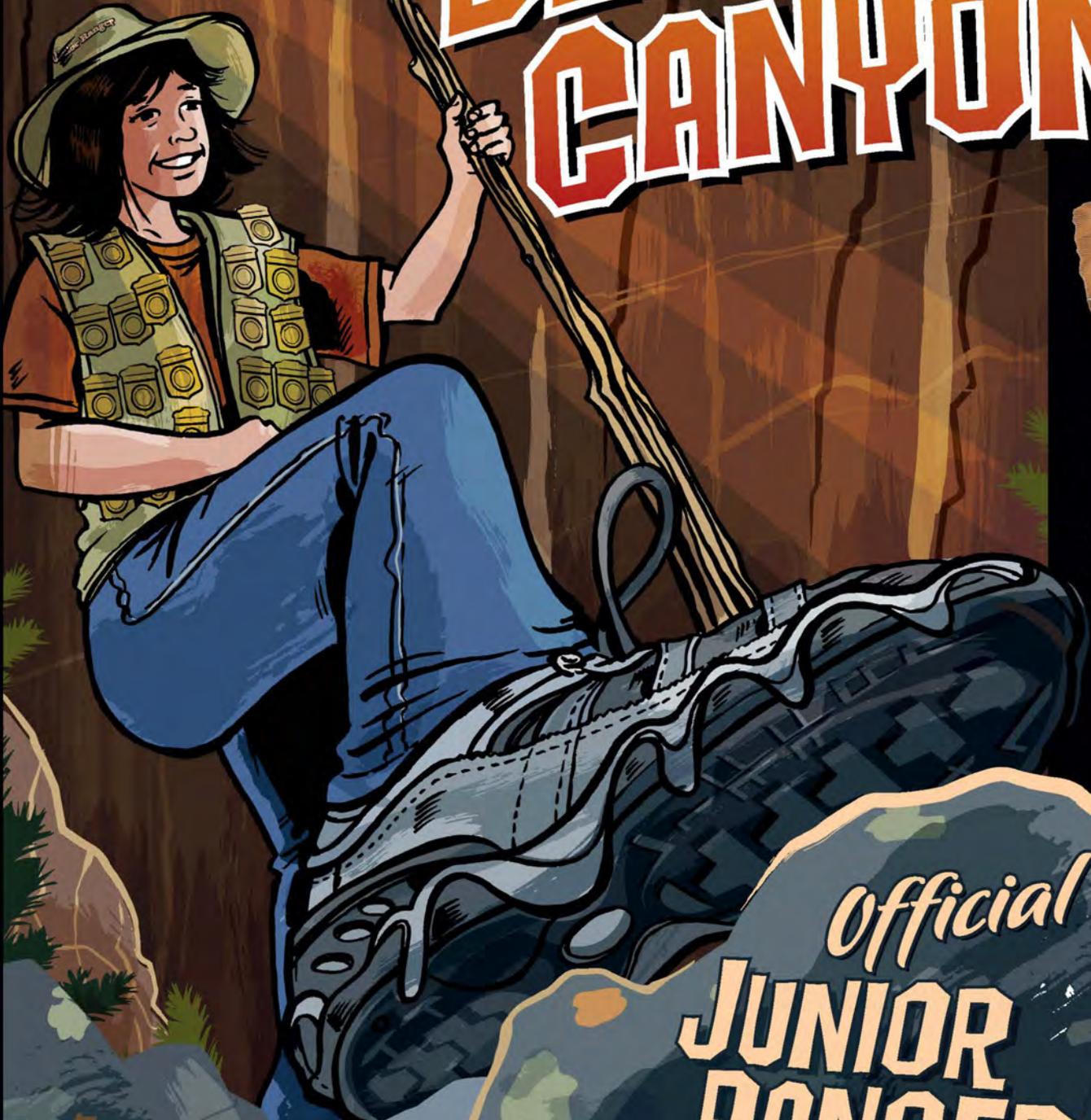


*adventures in*

# BLACK CANYON



Black  
Canyon  
of the  
Gunnison  
National  
Park

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



# Welcome to **BLACK CANYON** *of the Gunnison* **NATIONAL PARK!**

## *To Earn Your Junior Ranger Badge:*

- Page 6 is a **REQUIRED** page.
- 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:*

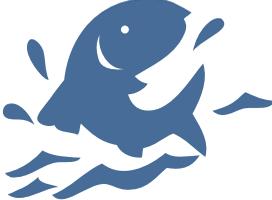
### • **SAFETY FIRST!**

- Stay at least a body length from the edge of the canyon.
- Do not climb on railings.
- Do not throw rocks over the canyon rim.
- Store food where bears and other wildlife can't get it.
- Keep a safe distance from wildlife.
- 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>Sit in a quiet place for two minutes.</i></p>  <p>Can you hear birds? The river?</p>	<p><i>Visit East Portal.</i></p>  <p>How many fish can you spot?</p> <hr/>	<p><i>Touch a juniper tree.</i></p>  <p>Hint: Look for a tree with small, hard blue berries.</p>
<p><i>Have a picnic.</i></p>  <p><i>Clean up your trash.</i> Don't attract bears, birds, or chipmunks!</p>	<p><i>Attend a Ranger program.</i></p> 	<p>Find an animal's home. Sketch it.</p> <p><i>Who lives there?</i></p> <hr/>	<p><i>Hike a park trail.</i></p> <p>On the South Rim you can try the Warner Point Trail or the Oak Flat Trail. On the North Rim try to hike to Exclamation Point on the North Vista Trail.</p>
<p><i>Look for lichen growing on the rocks.</i> Circle the colors that you find.</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> <hr/>	<p>Hide under a small tree or under a bush like a mountain lion.</p> <p><i>What would you hunt for dinner?</i></p> <hr/>	<p><i>Sketch an oak leaf.</i></p> <p>Hint: Look for acorns under the tree.</p>
<p>Sketch a wildflower.</p> <p><i>Don't pick it!</i></p>	<p>Wave to a mule deer.</p> 	<p>Ask a Park Ranger a question.</p> 	<p><i>Spot a soaring bird.</i></p>  <p>Hint: Look up!</p>

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

# WHAT A RIVER!

*As you travel through the park,*

you are likely to visit many overlooks. Circle one overlook below and visit it in order to complete these two pages.

*South Rim:*

*Pulpit Rock*

*Chasm View*

*Sunset View*

*North Rim:*

*Narrows View*

*Exclamation Point*

*Kneeling Camel View*

The rock that makes up the Black Canyon's walls is ancient! Some of the rock that you can see is over *1.8 billion (1,800,000,000)* years old. This rock formed deep underground and is extremely hard. It was lifted to the surface of the earth about *65 million (65,000,000)* years ago during the Gunnison Uplift. The Gunnison River has been forming the canyon by cutting through the rock for the past *2 million (2,000,000)* years. The canyon gets a little bit deeper each year. HINT: in 1 year, the river carves approximately the thickness of this piece of paper.

▶ **How many years would it take to cut the canyon as deep as your Junior Ranger book's thickness?** \_\_\_\_\_

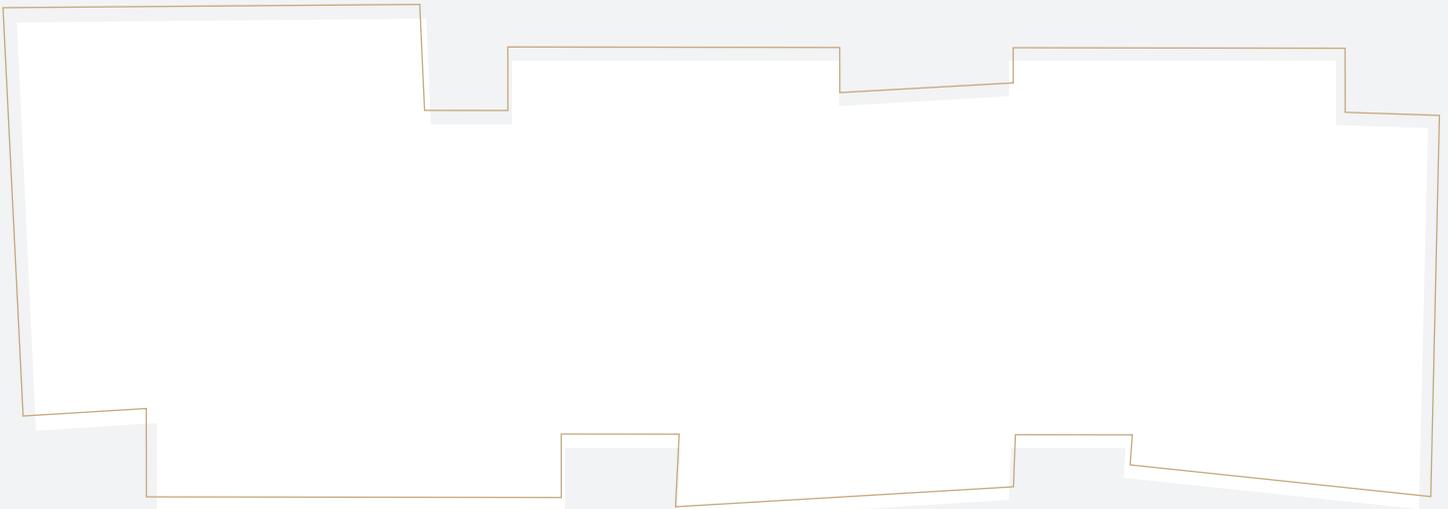
▶ **Can you hear the river? What does it sound like? Is it moving quickly or slowly?**

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▶ **Can you see the river? Sketch what you can see.**



Do you know which direction the river is flowing? It may be hard to tell. The Gunnison River flows northwest (NW) through the canyon. Use the *compass rose* on the next page to determine whether the river is moving from *left to right* or *right to left* below you. (Circle answer below.)

*I am standing on the*

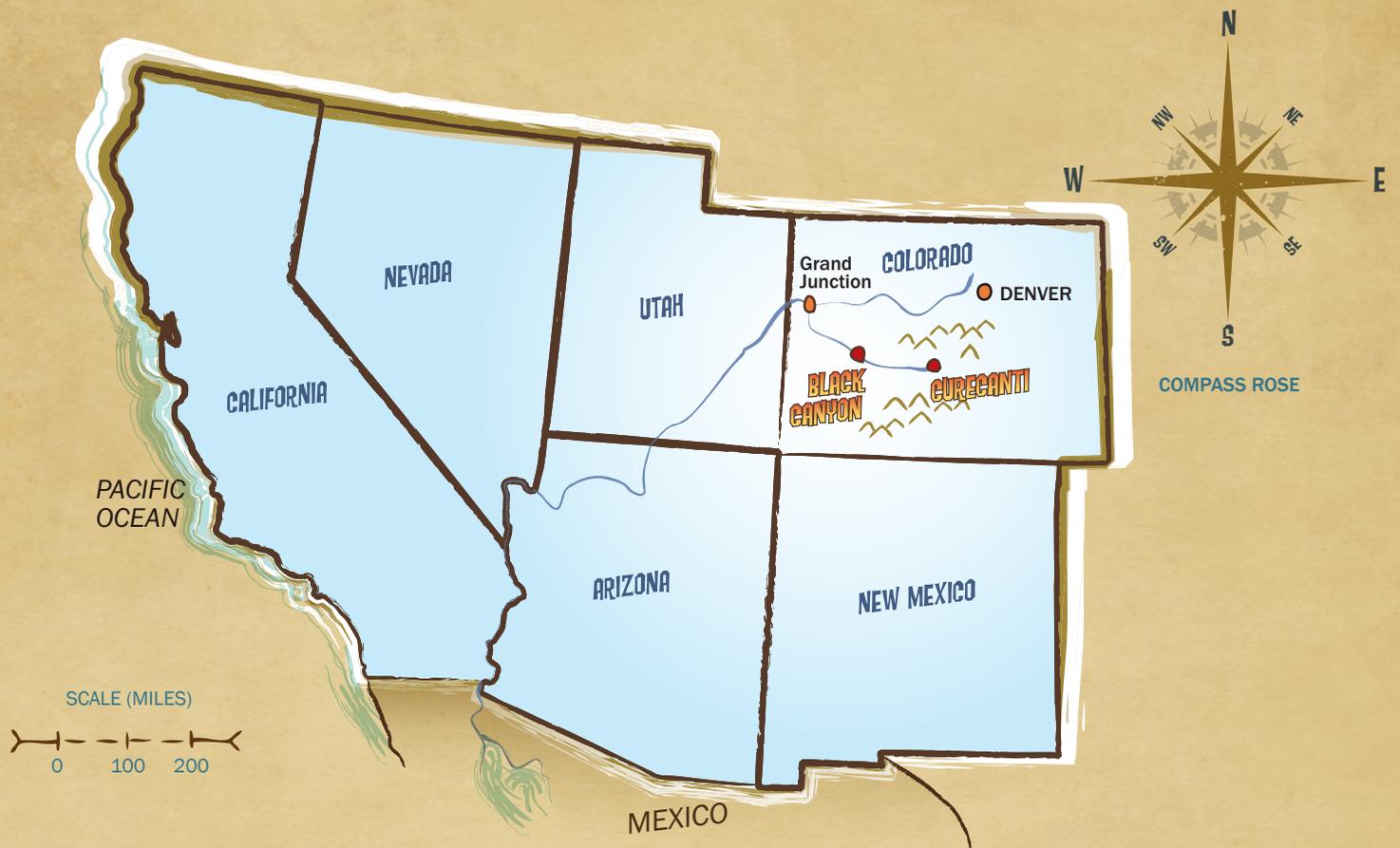
*South Rim*

*North Rim*

*Below me, the Gunnison River is flowing from*

*left to right*

*right to left*



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.

▶ How many mountains can you count around you? \_\_\_\_\_ Can you see the ocean? \_\_\_\_\_

▶ Using the scale on the map, estimate how far you are from the ocean: \_\_\_\_\_

*Imagine that you are a drop of water in the Black Canyon. You travel in the Gunnison and Colorado Rivers all the way to the Pacific 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 another overlook for completing the activities on these two pages! Circle it below.*

*South Rim:*

*Painted Wall View*

*Gunnison Point*

*Tomichi Point*

*North Rim:*

*Chasm View*

*Big Island View*

*Balanced Rock View*

► Sketch a rock wall that you see from the overlook.

Do you ever look for shapes in the clouds? You can do the same thing with the rocks and plants that you see across the canyon. Do any of the shapes or patterns look like animals or scenes in your imagination?

► Sketch what you imagine below.

► Using colors, shapes, and patterns please describe your view to an artist:

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*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.

► **How would you describe your view to a geologist?** *(Read on for useful vocabulary.)*

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► **Unscramble the words below to learn about the three rock types studied by geologists.**

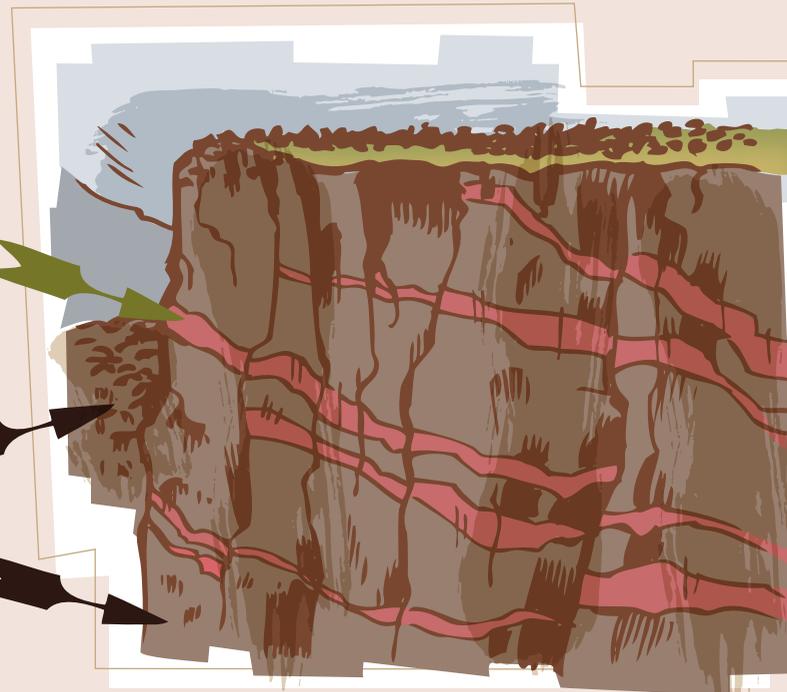
*Sedimentary rocks* are made of sand, **UMD** \_\_\_\_\_, and clay pushed together in layers. **SOF SILS** \_\_\_\_\_ of ancient plants and animals are often found in *sedimentary rocks*. *Igneous rocks* are made of volcanic materials, like cooled **AVAL** \_\_\_\_\_, magma, or ash. *Metamorphic rocks* are formed deep underground when sedimentary and igneous rocks **HANE GC** \_\_\_\_\_ because of the hot temperature and high pressure.

*Specific rocks that you might see:*

*Pegmatite* ('peg-ma-tite'): This igneous rock is usually pink or white. It has shiny flakes (mica), thick white crystals (quartz), and pink minerals (feldspar). It is formed by magma that cooled deep underground.

*Schist* ('shist'): This darkly colored metamorphic rock may look black with shiny flakes.

*Gneiss* ('nice'): This darkly colored metamorphic rock usually has white bands (stripes) through it.



**BONUS:**

*Want a challenge?* Identify each of these three rocks by searching for them on the ground. Sketch them below or take a picture with your camera to show to a Park Ranger at the visitor center.

*Remember: Leave what you find!*

Pegmatite

Schist

Gneiss



# The Living EARTH!

## Uplift occurs when tectonic plates deep below the surface

of the earth move and push up on the rock above. This process brought the ancient rock found at the Black Canyon to the earth's surface. A process called *erosion* has broken down this rock and still cuts the canyon's walls.

The *river* has carved much of the canyon, but other agents of erosion have been working, too. Water can get into cracks in rocks and then expand when it freezes (turns to *ice*), breaking rocks apart. *Lichen* growing on rocks and carbonic acid in *rain* both break down rocks into soil.

► **Complete the word search below to learn more about agents of erosion that shaped this area's landscape and that still carve the Black Canyon today.**

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

**WORD BANK**

←

WIND

RAIN

RIVER WATER

ICE

GLACIER

SUN'S HEAT

LICHEN

PLANT ROOTS

HIKERS

► **Try this model at home with an adult!**

Fill a shallow pan with ½ inch of whole milk. This represents the surface of the earth. Add drops of food coloring. Red represents mountains and valleys; blue represents oceans, lakes, and rivers; green represents vegetation; yellow represents all the wildlife. Watch how the earth changes for two minutes. Then fast forward millions of years by dipping a cotton swab in dish soap and tapping the earth's surface. Watch uplift and erosion of mountains. Watch the amount of water increase and decrease as the earth warms and cools.



# ★ Explore the WILD INNER CANYON!

In a *Wilderness* canyon you must tread lightly. Try and choose routes that will provide a fun experience while keeping both you and the canyon safe. Trace your route to the river where you will camp, then assign point values to your choices by circling the corresponding numbers in the chart to the right. Add them up for your total score. See page 14 to find out how well you did.

**START**

A. GET A PERMIT

B. FOLLOW PEOPLE

C. FOLLOW A DEER

D. TAKE A ROCK

E. TAKE A PICTURE

F. PICK FLOWERS

G. WATCH WILDLIFE FROM A DISTANCE

H. FEED A CHIPMUNK

I. USE HANDS & FEET

J. LOWER USING ROOT

K. JUMP DOWN

L. CROWD OTHERS

M. TAKE SHORTCUT

N. TAKE YOUR TIME

O. TAKE YOUR TRASH OUT

P. PUT YOUR TRASH IN A HOLE

Q. BUILD A BIG FIRE

R. NO FIRE. WATCH THE STARS

**POINTS**

A - 1
B - 2
C - 3
D - 5
E - 1
F - 4
G - 1
H - 5
I - 1
J - 3
K - 4
L - 3
M - 3
N - 1
O - 1
P - 5
Q - 3
R - 1
<b>TOTAL:</b>

**GUNNISON RIVER**

**SLEEP WELL!**

# HABITATS



★ Big and Small

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

to survive. Where they find these things is called their *habitat*. Some animals and plants need river edges, some need deep water, and some need dry soil. A small animal, like a mouse, may find everything it needs within a few feet. A bear or a mountain lion may need hundreds of miles in which to search.

Explore habitats of different sizes by completing the activity below.

Find a place where you can observe quietly. Begin at the bottom of the page and work your way up. From each perspective, draw or list possible sources of food, water, and shelter for wildlife. If you see any wildlife, be sure and name or sketch it in the space provided.

▶ Stand up. Look as far as you can see.

<u>Food</u>	<u>Water</u>	<u>Shelter</u>	<u>Who lives here?</u>
			<p>Hint: Think big!</p> 

▶ Sit down. Look as far as you can see.

<u>Food</u>	<u>Water</u>	<u>Shelter</u>	<u>Who lives here?</u>
			

▶ Lie on your stomach. Look as far as you can see.

<u>Food</u>	<u>Water</u>	<u>Shelter</u>	<u>Who lives here?</u>
			<p>Hint: Think small!</p> 

The steep canyon walls create a vertical landscape with some special challenges for the plants and animals that live here. How do plants hold on and get the water they need in such a steep, rocky home? How do animals move safely from ledge to ledge? They have special adaptations. An *adaptation* is a body part or special behavior that helps an animal or plant survive.

*Hanging garden Sullivantia* ('sull-i-van-ti-a') is a rare plant specially adapted to living in canyon crevices where water seeps down the wall. Their roots hold tightly to this isolated water source, while their stems and leaves hang down in a curtain to make the most of the fleeting sunlight crossing the canyon wall.



Concave, elastic hooves—soft and flexible on the inside, hard on the outside—aid sheep in precarious jumps and breathtaking climbs on sharp cliff faces. *Bighorn sheep* move in and out of the park. They are most commonly seen in the park in summer and fall.



► Draw your own imaginary animal or plant with special adaptations to live on the canyon walls.

► Invent a name for your animal or plant: \_\_\_\_\_

► Describe its adaptations here. How does it get its food, water, and shelter? How much space does it need? Does it move? If so, how?

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*Botany ('bot-a-nee') is the study of plant life.*

Botanists are scientists who look closely at how plants are structured, how they grow, and how they spread. Hike for five minutes down a trail. Stop and slowly turn in a circle three times.

There are plants all around you.

▶ **How many different types of plants can you spot as you spin?**

*Hint: Remember to include trees, grasses, flowers, and bushes.*

\_\_\_\_\_

*Become a botanist!* As you continue to hike, look for your favorite plant. Study it closely, but remember, don't pick it!

▶ **Sketch your plant below.**

▶ **What colors do you see?** \_\_\_\_\_

▶ **How big is one leaf? The ruler may help you measure.** \_\_\_\_\_

▶ **What does it smell like?** \_\_\_\_\_

▶ **What are three adjectives that describe this plant?** \_\_\_\_\_

\_\_\_\_\_

▶ **Name an animal that could use this plant as part of their habitat.**

**Might this plant provide food, water, or shelter for that animal?**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Some Park Rangers are *wildlife biologists*. Wildlife biology is the study of wild animals and their habitats. Sometimes wildlife biologists are lucky, and when they go out hiking they will find the animals that they are looking for. Other times, the animals that they are looking for are *nocturnal* (active at night) or are scared by the sound or smell of people. Train to be a wildlife biologist by drawing lines from each animal below to the clues that it left behind (illustrations not to scale).



If you are lucky enough to spot wildlife in the park, follow this *"Rule of Thumb"*: hold your thumb up at an arm's length between you and the animal. If your thumb covers the outline of the animal, then you are a good distance away.

# 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 known inhabitants, living off of the plants that they could gather and the animals that they could hunt. In the 1800s, *miners* began moving to the area, looking for any minerals that would make them money, having heard of gold in the nearby mountains. With more farmers moving to the Uncompahgre Valley (Montrose), people began to truly change the Black Canyon's landscape. A settlement was made in *East Portal* by 1904, the *Gunnison Diversion Tunnel* was completed in 1909, and the Black Canyon had its first *scenic road* in 1930.

By visiting **BLACK CANYON**, 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 steps from the visitor center down to Gunnison Point and back!

*I counted \_\_\_\_\_ steps.*

Hike to *Exclamation Point!*

*Carry your own backpack* for the whole day.

Go fishing at East Portal.

*Did you catch any?*

\_\_\_\_\_

*Hike the Rim Rock Trail* from the campground to the visitor center.

*Sleep in a tent* for the night.

Go on a Ranger-led hike.

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Hike the Uplands Trail and see how many different wildflowers you can count.

*I spotted (but did not pick) \_\_\_\_\_ different wildflowers.*



*Snowshoe or ski down the South Rim Road in winter.*

Maybe one day you will return to the Black Canyon. Adventure seekers plan trips here to rock climb, to hike down to the river for fishing or camping, and to kayak.

- ▶ What would you like to do here some day?

*Wild Inner Canyon (p. 9) answer key:*

*7 - Great job! You get top marks. 8-15 - Not bad. You could do better. 15 or more - Lighten up! You could get hurt and so could the canyon. If you got a 5 on any action - YIKES! You shouldn't be doing this. Check your answer and ask a Park Ranger if you have any questions.*



# 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

# BLACK CANYON *of the Gunnison* National Park

“I, \_\_\_\_\_, PROMISE TO  
TEACH OTHERS ABOUT WHAT I LEARNED AT  
BLACK CANYON, 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, Black Canyon NP, 102 Elk Creek, Gunnison, CO 81230. We will mail your badge with your completed booklet.  
For more, visit: [www.nps.gov/bica](http://www.nps.gov/bica) [www.nps.gov/webrangers](http://www.nps.gov/webrangers)