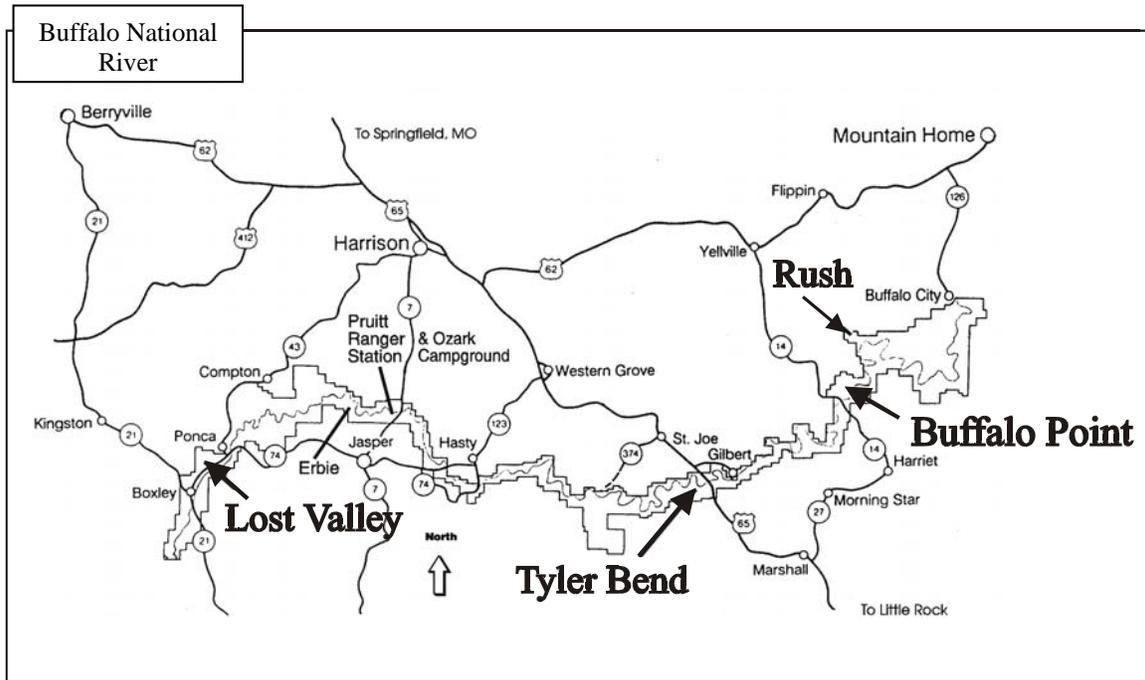


A Day by the Buffalo

We welcome you as a participant in the resource education programs of Buffalo National River. This booklet is intended to provide you with information about a park resource education program, *A Day by the Buffalo*. Included is the background information, lesson content, and references used in our conducted programs. Additional activities are also included for follow-up or additional on-site visits you might wish to make independently of a ranger-conducted program.

Buffalo National River was established to preserve and interpret the significant scenic and scientific resources of the free-flowing Buffalo River for the inspiration, education and recreational enjoyment of present and future generations. Please avail yourself of the educational opportunities provided by the National Park Service or visit the park with your class “on your own” to explore one of the many aspects that make Buffalo River a national treasure.

Program Offerings by Location



Teachers are allowed to select two activities per field trip. The exception to this is the Indian Rock house hike at Buffalo Point, which, if selected, is the only activity that may be participated in due to its length.

Lost Valley **Upper District**

At the Water's Edge
Lost Valley Hike
Beaver Jim's Homestead

Buffalo Point **Lower District**

At the Water's Edge
Overlook Hike
Indian Rockhouse Hike

Tyler Bend **Middle District**

At the Water's Edge
River View Stroll
Collier Homestead

Rush **Lower District**

At the Water's Edge
Rush Ghost Town



A DAY BY THE BUFFALO

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A DAY BY THE BUFFALO

KEEPING OUR NATIONAL TREASURES

This lesson will help students identify the significance of Buffalo River to our nation. It reviews the role of *national park system* areas and the use and *preservation* of these areas for future generations.

TEACHER BACKGROUND

Our government has set aside special lands and properties as public lands for the benefit of all citizens of the United States. One agency in the Department of Interior, the *National Park Service*, is charged with *preserving* our nation's natural and cultural heritage.

In 1872, Yellowstone became the first national park established by Congress. Our lawmakers answered the question that many who had visited or seen images of Yellowstone wanted to know -- What to do with a place as *unique* and unusual as Yellowstone? By establishing Yellowstone as a national park, Congress was establishing a means for preserving natural and cultural resources in the years to come. They established Yellowstone for future generations as a "pleasuring ground" to be *conserved* for its special qualities and values. Thus was the beginning of a system of special areas, both natural and cultural, that has come to represent our nation's heritage. Additional areas were established during the next 44 years. In 1916 the National Park Service (NPS) was created to manage the developing *national park system*. The *national park* idea began in the United States.

Today after over 80 years of management by the NPS, there are more than 375 units of our country's *national park system*. These units are classified as national parks (NP), national historic sites (NHS), national monuments (NM), national lakeshores (NL), national rivers (NR), national recreation areas (NRA), national memorials (N Mem), and a handful of other designations. Created by an act of Congress or as in the case of some national monuments, by presidential proclamation, these areas are afforded federal *protection*, with management directed to allow use of these resources "by such means as will leave them unimpaired for the enjoyment of future generations."



CLASSROOM: PRE-VISIT ACTIVITIES

ACTIVITY 1. The Buffalo River: Our National Treasure

STATE STANDARD:

Social Studies – Strand Geography

Standard 1. Physical and Spatial

Students shall develop an understanding of the physical and spatial characteristics and applications of geography.

OBJECTIVES

Students will:

1. name the federal agency that is entrusted with **preserving** our nation’s natural and cultural heritage.
2. describe significant features or events that make **national park system** areas special and qualify them for inclusion in a **national park system**.
3. identify five **unique** qualities of the Buffalo River that led to the designation as a national river.

MATERIALS

- outline maps of the United States
- maps of the **national park system** or U.S. atlas
- park folders from various NPS units
- map/folder of the Buffalo National River area
- chalkboard
- paper
- pencil

ACTIVITY

1. Have the students name any **national park system** areas they have visited. If there are many responses, make a list on the chalkboard. Introduce the **national park system** map to the class. Identify some of the areas across the country, indicating natural and cultural areas. Utilize any picture books of the **national park system** that may be in the school or public libraries. Ask the students if they can identify the six **national park system** units in the state of Arkansas [Buffalo NR, Hot Springs NP, Arkansas Post NMem, Pea Ridge NMP, Fort Smith NHS, Central High]. Were any of these not on the class list? Were they overlooked because the students did not realize these areas were “parks?”

2. Divide the class into teams of three or four students. Give each team an outline map of the United States and three park folders from different park areas around the country. (Contact your local ***national park system*** area for addresses of the park areas of which you would like brochures. Write these parks and they will gladly send you their park folder and other information. You may also research park areas via the Internet at <http://www.nps.gov>.) Ask the teams to do the following: (1) label their park names on the U.S. map and look over the brochures for each park, and (2) make a list of five important (unique) things about each park. After an appropriate length of time, have each team share with the class the names and important aspects of the parks they investigated.
3. Now give each group a park folder of Buffalo National River. Have the groups identify five characteristics of the Buffalo National River that are special and make it worthy of national designation. When completed, have the students write down their answers and share their ideas.
4. Read the enclosed essay and have students reevaluate step 3 of this activity. Allow them to make any revisions they feel are necessary and compare answers again.
5. Assign students a project of researching more about the ***national park system*** or about a park they might wish to visit some day. Have them submit a written story on the significance of the park and why they would want to visit it.



ACTIVITY 2. Your Special Place

STATE STANDARDS:

English - Strand: Oral and Visual Communications

Standard 1. Speaking

Students shall demonstrate effective oral communication skills to express ideas and to present information.

Science - Strand 2: Life Science

Standard 2. Living Systems: Characteristics, Structure, and Function

Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.

OBJECTIVES

Students will:

1. name and describe their special place.
2. state why their special place is important to them.

MATERIALS

- paper
- pencil

ACTIVITY

1. Ask students if they have a “special place,” perhaps alongside a river, spring, or waterfall? How does it make them feel to spend time near water, like a river? Was their “special place” clean (and would they return if it weren’t)? Does their water “course” to someplace else? Is their “special place” a **tributary**? Does it travel on for someone else to enjoy?
2. Ask students to name plants they have seen near rivers they have visited. Were these plants important to the river?
3. Have students look around their homes or school and list the different ways they use water and how the water affects their daily lives. Are there things they do now with water that they would be unable to do if it were not clean? What are some ways they have seen water **polluted**? How can they help to ensure that water in the **Ozarks** remains as clean as possible?

4. Ask students to write about their “special place” and how it makes them feel, and whether or not they think their special place is worthy of becoming a national treasure.



THE BUFFALO RIVER: OUR NATIONAL TREASURE

An old marker at Buffalo Point near Yellville reads in part:

“There are little corners of this earth put aside to be discovered ... and to bring joy... The lands over which you look here, across this beautiful river, are such a corner ... set aside forever for all...”

This marker brings to light the need for boys, girls, men, and women to experience nature and to see areas unspoiled by human hands. The Buffalo River in northwest Arkansas is such a place. In 1972, the United States Congress enacted legislation *“for the purpose of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free flowing stream an important segment of the Buffalo River in Arkansas for the benefit and enjoyment of present and future generations.”*

What are these “unique scenic and scientific features?” The Ozarks are the only extensively elevated land between the Appalachian and the Rocky Mountains. The Ozarks aren’t actually mountains at all but an uplifted plateau of soft limestone that has been eroded into steep valleys and ravines. Several writers describe the Ozarks, the oldest highlands in North America, as too low to be true mountains but too rugged and grand to be mere hills.

The Ozarks are an ecological island because they are bordered on all sides by terrain that isolates its plant and animal species. These include glacially flattened terrain to the north in Missouri; the Mississippi River Alluvial Plain to the east; the Mississippi River Delta to the south; and the Great Plains to the west. This island of highlands has preserved a diverse community of over 3,500 plant species that include isolated patches of prairie and the western most expanse of the eastern deciduous forest. Of the 160 species of fish found in Ozark waters, 13 are unique to its streams. The isolation may explain why only 43 species of mammals are native to the Ozarks. Thirteen of these are bat species and the remaining thirty include elk, cougar, bear, and bison. The bison, once so numerous that the Buffalo River and Bull Shoals on White River were named for them, are now gone from the area. Elk also became extinct but were reintroduced in the 1980s along the upper portions of the Buffalo River. A herd now roams the park and surrounding lands.

The Buffalo River is the longest undammed river in the Ozarks Region, and is the second longest free flowing river in the lower 48 states; the longest is the Yellowstone in Yellowstone National Park. Because of the porous limestone bedrock, the depth and flowrate of the river change drastically with seasonal weather changes. At times much of the water is moving below the surface of the ground in cavern systems. The river itself begins in a wilderness area of the Ozark National Forest and flows through a protected

corridor until it merges with the White River at Buffalo City. In this corridor, activities that may degrade the water quality are not allowed and the water is closely monitored for any changes that may occur. Along this corridor the river has carved enormous bluffs, with sheer faces many hundreds of feet high.

Areas around the river were developed mainly as marginal farmland because the ridges of the Ozarks feature poor soil. Because of this, the area existed in an isolated status, sparsely populated with few roads and fewer industries. Even farmers with the good soil along the river had a difficult existence due to lack of transportation and their isolation. This left the Buffalo River country as a window in time. The pioneer cabins and historic sites let us see how the homesteader of 100 years ago lived in these hills. The many archeological remains allow us to peer into the world of the first Americans who inhabited this land for thousands of years, and the magnificent geologic formations of the area allow us to see fossil life forms from long ago. The wilderness areas and the river itself let us experience the Ozarks in an unhurried, peaceful pace. The Buffalo River remains a place to be discovered by all whom will take the time and trouble to look, to all that seek this national treasure now and in the future.



KEY WORDS

preservation, preserving, National Park Service, unique, protection, Ozarks, tributary, polluted, plateau, national park system, conserved

RESOURCES

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A DAY BY THE BUFFALO

WATERSHED WORKS

Through experiment, research projects and games in the classroom and in the field, students learn about the importance of our natural surroundings and the role of human beings in the *protection* of the outdoors.

TEACHER BACKGROUND

Water affects many things. It shapes the face of the Buffalo River Valley, carving canyons, hollows, and rock shelters. It sculpts the land into stones small enough to skim across a creek, and boulders so large that only flood waters can move them. It seeps through porous rock, carving out large caverns and narrow crawl spaces, and depositing tiny delicate crystals resembling needles. It erupts from the ground as springs, sometimes emerging in the shape of roaring waterfalls and other times as small seeps where ferns grow from cracks in the rock.

Trees, ground vegetation, even last year's fallen leaves help to clean and filter water run-off. By holding soil in place, they prevent *erosion*. When plants are removed from the land, soil often moves into streams, filling them with silt and making the water murky. This can change the entire cycle of life found in a stream.

The amount and cleanliness of water on your land depends not just upon your actions, but also those of your neighbors. Something thrown into a *sinkhole* or small *cave* on your neighbor's property could seep through the soil, enter an underground creek, and emerge as a spring on your land. Likewise, something thrown into a *tributary* stream, or flowing water, outside the park eventually winds its way down into Buffalo National River.

We share the limited supply of water in the *Ozarks* with plants, animals, and our neighbors. Maintaining its cleanliness becomes a greater challenge as the area becomes more populated, more trash is generated, and more water is needed for washing cars and clothes. We all share the responsibility to ensure that our wells, springs, and *tributaries* are clean, and our trash properly disposed of. It means good health for us and the *environment*.



CLASSROOM: PRE-VISIT ACTIVITIES

ACTIVITY 1. Filter Facts

STATE STANDARD

Science - Strand 4: Earth and Space Science

Standard 8. Earth Science: Structure and Properties

Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.

OBJECTIVES

Students will:

1. explain how soil and vegetation help to filter water.
2. describe karst topography and explain how water travels through it.

MATERIALS

- two capped clear plastic litter bottles that have bottoms removed and a small hole punched into the caps
 - fill bottle “A” with mostly rock below and a shallow layer of soil on top
 - fill bottle “B” with alternating layers of rock, soil, and vegetation material (twigs, leaves, grass, etc.)
- one additional container filled with visibly DIRTY water to pour into the other bottles
- two empty containers to catch the DIRTY water as it leaves the other bottles

ACTIVITY

1. Ask for volunteers to hold bottles “A” and “B” side-by-side for the rest of the class to see. Ask for two other volunteers to hold the clean, empty containers under each bottle.
2. Pour the DIRTY water into bottle “A” while a volunteer catches water in a clean container. Observe the results and record.
3. Now pour the DIRTY water into bottle “B” while a volunteer catches water in a clean container. Observe the results and record.
4. After the demonstration ask these questions or create a discussion:
 - a. Did they see any difference in the water after it flowed through the bottles?
 - b. Which was the cleanest and why?

- c. Discuss *karst topography*
- d. Discuss importance of vegetation such as trees, leaves, plants, forest organic litter and soil on the filtering process.

DISCUSSION

1. Do you suppose the vegetation cover makes much of a difference in the water quality of a watershed?
2. What effect does karst topography have on water quality?
3. If you discharge DIRTY water through a karst system, what might you expect to find as a result in area springs and seeps?



NATIONAL RIVER: ON-SITE ACTIVITIES

Activity 2. Lost Valley Hike

STATE STANDARDS

Science - Strand 4: Earth and Space Science

Standard 8. Earth Science: Structure and Properties

Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.

Science - Strand 1: Nature of Science

Standard 1. Characteristics and Processes of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology

OBJECTIVES

Students will:

1. define **ecology** and give an example of how things interact in the **environment**.
2. define **tributary**.
3. name 1) a tributary of the Buffalo River, and 2) the river into which the Buffalo flows.
4. describe water's role in shaping the **biological environment** of Buffalo National River.
5. explain how plants help to clean the water.
6. explain the importance of clean water to society and the environment.
7. describe the purpose of **national parks** in **preserving** natural **communities** and why clean water is important.
8. explain how a person's actions can help or harm **tributaries**.

MATERIALS

- day pack
- drinking water

ACTIVITY

Be prepared to hike with a ranger approximately 1.5 miles and spend approximately 1 hour on a moderately strenuous trail into Lost Valley. Activity begins in the Lost Valley parking lot off of Highway 43 in Boxley Valley.

CLASSROOM: POST-VISIT ACTIVITIES

Activity 3. Downhill Running

STATE STANDARDS

Science - Strand 4: Earth and Space Science

Standard 8. Earth Science: Structure and Properties

Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology

Science - Strand 1: Nature of Science

Standard 1. Characteristics and Processes of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology

English - Strand: Oral and Visual Communications

Standard 1. Speaking

Students shall demonstrate effective oral communication skills to express ideas and to present information

OBJECTIVES

Students will:

1. state a relationship between plants and soil stability.
2. describe the effects people have on the land.

MATERIALS

- jugs of water
- paper
- pencil

ACTIVITY

1. Ask your students to select two equally sloping sites on or near the school grounds. One site should be covered with bare soil only. Roadway cutbanks, for example, work well. The second site should have good vegetational cover; for example, grass, leaves, and moss. Or you can develop your own landscapes using two large trays and sand, rocks and vegetation, etc.
2. Ask the students to pour equal amounts of water over these two slopes and observe the results.



3. Ask these kinds of questions:
 - a. How does the vegetation effect the rate at which the water moves downhill?
 - b. On which slope does most of the water reach the farthest downhill?
 - c. What happened to any debris (twigs, leaves) on the bare soil when the water was poured, including where the debris went?
 - d. Discuss circumstances they can think of where *erosion* might be a problem, for example, soil erosion along roadsides.

4. Once the observations and discussion have concluded, ask each student to state in his or her own words (either orally, in writing or both) any relationships identified between plants and soil stability.

KEY WORDS

national parks, protection, Ozarks, cave, sinkhole, erosion, ecology, environment, tributary, polluted, karst topography, biological environment, preserving, communities

RESOURCES

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A DAY BY THE BUFFALO

WATER QUALITY – At the Water’s Edge

One way to determine the health of a river is to look at what organisms are living in it. Students learn how to identify and inventory organisms through actual hands-on activities. This knowledge can be applied to any body of water.

TEACHER BACKGROUND

The health of a river can be, in part, judged by the diversity of organisms that the river is able to support. Certain aquatic insects are only able to thrive under excellent water quality conditions. In turn, only *macroinvertebrates* that are pollution-tolerant are able to survive in poor water quality conditions. Thus, by counting the number and kind of macroinvertebrates present, you can get a general idea of the *water quality* of a river.

Aquatic insects serve as food for fish and other aquatic organisms. The absence or presence of these insects determines the presence of other animals in river *food chains*. The smallmouth bass that fisherman love to catch depend on these insects to live and grow.

Water flowing into the river from the surrounding *watershed* contributes to the quality of water and life. The river channels water, sediments and pollutants, that flow off the surrounding hills. If pollution levels get too high, certain insects may die off affecting the populations of fish and other organisms dependent on a clean river.

These topics will be explored through activities dealing with a watershed, the types of macroinvertebrates present in the river, the impact these organisms have on other *aquatic species*, as well as through actual sampling of the river’s macroinvertebrates.



CLASSROOM: PRE-VISIT ACTIVITIES

Activity 1. Wonderful Water

STATE STANDARD

Social Studies - Strand: Geography

Standard 1. Physical and Spatial

Students shall develop an understanding of the physical and spatial characteristics and applications of geography.

OBJECTIVES

Student will:

1. describe where their water comes from.
2. identify on a map where the school's water source is located.

MATERIALS

- paper and pencil, or chalkboard, or dry erase board
- brainstorming

ACTIVITY

Have the students explore the origins and uses of water in their daily lives, by asking:

1. Where does the water in their home or school come from?
2. What uses do they or their families have for it? (List as many as the class can suggest.)
3. What happens to the water when it leaves their home or school? Do humans handle it (treated) or does it go directly back into the environment?
4. Where does it eventually go? (Think hydrologic cycle.)

NATIONAL RIVER: ON-SITE ACTIVITIES

Activity 2. At The Water's Edge

STATE STANDARD

Science - Strand 2: Life Science

Standard 2. Living Systems: Characteristics, Structure, and Function

Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.

OBJECTIVES

Students will:

1. define **watershed** and describe how much of the Buffalo River's watershed is within the National River boundaries.
2. define **macroinvertebrates** and list two common types found in the river.
3. describe a simple **food chain** that might be found in a river or stream.
4. find and identify at least two macroinvertebrates at the park.
5. explain the relationship between the macroinvertebrates found in the water and the **water quality** of the river.

MATERIALS (to be provided by park rangers)

- rubber boots
- buckets
- dip nets
- ice trays
- shallow, flat plastic container

MATERIALS (student needs to bring)

- drinking water
- towel

ACTIVITY

Be prepared to GET WET and spend approximately one hour with a ranger, wading the water's edge, learning about **macroinvertebrates**. You will record your findings and apply them to an analysis of the quality of the water and its ability to sustain a diversity of life.



CLASSROOM: POST-VISIT ACTIVITIES

Activity 3. Let's Take A Closer Look

STATE STANDARD

Social Studies - Strand: Geography

Standard 1. Physical and Spatial

Students shall develop an understanding of the physical and spatial characteristics and applications of geography.

OBJECTIVES

Students will:

1. locate Arkansas on a map.
2. locate Buffalo National River on a map.
3. determine what **watershed** their school is in (locate and name the stream).
4. determine what watershed their homes are in (locate and name the stream).

MATERIALS

- maps: U.S., Arkansas, drainage maps, topographic maps

ACTIVITY

1. After locating Arkansas on the map, begin to look at rivers and their **tributaries**.
2. Using a map explain why large rivers in our area flow west to east as they make their way to the next body of water (run downhill). Look at how smaller watercourses combine with larger watercourses. Try to determine the elevation gradient from a topographic map (how much the watercourse falls in a given distance). Develop a map reading activity to do with the class using the topographic map in Figure 3-1 or one of your own choosing. Read the elevation at point A and point B, determine the difference, and establish that height in a relationship to the distance between point A and point B for Highway 7. Now try it for Spider Creek between point C and point D. Can you determine which part of Spider Creek or Highway 7 is steeper from looking at the contours of the map?
3. Could it be reasoned (generally) that a steeper watercourse would have a smaller square mile watershed and a gentle watercourse might have a larger watershed? Do you think there is a relationship between the size of the stream and the size of the watershed?

4. Color or shade in the area on your topographic map that would correspond to the watershed area of each particular body of water the class has identified. Test the above hypothesis (#3) by tracing the outline of the different watersheds on graph paper and establish the square mileage or the relative area size of each.
5. For extra credit and additional math practice, make additional comparisons, such as size of watershed vs. length of watercourse; size of watershed vs. gradient of watercourse; develop the concept that as you travel downstream the watershed of the main branch increases in size by the addition of each tributaries' watershed. Contemplate what affects the water quality of the Arkansas River at Little Rock, or the Mississippi River at New Orleans (think watershed).
6. Do you think there is a relationship between the gradient of a stream and its use (kayaking, canoeing, and navigation)?

Figure 3-1



KEY WORDS

macroinvertebrate, water quality, food chains, watershed, tributaries, aquatic species

RESOURCES

See Appendix D for materials on watersheds and macroinvertebrates.

Internet resources:

- Macroinvertebrate keys: www.people.virginia.edu/~sos-iwla/Stream-Study/Key/MacroKeyIntro.html
- Stream Ecology and Water Education bibliography: www.habitat-restoration.com/restedu.htm
- Lawrence Hall of Science lessons: www.lhs.berkeley.edu/GEMS/gemspubs.html

Missouri Department of Conservation. *Life Within the Water* (macroinvertebrates); *Missouri Fishes*. P.O. Box 180, Jefferson City, MO 65102.

Reid, George K. *Pond Life*. Golden Guide pocketbook series. Golden Press. New York.

Robison, Henry W. and Thomas M. Buchanan. 1988. *Fishes of Arkansas*. The University of Arkansas Press. Fayetteville, AR.

A DAY BY THE BUFFALO

PIONEER HISTORY/OZARK CULTURE - Beaver Jim Villines

Participants will learn the pioneering ways of the Ozark region's earliest settlers and how they are revealed in the clues they left behind.

TEACHER BACKGROUND

Before the days of railways and highways, rivers were used to explore the *frontier*. Native Americans were the first to know the vast American continent -- much later, European explorers followed the Indians down the trails and waterways of the frontier. When the earliest settlers arrived, they established communities along large rivers like the Mississippi, Ohio, and Arkansas. Eventually, they made their way up smaller streams like the White River and the Buffalo Fork of the White River, which was later shortened to Buffalo River.

Settlers first arrived in the Buffalo River valley in the 1830s to discover little more than narrow pathways made by those who preceded them. They built log houses up the hollows and at the base of cliffs, and farmed the fertile bottomlands alongside the river and creeks. After the bottomland was claimed, settlers began building cabins atop the benches overlooking the river valley. James A. Villines, or "Beaver Jim" was one such "bench settler." His simple homesite resembled many being built during this time.

With more settlers arriving, neighbors became closer as the crow flies but remained distant as the wagon rolls. Travel was difficult over the winding roads and rivers were often too high to cross during the high waters of springtime. Springfield, Missouri, where most trading was done, was a three-day trip -- Russellville took up to two weeks to reach. Poor transportation meant few travelers came through the hills. In some ways, the settlers of the *Ozarks* were isolated from things occurring in other parts of the United States. Because of this isolation, traditions, skills, and ideas developed that were different from other areas. The Ozark people became a distinct *culture*, or group of people with a *unique* lifestyle passed down through the generations.

Today, the *National Park Service*, *protects* and *preserves* many of the homesites and farms to ensure that the faces, names, and traditions of these early settlers are not forgotten. Cabins like the one built by James A. Villines provide clues to a former way of life, and evidence of the persistence of pioneers who paved the way for others.



CLASSROOM: PRE-VISIT ACTIVITIES

Activity 1. Obstacles Here, There and Yonder

STATE STANDARDS

Social Studies - Strand: Geography

Standard 1. Physical and Spatial

Students shall develop an understanding of the physical and spatial characteristics and applications of geography.

Social Studies - Strand: Geography

Standard 3. Interaction of People and the Environment

Students shall develop an understanding of the interactions between people and their environment.

OBJECTIVES

Students will :

1. locate the ***Ozark*** region on a United States map.
2. locate large rivers relative to the Ozark region.
3. explain how and what obstacles slowed the growth of the Ozarks compared to growth along larger rivers.

MATERIALS

- map of the United States

ACTIVITY

1. Have students look at a map of the Midwest area and locate the largest cities. Ask students:
 - a. Why did these cities develop where they did?
 - b. Locate the large rivers of the area and where they intersect.
 - c. What were the obstacles to travel, on and off the rivers, and throughout the Ozarks?
2. Have students distinguish the geographic boundaries of the Ozark region relative to the Arkansas River Valley, the Great Plains states, the Ouachita Mountains, and the Mississippi Delta. Ask students:

In what ways would living in the Ozarks be different than living on the Mississippi Delta?



NATIONAL RIVER: ON-SITE ACTIVITIES

Activity 2. Exploring Beaver Jim's Homestead

STATE STANDARDS

Social Studies - Strand: Culture and Diversity

Standard 2. Interaction of People and the Environment

Students shall develop an understanding of how cultures around the world develop and change.

Social Studies - Strand: Geography

Standard 3. Interaction of People and the Environment

Students shall develop an understanding of the interactions between people and their environment.

OBJECTIVES

Students will:

1. describe the settlement patterns of the United States in the 1800s.
2. identify five features of Beaver Jim's homesite that cannot be found in home of today and explain why the changes came about.
3. Identify three modifications to the house and ground that were made during Beaver Jim's lifetime.
4. Explain why the Ozark region remained culturally isolated for so long and identify three things that brought about change.
5. Describe the purpose of ***national parks*** in ***preserving*** historic sites and explain why these areas are important.

MATERIALS (Ranger will provide)

- paper
- pencils

ACTIVITY

Be prepared to spend approximately one hour with a park ranger exploring the cabin, barn, outbuildings and surrounding land of a pioneer.

CLASSROOM: POST-VISIT ACTIVITIES

Activity 3. Your Family History is Important, Too!

STATE STANDARD

Social Studies - Strand: Culture and Diversity

Standard 2. Interaction of People and the Environment

Students shall develop an understanding of how cultures around the world develop and change.

OBJECTIVES

Students will:

- compare their family history with Buffalo River pioneer history.

MATERIALS

- paper
- pencil
- someone to interview

ACTIVITY

1. Ask students to conduct an interview with family members, preferably Mom and Dad or Grandma and Grandpa.
2. Suggested questions during interview would be:
 - a. Did you *migrate* here?
 - b. Where were you born?
 - c. Who was the first family member to *migrate* to Arkansas?
 - d. Where did he/she come from?
 - e. How did they arrive?
 - f. Did other family members follow?
 - g. Did they live off the land or work someplace else?
 - h. How was life different when you were a student compared to student life today?
 - i. What do I have that *pioneers* in our family did not have?
3. Suggested thoughts for students to add to their interview report:
 - a. Will my children and grandchildren be interested in learning about my family history?



- b. Why is it important to remember how our family once lived?
 - c. Is it important to *protect* and *preserve* the house that our family lives in now?
Does it tell a story?
 - d. Am I part of today's history?
4. Encourage students to return to school with their interview and read aloud their family history to the other students.

KEY WORDS

frontier, Ozark, culture, National Park Service, protects, preserved, pioneers, unique, migrate

RESOURCES

Pitcaithley, Dwight T. 1978. *Let The River Be.*

Smith, Kenneth. 1967. *The Buffalo River Country.* Little Rock, AR.: Ozark Society.

Hardaway, B. Touchstone. 1991. *These Hills, My Home*

Internet: Library of Congress; maps of early United States
<http://lcweb2.loc.gov/ammem/gmdhtml/gmdhome.html>

A DAY BY THE BUFFALO

FOREST ECOLOGY - River View Stroll

Forests are more than a collection of trees. Plants and animals of many types can live in forests, forming communities that may interact. These activities will introduce your class to various forest communities at Buffalo National River.

TEACHER BACKGROUND

A forest is composed of many *habitats*, or natural communities, just as a town is composed of many neighborhoods. Each community, in turn, contains a variety of plants and wildlife, just as each neighborhood in a town has different types of people. People depend upon the different skills of others to make a town operate properly (some are teachers, some auto mechanics, and some musicians). Likewise, plants and animals in a community directly and indirectly depend upon each other for survival.

Lichens, for instance, break down rock to make soil. Soil then provides a place for ants to build tunnels and escape *predators*, or animals that will eat them. Ant tunnels allow more air into the soil, enabling plants to grow better. Plants produce food for wildlife whom, in turn, help spread the same plants by eating the fruit and excreting waste products that contain seeds.

Removing one member of a community can affect the entire forest. Sometimes this effect is bad for one type of plant or animal, but seems to help another. The effect is often temporary, however, because when the population of a single *species*, or type, of animal gets too big, the food supply usually runs short causing starvation, disease, and maybe even death.

We are also members of the natural community and play a role in maintaining its health. We do this not by breaking down rock to make soil, or digging tunnels to increase the air supply, but by allowing these things to happen without removing from or adding to the natural process. We also help by doing things like not littering and cleaning up after those who are not as responsible. It is in ways such as this that we play a vital role and can feel proud to be responsible members of the natural community.



CLASSROOM: PRE-VISIT ACTIVITIES

Activity 1. Community Efforts

STATE STANDARD

Science - Strand 2: Life Science

Standard 4. Populations and Ecosystems

Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

OBJECTIVES

Students will:

1. describe at least three natural *communities* found at Buffalo National River.
2. name at least five members found within those three communities.

MATERIALS

- paper
- pencil

ACTIVITY

As a class discuss the term habitat or community. Have students name different natural *communities* (i.e., cedar glade, stream, open fields, dead tree, etc.). Then have them name different members of each community (i.e., a dead tree community would include mushrooms, grubs, mosses, woodpeckers). Make a visible list on the chalkboard. How do the different members help the community survive? Do any of them hurt each other? Give examples of what could happen if a community member was suddenly removed.

Are there any members of one community that are members of another as well? Draw lines to connect these members (it could get cluttered). With a different color chalk, connect community members (regardless of community) with other members that they eat or are eaten by or have a beneficial or negative relationship with (now the chalkboard should really be getting messy). Can you create new communities from these newly identified relationships? Your students should understand how interwoven and sometimes complicated the relationships are in the natural world.

NATIONAL RIVER: ON-SITE ACTIVITY

Activity 2. River View Stroll

STATE STANDARD

Science - Strand 2: Life Science

Standard 4. Populations and Ecosystems

Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

OBJECTIVES

Students will:

1. define **habitat** and give an example of four within Buffalo National River.
2. identify a key plant or animal **species** and explain how this plant or animal interacts with something else in its habitat.
3. compare and contrast natural **communities** with human communities.
4. determine the effects on a **community** if one or more of its members are removed.
5. describe the purpose of **national parks** in **preserving** natural communities and why **diversity** is important.

MATERIALS

- day pack
- drinking water

ACTIVITY

Be prepared to spend approximately one hour with a park ranger hiking a moderately strenuous trail.



CLASSROOM: POST-VISIT ACTIVITIES

Activity 3. Taking Responsibility (in an human community)

STATE STANDARD

Social Studies – Strand: Civics

Standard 4. Government

Students shall develop an understanding of the forms and roles of government.

OBJECTIVES

Students will :

1. list what they feel describes a responsible member of a *community*.
2. actively participate in their community.
3. explain how their accomplishments benefit the community.

MATERIALS

- paper
- pencil
- poster board

ACTIVITY

Have your students consider that they are members of a classroom community. There may be active and in-active members. Do some brainstorming as a group to define what this classroom community requires to function (leadership, organization, structure, etc.). Consider the basic needs (similar to Activity 1, Habitat Shuffle).

1. Divide the class into groups of 4 or 5 and have the students make a list of things they can do to make them responsible members of the classroom community. Have each group share their ideas with the class. After each group has shared, ask the whole class to refine these ideas and make a class list of no more than 10 items and post them on the chalkboard or poster board.
2. Mount this list in a prominent place in the classroom.
3. Encourage the students to personally consider their roles in the classroom community. As a student accomplishes an item, have the student sign their name on the poster board next to the item (more than one student name may be next to each item). After a period of time, come back to a discussion of this class list and allow the students to share how their accomplishments benefited the community.

4. For further discussion, ask the class to discuss how they as individuals are part of the greater natural community of the Ozarks. What personal actions will have a positive or negative impact on the community? List for impact.



KEY WORDS

predators, species, communities, national parks, preserving, diversity, habitat

RESOURCES

Pitcaithley, Dwight T. 1978. *Let The River Be*.

Smith, Kenneth L. 1967. *The Buffalo River Country*. Little Rock, AR.: Ozark Society.

Hardaway, Billie Touchstone. 1991. *These Hills My Home*.

A DAY BY THE BUFFALO

PIONEER HISTORY/OZARK CULTURE-Collier Homestead Tour

Change came slow to the Ozark mountains, and settlers depended upon their own resourcefulness long after “conveniences” were common in other regions of the United States.

TEACHER BACKGROUND

In the 1800s, Arkansas was part of the *frontier* of the United States. Most areas east of the Mississippi River were settled, but much of the land west of the river was still uncharted territory. Maps of the west contained little detail, and only the most adventuresome souls attempted to cross into these unsettled lands. The United States government encouraged people to move further west to help expand the boundaries of the growing nation. In 1862, the *Homestead Act* was established to assist people in their *migration*, or westward movement.

Under the Homestead Act, people could gain ownership of government lands in exchange for improvements to it. The act helped both the United States government and its citizens: it encouraged settlement of the West, and also gave people the chance to become landowners. Wealth was not necessary to take advantage of the new act, only a willingness to work hard, the ability to withstand hardships, and the resourcefulness to make it on your own. People who possessed such traits settled frontier areas like the Buffalo River Valley.

The earliest settlers to the river valley arrived in the 1830s and homesteaded the bottomlands along the river where the soil was best for growing crops. Eventually, the most fertile land was claimed and settlers began homesteading land atop the rises or “benches” that overlooked the valley. By the 1930s, the only patches of unclaimed land that remained lay atop the highest ridges where the land was least fertile, but the views were most spectacular. Sod Collier and his family lay claim to one of these tracts in the 1930s, becoming one of the last families to homestead land in the Buffalo River Valley.

Today, the National Park Service tells the story of the settlement of the Buffalo River Valley, *preserving* the traditions, names, and places of those who tamed this portion of the frontier.



CLASSROOM: PRE-VISIT ACTIVITY

Activity 1. Obstacles Here, There and Yonder

STATE STANDARDS

Social Studies - Strand : Geography

Standard 1. Physical and Spatial

Students shall develop an understanding of the physical and spatial characteristics and applications of geography.

Social Studies - Strand : History

Standard 6. History

Students shall analyze significant ideas, events, and people in world, national, state, and local history and how they affect change over time.

OBJECTIVES

Students will:

1. locate the **Ozark** region on a United States map.
2. locate large rivers relative to the Ozark region.
3. explain how and what obstacles slowed the growth of the Ozarks compared to growth along larger rivers.

MATERIALS

- map of the United States

ACTIVITY

1. Have students look at a map of the midwest area and locate the largest cities. Ask students:
 - a. Why did these cities develop where they did?
 - b. Locate the large rivers of the area and where they intersect.
 - c. What were the obstacles to travel, on and off the rivers, and throughout the Ozarks?
2. Have students distinguish the geographic boundaries of the Ozark region relative to the Arkansas River Valley, the Great Plains states, the Ouachita Mountains, and the Mississippi Delta. Ask students:

In what ways would living in the Ozarks be different than living on the Mississippi Delta?



NATIONAL RIVER: ON-SITE ACTIVITIES

Activity 2. Exploring the Collier Homestead

STATE STANDARDS

Social Studies - Strand : Geography

Standard 2. Culture and Diversity

Students shall develop an understanding of how cultures around the world develop and change.

Social Studies - Strand : History

Standard 6. History

Students shall analyze significant ideas, events, and people in world, national, state, and local history and how they affect change over time.

OBJECTIVES

Students will:

1. describe the settlement patterns of the United States during the 19th and early 20th centuries.
2. identify three things still in practice in the Ozark region that had changed in other parts of the United States by the 1930s and 40s. Explain why these advances were slow to reach this region.
3. describe family life in the 1930s Ozark region.
4. compare and contrast skills needed to survive in earlier times with those needed today.
5. describe the purpose of *national parks* in *preserving* historic sites and explain why these areas are important.

MATERIALS

- day pack
- drinking water

ACTIVITY

Be prepared to spend approximately one hour with a park ranger touring the Collier Homestead.

CLASSROOM: POST-VISIT ACTIVITIES

Activity 3. Your Family History is Important Too!!

STATE STANDARD

Social Studies - Strand : Geography

Standard 2. Culture and Diversity

Students shall develop an understanding of how cultures around the world develop and change.

OBJECTIVES

Students will:

- compare their family history with Buffalo River pioneer history.

MATERIALS

- paper
- pencil
- someone to interview

ACTIVITY

1. Ask students to conduct an interview with family members, preferably Mom and Dad or Grandma and Grandpa.
 2. Suggested questions during interview would be:
 - a. Did you *migrate* here?
 - b. Where were you born?
 - c. Who was the first family member to *migrate* to Arkansas?
 - d. Where did he/she come from?
 - e. How did they arrive?
 - f. Did other family members follow?
 - g. Did they live off the land or work someplace else?
 - h. How was life different when you were a student compared to student life today?
 - i. What do I have that *pioneers* in our family did not have?
 3. Suggested thoughts for students to add to their interview report:
 - a. Will my children and grandchildren be interested in learning about my family history?
-



- b. Why is it important to remember how our family once lived?
 - c. Is it important to *protect* and *preserve* the house that our family lives in now?
Does it tell a story?
 - d. Am I part of today's history?
4. Encourage students to return to school with their interview and read aloud their family history to the other students.

KEY WORDS

frontier, migration/migrate, Homestead Act, preserving, protecting, pioneer, Ozarks, national parks

RESOURCES

Hardaway, B. Touchstone. 1991. *These Hills, My Home*.

Smith, Kenneth. 1967. *The Buffalo River Country*. Little Rock, AR.: Ozark Society.

A DAY BY THE BUFFALO

RESOURCE DIVERSITY – Indian Rockhouse Hike

The vast diversity of natural resources of the Buffalo River valley has attracted people for thousands of years. The Ozarks is a biological crossroads, exhibiting species from east and west, north and south, many unexpectedly found in association with other species. This biodiversity provided for the needs of the people that lived in this region.

TEACHER BACKGROUND

The **Ozark** region is home to many different types of plants and animals, with *species* that range throughout the United States. This is due, in part, to its central location. To the east of the Ozarks are the forests of the Appalachian Mountains -- to the west range the wide open plains, deserts of the Southwest, and the high mountain peaks of the Rockies. The Ozark region is considered to be at the *biological crossroads* of the United States.

Because of this *biodiversity*, people have been attracted to this area as a source of resources for many years. Indians traveled through the area thousands of years ago, following large animals for food and clothing. Later, bluff dwelling people created more permanent communities, seeking shelter in large overhangs and caverns. As recent as the early 1800s, Cherokee Indians settled in and farmed the fields along the riverbanks. Today we continue to create homes and communities in these same hills and hollows.

Each group has left their mark on the land. *Prehistoric* Indians used stone for weapons and tools, clay for pottery, and plants for medicines, dyes, and food. They traveled down the rivers and along narrow trails through the woods, following the paths created by wildlife. Today, their *artifacts* are found on the landscape. They left little mark upon the land by today's standards.

By the 1830s, settlers from the east began widening woodland paths for wagons. The rugged hills and hollows, however, made the Ozarks a difficult area to *settle*. Steep hillsides, rocky slopes, and thinly soiled hilltops made farming difficult except in fields along the rivers. Water had to be carried great distances from springs or collected in cisterns. Wells were difficult to dig and sometimes unreliable due to caves and sinkholes.

Eventually, however, fields were cleared for farming and trees were cut for homes and to sell for lumber. Settlers mined the rock for lead and zinc. Wild plants and animals continued to provide food, clothing, and even medication.



Today the paths are even wider. Campers and tractor-trailer trucks follow a roadway that may have originally been established by a deer. Indoor plumbing, wells, cellular phones and computers have enabled us to settle areas once difficult to inhabit. We rely less on wild plants and animals and more on grocery stores and farm raised animals and vegetables. Roads penetrate much deeper into the woods.

National parks are places where we have touched the land, but only lightly. They give us an idea of how an area may have appeared during the time when only paths ran through the woods. They provide protection for plants that may have medicinal uses yet to be discovered. National parks give us a place to remember.

CLASSROOM: PRE-VISIT ACTIVITY

Activity 1. The Land Provides

STATE STANDARD

Social Studies - Strand : Geography

Standard 3. Interaction of People and the Environment

Students shall develop an understanding of the interactions between people and their environment.

OBJECTIVES

Students will:

1. list three plants that were utilized (or may still be) by people that lived in this area. Consider prehistoric and modern uses.
2. diagram the influences of the bioregions that surround the Ozarks.
3. list three species of plants or animals or a combination that are found in the Ozarks but ordinarily are found in abundance in a different bioregion.

MATERIALS

- paper
- pencils
- map of the United States

ACTIVITY

1. As a group activity, identify the biological regions that surround the Ozarks on a map of the United States. Visually represent the Ozarks as a biological crossroads, exhibiting species from other areas.
2. Have students research plants of the Ozarks and list ones that were used for medicine. Have them list other resources that were use to support life in this area. Include any resources that were used for industry. How has the utilization of these resources impacted the area, economically or in distribution, population, or diversity?
3. Discuss with the students ways we affect the land today. Do these things have a positive or negative affect on the environment? If negative, what are ways to do these things and have the least impact?



NATIONAL RIVER: ON-SITE ACTIVITIES

Activity 2. Indian Rockhouse Hike

STATE STANDARD

Social Studies - Strand : Geography

Standard 3. Interaction of People and the Environment

Students shall develop an understanding of the interactions between people and their environment.

OBJECTIVES

Students will:

1. describe why the Ozarks is known as a **biological crossroads**.
2. explain why the Buffalo River valley has attracted prehistoric, historic, and contemporary settlement.
3. identify one or more plant species used for 1) medicine, 2) food, and 3) resources.
4. identify one or more animal species used as food and for resources.
5. identify major geological features, emphasizing cultural connections
6. describe two industrial uses of the resources
7. explain how industry and settlement have affected the land.
8. describe ways we can have a positive affect upon the land.
9. describe the purpose of national parks in preserving the areas.

MATERIALS

- day pack
- drinking water

ACTIVITY

Be prepared to spend approximately three and a half to four hours with a park ranger hiking a moderate difficulty trail to the Indian Rockhouse bluff shelter.

CLASSROOM: POST-VISIT ACTIVITIES

Activity 3. A Way of Life

STATE STANDARD

Social Studies - Strand : Geography

Standard 3. Interaction of People and the Environment

Students shall develop an understanding of the interactions between people and their environment.

OBJECTIVES

Students will:

- identify three cultures that lived in the Buffalo River Valley and the affect each group had on the land.

MATERIALS

- pencil
- paper

ACTIVITY

1. Divide the students into three groups. Have one group research prehistoric Indians, the second group research historic Indians, and the third group research pioneers/ settlers/ miners of the Buffalo River Valley. Some questions to research include:
 - a. Why were they attracted to the Buffalo River Valley?
 - b. Where did they live and why?
 - c. What kind of natural resources did they use and why?
 - d. What were some major geological features of the Buffalo River Valley that both helped and hindered settlement here?
 - e. Was finding/growing food difficult or easy? Why?
 - f. How did they change the land?
2. After the students have researched the three groups, compare and contrast the three cultures.
 - a. Which culture did the least or the most damage to the environment?
 - b. Why is it important to preserve our environment now?
 - c. Why is it important to have areas like the Buffalo National River?



KEY WORDS

species, biological crossroads, biodiversity, prehistoric, artifacts, settle, national parks, Ozarks

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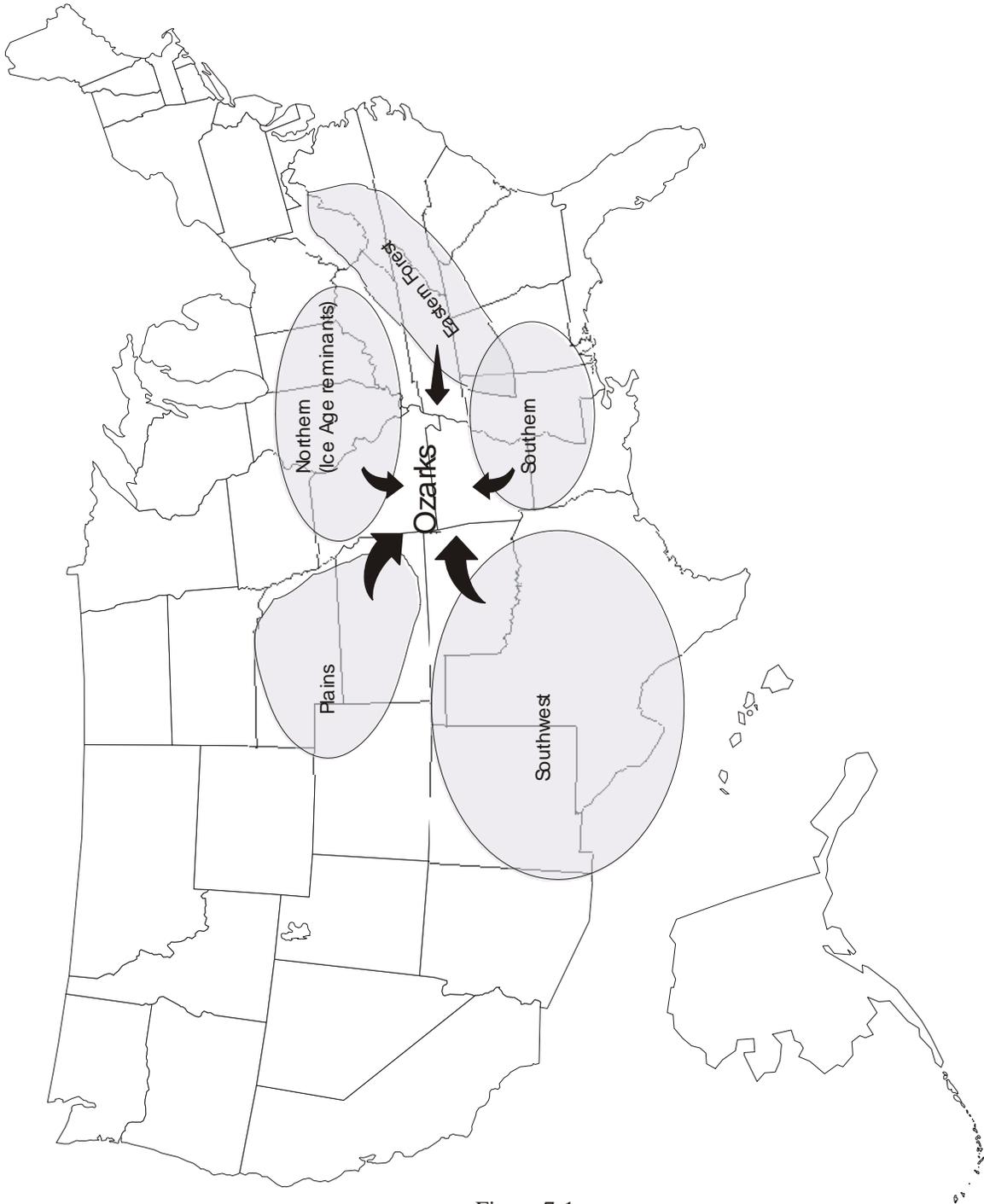


Figure 7-1

A DAY BY THE BUFFALO

MINING HISTORY – Rush Ghost Town

The Rush Creek Mining District is recognized as the most important zinc-producing area in the State of Arkansas. This region of northern Arkansas boomed during the late-1800s to become a major mining center. Mining was hard, rigorous work. A resource like zinc caused the development of a whole new industry and its associated impact on the economy.

TEACHER BACKGROUND

The Rush Creek Mining District is recognized as the most important zinc-producing area in the State of Arkansas. In the early 1880s, local residents discovered *zinc* in the Rush Valley. Initially, the prospectors were hopeful that the area also contained silver or even gold. They built a *smelter* to reduce the *ore*, but no silver was produced. Nevertheless, zinc mining continued and more prospectors moved into the Rush Valley. However, high transportation costs made it difficult to turn a profit. During World War I, due to increased demand, the price for zinc skyrocketed and Rush became a boomtown. Numerous *mines* employed hundreds of miners and the population of the valley was several thousand. Rush was the largest city in northern Arkansas during this period. After the war ended, zinc prices fell and people began to leave Rush as quickly as they had arrived. Some mining did continue, but slowly Rush was abandoned. Today the National Park Service preserves the remains of this once-bustling town and tells the story of Rush, the Ghost Town.



CLASSROOM: PRE-VISIT ACTIVITIES

Activity 1. From A to Zinc

STATE STANDARD

Social Studies - Strand : Geography

Standard 3. Interaction of People and the Environment

Students shall develop an understanding of the interactions between people and their environment.

OBJECTIVES

Students will:

- list some of the uses for *zinc* and where it is found.

MATERIALS

- paper
- pencils

ACTIVITY

1. Have students prepare for their trip to Rush by researching zinc. What can they find out about this metal? What is it used for today? What uses might it have had during the early part of this century when the Rush mines were most active? Where does most zinc come from today? Is mining still important in Arkansas today? What are the leading minerals currently being mined in Arkansas?
2. Share pictures of zinc from books or items made of zinc with the class.
3. Have students brainstorm ways that zinc mining at Rush might have affected the local communities and local economies of this part of Arkansas. How might zinc mining have affected the natural resources and scenery of the Rush area? Have your students develop an image of what they think the Rush area looks like today (especially if they have never been to Rush).

NATIONAL RIVER: ON-SITE ACTIVITIES

Activity 2. Rush, the Ghost Town

STATE STANDARDS

Social Studies - Strand : Geography

Standard 3. Interaction of People and the Environment

Students shall develop an understanding of the interactions between people and their environment.

Social Studies - Strand : History

Standard 6. History

Students shall analyze significant ideas, events, and people in world, national, state, and local history and how they affect change over time.

OBJECTIVES

Students will:

1. describe a basic time line for the history of Rush.
2. briefly describe some of the mining practices used in the Rush area.
3. explain why the mining stopped at Rush.
4. list two reasons to stay out of old mines.

MATERIALS

- day packs
- drinking water

ACTIVITY

The miners at Rush dreamed of silver, mined zinc and won gold. On this program, students will learn about these interesting facets of the history of Rush. Touring along with the ranger, they will see the old smelter and the remaining buildings of the Morning Star mine area. Students will explore the remains of the old Morning Star mill and the large tailings pile there. The group will also hike up to the mine level to talk about mining techniques and the dangers of old mines.

Be prepared to spend 1 1/2 hours with a ranger exploring the ghost town of Rush.



CLASSROOM: POST-VISIT ACTIVITIES

Activity 3. The Value of Natural Resources

STATE STANDARD

Social Studies - Strand : Economics

Standard 7. Choices

Students shall analyze the cost and benefits of making economic choices.

OBJECTIVES

Students will:

- relate ways in which the introduction of a single resource into the economy might affect an entire community.

MATERIALS

- paper
- pencil

ACTIVITY

1. Discuss how the discovery of zinc turned Rush from a small community into the largest town throughout northern Arkansas. Emphasize how quickly this happened and question the affects this might have had on neighboring communities. Have students question their relatives (i.e. great grandparents, grandparents, uncles and aunts) about Rush, and if they know anyone who was born there.
2. Introduce the concept of how much a single resource can impact an entire nation (i.e., the California Gold Rush, oil in Alaska and the Gulf of Mexico). Compare this to Rush and the discovery of zinc. Break students up into groups and ask them to list ways in which the following things would affect the local community:
 - a. A need for mining equipment.
 - b. Mine buildings.
 - c. A need for wood to heat buildings, provide steam power (oil following WWI) and build structures.
 - d. Miners needed places to live.
 - e. Food was needed for miners and their families.
 - f. A larger community ushered in a need for:

- | | |
|---------------------|--------------------------|
| 1.) Doctors | 9.) Schools |
| 2.) Midwives | 10.) Stores |
| 3.) Teachers | 11.) Restaurants |
| 4.) Law Enforcement | 12.) Barber Shops |
| 5.) Engineers | 13.) Pharmacy |
| 6.) Carpenters | 14.) Post Office |
| 7.) Blacksmith | 15.) Horses and Mules |
| 8.) Hotels | 16.) Railroads and Roads |

3. Ask students who they think might have gained the most wealth; the person actually extracting the zinc from the earth, or the hotel owner.
4. What are some environmental changes that might have resulted from the discovery of zinc and its subsequent effects upon the community? (i.e. noise, clearing of forests, disposal of waste).



KEY WORDS

zinc, smelter, ore, mines

RESOURCES

Pitcaithley, Dwight T. 1978. *Let the River Be*. Southwest Cultural Resource Center, National Park Service. Santa Fe, NM.

A DAY BY THE BUFFALO

HABITAT AND DIVERSITY – Overlook Hike

Buffalo National River protects many different types of habitat, harboring a wide diversity of species.

TEACHER BACKGROUND

The *Ozarks* of northern Arkansas harbor a great variety of plant and animal life due to factors such as location, elevation and climate. From hardwood forests to cedar glades to pine woodlands, many different *habitat* types are found here. Located in the middle of the country, this region serves as home to northern, southern, eastern and southwestern *species*. River birches, essentially northern trees, hide in cool hollows. Beech trees, whose principal range is the eastern United States, find habitat in moist valleys. Scorpions and prickly pear cactus, more often associated with southwestern deserts, make themselves at home among the rocks of hillside glades. Lichens usually seen in the arctic tundra cling to weathered bluffs. The Ozarks truly are a “*biological crossroads*” where species from many areas of the country can be found.

Thus the Ozarks contain many different *natural communities*, or habitats. Each of these communities contains a wide diversity of plants and wildlife. Since all the members of the natural community are dependent on each other, removing one type of plant or animal will affect all the others. The National Park Service strives to protect natural communities and preserve diversity in national park areas like Buffalo National River.



CLASSROOM: PRE-VISIT ACTIVITIES

Activity 1. Habitat Shuffle (adapted from Habitat Rummy in Project Wild)

STATE STANDARD

Science - Strand 2: Life Science

Standard 4: Populations and Ecosystems

Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

OBJECTIVES

Students will:

1. name the elements of *habitat*
2. identify the habitat requirements of various animals found at Buffalo National River

MATERIALS

- writing paper
- 3x5 index cards
- chalkboard/dry erase board

ACTIVITY

1. Divide the class into work groups. Assign or let each group pick one or more animal(s) they will research from the list below. Or create your own list of animals that commonly live in this area.

Collared lizard

Gray bat

Five-lined skink

Coyote

Texas mouse

Smallmouth bass

Wild Turkey

Cave salamander

Green frog

Eastern meadowlark

2. Each group should research the animal(s) they have and be able to identify the following:
 - a. What kind of community or arrangement does the animal live within (i.e. glade, open field, woodland, riparian area, or cave)?
 - b. What does the animal eat?
 - c. What does the animal use for shelter (i.e. burrow, rock crevice, etc.)?
 - d. Where might this animal get water (i.e. from the plants it eats, from a nearby stream, etc.)?

3. Record the students findings on a chart for all to see such as the one below.

| | Collared lizard | Gray bat | Five-lined skink | Coyote | Texas mouse | Smallmouth bass | Wild turkey | Cave salamander | Green frog | Eastern meadowlark |
|-------------|-----------------|----------|------------------|--------|-------------|-----------------|-------------|-----------------|------------|--------------------|
| Food | | | | | | | | | | |
| Water | | | | | | | | | | |
| Shelter | | | | | | | | | | |
| Arrangement | | | | | | | | | | |

4. Once the chart is complete, have the students transfer the information to 3x5 cards. The top of the card should have the habitat component and the specific information for that animal at the bottom. For example, the cards for the gray bat may look like these:

| | | | |
|---------|------------------------|---------|-------------|
| Food | Water | Shelter | Arrangement |
| insects | Nearby Ponds & streams | caves | caves |

The groups may draw pictures on each card to represent each component. For example, draw a picture of a mosquito on the bat's food card. Each group should have a complete set of all ten animals' habitat elements (a total of 40 cards per group).

- To play the game, one student mixes the cards, deals four cards to each of the players in the group, turns one card face up for all players to see (this one card becomes the discard pile) and places the remaining cards in a pile face-down. The object of the game is for the player to complete a set of habitat elements (food, water, shelter, and arrangement) for an animal.
- Each player in turn may draw a card from the remaining cards *or* the top card in the discard pile. Then the player discards an unwanted card. Each player takes a turn. When the face-down pile runs out, mix the remaining discard pile and place them face down. When a player gets all the elements for an animal, s/he yells "HABITAT!" This process continues until all the habitat element groupings are complete. The winner is the one with the most habitat element groupings.
- (Additional activity): Students can do this activity separately or in groups. Ask them to spend a little time after school or at recess finding an habitat to describe.



Suggest a park, the playground, or their own backyard. Ask them to answer the following questions:

1. What type of habitat is it?
2. What type of wildlife (if any) might live there?
3. What are some ways that plants and animals within that habitat might interact?
4. What are some ways that humans have changed the habitat?
5. Are there some changes that might have helped the habitat?
6. Are there some changes that might have hurt the habitat?
7. Could these changes have been avoided? If so, how?

NATIONAL RIVER: ON-SITE ACTIVITIES

Activity 2. Overlook Hike

STATE STANDARD

Science - Strand 2: Life Science

Standard 4: Populations and Ecosystems

Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

OBJECTIVES

Students will:

1. define **habitat** and give an example within Buffalo National River.
2. identify a key plant species from three, different **natural communities** found along the trail.
3. identify a representative animal species from three different natural communities found along the trail.
4. describe why the **Ozarks** are known as a **biological crossroads**.
5. describe the purpose of national parks in preserving habitat and why diversity is important in natural communities.

MATERIALS

- day packs
- drinking water

ACTIVITY

Be prepared to spend approximately an hour and fifteen minutes with a ranger hiking an easy to moderate trail.



CLASSROOM: POST-VISIT ACTIVITIES

Activity 3. Taking Responsibility (in an human community)

STATE STANDARD

Social Studies - Strand : Civics

Standard 5: Citizenship

Students shall develop an understanding of the rights and responsibilities of citizens.

OBJECTIVES

Students will:

1. list what they feel describes a responsible member of a **community**.
2. actively participate in their community.
3. explain how their accomplishments benefit the community.

MATERIALS

- paper
- pencil
- poster board

ACTIVITY

Have your students consider that they are members of a classroom community. There may be active and in-active members. Do some brainstorming as a group to define what this classroom community requires to function (leadership, organization, structure, etc.). Consider the basic needs (similar to Activity 1, Habitat Shuffle).

1. Divide the class into groups of 4 or 5 and have the students make a list of things they can do to make them responsible members of the classroom community. Have each group share their ideas with the class. After each group has shared, ask the whole class to refine these ideas and make a class list of no more than 10 items and post them on the chalkboard or poster board.
2. Mount this list in a prominent place in the classroom.
3. Encourage the students to personally consider their roles in the classroom community. As a student accomplishes an item, have the student sign their name on the poster board next to the item (more than one student name may be next to each item). After a period of time, come back to a discussion of this class list and allow the students to share how their accomplishments benefited the community.

4. For further discussion, ask the class to discuss how they as individuals are part of the greater natural community of the Ozarks. What personal actions will have a positive or negative impact on the community? List for impact.



KEY WORDS

Ozarks, habitat, species, biological crossroads, natural communities

RESOURCES

Hardaway, Billie Touchstone. 1991. *These Hills My Home*

Pitcaithley, Dwight T. 1978. *Let the River Be.*

Smith, Kenneth L. 1967. *The Buffalo River Country.* Little Rock, AR. Ozark Society.

A DAY BY THE BUFFALO

PLANNING YOUR TRIP

Prepare for a fun-filled day of learning in an outdoor classroom! The information below is designed to assist you in planning for a successful trip. Additional information included in this packet is for review with your students and chaperones.

Items to Bring:

Each student should have a labeled bag lunch including a drink. Extra water should be brought to drink during the day. Ask students to NOT bring radios or tape players. Please provide a tag for each participant (chaperones, too, please) with their name and group number on the tag. Masking tape marked with marking pens on the bus ride is quick and easy.

Appropriate Clothing:

Activities will take place almost exclusively outdoors, so students need to bring clothing that will keep them both warm and dry. All programs will involve some hiking. Students need to wear appropriate footwear for walking a mile or more on woodland trails. Extra shoes, socks, and a towel should be brought by students participating in the *At the Water's Edge* program.

Special Needs:

Please provide advance notification if a member of your class has any special needs such as wheelchair accessibility or visual assistance. Every effort will be made to accommodate such needs and provide a quality experience.

Cancellations:

Please notify the park staff as soon as possible if your group will not be able to attend.



Weather:

Programs will be held rain or shine unless weather conditions become extremely severe (i.e., flooding, lightning storms). High water could shift locations of some programs, which might necessitate a lengthier bus trip. Park staff will contact participating schools under these circumstances. Every effort will be made to reschedule your group if cancellation is required.

Protecting the Park
and Yourself:

Please review park rules with students prior to your visit. Ensure that chaperones are aware of their role by providing them with a copy of the enclosed page entitled Chaperone Responsibilities. Please assist us by maintaining class discipline throughout the visit, and we will do our best to make this a good learning experience for all.

CHAPERONE RESPONSIBILITIES

Park Rangers will assist with the group and offer instruction, but teachers and chaperones are responsible for maintaining class discipline. Please help us provide a quality experience for all by ensuring that students observe the following safety and regulatory information.

Your Safety:

- The ranger should remain in front of the group on trails, as some routes may bypass unsafe caves, mines shafts, or unfenced overlooks.
- Do not climb up bluffs or get too close to cliff edges. Go only where the ranger goes; gravity can be dangerous.
- Bring ample drinking water. Never drink untreated water from springs or rivers due to the potential presence of harmful organisms.
- Poison ivy and snakes are present and protected in the park. Never reach or step where you cannot see. Touch only what the ranger touches.
- Ticks and chiggers are hard to avoid anywhere in the Ozarks. Long pants and repellent help-- light colored clothes make it easier to spot and remove the critters.
- Sturdy shoes and proper clothing are a must to ensure a safe and comfortable out-of-doors experience.

Protecting the Park:

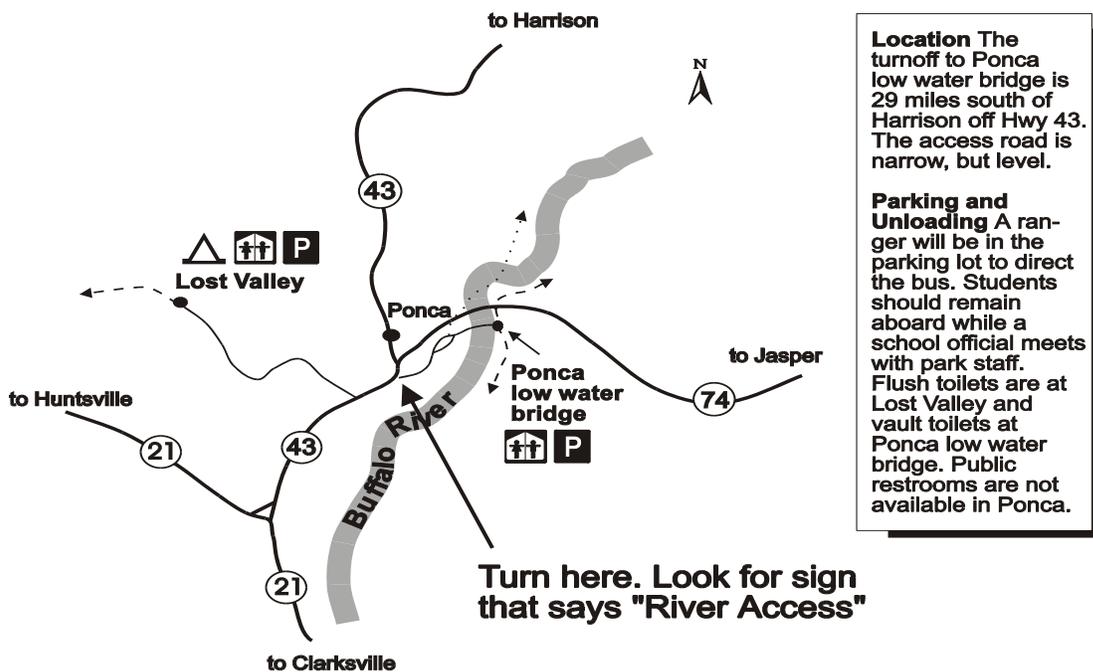
- Buffalo National River is part of the national park system. Plants, animals, rocks, historic sites, prehistoric sites are protected by law for all to enjoy. Collecting of anything is prohibited (except designated edibles for personal consumption).
- Littering is prohibited. Picking up after those less considerate is encouraged.
- Glass is prohibited within 50 feet of the river, its tributaries, and in caves. Bring drinks in plastic or aluminum containers.
- Stay on hiking trails. Avoid short cuts that create erosion and harm plants. If stepping off trail is unavoidable, don't trample lichens or delicate plants.
- Excessive noise lessens the likelihood of spotting wildlife. Have fun, but respect others.
- Trees have right, too. Never carve initials in bark, which increases likelihood of disease.
- Help protect your park by reporting violations to a park ranger.

A DAY BY THE BUFFALO

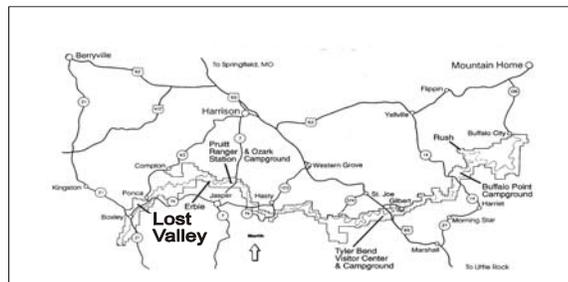
MEETING LOCATIONS

Use the following maps to help you get your class to the meeting location for your activity.

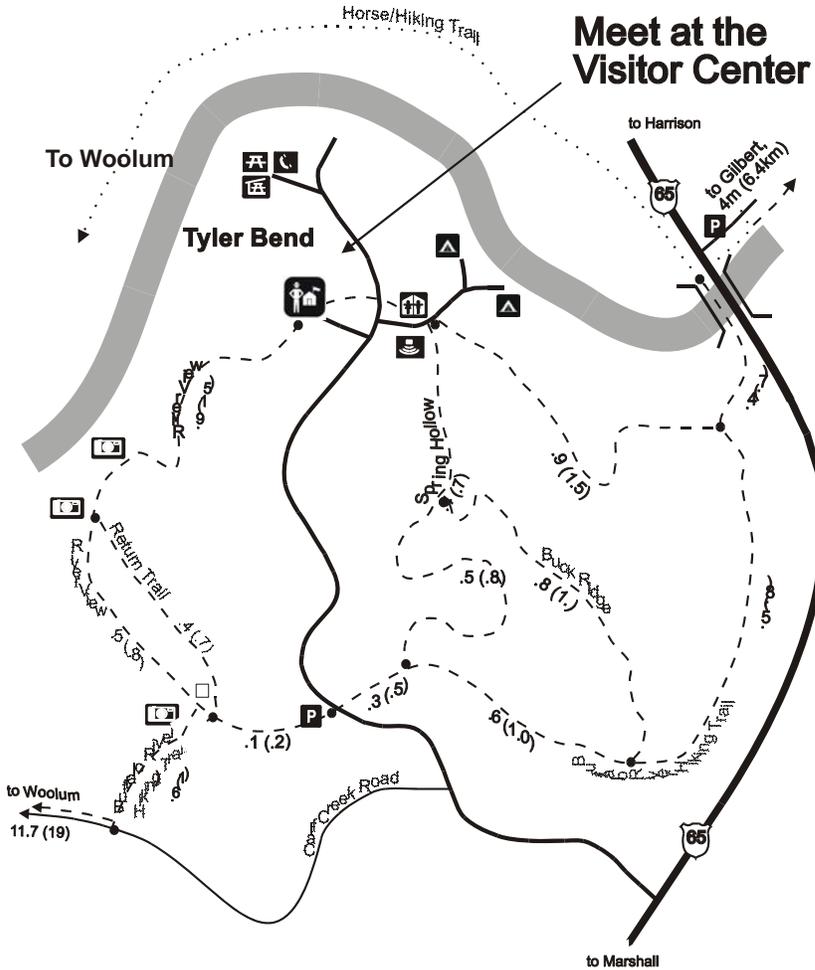
PONCA/ LOST VALLEY



- Paved state road
- Unpaved road
- Hiking trail
- Horse/Hiking trail
- Primitive campsite
- Restrooms
- Parking



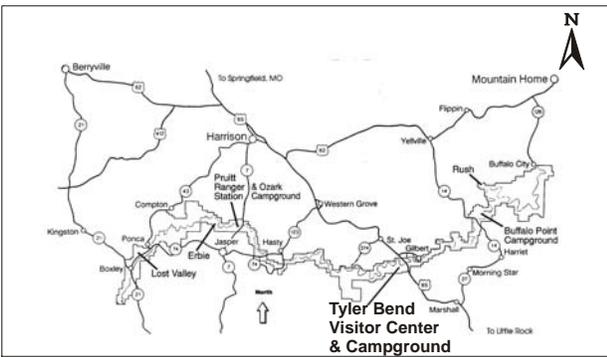
TYLER BEND



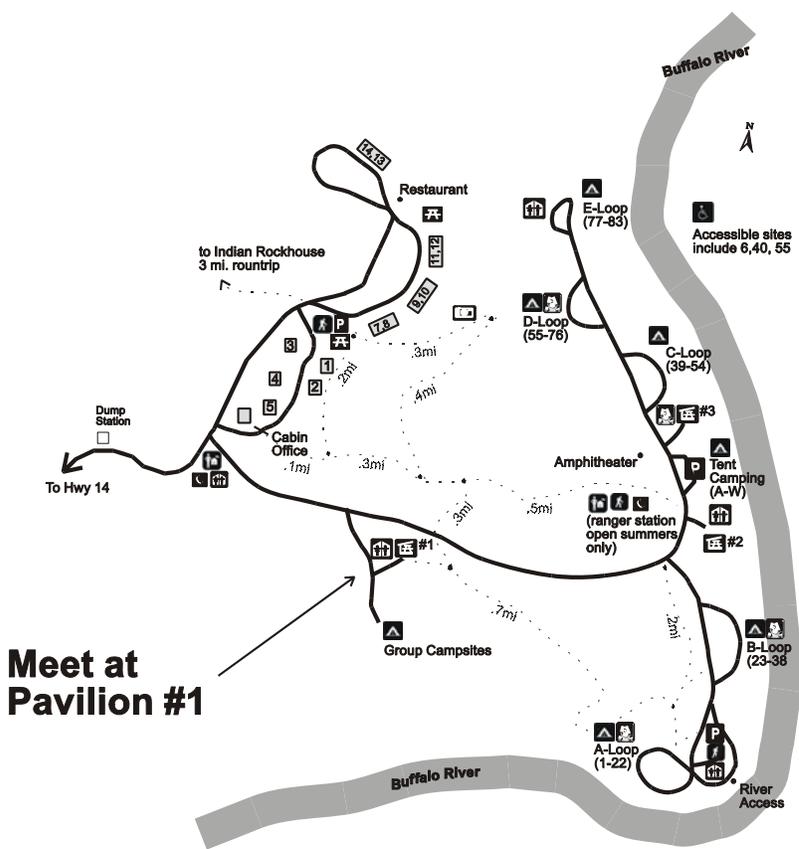
Location The turnoff to Tyler Bend is located 31 miles south of Harrison and nine miles north of Marshall on highway 65. The visitor center is located three miles down the Tyler Bend road.

Parking and Unloading Park in the visitor center parking lot. Students should remain on the bus, while a school official meets with a park ranger. Depending upon group size, the students may off load at the visitor center, or may proceed on to the amphitheater. Restrooms are available at the visitor center.

- | | | | |
|--|---|--|-------------------|
| | Paved State Road | | Visitor Center |
| | Paved county road | | Restrooms/Showers |
| | Unpaved road | | Campground |
| | Hiking Trail | | Pavilion |
| | Horse/Hiking Trail | | Picnic Area |
| | Trail Distances in miles and (kilometers) | | Amphitheater |
| | Scenic Overlook | | Parking |
| | Collier Homestead Historic Site | | Public Phone |



BUFFALO POINT

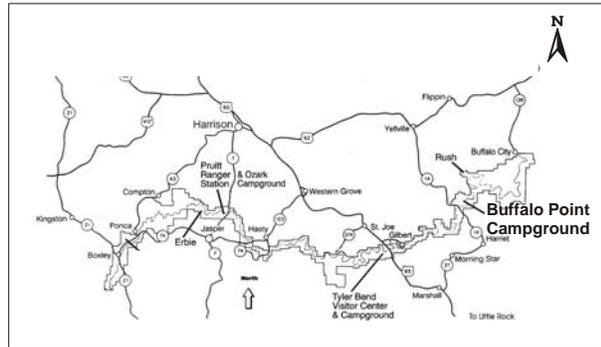


Location The turnoff to Buffalo Point is located on Hwy 14, fourteen miles south of Yellville. Turn left onto Arkansas Hwy 268 and continue to the Ranger Station. Turn right at the Ranger Station, heading towards the campground. Look for the sign for Pavilion #1, make the right hand turn and stop at the pavilion.

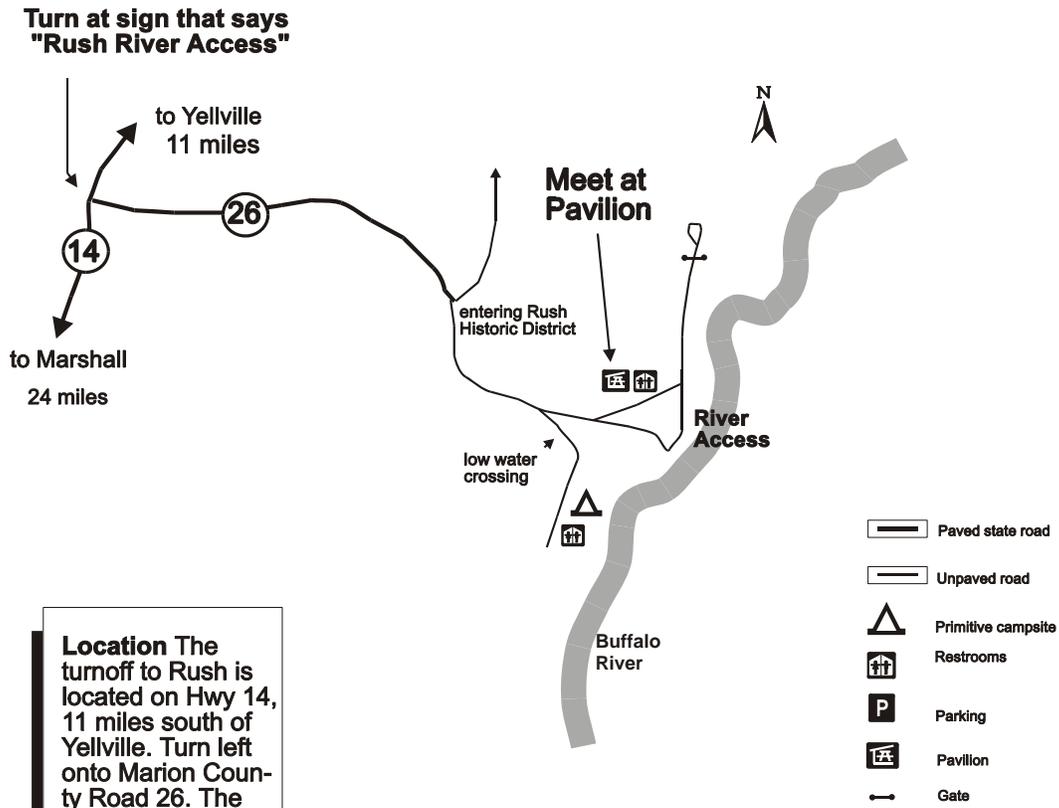
Parking and Unloading Park in the pavilion parking lot. Students should remain on the bus, while a school official meets with a park ranger. Restrooms are available at the pavilion.

Meet at Pavilion #1

- | | |
|-------------------|-------------------|
| Paved county road | Ranger Station |
| Hiking Trail | Restrooms/Showers |
| Trail Distances | Restrooms |
| Scenic Overlook | Campground |
| Cabins | Pavilion |
| | Picnic Area |
| | Parking |
| | Public Phone |

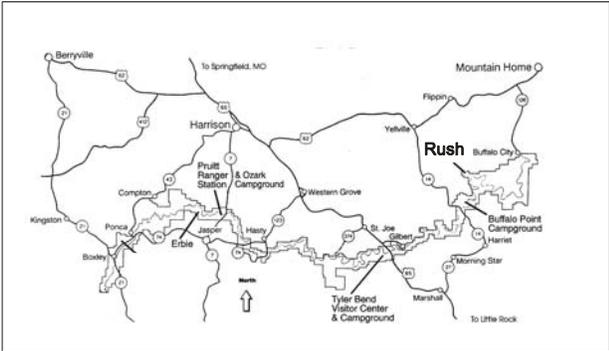


RUSH



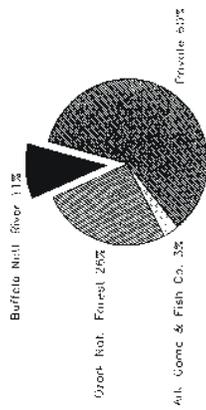
Location The turnout to Rush is located on Hwy 14, 11 miles south of Yellville. Turn left onto Marion County Road 26. The campground is located six miles down the road.

Parking and Unloading Meet at the pavilion. Students should remain on the bus while a school official meets with a park ranger. Restrooms are available at the pavilion.



A DAY BY THE BUFFALO

**Buffalo River Watershed
Land Ownership Status**



840,000 acres watershed

