

A Study Guide for the Six Main Natural Divisions of Arkansas



Ozark Mountains

Arkansas Valley

Ouachita Mountains

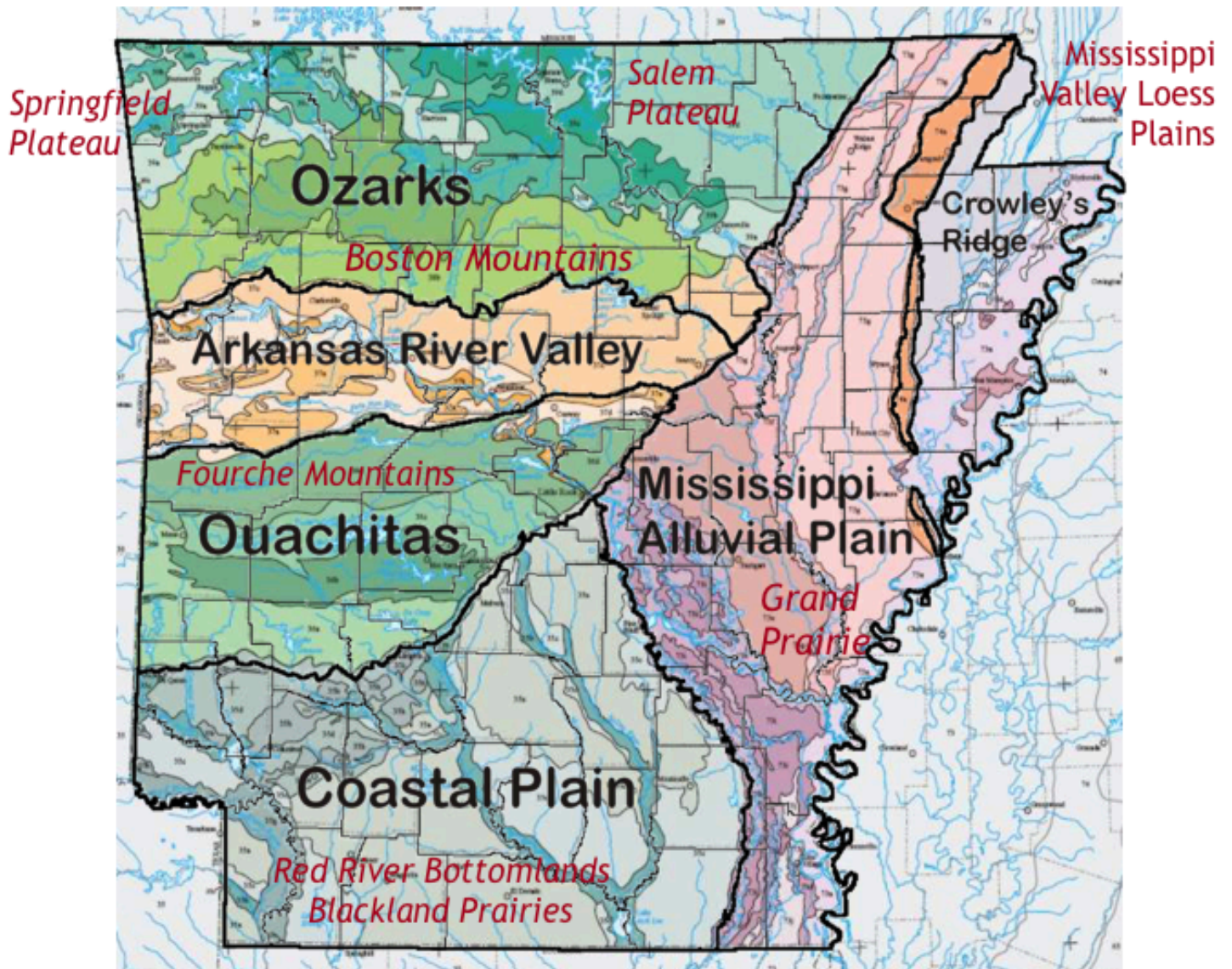
Coastal Plain

Mississippi Alluvial Plain

Crowley's Ridge

The study of Arkansas's natural divisions is multi-disciplinary, combining biology, geology, natural history, and social studies. This guide highlights major components and unique characteristics of each natural division, and it provides resources for further learning. Words in bold type can be found in the Glossary of Terms.

This document is used in conjunction with the Arkansas Natural Heritage Commission's educational program "Arkansas Ecoregions." For more information or to schedule a program, contact Leslie Patrick, leslie.patrick@arkansas.gov.



A natural division or ecoregion (ecological region) is a geographical area occupied by a distinctive ecosystem. An ecosystem can be defined as an environment made up of interrelated living and non-living components.

The six main ecoregions of Arkansas are labeled in black in the map above. These can be further divided into smaller ecoregions, a few of which are labeled in red. Ecoregions are not bound by state boundary lines, and most extend into adjoining states. The U.S. Environmental Protection Agency has ecoregion maps for all of North America available for viewing and downloading at www.epa.gov/eco-research/ecoregions.

Ecoregions of Arkansas

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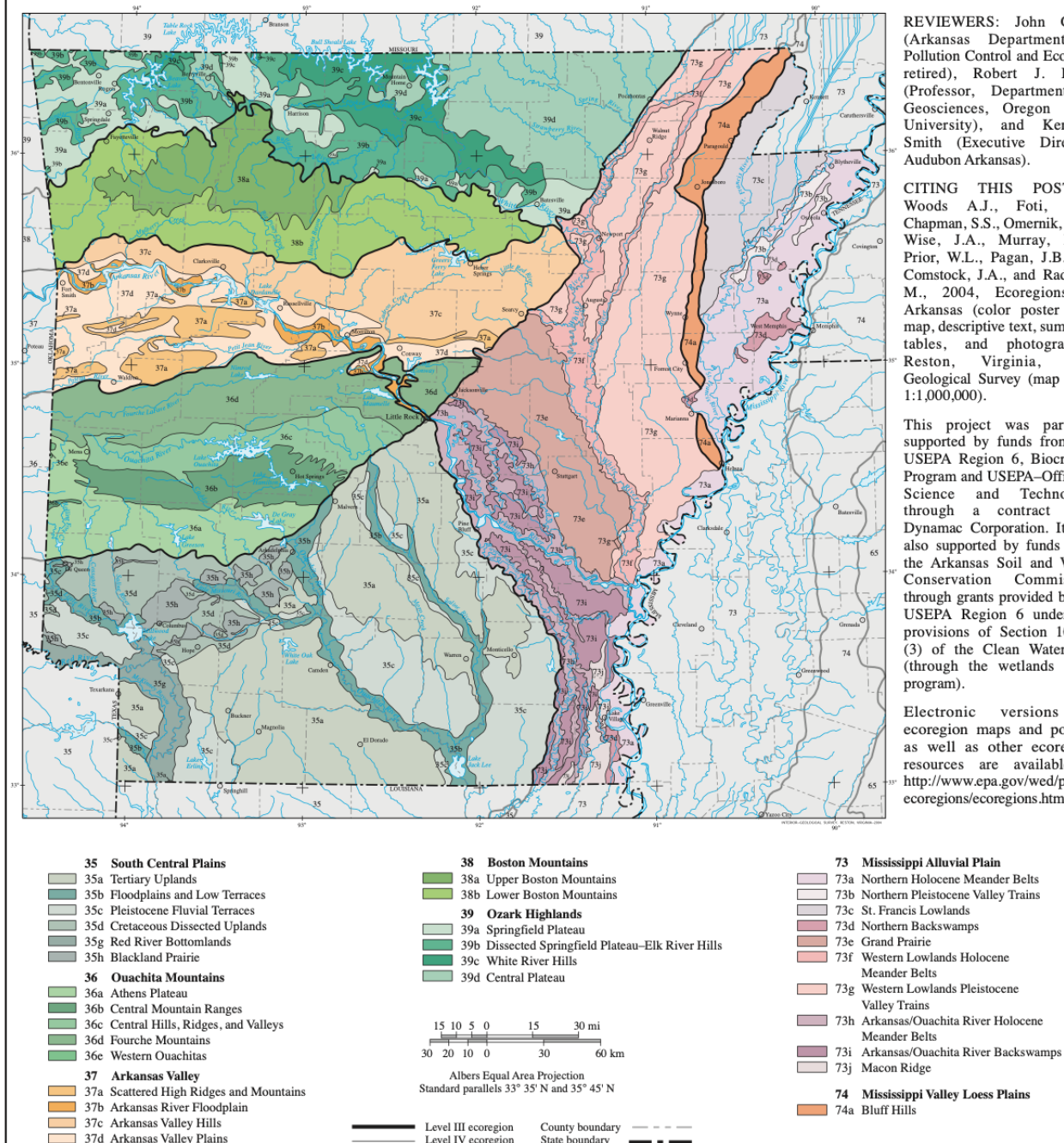
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Electronic versions of ecoregion maps and posters as well as other ecoregion resources are available at <http://www.epa.gov/wed/pages/ecoregions/ecoregions.htm>.



Levels III and IV Ecoregions of Arkansas, available at www.epa.gov/eeco-research/ecoregion-download-files-state-region-6#pane-03

Six Major Components of an Ecoregion

GEOLOGY: landforms, geologic history, rock type

CLIMATE: temperature, precipitation, winds

SOIL: type, formation

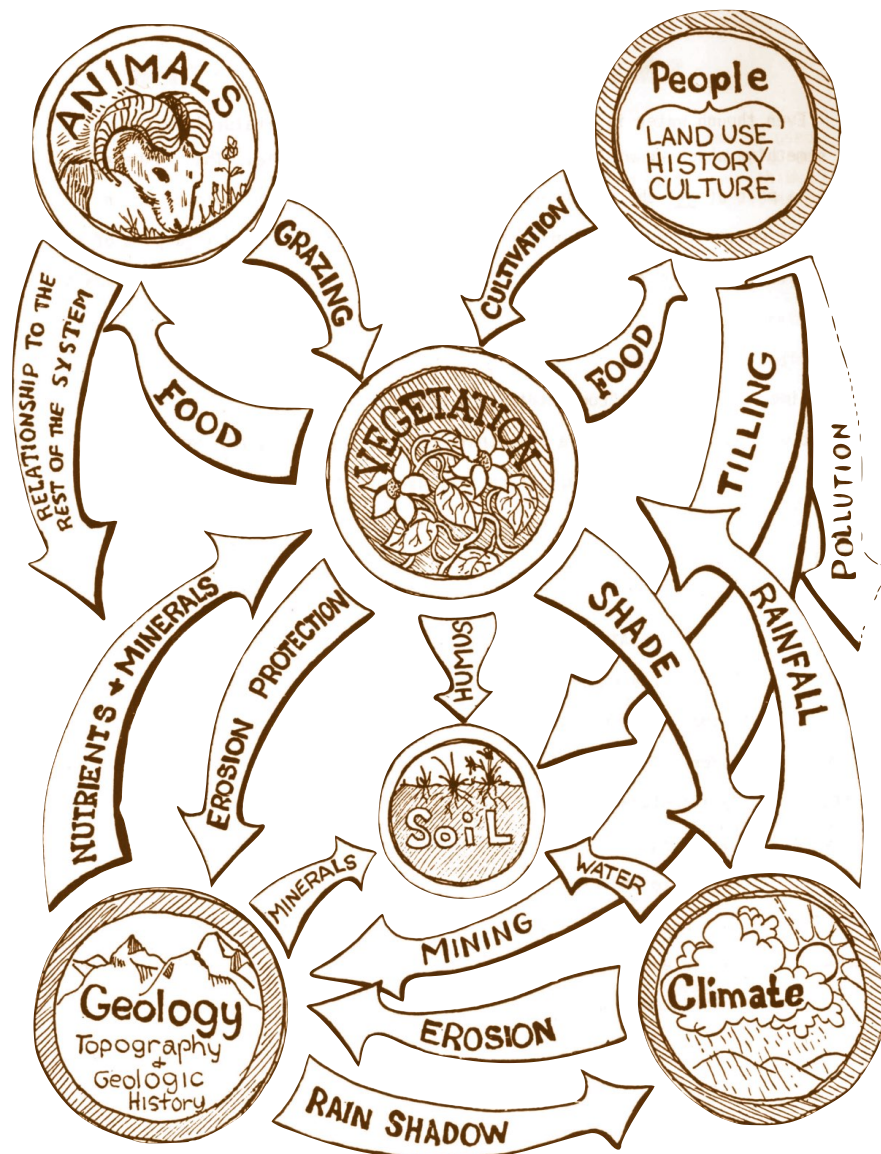
PLANTS: flora, plant communities, vegetative cover

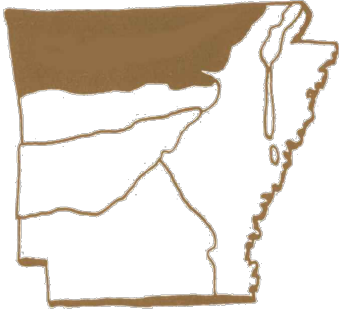
ANIMALS: fauna, animal communities

PEOPLE: land use, culture, history

Relationships Between the Components

Every place on the earth has a distinctive **geology** and **climate**; these are the two basic components of any ecosystem. The following diagram shows some of the ways that these components relate to each other:



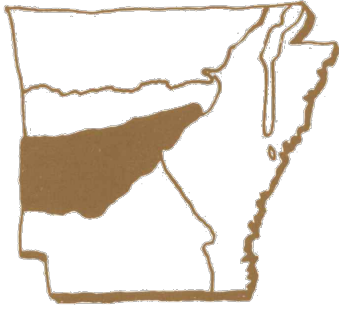


Ozark Mountains

(Boston Mountains, Springfield Plateau, Salem Plateau)

- **Topography:** flat-topped mountains, remnants of eroded **plateaus**, steep valleys
- Part of the U.S. Interior Highlands, the most extensive **highland** region between the Appalachian and the Rocky Mountains
- **Geology:** horizontal layers of sedimentary rock deposited by ancient shallow seas; primarily limestone, dolostone, sandstone, shale, chert
- **Karst systems:** Support cave ecosystems with rare and endangered species, such as the Ozark big-eared bat (*Corynorhinus townsendii ingens*)
- **Ecosystems:** upland hardwood forests dominated by oak and hickory; glades with thin soils and exposed bedrock; tallgrass prairie remnants dominated by native grasses and wildflowers with few trees
- **Past cultures:** Osage Indians, one of three main American Indian tribes (Osage, Quapaw, and Caddo) known to have occupied Arkansas at the time of European exploration
- **Buffalo National River:** the first national river, established 1972
- **Present culture and land use:** large metropolitan areas, corporation centers, outdoor recreation, retirement communities

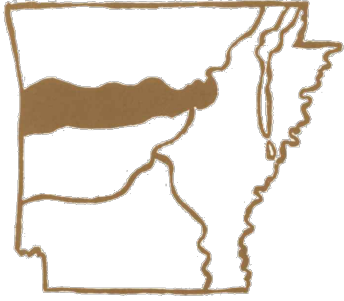
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Ouachita Mountains

- Topography: long mountain ridges running generally east-west with narrow to broad valleys in between
- Part of the U.S. Interior Highlands, the most extensive highland region between the Appalachian and the Rocky Mountains
- Geology: **folded, faulted** rock caused by tectonic plate collision; primarily shales, sandstone, **novaculite**, chert
- Ecosystems: primarily pine forests on the warmer, drier, south-facing mountain slopes; primarily hardwood forests on the cooler, moister, north-facing mountain slopes
- Biodiversity hotspot: many rare and **endemic** plants, such as Ouachita goldenrod (*Solidago ouachitensis*), and animals, such as the Ouachita Dusky Salamander (*Desmognathus brimleyorum*)
- Minerals and gemstones: quartz, diamond, amethyst
- Past cultures: Caddo Indians; Arkansas Archeological Survey has documented over 120 aboriginal novaculite quarries
- Hot Springs National Park: established 1921, set aside by the federal government as the Hot Springs Reservation in 1832
- Ouachita National Forest: the South's oldest national forest, established 1907
- Present culture and land use: tourism, quartz and novaculite mining, outdoor recreation, retirement communities

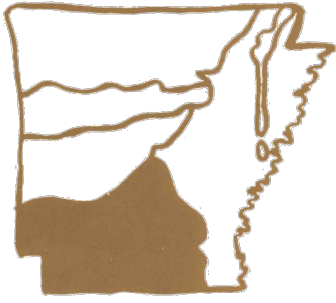
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Arkansas Valley

- Topography: the Arkansas River, **floodplains**, valley hills, scattered ridges and mountains; between the Ozark and Ouachita Mountains
- Geology: flat-topped mountains (typical of the Ozarks), folded ridges (similar to the Ouachitas), and isolated **mesas** capped with sandstone, underlain by shale
- Well-known mesas: Mt. Magazine, the highest point in Arkansas and the U.S. Interior Highlands; Petit Jean Mountain; Mt. Nebo
- Ecosystems: **upland hardwood** and pine forests; **tallgrass prairie** remnants of the Cherokee Prairie Complex that formerly covered approximately 135,000 acres of the western Arkansas Valley
- Past cultures: Bluff shelters contain rock art - pictographs (painted images) and petroglyphs (carved images) - created by ancient American Indian cultures
- Historical transportation corridor: Butterfield Overland Mail stagecoach route, military roads, and part of the Trail of Tears
- Historical settlements along the Arkansas River: Little Rock, Conway, Russellville, Dardanelle, Fort Smith
- Present-day transportation corridor: McClellan-Kerr Arkansas River Navigation System, Interstate-40, railroads, pipelines, power lines
- Important migratory bird corridor, **flyway**

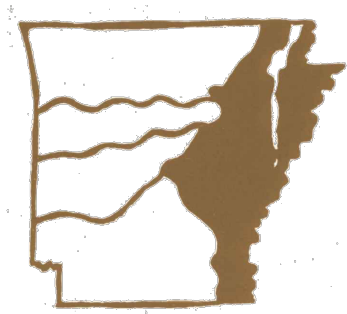
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Coastal Plain

- Topography: gently rolling **lowlands**, once covered by an ancient ocean (now the Gulf of Mexico)
- Geology: sediments of sand, silt, gravel, and clay; rocks of chalk, limestone, and **marl**
- Ecosystems: mosaic of **pine flatwoods**, **palmetto savannas**, **saline barrens**, **salt slicks**, **bottomland hardwood forests**
- Blackland ecosystems: prairies, savannas, and woodlands with black soil overlaying white chalk
- Many rare and endangered species, including the Red-cockaded Woodpecker (*Dryobates borealis*) that inhabits open, mature pine flatwoods
- The White Cliffs: unique Annona chalk bluffs along the Little River, containing marine fossils
- Bayou Bartholomew: longest **bayou** in the world, over 350 meandering miles, transportation route to/from an otherwise landlocked area before railroads, straddles the Coastal Plain and the Mississippi Alluvial Plain
- Past cultures: Caddo and Quapaw Indians
- Present-day culture and land use: oil, gas, and bromine industries; clay mining; bauxite mining and aluminum refinery; timber

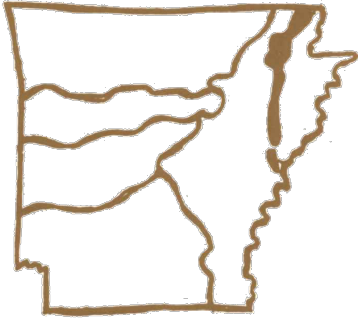
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Mississippi Alluvial Plain

- Topography: level lowlands, floodplains, wetlands
- Major rivers: Mississippi, Arkansas, White; the “Land of Rivers”
- Geology: deep, fertile alluvial (stream deposited) soil of sand, gravel, silt, and clay
- Ecosystems: bottomland hardwood forests, **bald cypress-water tupelo** swamps, **oxbow lakes**
- Lake Chicot: largest oxbow lake in North America, largest natural lake in Arkansas
- “The Big Woods”: along the White River and its **tributaries**, historical home to now-extinct birds such as the Ivory-billed Woodpecker, Carolina Parakeet, and Passenger Pigeon
- The Grand Prairie: historically 400,000 acres of tallgrass prairie, only approximately 600 acres remain today
- Past cultures: Quapaw Indians
- Historical land use: hunting and farming; Spanish and French trading post at Arkansas Post, established in 1686 by Henri de Tonti
- Present-day culture and land use: large-scale agriculture of primarily rice, soybeans, cotton
- Important migratory bird flyway across entire region
- Birding and duck hunting: economy boosters

Notes:



Crowley's Ridge

- Topography: narrow ridge, about 150 miles long, approximately 200 feet higher than the surrounding Mississippi Alluvial Plain
- Smallest natural division/ecoregion
- Geology: **loess soil**, ancient windblown deposits up to 50 feet thick, underlain by sand, clay and gravel; prone to **vertical erosion**
- Ecosystems: unique upland hardwood forest communities containing rare plant species that typically occur farther east and some that occur nowhere else in Arkansas naturally, such as the tulip poplar (*Liriodendron tulipifera*)
- Kudzu (*Pueraria montana*): non-native, highly invasive plant species, introduced to stabilize erosion-prone slopes of loess soil
- Settlement: eight county seats established on or near the ridge
- Namesake: Benjamin Crowley, veteran of War of 1812 and land-grantee who settled with his family on the ridge in 1821

Notes:

Glossary of Terms

- **Bald Cypress:** A large deciduous conifer (*Taxodium distichum*) with feathery foliage and a flared base often surrounded by “knees,” typically found in wetlands such as swamps, bayous, and lake margins
- **Bayou:** A very slow-moving body of water, usually found in flat areas, associated with the southeastern United States
- **Bottomland Hardwood Forests:** Forests in or near floodplains of rivers and streams, dominated by water-tolerant, deciduous trees such as bald cypress (*Taxodium distichum*) and water-tupelo (*Nyssa aquatica*)
- **Climate:** The average course or condition of the weather at a place usually over a period of years as exhibited by temperature, wind velocity, and precipitation
- **Endemic:** native and occurring only in a restricted area
- **Faulted:** Rock that is fractured and dislocated due to severe strain, associated with earthquakes
- **Floodplain:** Level land that may be submerged by floodwaters; or, a plain built up by stream deposition
- **Flyway:** An established air route of migratory birds
- **Folded:** Rock that is bent and deformed due to intense compressional force
- **Geology:** A science that deals with the history of the earth and its life, especially as recorded in rocks
- **Highland:** Elevated or mountainous land
- **Karst Systems:** Natural features, including caves, springs, disappearing streams, dry valleys, and sinkholes, produced on a land surface due to the chemical weathering or slow dissolving of rock such as limestone
- **Loess Soil:** Windblown soil or silt
- **Lowlands:** Low or level country
- **Marl:** A loose or crumbling earthy deposit (as of sand, silt, or clay) that contains a substantial amount of calcium carbonate; used in making cement and fertilizer
- **Mesa:** A wide, flat-topped mountain or hill with steep sides

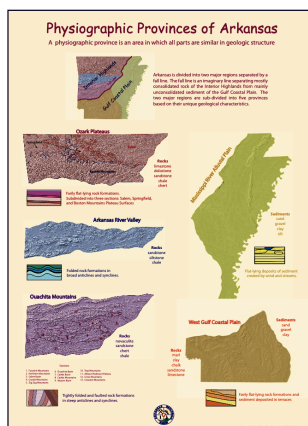
- **Novaculite:** A sedimentary rock that is dense, hard, white to grayish-black in color, translucent on thin edges, and has a dull to waxy luster. Arkansas novaculite is recognized worldwide for its use as whetstones and oilstones.
- **Oxbow Lake:** An oxbow lake starts out as a curve, or meander, in a river. A lake forms as the river finds a different, shorter, course.
- **Palmetto:** Any of several usually low-growing fan-leaved palms
- **Pine Flatwoods:** Low-lying, flat timberland; open-pine flatwoods are historically dominated by widely spaced, mature pines with some scattered hardwoods, with diverse prairie-like ground cover.
- **Plateaus:** extensive highland areas having a relatively level surface
- **Saline Barrens:** A saline-soil grassland community with thin soil that is naturally high in levels of sodium and magnesium salts overlying a dense clay layer. These soils are too toxic for most woody plant species.
- **Salt Slicks:** Areas in saline barrens that are so salty that they lack any plant cover
- **Savanna:** A habitat with at least 50 percent open grassland with scattered trees
- **Tributaries:** Streams feeding a larger stream or lake
- **Tallgrass Prairie:** Level to gently rolling land with rich topsoil, covered mostly by tall grasses growing up to 8 feet or more, along with many wildflowers and little to no shrubs and trees
- **Topography:** The arrangement of the natural and man-made physical features of an area, including the shape and elevation of the terrain
- **Upland Hardwood Forest:** Dry to moist forests with primarily deciduous trees such as oaks, hickories, maples, and ashes
- **Vertical Erosion:** Land eroded or worn away in a steep downwards direction
- **Water Tupelo:** A large deciduous tree (*Nyssa aquatica*) with glossy foliage and a flared base, typically found in wetlands such as swamps and bayous, and often growing with bald cypress

Additional Resources



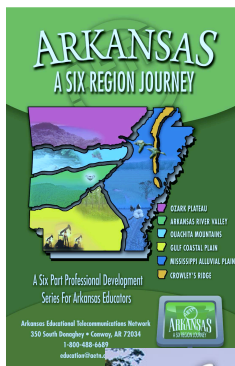
The Central Arkansas Library System's Encyclopedia of Arkansas is a free, authoritative source of information about the rich history, geography, and culture of Arkansas. Entries about each of Arkansas's six main natural divisions can be found here, along with photos, maps, lesson plans, and many more related articles.

encyclopediaofarkansas.net/entry-category/six-natural-divisions/



The Arkansas Geological Survey offers information and materials on the geology of each natural division, including a classroom poster on the physiographic provinces, aka natural divisions, of Arkansas.

geology.arkansas.gov/education/geology-resources.html



Arkansas PBS: "Arkansas: A Six Region Journey" is a six-part professional development series that includes videos and lesson plans on each of the state's six main natural divisions.

myarkansaspbs.org/programs/sixregionjourney

Arkansas PBS: "Bayou Bartholomew: World's Longest Bayou" is an award winning documentary on the history of the bayou. An educator's guide is also available.

myarkansaspbs.org/programs/bayoubartholomew

