

What is the Delta ?

**Delta Cultural Center Series
Lesson Plan #1
Grade Level 5-8**

LINKS TO THE ARKANSAS HISTORY GUIDELINES OF 1997:

1.1.7, 1.1.9, 1.1.12, 1.1.15, 2.1.7, 3.1.13, 4.1.5, 4.1.6, 4.1.7.

TIME FRAME: Four to five 50-minute classes, or on-going throughout the school year.

MATERIALS TO BE SUPPLIED BY TEACHER:

Map exercise- yarn (various colors), scissors (to be used under the supervision of teacher), colored paper

Portfolio- pen, pencils, colored paper, white paper

Reference book- *Arkansas and the Land*, Tom Foti and Gerald Hanson (Fayetteville: U of A Press, 1989)

MATERIALS SUPPLIED:

Arkansas Rivers Floor Map Exercise Instructions (Insert #1)

Anatomy of a River worksheet (Insert #2)

River Data Sheet (Insert #3)

Bottomland Forest Sketch Composite (Insert #4)

OPTIONAL MATERIALS TO BE OBTAINED BY TEACHER:

Shaded relief map of Arkansas (1:500,000)

United States Geological Survey
9720 North Rodney Parham Road
Little Rock, AR 72227
501-228-3200

Classroom set of highway maps (free)
Arkansas Highway and Transportation Department
P.O. Box 2261
Little Rock, AR 72203
501-569-2000

Overlay of Mississippi River (free) (shown at right)
Department of Arkansas Heritage
Attn: Education Coordinator
1500 Tower Building, 323 Center Street
Little Rock, AR 72201
501-324-9150



What is the Delta? _____

LESSON OBJECTIVES:

1. Identify the major bodies of water in the Delta.
2. Identify the two major landforms of the Delta (floodplain and Crowley's Ridge).
3. Describe how the Delta is formed.
4. Compare and contrast how the natural vegetation of the Delta has changed over time.

GEOGRAPHY VOCABULARY:

1. Floodplain- Flat land feature that frequently floods.
2. Crowley's Ridge- Elevated land feature running from Northeast Arkansas south to Helena. It is made up of loess.
3. Swamp- Poorly drained area that contains a wide variety of trees and animals.
4. Backswamp- Poorly drained areas between natural levees and floodplains.
5. Oxbow Lake- A curved bend of a former river that has cut off from the river. Example: Lake Chicot and Horseshoe Bend Lake.
6. Natural Levee- Slightly elevated ridge that runs along a river's edge.
7. Loess (pronounced "luss")- Wind-blown material deposited on the ground by wind.
8. Bottomland Hardwood Forest- Contains both evergreen and deciduous trees.
9. River- Naturally flowing body of water.
10. Watershed- Area drained by the river and its tributaries.
11. Headwater- Starting point for rivers.
12. Mouth- Site where river empties into a larger body of water.
13. Delta- Material deposited at the mouth of the river.
14. Meander- Looping of a river back and forth across a floodplain.



Composite river sketch

What is the Delta? _____

TEACHING THE LESSON:

1. The teacher will brainstorm with the students on the following question, "What is the Delta?" Students will be asked to describe and write down their perceptions of the Delta on a piece of paper.

2. The teacher will use background information provided to give supporting information on the physical geography of the Delta. This can be in the form of a handout or through lecture (one class period).

3. The teacher will introduce the hands-on activity, "The Delta Floor Map," to students. Using the attached "Delta Floor Map" exercise, the teacher will explain the objectives of the project and what the students hope to accomplish.



The students will work in **cooperative learning groups (CLGs)** to outline the state of Arkansas in yarn. They will identify and label Crowley's Ridge, the Delta floodplain and major rivers of the region on the map. Students will also make a map legend (one class period).

4. Brainstorm with students on how a bottomland forest looks in the Delta during the various seasons. Ask students to write down their perceptions of what each season in the forest would be like.

5. The teacher will then use the bottomland hardwood forest composite sketches supplied in this lesson to build images of the forest. Additional photographs and pictures will help students to draw their images of the forest (these may be taken by the teacher/students or obtained through various agencies, such as the Arkansas Natural Heritage Commission, the Arkansas Game and Fish Commission and the National Wildlife Refuge in your area). (one class period)

6. Create a classroom or individual portfolio and have students chart the vegetation changes of Delta plants throughout the school year (school year activity).



7. Have students read excerpts from early Arkansas explorers and settlers from your textbook. Have students write down what they think a Delta landscape looked like in 1800, including animals and vegetation. Ask students to compare their perceptions of the Delta landscape now and in 1800. Ask what accounts for the differences between the two viewpoints.

8. End exercise: Have students re-evaluate their perceptions of the physical geography of the Delta and report the differences to their fellow classmates (one class period).

What is the Delta?

BACKGROUND INFORMATION:

DR. GERALD HANSON GEOGRAPHY DEPARTMENT, UNIVERSITY OF ARKANSAS AT LITTLE ROCK

The Delta is a region in eastern Arkansas that was created, sculptured and defined by rivers. Water is in constant motion across this vast area as gravity carries the water into the region and out of the region. The Delta's rivers wander (**meander**) all over the landscape creating an area of slow moving, lazily tracking streams. Water is only present at the surface in the Delta, but it is also ever present below the surface in the form of **groundwater**. This groundwater is critically important to the Delta's agriculture.



The Delta was formed by rivers carrying sediments like sand, silt and clay from the northern half of the United States. Rivers such as the Mississippi, the Missouri and the Ohio and all their tributaries eroded away rock and soil that was carried southward. Eventually these sediments were dropped (deposited) by the rivers onto the area known as the Mississippi Alluvial Plain. The Plain became known as the Delta region. As the river's velocity (speed) slowed down because the **gradient** (slope) leveled out in eastern Arkansas, the sediments were deposited and began to pile up, layer upon layer. The heavy sediments began to sink and the Delta grew in extent.

There are many parts to the Delta's physical landscape. The rivers and streams comprise one part of the Delta. Alongside each stream there is also a **natural levee** that acts as a natural fence or barrier to the stream in normal water times. A distance from the natural levees are the back swamps that represent low-lying land that frequently floods. **Oxbow lakes** are also a part of the Delta landscape. These lakes are old cutoff sections of streams and rivers. The cutoff sections were once loops and bends in the rivers. Over time these loops got cut off as the rivers changed course. If the oxbow lake does not get water in it from the river, it eventually starts to dry up and forms a **meander scar**.

The soils of the Delta are very rich because the sediments deposited in the Delta are full of **nutrients** (minerals and plant "vitamins") that help plants grow. These soils are often called **alluvial** soils, and are very important to agriculture in the Delta.

Within the Delta there exists another major landform besides the Mississippi Alluvial Plain. This landform is called **Crowley's Ridge** and extends from northeast Arkansas southward to Helena. The Ridge formed from the depositing of a material called **loess**. Loess is very fine, brown soil that was picked up by the winds coming off the Great Plains region thousands of years ago. The loess was deposited to a thickness of 250-400 feet over the Delta. Over time however, the major rivers that ran through the area began to erode the edges of the loess. The Mississippi and Ohio Rivers once ran southward through the Delta. The Ohio ran in what is today the bed of the Mississippi River. The Mississippi River ran further west alongside the edge of the Ozarks Plateau. Together these two rivers all but eroded away Crowley's Ridge and all that remains today is a narrow leftover landform.

Covering the Delta was a diverse vegetation system comprised of bottomland hardwood forests. The hardwood forests thrived in standing water and poorly drained land. Because this was a floodplain and water drained off slowly, these forests were well suited to rapid growth. The bottomland hardwood forests, often called swamps, were rich in different tree species. This rich forest also supported a diverse animal population. Today, much of this bottomland hardwood forest has been replaced by agriculture. The rich soils, water resources and flat land strongly support farming. The Delta landscape has changed and is changing with time.

What is the Delta? _____

EVALUATING THE LESSON:

1. Have students complete the word search, fill in the blank and Arkansas River Data Sheet as an independent practice. Grade accordingly.
2. Create an objective test where students identify on a blank map of Arkansas the major rivers (St. Francis, Mississippi, Arkansas, White, L'Anguille) of the Delta, match terms and describe season changes.
3. Offer subjective evaluation where students explain their definition of the Delta before and after their unit of study on the region. Using the rubrics, have students write a minimum of one paragraph and grade using 0 to 3 scale:

0 - Student does not write any physical perception of the Delta.

1 - Student writes about one or two perceptions of the Delta.

2 - Student writes about both physical and cultural perception and compares his/her perception of before and after the lesson plan.

3 - Student writes about landform perceptions of the Delta, as well as water resources and vegetation systems. Student compares his/her perceptions of the Delta before and after the lesson.

EXTENSION ACTIVITIES:

Visit the Delta Cultural Center in Helena to learn more about the geography of the Arkansas Delta.

Visit the following state parks and natural areas to learn more about the geography of the Arkansas Delta:

Crowley's Ridge
Post Office Box 97
Walcott, AR 72936
(870) 573-6751

Louisiana Purchase State Park
Highway 49 South
(Bottomland hardwood forest)

Pine City Natural Area
Pine City, AR
(Red cockaded woodpecker)



Roth Prairie Natural Area
Stuttgart, AR
(Tall grass prairie)

Striplin Woods
Located within the White River National Refuge
DeWitt, AR
(Bottomland hardwood forest)

Village Creek State Park
201 CR 754
Wynne, AR 72396
(870) 238-9406

What is the Delta? _____

ADDITIONAL

Delta Cultural Center
95 Missouri Street
P.O. Box 509
Helena, AR 72342
(870) 338-4350

Arkansas Natural Heritage Commission
1400 Tower Building, 323 Center Street
Little Rock, AR 72201
(501) 324-9619

Department of Arkansas Heritage
1500 Tower Building, 323 Center Street
Little Rock, AR 72201
(501) 324-9150



RESOURCES

White River National Refuge
U.S. Wildlife Service
321 West 7th Street
DeWitt, AR 72042
(870) 946-1468

Arkansas Geology Commission
3815 West Roosevelt
Little Rock, AR 72204
(501) 296-1877

Arkansas Geographic Alliance
University of Arkansas at Little Rock
Stabler Hall 603 - H
Little Rock, AR 72204

This lesson was written by the following teachers of the Helena-West Helena School District, Helena, Arkansas: Monica Davis, Pamela Gilmore, Eloise Hopkins, Edward Joshaway, Earnestine Statyon and Constance Watson. Thanks to Nashid Madyun of the Helena-West Helena School District.

This lesson was edited by Dr. Gerald Hanson of the UALR Geography Department and the Arkansas Geographic Alliance; Jane Jones-Schulz, Education and Communications Coordinator, Arkansas Natural Heritage Commission; Lea Flowers Baker, Education Coordinator, Department of Arkansas Heritage and Melissa Whitfield, Communications Director, Department of Arkansas Heritage. Layout by Melanie Dickens, Communications and Education, Department of Arkansas Heritage. Transcription by Cora Grimes.

This lesson is made possible by the Delta Cultural Center, a museum of the Department of Arkansas Heritage, the Helena-West Helena School District and the Arkansas Natural and Cultural Resources Council.



Arkansas Rivers Floor Map

(Adapted from a lesson by Anne Linn, Arkadelphia, AR)

TEACHING LEVEL: Grades 4-12

GOALS: This lesson focuses on constructing a floor map of Arkansas rivers. This hands-on activity teaches students how to construct a map using symbols and labels. It also reinforces the concepts of movement and region as geographic themes. Arkansas' rivers attracted settlement as they grew up along the rivers in 19th and 20th centuries. This settlement pattern reflects the river's role in shaping the Arkansas landscape.

CONNECTIONS WITH THE CURRICULUM: Social Studies, Geography, Science

ARKANSAS HISTORY GUIDELINES OF 1997: 1.1.7., 1.1.9., 1.1.12., 1.1.15., 2.1.4., 2.1.7., 4.1.5.

SOCIAL STUDIES/ARKANSAS HISTORY- INTERDEPENDENCE: Students will understand how people, cultures and systems are interrelated.

SCIENCE- EARTH/SPACE SYSTEMS: The student will explore, demonstrate, communicate, apply and evaluate knowledge of the properties of Earth/space systems.

GEOGRAPHY STANDARDS:

1. SEEING THE WORLD IN SPATIAL TERMS- The student will use maps and other geographic representations to acquire, process and report information.

2. PLACES AND REGIONS- The student will understand the physical and human characteristics of a place.

3. PHYSICAL SYSTEMS- The student will understand the physical processes that shape that Earth's surface.

4. GEOGRAPHY THEMES- Place, Movement, Region

RESOURCES SUPPLIED BY TEACHER FOR THIS LESSON:

- Crepe paper streamers or yarn (blue & one other color)
- Paper or cards for places names
- Markers to identify cities
- Paper or bags or other paper for mountains
- Scissors, tape, colored makers
- Arkansas wall map or Arkansas highway map
- Instruction cards with lists of information to be located
- Arkansas atlas and other reference materials on Arkansas

STUDENT OBJECTIVES:

STUDENTS WILL BE ABLE TO:

1. Name and locate the major rivers in Arkansas
2. Name and locate major towns on these rivers
3. Name and locate the six natural regions of Arkansas

PROCEDURE:

1. INTRODUCING THE LESSON- Using maps and/or overhead projectors, offer the students the information on relative location, regions, rivers and rivertowns of Arkansas. Point out that every place has an exact location as well as a relative location, and that physical and cultural features of a region are often influenced by location.

2. DEVELOPING THE LESSON- Divide the students into five groups. Give each group an instruction card with one of the following assignments:

- a. Use yarn or streamers to lay out the outline of the state of Arkansas on the floor. Make it as large as possible with the space you have and materials will allow. Write the latitude and longitude coordinates on the card for the four corners of the state. **NOTE:** This activity can also be done on large sheets of butcher paper taped together.
- b. Use cards to label the surrounding states. Place cards in appropriate places.
- c. Make name cards for the major rivers of Arkansas including the Mississippi, Arkansas, White, Red, Ouachita, Saline, St. Francis and any other smaller rivers. Use blue yarn to mark the rivers.
- d. Write names of Arkansas river towns on cards and place these cards in the appropriate location on the correct river in Arkansas.
- e. Write the six natural regions of Arkansas on cards and have the group place these cards in the appropriate location on the map.

CLOSING THE LESSON- Have students prepare their materials, then place them on the map, taking turns as necessary. Have each group explain their information. Wrap up the lesson by reviewing the whole map and talking about how each feature is important to the whole of Arkansas. Have students also discuss how the natural features and landforms have helped to determine where cities are located. Also have students discuss how the economics of Arkansas have been affected by the rivers.

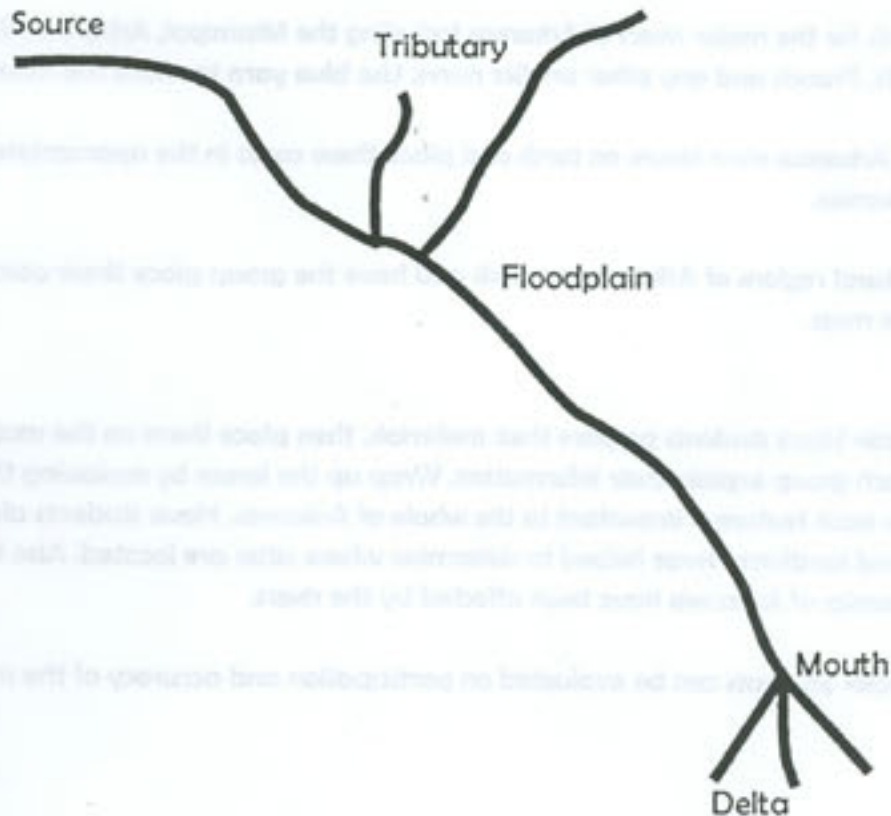
ASSESSING THE LESSON- Students can be evaluated on participation and accuracy of the map, as well as creativity.

NAME: _____

Anatomy of a River

Fill in the correct word from the chart.

1. _____ Where a river begins.
2. _____ Where a river flows into a larger body of water.
3. _____ A smaller river flows into a larger river.
4. _____ Flat land on either side of the river.
5. _____ A triangle shaped area of flat land formed by deposition of sediments at the mouth of a river.



INSERT #2

**Arkansas' Rivers
Some Important Facts**

1. Name of the river system _____

2. Source of the river (state and county) _____

3. Direction that the river runs _____

4. Counties that the river runs through _____

5. Part of the state in which the river runs _____

6. Major towns which the river runs through _____

7. Does the river system have any dams on it? _____

8. How many dams are on this river system? _____

NAME _____

River Data Sheet

River System _____

Continent _____

Length _____

Direction of Flow _____

Source _____

Mouth _____

Tributaries _____

Type of Terrain _____

Counties it Flows Through _____

Major Cities/Towns/Communities _____

Manmade Changes _____

Uses of River _____

Problems _____

Who Lives in Them?

Bottomland Hardwood Forest
(Composite Sketch Guide)

by the
Arkansas Natural Heritage Commission

Delta Cultural Center
Lesson Plan #1

Mink ~ Occurs along rivers, creeks, lakes, and marshes. Preys upon muskrats, turtles and birds.

Wood Duck ~ A year-round resident of Arkansas' wooded swamps and sloughs, nests in cavities of large trees.

Overcup Oak ~ Commonly found in wetland forests, this tree produces large acorns eaten by a variety of wildlife.

Pileated Woodpecker ~ Arkansas' largest woodpecker. Constructs nest cavities in large, dead trees.

Barred Owl ~ A resident of flooded forests, this owl feeds on rodents, birds and crayfish.

Prothonotary Warbler ~ A summer visitor to Arkansas' forested wetlands. Nests in tree cavities in forested areas subject to flooding.

Great Blue Heron ~ Often seen standing in wet places, this heron feeds upon frogs, fish and small mammals.

Black Bear ~ Though not found here, the black bear has enjoyed a resurgence in the bottomland hardwood forests at the White River National Wildlife Refuge.

Cottonmouth ~ Also known as the water moccasin, this venomous snake is found in wet areas ranging from flooded woods to roadside ditches. It will leave you alone if you leave it alone.

American Lotus ~ A member of the water lily family, American lotus can be found along swamps, ponds and ditches. Indians ate the roots, shoots and seeds of this plant

Bald Cypress ~ A common tree in wet areas. These trees produce wide, buttressed bases that provide support in the soft soil.

