

National Park Service  
U.S. Department of the Interior

Buffalo National River  
402 N. Walnut Street, Suite 136  
Harrison, AR 72601

Website: [www.nps.gov/buff](http://www.nps.gov/buff)  
Email: [buff\\_information@nps.gov](mailto:buff_information@nps.gov)



National Park Service  
U.S. Department of the Interior

Buffalo National River  
Arkansas



# Buffalo National River



## Junior Ranger Handbook





## CONTENTS

THE JUNIOR RANGER HANDBOOK.....	PAGE 1
BUFFALO NATIONAL RIVER.....	PAGE 2
<i>Identify Watershed Features</i>	
WATER QUALITY AT BUFFALO NATIONAL RIVER.....	PAGE 3
<i>What Doesn't Belong? Word Puzzle</i>	
KARST: THE WORLD BENEATH OUR FEET.....	PAGE 4
<i>Careful Cave Crawl Maze</i>	
ENDANGERED CAVE CRITTERS.....	PAGE 5
<i>Batty Brainteaser</i>	
GEOLOGY ROCKS.....	PAGE 6
<i>Find The Time / Matching Pictures</i>	
BUFFALO BLUFFSHELTERS.....	PAGE 8
<i>Find The Hidden Artifacts</i>	
THE WILD BUFFALO.....	PAGE 10
<i>Forming a Food Web</i>	
THE COLLIER HOMESTEAD.....	PAGE 12
<i>Fill-in-the-blank / Unscramble Word Puzzle</i>	
OVERCOMING OBSTACLES AT RUSH.....	PAGE 14
<i>Help Miners Find Their Routes</i>	
THE MILL OF BOXLEY VALLEY.....	PAGE 16
<i>Matching Pictures</i>	
SAVING THE BUFFALO.....	PAGE 18
<i>Haiku Poetry / Drawing Challenge</i>	
LEAVE NO TRACE!.....	PAGE 20
<i>Trace Tracker</i>	
BE SURE AND BE SAFE.....	PAGE 22
<i>Help Prevent Accidents</i>	
GLOSSARY.....	PAGE 23
JUNIOR RANGER PLEDGE.....	PAGE 24
CERTIFICATE OF ACHIEVEMENT.....	PAGE 25

# The Junior Ranger Handbook

*Since 1916, the National Park Service has protected natural places and historic sites across the United States. Today, there are more than 400 National Park Service sites in the United States and this number continues to grow!*

*As you complete this booklet, remember that you are responsible for helping to uphold the goals of the National Park Service and the Junior Ranger Program. This means that you will **EXPLORE** and **LEARN** more about the river, wildlife, and history of Buffalo National River.*

*Complete at least 6 activities and then take the booklet to a ranger station or mail it to **Tyler Bend Visitor Center, 170 Ranger Road, St. Joe, AR 72675** to receive your Junior Ranger badge. For more information visit the park's website at [www.nps.gov/buff](http://www.nps.gov/buff) or contact us at [buff\\_information@nps.gov](mailto:buff_information@nps.gov).*

*Remember, as a Junior Ranger you help **PROTECT** the resources of the National Park Service.*

*Enjoy your visit to Buffalo National River!*





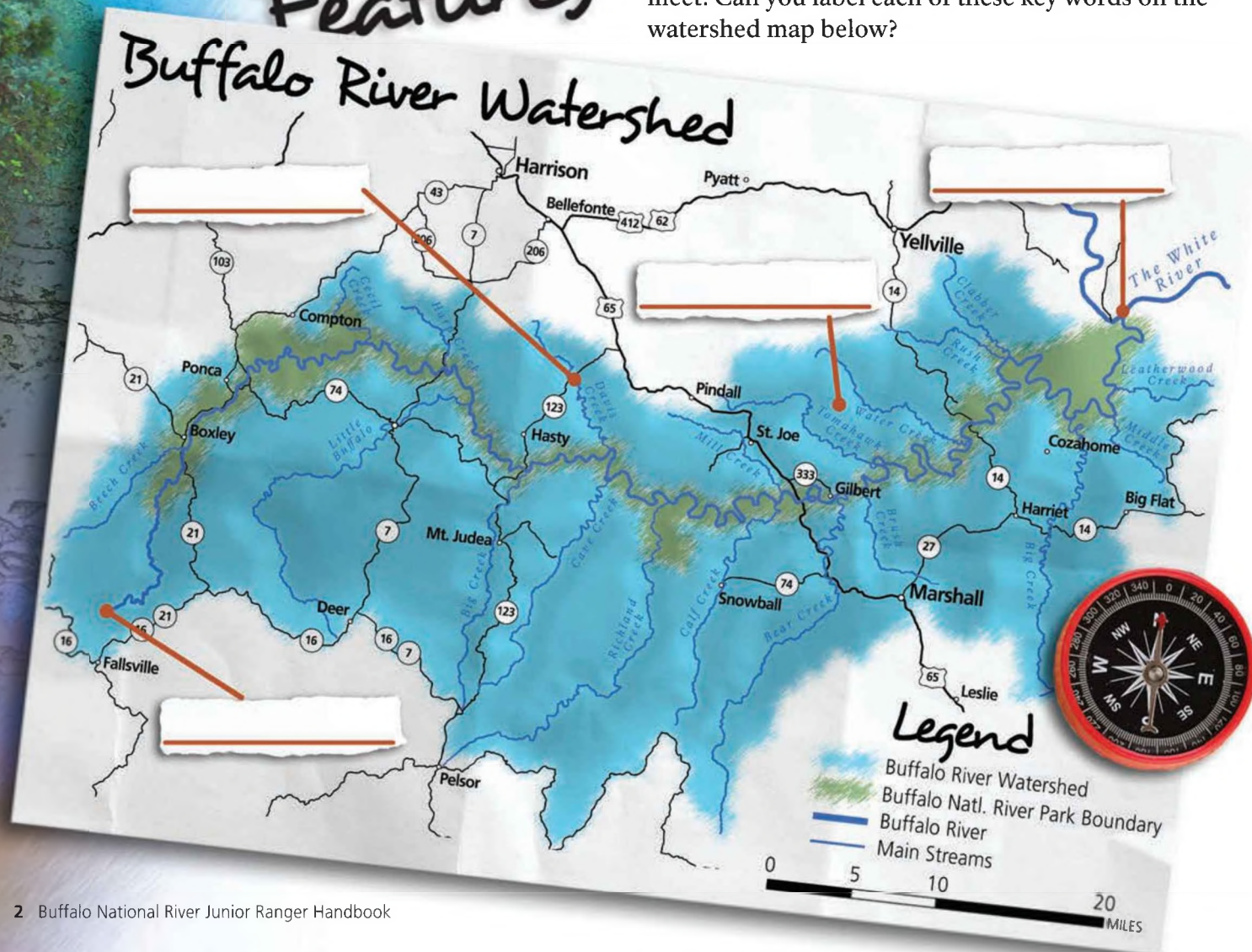
# Buffalo National River

Welcome to Buffalo National River! Here you will discover a wild river with tall bluffs, hilly forests, deep caves, and lots of wildlife. The Buffalo River flows for 151 miles across northern Arkansas, starting high up in the Boston Mountains and winding eastward to the White River.

The huge area of land with creeks, streams, and rainfall that flow into the Buffalo River is called the Buffalo River **watershed**.

Identify Watershed Features

A watershed has many parts. The **headwaters** are the river's source, or the very beginning of the river system. A **drainage divide** is a high ridgeline that forms the boundary between two watersheds. A **tributary** is a smaller stream that drains into the river. A **confluence** is a point where two waterways meet. Can you label each of these key words on the watershed map below?



# Water Quality at Buffalo National River

The Buffalo River watershed works like a bathtub. Think about how all of the water in your bathtub flows down into the drain, carrying everything else--like soap suds, dirt, and rubber duckies--with it. That's how the watershed works, except the Buffalo River is the drain. This means that if there is **pollution** in the watershed (like the soap suds and dirt in our bathtub example), the pollution will end up in the Buffalo River. Pollution can make the water unclean and dangerous for people and animals.

What doesn't belong?

Pollution is something that can be harmful to our environment and our health. This could be litter, toxic sludge, or even human or animal waste. Identify 10 different types of water pollution in the wordsearch below.

KEY

- OIL
- DIRT
- CHEMICALS
- GLASS
- PLASTIC
- DOG POOP
- SODA CANS
- TIRES
- MANURE
- SLUDGE

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



# Karst: The World Beneath Our Feet

# Endangered Cave Critters

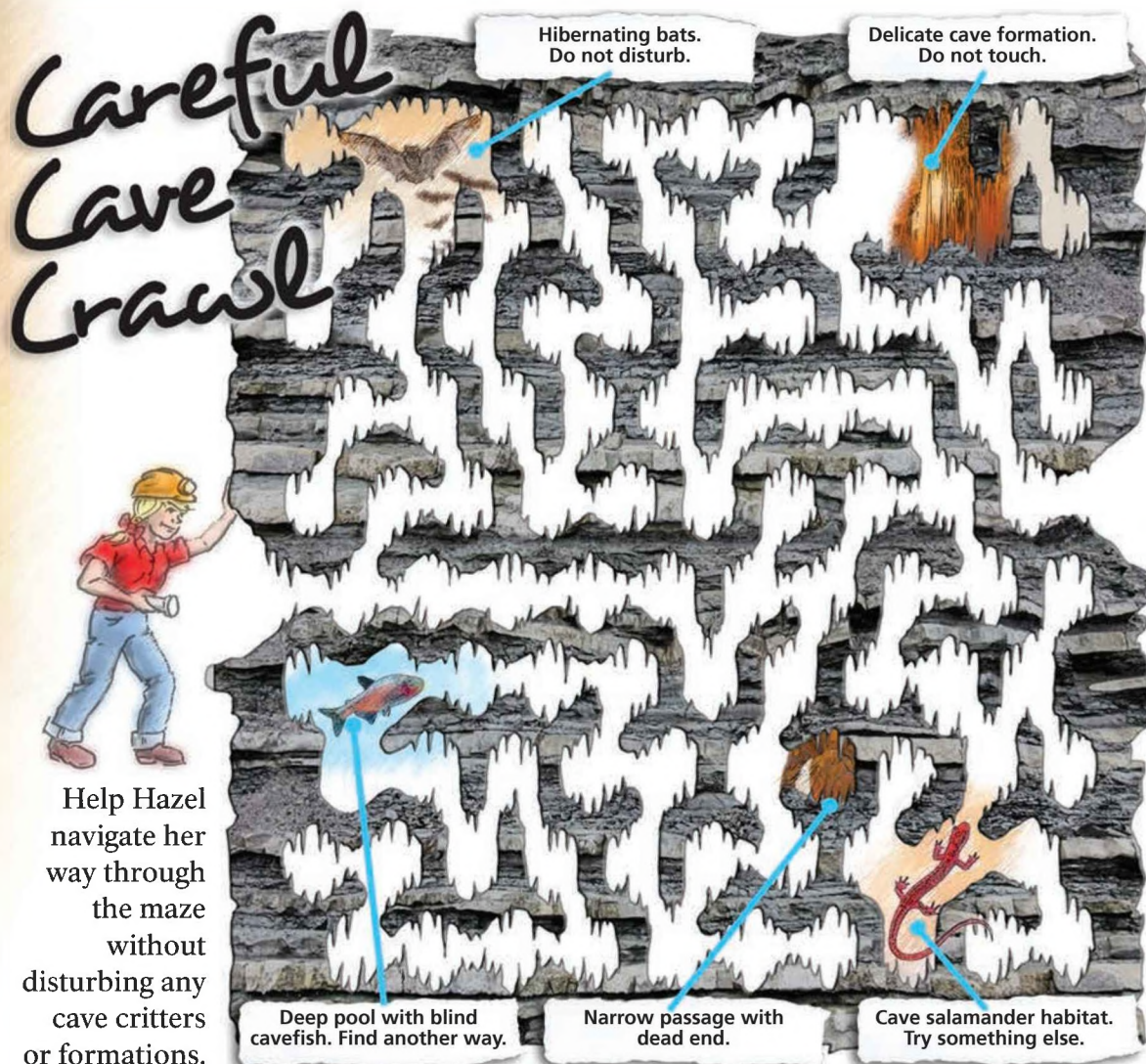
## Be A Safe Caver!

In order to protect fragile ecosystems, only a few caves at Buffalo National River are open for people to explore. Before you go, there are some things you need to know to stay safe and help take care of these special places.

- Never go into a cave alone. Ask an adult to go with you.
- Know your limits. Don't try to do anything above your skill level.
- Have the right gear - gloves, knee/elbow pads, a helmet, and at least 3 sources of light.
- Stay warm! Caves are cold and wet, so wear synthetic clothing and layer up.
- Storms can cause deadly floods in underground caves, so always check the weather first!
- Please don't touch cave formations or disturb wildlife.

Did you know there is a whole other world beneath your feet at Buffalo National River? This park sits on top of limestone, which over time has been dissolved and eroded by water, creating a **karst** landscape. Layers of underground rock have been dissolved like peppermint candy, which is why the Buffalo has so many unique landforms. Things like caves, sinkholes, disappearing streams, and springs are common in karst areas. Water uses these features as passageways to move around underground!

Buffalo National River has more than 300 caves, including Fitton Cave, the longest cave system in Arkansas! These caves can be home to fascinating **fauna** (wildlife) like bats, salamanders, and blind cavefish. It is important to protect cave **habitat** because many of the animals that live there cannot survive anywhere else.



Help Hazel navigate her way through the maze without disturbing any cave critters or formations.

## Scat & Symbiosis

Bat droppings (also called guano) are the most basic energy source for cave ecosystems. The very smallest cave critters rely on bat guano for food. Larger cave critters eat the smaller cave critters that eat the guano, and the chain goes on. This means that if bats disappeared from a cave system, other cave critters would run out of food and disappear, too. This is why it is so important to protect bats and their habitat! Most caves at Buffalo National River are closed to the public in order to protect this delicate cave ecology.

An **endangered species** is an animal or plant that is at risk of going extinct, or disappearing forever. There are three endangered species of bats that live in caves at Buffalo National River. These critters are threatened by a deadly disease called White Nose Syndrome, which is caused by a fungus that can be spread from cave to cave by people or animals. After going into a cave, always be sure to wash your clothes, boots, helmet, lights, and any other gear you took with you. Do your part to help prevent the spread of White Nose Syndrome!

Bats are **nocturnal**, so they sleep during the day and actively feed at night. Did you know that one bat can eat about 3,000 insects in one night? Imagine how buggy the Buffalo River would be without bats! With changing climate patterns, warmer winters can “trick” hibernating bats into waking up months too early. Bats may fly out of their cave to find food on a warm night in January, thinking that springtime has arrived. Since bugs aren't out in the winter, the bat wastes its energy and doesn't find food. For this reason, starvation is also a threat to bats.

## Batty Brainteaser

Use the **bold letters** in the hints below to name the three endangered species of bats that live at Buffalo National River.

1. **G**uess who? My range includes the Southeastern United States. I roost in warm caves near **w**ater in the summertime, and in the winter my entire species **h**ibernates in only 9 **c**aves, one of which is at Buffalo National River.

2. Do you know who **I** am? Fully grown, I'm only 1 to 2 inches long. I am **d**ifferent than most bats because I have **p**ink lips. My life **s**pan is nine to twelve years, **m**aybe more if I am lucky. Thanks for helping to protect me!

3. I'm **o**nly found in a few caves in the Ozarks of Arkansas, Oklahoma, and Missouri. My habitat is in **k**arst and my favorite snack is **b**ugs. I use my **g**iant ears for **e**cholocation to find food in the dark. I'm really glad to meet you. My name is:

BAT

Answers to blanks: 1. Gray bat 2. Indiana Bat 3. Ozark big-eared



# Geology Rocks!

## Dinos in Arkansas?

Much of the central United States (including part of Arkansas) was covered by a shallow inland sea during the Mesozoic Era – also known as the “Age of Dinosaurs.”

Dinosaur tracks have been discovered in southwestern Arkansas. In 1972 dinosaur bones were found there too. The *Arkansaurus* was a ostrich-like dinosaur that was 9 to 15 feet long and about 6 feet tall. It lived 144 million years ago.

Have you ever been to the ocean? If you had come to this area nearly 500 million years ago, you would have found an ocean instead of mountains here. The Ozark Plateau formed during 180 million years of geologic activity.

The Buffalo River flows through the Ozark Plateau. The rock formations you see are **sedimentary**. For millions of years sediments (sand or mud) washed into the sea, forming layers on the ocean floor. Layers of sand deposited on the ocean floor are pressed into rock called **sandstone**. Layers of muddy sediments pressed together form a rock called **shale**.

When organisms living in the sea died, their shells and skeletons drifted to the bottom to form more layers. Over time, these layers were pressed down to form

## Find The Time

ERAS	PERIODS	EPOCHS	MILLIONS OF YEARS AGO		
			Start	End	
CENOZOIC	Quaternary	Holocene	0	0.01	
		Pleistocene	0.01	1.8	
		Pliocene	1.8	5.3	
	Tertiary	Miocene	Miocene	5.3	23.0
			Pliocene	23.0	33.9
		Paleocene	Eocene	33.9	54.8
			Paleocene	54.8	65.5
	MESOZOIC	Cretaceous	Late	65.5	144
			Early	144	206
			Early	206	248
Jurassic		Late	248	290	
		Early	290	354	
Triassic		Late	354	417	
		Early	417	443	
PALEOZOIC	Permian	Late	443	490	
		Early	490	543	
	Pennsylvanian	Late	543	900	
		Early	900	1600	
	Mississippian	Late	1600	2500	
		Early	2500	3000	
Devonian	Late	3000	3400		
	Early	3400	3800		

Match the three sections of rock to when they were created on the geologic timeline. Then, mark where *Arkansaurus* and the geologist are on the time line.

Based on your results, are dinosaur fossils in the park?



solid rock, called **limestone**. During periods of **uplift**, layers of rock exposed at the surface were sometimes worn away by **erosion**. This is why certain rock layers are present in just a few places along the Buffalo River today. The last uplift was about 300 million years ago. We are now in a period of erosion. How many layers can you find in the bluffs you see along the river?

Sometimes, pieces of plants or animals may be preserved or leave an impression in the sediment as it is pressed into rock. These **fossils** can tell us about what lived here in the past. Some fossilized animals are extinct and no similar species exist today. Other fossils show us the ancient ancestors of modern animals.

## Matching Pictures

### Fossilized Life



**brachiopod**  
Small marine invertebrates that look like clams.



**crinoid**  
Flower-like marine animals.



**lepidodendron**  
An extinct plant that had a trunk and triangular shaped bark.



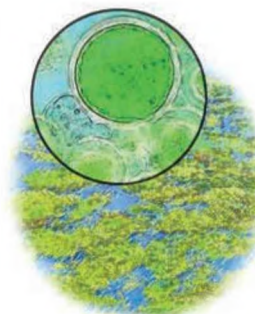
**nautilus**  
Marine mollusks with an external shell that may be coiled or straight in shape.



**stromatolite**  
Layers of blue green algae that look like waves in the rock when fossilized.

### Modern Life

Can you match each fossil to a similar organism that is living today?



algae



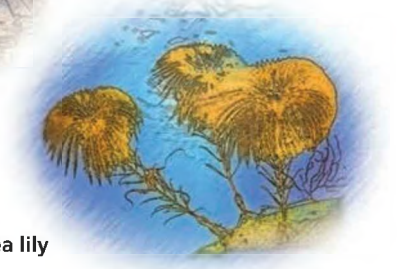
clam



sago palm



nautilus



sea lily



# Buffalo Bluffshelters

## American Indians

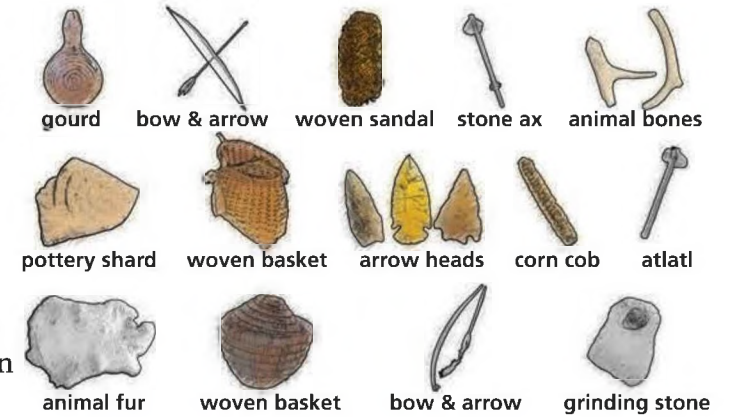
Long before the earliest European explorers and settlers arrived to this region, the first inhabitants were already living off of the land. American Indians fished and hunted animals for meat, feathers, furs, and bones for tools. They gathered nuts, berries, and plants for food and medicines. They also grew vegetables, like corn and squash.

The first people came to the Buffalo River area about 10,000 years ago, long before any Euroamerican settlers. These first inhabitants relied on nature for their every need in life. **Bluffshelters** are rock overhangs that were once used by the people who lived here in historic and prehistoric times. Bluffshelters provided dry and protected dwellings. These places were used as campsites, storage areas, and sacred spaces. The dry environment that the bluffshelters created were ideal places for food storage and in some cases even ceremonial and burial grounds. As bluffshelters were abandoned over the years many items that American Indians left behind were well-preserved. These same items would have decayed in any other type of archeological site where moisture would have deteriorated them. Things like stone tools, woven baskets, and woven sandals have been found in bluffshelters in the Ozarks.

Archeologists have worked to carefully excavate some of the more significant bluffshelters. They found many artifacts that help us understand what daily life was like for the earliest inhabitants in this region. Two bluffshelters that you can hike to in the park are Cob Cave on the Lost Valley Trail and the Indian Rockhouse at Buffalo Point.

## Find The Hidden Artifacts

KEY:



Can you find and circle all of the items that a Native American would have used in everyday life hidden in the bluffshelter?

REMEMBER  
 You can help preserve these important archeological sites by not removing or disturbing any artifacts that you may come across in the park.





# The Wild Buffalo

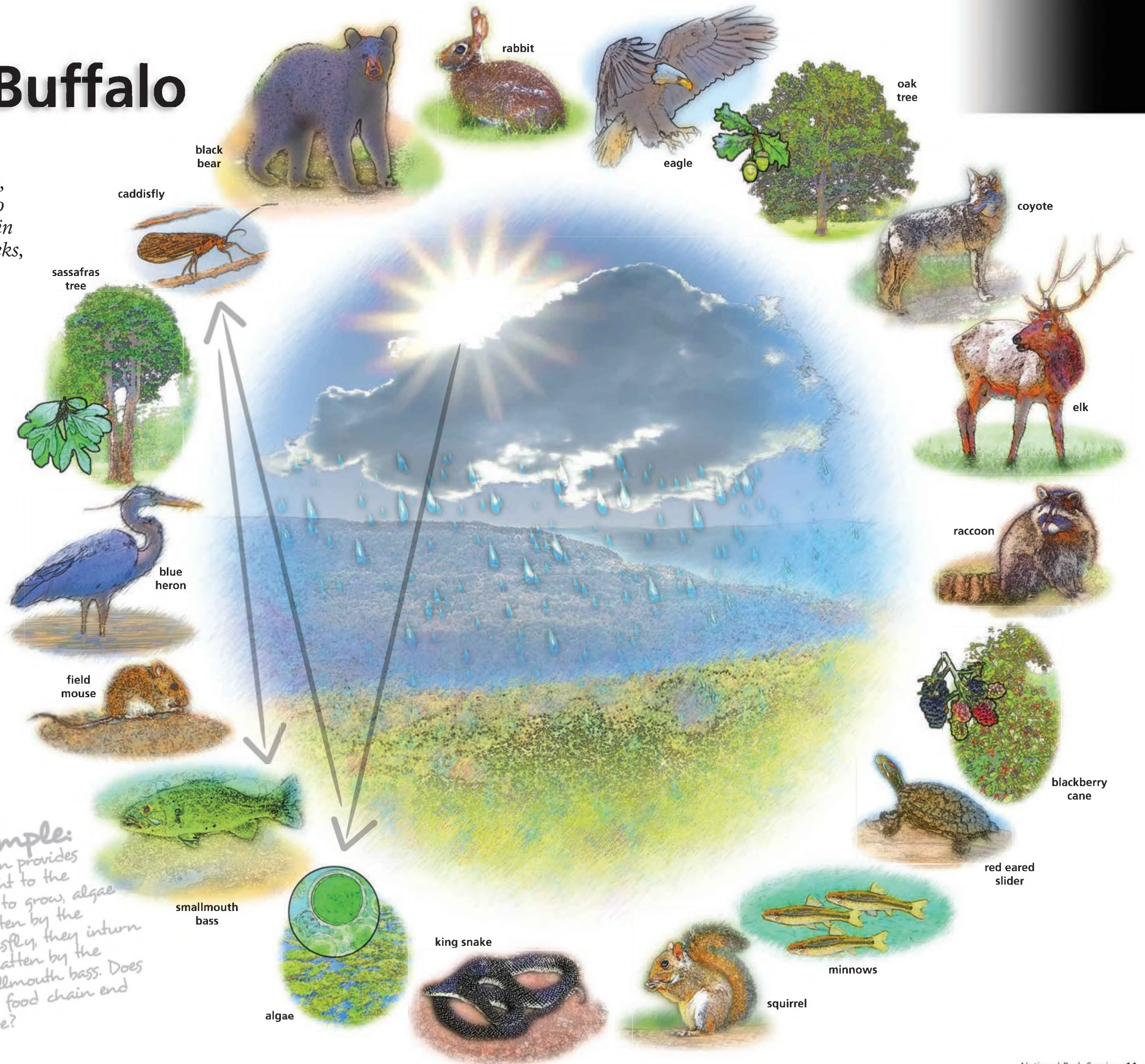
Over 200 species of birds, 29 amphibians, over 500 *invertebrates*, and more than 50 mammals call this park home. They live in the river, oak-hickory forests, ponds, creeks, caves, abandoned historic sites, box canyons, cedar glades, and open fields.

A **food chain** demonstrates what each living thing eats and how nutrients are cycled between plants and animals. A food chain begins with a plant absorbing the sun's energy, water, and nutrients from the ground and ends with an animal. Several food chains within the same ecosystem or set of related ecosystems interconnect to form a **food web**.

## Forming a Food Web

Your job is to create multiple food chains. Before you know it you will have a food web! Starting with the sun and rain, draw an arrow to a plant, which gets its energy from the sun. Then draw an arrow from the plant to an animal that might eat it and so on. Some predators, animals that feed on other animals, may eat several different prey, forming a complex web.

**Example:**  
The sun provides sunlight to the algae to grow, algae is eaten by the caddisfly, they in turn are eaten by the smallmouth bass. Does that food chain end there?





# The Collier Homestead

Sod and Ida Mae Collier moved to Arkansas from Kentucky in February 1928. The Homestead Act of 1862 offered settlers an opportunity to own property in exchange for making improvements the land by clearing and farming it and building a home on it. Most land in the Buffalo River valley had been claimed long before the Colliers arrived, but in 1932 the family was able to settle on 40 acres of land at Tyler Bend.

A small shed served as home until the Colliers could fell trees and shape logs for a cabin. The original portion of the home included one large room with a rock fireplace that served as the living room, kitchen, dining room, and bedroom, combined. As the farm and family prospered, they added more rooms to enlarge the cabin.



The family later built a barn, hog pen, and feed crib to provide shelter for their farm animals. A large garden near the house provided the family with fresh fruits and vegetables. The children carried water from a spring one quarter mile away to fill the **cistern**, a large storage tank, outside of their home. They also fed the farm animals, tended to the garden, and helped their parents slaughter hogs to make sausage. The family's hard work paid off and in 1937 the Colliers met the requirements of the Homestead Act, earning title to their land.

The Colliers lived without electricity or running water in their home until the early 1960s. Grandchildren and great-grandchildren visited often, enjoying the adventures of a lifestyle that was fading away. The Colliers lived in the cabin until 1962.



The family later built a barn, hog pen, and feed crib to provide shelter for their farm animals. A large garden near the house provided the family with fresh fruits and vegetables. The children carried water from a spring one quarter mile away to fill the **cistern**, a large storage tank, outside of their home. They also fed the farm animals, tended to the garden, and helped their parents slaughter hogs to make sausage. The family's hard work paid off and in 1937 the Colliers met the requirements of the Homestead Act, earning title to their land.



## Fill-in-the-blank

and a Scavenger Hunt if you visit the homestead.



broad axe

1. Sod built his cabin using a \_\_\_\_\_ axe to shape the logs. Can you find axe marks on the logs?

2. The space between the \_\_\_\_\_ is filled with small bits of rock (chinking) and covered with \_\_\_\_\_ (daubing). Are there any places where the daubing is coming off and the chinking is showing?



chinking & daubing

3. The family never had water piped into the house. They had a cistern, which holds water that is put into it. The children had to haul \_\_\_\_\_ from a spring to the cistern. Can you find the cistern?



cistern

4. The family grew vegetables and \_\_\_\_\_ trees. The children helped dry and can this food to store for the winter. Where are the shelves that served as the pantry?



pantry

5. It was a long way to any town and money to buy new things was scarce. If something could be reused, or \_\_\_\_\_, it was. Where is the piece of a wagon wheel rim in the living room?

6. There is a small shelf between two \_\_\_\_\_ on the front porch. What do you think it was used for?



fireplace

7. The \_\_\_\_\_ provided \_\_\_\_\_ and served as the stove for cooking for many years. Over the years cookstoves were used in other rooms of the cabin. Can you find where the stoves might have been?



shelf on front porch

## Unscramble Word Puzzle

From the word answers above, write the letters that were over the bold blanks into these spaces:

\_\_\_\_\_

Now unscramble them.

\_\_\_\_\_

Answers to blanks: 1. broad 2. logs, mud 3. water 4. fruit 5. recycled 6. posts 7. fireplace, hearth  
Answers for word scramble: odlmentclosetha to collier homestead



# Overcoming Obstacles at Rush

## Rush Mines

The mines at Rush are gated and fenced off for the safety of the visitors and to provide protection for the bats that now call the mines home.

Rush was a zinc mining town in the late 1800s and early 1900s. It was here along the banks of the Buffalo River that prospectors found large deposits of zinc ore. Mining companies set up mines, processing plants, and small communities in these hills. Thousands of miners moved to Rush during World War I. Zinc was critical to the war effort because it is used to make brass, which is needed for ammunition.

One of the biggest obstacles the mining companies faced was getting the zinc out of Rush so that it could be taken to a processing plant. Unfortunately, the Buffalo River was not deep enough to float ore boats and there were not any railroads close to Rush. The only option for hauling zinc out of Rush was by horse and mule teams on the rough dirt roads. These rugged roads led to Summit, the closest

railroad access, or to Old Buffalo City where the ore could be loaded onto a barge and floated to Batesville on the White River.

Today Rush is a ghost town that you are welcome to visit. A few of the 100+ year old buildings still stand and remind us of the strength and determination it took to live here and mine these hillsides.

## Help Miners Find Their Routes

Help the miners get the zinc out of Rush by drawing the two possible road routes from Rush to other transportation hubs.

1. At Rush zinc was loaded onto the wagon and the horses hauled it \_\_\_\_\_ miles \_\_\_\_\_ (direction) to Old Buffalo City on the White River. The zinc was then loaded onto a barge and floated approximately \_\_\_\_\_ miles \_\_\_\_\_ (direction) to Batesville where it was loaded on a railcar.
2. The zinc was loaded onto the wagon and horses hauled it \_\_\_\_\_ miles \_\_\_\_\_ (direction) to the railroad in Summit.

Answers to blanks: 1. 8, east, 90, southeast 2. 14, northwest





# The Mill of Boxley Valley



Generations of people have used the waters of the Buffalo River for agriculture, industry, and tourism in Boxley Valley. Boxley Grist Mill is one example of water's vital role in early industry. The mill used the power of moving water to grind corn into meal and wheat into flour. This service was hard to come by in the rural Ozarks











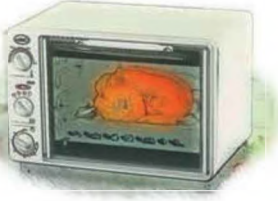

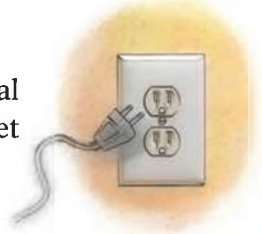
in the 1800s, so Boxley Valley resident Robert Villines built and operated the Boxley Grist Mill to produce flour and cornmeal for the surrounding community.



## Matching Pictures

How does your life today compare to what life might have been like for an early settler of Boxley Valley? How do you acquire basic goods, like flour and milk, today? In what other ways has life changed for people living in urban and rural areas?

Draw a line to match the item from the past to the modern day one.

		From The Past	To The Present		
	cow		water pail		kayak
	water wheel		fireplace kettle		milk carton
	oil lamp		lightbulb		microwave
	log raft		electrical outlet		water faucet



# Saving The Buffalo

For thousands of years, the Buffalo River has been treasured by humans as a life-giving resource. American Indians lived in its bluffshelters, gathered food from its forests, and were refreshed by its waters. Early settlers used nearby land for industry and mining. Millions of visitors have enjoyed hiking, paddling, horseback riding, fishing, and camping here, too.

In 1972, the Buffalo River became the first “national river” within the national park system. The National Park Service protects places like Buffalo National River so that you and future visitors can explore, learn, and have fun. We also protect these places to keep the air and water clean, protect wildlife habitat, and preserve our heritage as Americans. What do you like about the Buffalo River? Why do you think it should be protected forever?

## Haiku Poetry Challenge

A haiku is a three line poem. The first line contains five syllables, the second contains seven, and the third contains five (5-7-5). Remember from English class, a syllable is a unit of pronunciation having one vowel sound. Example: There are two syllables in “water” (wa-ter) and three in “watershed” (wa-ter-shed).

Here’s a haiku that can help you remember the structure:

*Five syllable line*

*Seven syllables go here*

*Then five more go here*

Now it’s your turn to give it a try. On the next page, write a haiku that explains why you think Buffalo National River deserves to be protected for the future.

Example:

*I can swim and play*

*In the same clean, blue river*

*When I’m eighty-two.*

## Drawing Challenge

Or, instead of writing a poem on the next page, you may draw a picture of your favorite thing about your visit OR what you hope the Buffalo River will look like 100 years from now. Feel free to write a description of your drawing, too!





# Leave No Trace!

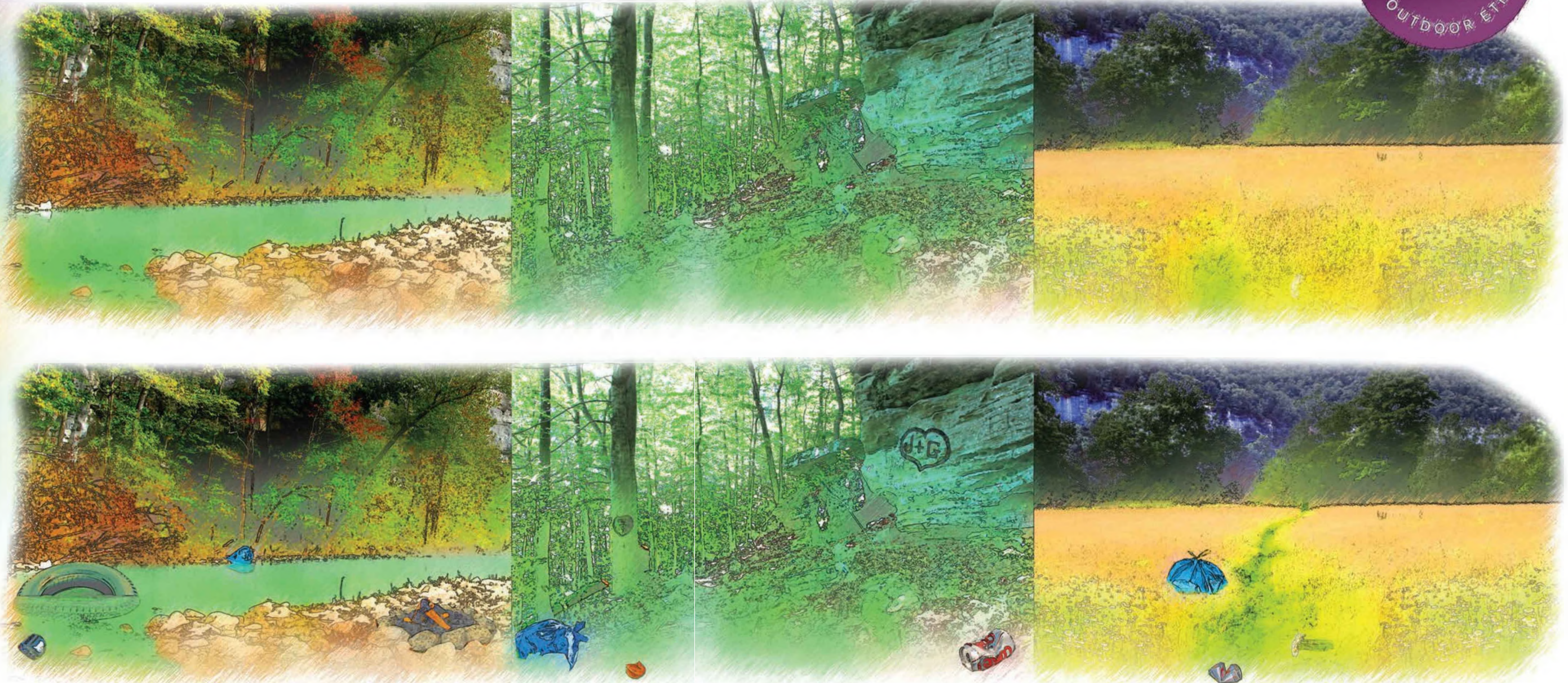
People visit Buffalo National River to experience its natural and pristine beauty. The quiet stillness of the forest, the meandering river current, and the sweeping views from the top of a bluff can remind us what life was like before roads, airplanes, shopping malls, and skyscrapers. However, the stillness of the forest can be interrupted by loud voices. The river can be littered with soda cans and tires. Views can be diminished by recent carvings in trees and etchings on rock. Sometimes, park visitors find traces of those who visited before them. These traces, like litter and graffiti, are unsightly and can cause harm to plants, animals, and even park visitors.

Leave No Trace is an outdoor ethic that should be practiced to preserve natural places and respect other visitors to those places (including humans and wildlife). By “leaving no trace” of your presence and picking up after others, you are helping to make the next visitor’s experience much more enjoyable. Remember: Take only pictures; leave only footprints!

## Trace Tracker

The top picture shows Buffalo River landscapes where visitors practiced Leave No Trace. The bottom picture shows the same landscape with twelve “traces” left by past visitors.

Can you find them all?





# Be Sure and Be Safe

## Help Prevent Accidents

We're all human. Accidents happen. However, many accidents that occur at Buffalo National River can be prevented by planning ahead, being prepared, and using caution. For each accident described below, write one way that the accident could have been prevented.

During a float trip from Woolum to Gilbert, Faron flipped his canoe on a rapid, and all of the food in his cooler dumped into the river. His camera also suffered water damage.

**Prevention:** \_\_\_\_\_

Fenn built a campfire while he was camping at Tyler Bend, and he left it smoldering while he went kayaking. When he got back to camp that afternoon, he found that the fire had started again and escaped the fire ring, burning down his tent.

**Prevention:** \_\_\_\_\_

While Jesse was crawling through a narrow passage in Eden Falls Cave, he bumped his head on the ceiling and got a bad bruise.

**Prevention:** \_\_\_\_\_

Alma took her family to Buffalo Point to go camping over Memorial Day Weekend. When they arrived, they found that the campground had already filled up, so they had to turn around and go someplace else to camp.

**Prevention:** \_\_\_\_\_

After Suika explored the grounds of a historic homestead one summer afternoon, she noticed that her shoulders and face had gotten severely sunburned.

**Prevention:** \_\_\_\_\_

When Sheila arrived in Boxley Valley, she realized that she wasn't sure which road to take to get to the horse trails at Steel Creek. She pulled out her phone to look up a map, only to realize that there was no cell reception.

**Prevention:** \_\_\_\_\_

# Glossary

**Bluffshelters** – Open rock overhangs that provided shelter for prehistoric people and early settlers. Page 8

**Cistern** – A tank for storing water. Page 12

**Confluence** – The place where two streams or rivers join together. Page 2

**Drainage Divide** – An elevated ridge forming the division between two watersheds. Page 2

**Endangered Species** – Any species that is threatened with extinction. Page 5

**Erosion** – The gradual wearing away of surface landscapes by water and wind. Page 7

**Fauna** – Animal life. Page 4

**Food Chain** – A sequence of feeding habits starting with the sun, water, and plant life and ending with larger animal life. Page 10

**Food Web** – Multiple, interconnected food chains. Page 10

**Fossils** – The preserved remains or impression of a plant or animal from prehistoric times. Page 7

**Habitat** – The environment in which an organism lives. Page 4

**Headwaters** – The source of a stream or river. Page 2

**Invertebrates** – Animals without a backbone. Page 10

**Karst** – An area of limestone containing sinkholes, caves, underground streams, and springs. Page 4

**Limestone** – A sedimentary rock formed from the skeletal remains of marine animals. Page 7

**Nocturnal** – An animal that is active during the nighttime. Page 5

**Plateau** – A large area of relatively flat land that is elevated above the surrounding land. Page 6

**Pollution** – Any substance that makes the land, water, or air unsuitable for people, plants, or animals. Page 3

**Sedimentary** – Rock that has formed as a result of the accumulation of sediments such as sand, silt, or clay, or the remains of marine animals. Page 6

**Sandstone** – A sedimentary rock formed from sand, minerals, and rock fragments. Page 6

**Shale** – A sedimentary rock formed from clay, mud, or silt. Page 6

**Tributary** – A stream or river that drains into a larger stream or river. Page 2

**Uplift** – In geology, the upward movement of part of the earth's surface. Page 7

**Watershed** – An area of land bounded by ridges in which all water ultimately flows into one body of water. Page 2



# Congratulations!



*You have completed the requirements for the Buffalo National River Junior Ranger program. Take your booklet to a Visitor Center or Ranger Station. A ranger will check your work and present you with a badge and certificate at a pledge ceremony.*

## Junior Ranger Pledge

*I promise to explore and learn about the wonders of the National Parks and share them with others. I promise to protect Buffalo National River and all other public lands.*



# Junior Ranger Certificate of Achievement



*has successfully completed the requirements to be an official  
Buffalo National River Junior Ranger*

Junior Ranger Signature

Date

Ranger Signature

Date