AN ENVIRONMENTAL HISTORY OF THE ILLINOIS RIVER BASIN IN EASTERN OKLAHOMA AND NORTHWEST ARKANSAS

By

ROBERT EDWARD KRAUSE, JR.

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Scope and Method of Study: The purpose of this study is to examine the environmental history of the Illinois River watershed and basin in northeastern Oklahoma and northwest Arkansas, 1818-Present. Chapter one provides an introduction to the Illinois River and examines the historiography of scholarly and historical writing on the watershed region. Chapter two presents information on landforms and resource use in the watershed from 1818 to 1907. Chapter three deals with land-use and resource exploitation in the Illinois basin from 1907 through the contemporary period. The final chapter of this report investigates the history of preservation, conservation, and environmental protection and advocacy in the Illinois watershed.

Findings and Conclusions: Accounts of early expeditions show that the Illinois River region was a diverse area in terms of ecosystems and land use. With the settlement of northwest Arkansas and Indian Territory by 1830, a subsistence-based agricultural society was developed through the mid 1800s and the Civil War. The aftereffects of the Civil War hindered development in the area until the emergence of cattle trails and railheads through Indian Territory and western Arkansas in the 1870s. Around the turn of the century, increased settlement and agricultural industrialization in the eastern half of the basin created a divergence in resource utilization between the two areas. Rapidly industrializing farmers in the northwest Arkansas Illinois River basin reaped the benefits of New Deal legislation and rural electrification programs in the 1930s, and poultry production became the most prevalent form of agriculture in the basin. Meanwhile, agricultural pursuits in the Oklahoma Illinois River basin remained non-industrial and sustainable in practice. When the Illinois River was designated as a state supported “Wild and Scenic River” in 1977, it was determined that pollution from poultry operations in Arkansas posed the primary threat to water quality in the river basin. For the last three decades, human impact on the Illinois River has grown with increasing recreation in the basin. Along with the enforcement of water quality standards at the Arkansas-Oklahoma state line, environmental awareness, education, and protection are all necessary to ensure the future integrity of the Illinois River basin.

ADVISER’S APPROVAL: _____

AN ENVIRONMENTAL HISTORY OF THE ILLINOIS

RIVER BASIN OF OKLAHOMA AND ARKANSAS

Thesis Approved:

Dr. Michael Logan

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Thesis Advisor

Dr. James Huston

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Dr. Ronald Petrin

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Dr. A. Gordon Emslie

_____

Dean of the Graduate College

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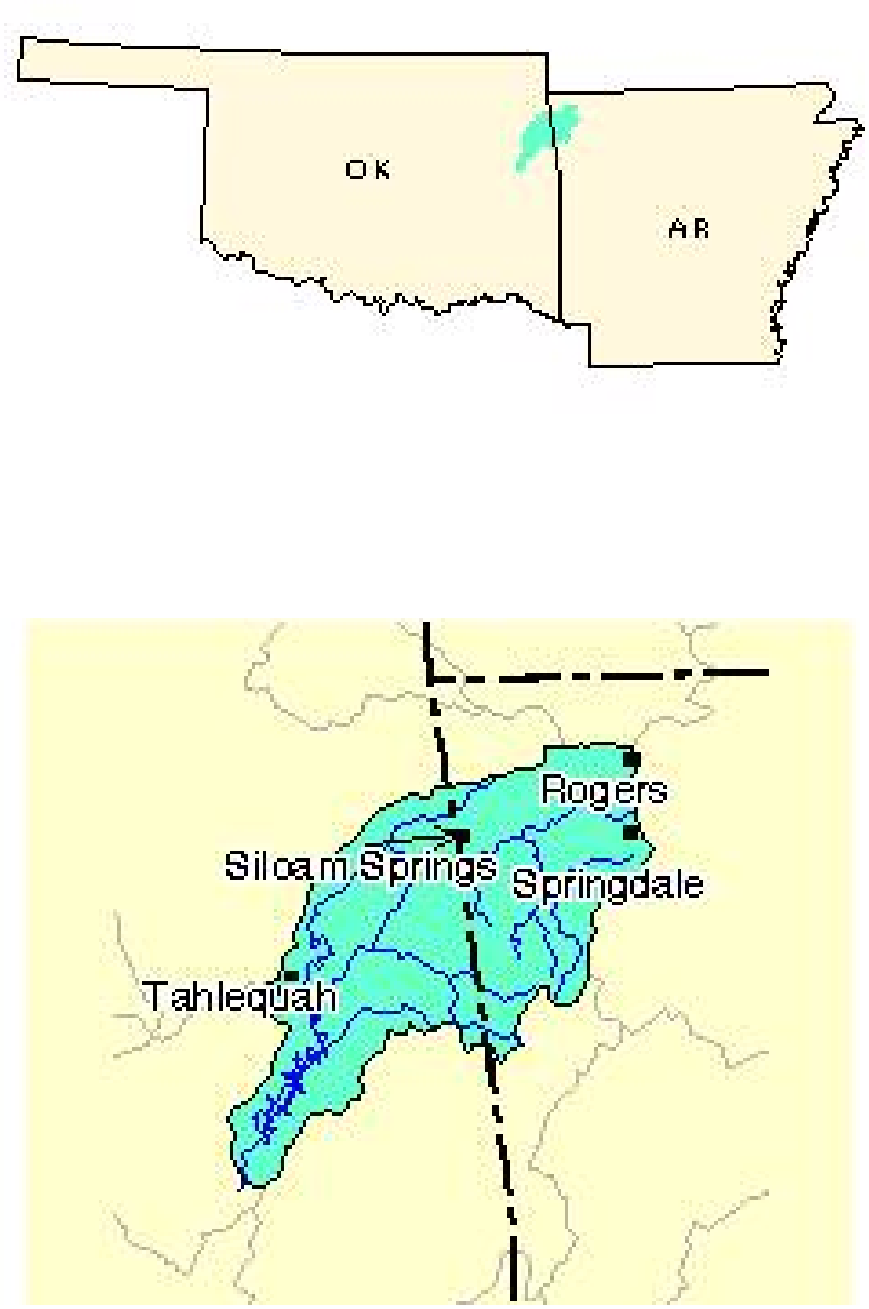
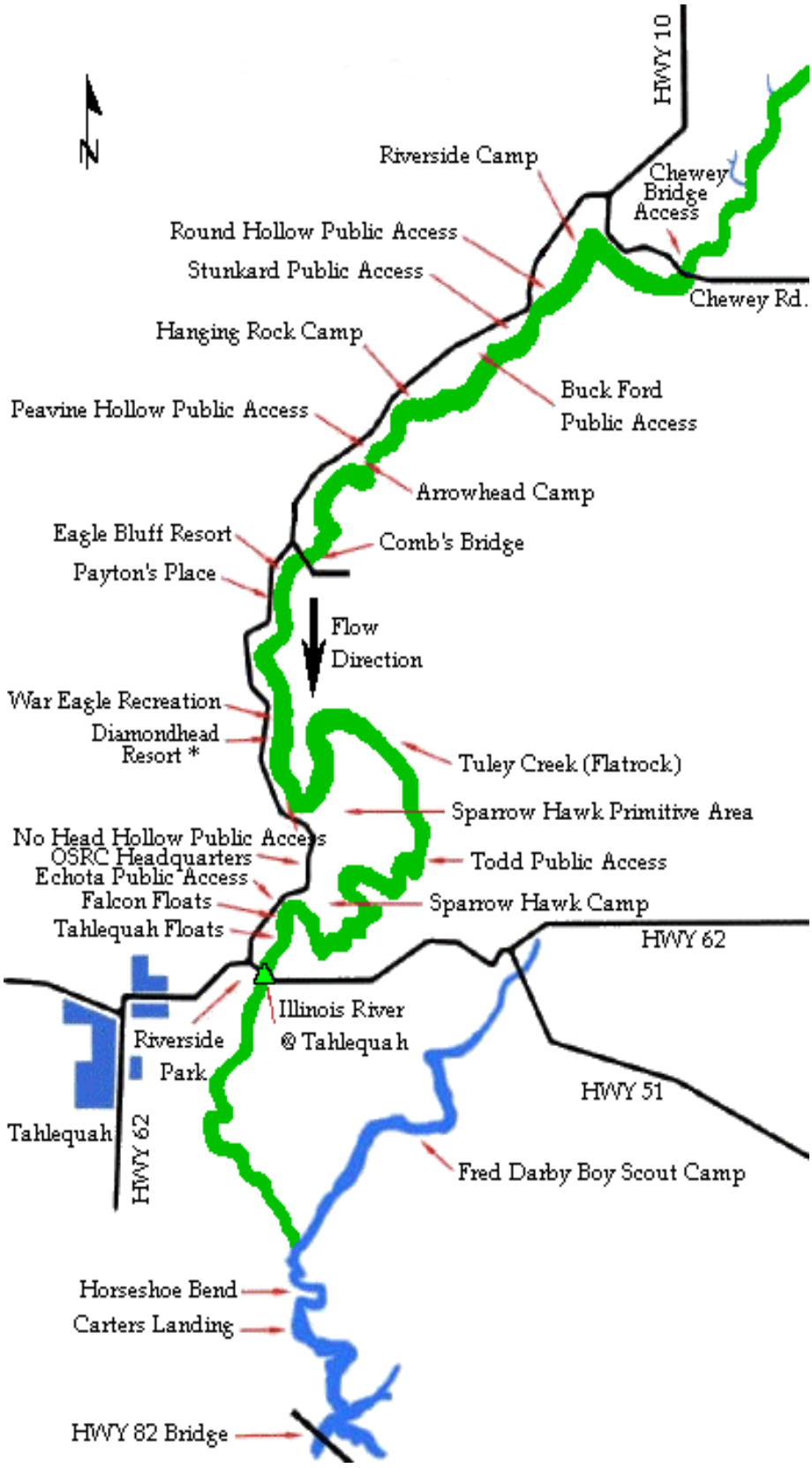


Map 1.1 courtesy of United States Geologic Survey; "Map Your Watershed" (http://water.usgs.gov/wsc/)



Map courtesy of Oklahoma Scenic Rivers Commission, Tahlequah, OK (http://www.scenicrivers.state.ok.us)

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Chapter One

Introduction to the Illinois River bioregion and selective Historiography

Flowing through the hilly borderlands of eastern Oklahoma and western Arkansas, the Illinois River is fed by 1,660 square miles of drainage area and serves as the main tributary for the largest lake in eastern Oklahoma, Tenkiller Ferry Reservoir (known locally as Lake Tenkiller). Historically, the Illinois has symbolized an area of significant economic and ecological importance in the southern plains. The watershed of the Illinois is contained within five counties in Oklahoma and Arkansas, providing over one hundred miles of recreational opportunities.[1] The Illinois River system (that is, the Illinois and its tributaries, Flint and Baron Fork Creeks) are major tourist destinations for the south-central United States and provide a substantial portion of tourism income for the area. In 1970, the Illinois gained designation and state protection as a "Wild and Scenic River." It is the purpose of this study to examine the Illinois River bioregion (land, water, trees, plants, and animals) and land use within the watershed, as well as how humans have interacted with and impacted the watershed. This report will also examine the history and significance of environmental protection of the Illinois basin. Agriculture and watershed recreation (primarily boating and fishing) are the two primary manifestations of land use within the Illinois River basin. In the downstream basin, the importance of nursery farming and small –acreage livestock production within the basin cannot be understated, nor can the approximately $930 million dollars of tourist spending that occurs from April to October in the watershed.[2] In the Arkansas, or upstream basin, industrialized poultry production throughout four counties has increased the amount of

non-point source pollution in the Illinois River. Runoff of Poultry waste and point-source pollution from wastewater treatment plants in Fayetteville, Arkansas has increased levels of eutrophication in the Illinois River and Tenkiller Lake.

This report stems from my own initial interest in the agricultural history of northeastern Oklahoma. The dichotomy of industrial production agriculture upstream from a federally protected watershed also provided impetus for researching this topic. As an area of year-round human contact and interaction, and as the two largest watershed counties for the Illinois River in Oklahoma, the bioregions and land uses within Cherokee and Adair counties will be covered in this report. The Illinois watershed is located within a section of Oklahoma unfamiliar to those who associate the state with images of "the great plains." Heavily wooded hills and oak-hickory forests are the dominant fauna ecosystems in the watershed, and rainfall is prevalent year-round. Constant human interaction and land use within an area that is an environmental or regional anomaly presents an interesting dichotomy for the student of environmental history. Fifty-five percent of the total area of the Illinois River watershed is located in Oklahoma[3]; therefore, in-depth discussion of the bioregion in western Arkansas will be limited to supplying historiographical information in the following section. The implementation and historical significance of 1993's River Management Plan in the Illinois River basin will be analyzed, also. Inspecting the goals, failures, and successes of bureaucratic legislation is crucial to determining the contemporary role of the Illinois River in the lives of residents, tourists, and those interested in the environmental history of eastern Oklahoma and western Arkansas.

As a precursor to research on the Illinois River watershed and bioregion, it is necessary to provide historiographical information on the basin and its surroundings. The Illinois River basin is the most historically and environmentally significant bioregion in the western Ozark Plateau region. Despite the ecological and socio-economic importance of the Illinois basin, little in the way of historical or environmental (i.e., non-scientific) writing has been done on the region. Furthermore, archival resources are limited and the most accessible research materials on the Illinois are in the form of secondary sources. The first section will examine the historiography and available sources of information on the peripheral areas of the Illinois basin, including western Arkansas. Sources of scholarship on eastern Oklahoma will be canvassed, as well as government documents and publications on the river and its tributaries. The immense nature of scholarship on the Oklahoma Cherokees causes the historiography of Native Americans in the region to be omitted from this section.[4] However, the historical significance of the Cherokee Nation in the Illinois River basin will be discussed in full later in this report. As mentioned, environmental historical studies of the watershed are limited, at best. A look at topics lacking in contemporary or existing literature will be discussed in the final section of this historiography.

Background Information and Historiography of Peripheral Illinois River Area

Forty-five percent of the square mileage of the Illinois River system is located within the boundary of western Arkansas.[5] The river and its tributaries flow first in a northwesterly, then southwesterly path through two Arkansas counties, Benton and Washington. Both counties contain economic stability unseen in many other areas of

Arkansas. Benton County, with its county seat in Bentonville, is home to the world headquarters of Wal-Mart. Located on the Oklahoma-Arkansas border in western Benton County, the city of Siloam Springs is a center for poultry production. According to the 2003 estimated population census, nearly 180,000 persons reside in Benton County[6], an increase of 80,000 residents since 1990. To the south, Washington County is home to another 170,000 persons and the University of Arkansas at Fayetteville.[7] Like their neighbors to the north, residents have seen the county undergo a massive population increase from a little under 115,000 citizens counted in the 1990 census. Although poultry production is a significant factor in local economies (as well as to the Illinois ecosystem), Benton and Washington counties are largely urbanized and driven by white-collar and service industries. The combined population of both Arkansas counties in the watershed is 350,000, while only 60,000 citizens reside in the eastern Oklahoma basin counties of Cherokee, Delaware, and Adair[8]. From 1977 through 1993, heated debate took place between delegates of Arkansas and Oklahoma regarding river policy and pollution problems. In short, Oklahoma factions sought to place blame on Arkansas poultry producers and other urbanized industries across the border for the poor water quality of the Illinois. Passage of the Wild and Scenic Rivers Act of 1993 sought in part to mediate concerns of pollution and water quality on both sides of the Oklahoma/Arkansas border. However, in August 2005, Oklahoma Attorney General Drew Edmondson levied a $30 million dollar lawsuit on behalf of the state of Oklahoma against the sixteen poultry production companies headquartered in northwest Arkansas.

Although human interaction and use of the Illinois River and its tributaries in Arkansas is limited by a small number of access points, a general overview of literature

dealing with the western section of the Natural State is important. The earliest public accounts of the area were given in the form of guidebooks published by land speculators. In 1887, the C.S. Burch Company of Chicago published the, "Hand-book of the Arkansas River Valley in Arkansas along the Valley Route between Van Buren and Little Rock."[9] As the Bursch Co. made clear, the late 19th century was still a time ripe for exploration, speculation, and exploitation of the Ozark highlands. Additionally, the 1818 Arkansas River expedition of naturalist Thomas Nuttall provides enlightening descriptions of the Arkansas River valley of western Arkansas and what would become eastern Oklahoma. The definitive work on early Arkansas history is Morris S. Arnold's, *Colonial Arkansas, 1686-1804*, published by the University of Arkansas Press in 1991.[10] S. Charles Bolton's *Territorial Ambition: Land and Society in Arkansas, 1800*-40, serves as a model history of land use and social mobility in antebellum Arkansas.[11] More recently, Jeannie M. Whayne's research in *Arkansas: A Narrative History* has been cited as an important text in the general history of the state.[12] For students interested in a more archival approach, C. Fred Williams' *Documentary History of Arkansas* is a helpful guide replete with documentary and primary sources on Arkansas history.[13] More recently, Brooks Blevins investigated the cultural and social history of the Ozarks and their national perception in his work, *Hill Folks: A History of the Arkansas Ozarkers and their Image*.

Historians examining state-level land use patterns will find agricultural census information from 1820-1950 particularly helpful. USDA's *Economic Inventory and Evaluation of the Arkansas River Flood Plain from Fort Smith to Pine Bluff* was[14] published in 1974 by the Southern Resource Programs Group and the United States Department of Agriculture, and this document provides insight into economic and land

use patterns throughout Arkansas. The Arkansas Game and Fish Commission is the preeminent organization involved with information on wildlife and ecology systems in Arkansas. In 1998, with the help of the University of Arkansas press, the commission published *Arkansas Wildlife: A History*.[15] Far from promotional in nature, *Arkansas Wildlife* is an asset to any historian, ecologist, student or recreationalist. Unfortunately, however, there have been no published academic attempts to analyze the Arkansas section of the Illinois River watershed.

Tenkiller Ferry Reservoir has long been considered a peripheral area of the Illinois River watershed. Although the Illinois flows directly into Tenkiller, there has been strangely little written about the largest reservoir or lake in eastern Oklahoma. The definitive work on Tenkiller Ferry Reservoir is the *Impact Study of the Construction and Operation of the Tenkiller Ferry Lake, Oklahoma*. Written in 1974 by Larkin Warner, Daniel Badger, and Gerald Lage, this study was published and released by the Research Foundation of Oklahoma State University.[16] There is virtually no published research on the human ecological and social systems of Tenkiller Reservoir area.

Oklahoma and Illinois River Historiography

Due to its unique settlement pattern and array of Native American cultures, historians have found Oklahoma history to be an inviting topic. Sources concerning the biotic and ecological foundations of Indian Territory and subsequently, Oklahoma, are lacking. However, there are several useful works dealing with human impact and the ecological history of Indian Territory. The first of these is *A Traveler in Indian* Territory, the journal of United States Army General Ethan Allen Hitchcock's expedition through

Indian Territory in 1842. Frank Eaton, a famed lawman and cowhand in Indian Territory, describes the early years of settlement in Indian Territory in his memoirs, entitled *Pistol Pete: Veteran of the Old West*. Although his work may seem anecdotal for some historians, Eaton does provide insight into the cattle trade and agricultural patterns of post-bellum Indian Territory. Fort Gibson, established in 1824, remains an important entity in the historical development and settlement of eastern Oklahoma. Brad Agnew examines what was once the U.S. Army's most westward fort in his work, *Fort Gibson: Terminal on the Trail of Tears*.

General Oklahoma history has been canvassed by a wide range of works, and for the purposes of this historiography, it is only necessary to mention the most useful of these resources. One of the earliest histories on the development of Oklahoma is Roy Gittinger's 1917 work, entitled *Formation of the State of Oklahoma.*[17] Students of early Oklahoma politics will also find Grant Foreman's *A History of Oklahoma* to be useful.[18] Historians often consider Edward Everett Dale to be the preeminent early writer in Oklahoma history. His *History of Oklahoma* is one of the earliest comprehensive looks at the formation and union of Oklahoma and Indian Territories.[19] The impetus provided by Foreman and Dale is evident in Edwin C. McReynolds' 1965 work, entitled, *Oklahoma: A History of the Sooner State*.[20]

More recent scholarship has provided innovative views on the history of Oklahoma. Davis D. Joyce's collection of Oklahoma-based essays, entitled, *An Oklahoma I Had Never Seen Before: Alternative Views on Oklahoma History*, is a significant re-thinking of history in the Sooner state.[21] In *Rural Oklahoma*, students of agricultural history will find Garry L. Nall's essay on cotton production in Indian

Territory especially helpful in assessing the role of tenant farming in territorial eastern Oklahoma.[22] More recently, Kansas State University historian Bonnie Lynn-Sherow is credited with writing the most comprehensive account of Native American and African American agricultural experiences in Oklahoma in *Red Earth: Race and Agriculture in Oklahoma Territory.* Murray R. Wickett's work, entitled *Contested Territory: Whites, Native Americans, and African American s in Oklahoma, 1865*-1907 critically examines the social, political, and economic systems of early Oklahoma. Oklahoma*: A History*, by H. Wayne Morgan and Anne Hodges Morgan, is an equally competent attempt at revisiting critical issues in Oklahoma's past.[23] Anne Hodges Morgan's encompassing look at state-wide history can be found in *Oklahoma: New Views of the Forty-Sixth State*, as well.[24] For an encompassing look at economic development and the role of railroads and resource exploitation in Indian Territory, H. Craig Miner's *The Corporation and the Indian* proves beneficial.

Howard F. Stein and Robert F. Hill examine the role and shaping of cultural and regional identity in *The Culture of Oklahoma*.[25] In "The World of John Steinbeck's Joads," literary critic Robert Davis Murray examines the falsehoods of *The Grapes of Wrath* and how Steinbeck's work translated into a stereotype of eastern Oklahoma, Murray argues, that still exists today.[26] For the purposes of this report, *The Historical Atlas of Oklahoma* was found to be an invaluable resource. However, the University of Oklahoma press has failed to publish a fourth version of this resource since releasing the third edition in 1981.[27]

Due to the regionalized nature of the research presented in this report, localized sources of information on the Illinois River ecosystem and eastern Oklahoma were highly

valued. In addition to valuable primary sources like the U.S. Agricultural Census (1890-1950) and population census', one of the earliest historical works on eastern Oklahoma was John Downing Benedict's *Muskogee and Northeastern Oklahoma*, published in 1922.[28] Grant Foreman followed Downing's work by writing *The Lore and Lure of Eastern Oklahoma* ten years later.[29] Foreman's study of eastern Oklahoma was published privately by the Muskogee Chamber of Commerce, and the boosterism of his work has been slighted by historical critics. Although occasionally anecdotal, both aforementioned works provide a solid foundation for the student of eastern Oklahoma history. To the chagrin of the environmental historian, the majority of secondary works dealing directly with the history of the Illinois River watershed region have been incorporated into bigger research projects focusing on the presence of Cherokee Indians in the area. Nevertheless, there are several helpful resources dealing directly with the ecological community of eastern Oklahoma. In 1943, George A. Moore and John M. Paden, then graduate students at Oklahoma A&M College in Stillwater, wrote the quintessential work on the underwater biota of the Illinois River. Moore and Paden's work, "The Fishes of the Illinois River in Arkansas and Oklahoma," has stood for over 60 years as the definitive research work on aquatic wildlife in the Illinois River.[30] Meryl Benenati's *Field Guide to Oklahoma* is an outstanding resource for both students of Oklahoma ecology and outdoor recreationists in the Sooner state.[31] Benenati utilizes maps and color photographs in an impressive section on the flora and fauna of the Illinois watershed. The second edition of *Rehabilitating Damaged Ecosystems*, edited by John Cairns, Jr., contains a twenty page section on the effects of eutrophication and pollutants in the Illinois River basin and is an important series of documents for the student of Oklahoma ecology.[32]

Recreational guides, resource reports, and other governmental documents on the Illinois River are perhaps the most essential of all resources in examining the historical ecology of the watershed and the impact of human interaction. In the early 1960s, the state of Oklahoma introduced its Overall Economic Development Program for every county in the state. These county reports are the first state-level surveys of land use and economic conditions in Oklahoma counties. The "Agricultural Supplement to an Overall Economic Development Program," is an important document in understanding the historical foundations of land-use and environmental conditions in Cherokee and Adair Counties before environmental protective legislation was passed.[33] The first water quality survey of the Illinois River and Tenkiller Ferry Reservoir was completed by the Oklahoma State Department of Health in 1979. This survey found that the Illinois and Tenkiller were gradually gaining pollutants from non-source point pollution. This document is especially important due to the formation of the Oklahoma Scenic Rivers Commission in 1981 and subsequent protected designation of the Illinois under the Wild and Scenic Rivers Act.

On April 30, 1981, a symposium on "The Status and Future of the Illinois River," was held at Northeastern State University in Tahlequah, Oklahoma. The complete transcript of the events is available and vital to comprehending the issues of land use and pollution in the watershed bioregion.[34] In 1992, the USDA, Soil Conservation Service, and U.S. Forest Service released the "Illinois River Cooperative River Basin Resource Base Report." The report is a valuable resource, containing over twenty individualized maps of the river basin. The maps describe more general information such as temperature, elevation, soil quality, along with more specific data showing the locations

of monitoring stations, fertilizer use, water quality problem areas, and designation of state, federal, and Native American lands.[35] The dichotomy of conservation versus preservation of the watershed is apparent when one views the aforementioned "Resource Base Report" with "The Illinois River Management Plan," released by the Oklahoma Scenic Rivers Commission, OSU, and the National Park Service in 1999. Although the 1999 management plan is now considered to be the most useful document dealing with land-use and human ecology of the basin, it is clear that the goal of the OSRC and NPS is to preserve and monitor access to the Illinois, while the "Resource Base Report" and the SCS seek to conserve the ecological community of the watershed. Both documents, moreover, are required reading to fully comprehend the issues and status of the Illinois River basin. Organizations in the private sector have become involved with the documentation and promotion of the Illinois watershed. The most notable of these groups is The Ozark Society, formed in 1962 to promote the knowledge, enjoyment, and conservation of the scenic and scientific resources of the Ozark-Ouachita mountain region. Under the direction of the Ozark Society Foundation, historian Kenneth L. Smith published *The Illinois River: A People River* in 1993.[36] The book acts as both a travelogue through the river and field guide for the region. The maps, trails, and selected float trips that are covered in the final two-thirds of the book can be utilized by students and recreationists alike.

Absent scholarship on the River: What is missing?

In light of this modest assessment of the resources available for scholarship on the Illinois River watershed, it is obvious that there are some gaping absences of material on specialized subjects that pertain directly to the human and non-human ecology of the basin. Firstly, generating scholarship directed towards the Arkansas side of the bioregion should be a priority. If the efforts of Oklahoma and Arkansas are to be successfully consolidated for the complete restoration of the watershed, then historians, ecologists and environmentalists would be wise to assess the role of human (and non-human) ecology in the relationship between western Arkansas and the Illinois.

A more over-arching principle is the decided lack of agricultural, ecological, or environmental histories published on the region. Surprisingly, even social and cultural historical writings on the watershed have been spotty, excluding the large amount of research done on the Cherokee Indians and Blevin's work on the Arkansas Ozarker. There has been no academic attempt at analyzing the histories of Cherokee, Adair, and Delaware counties of Oklahoma. Even Cherokee Indian histories deal largely with pre-removal circumstances and the move to Oklahoma via the "Trail of Tears." There has been shockingly little work on the post-removal and Oklahoma experience of the Cherokee Nation. Due to the varying cultural and ecological nature of the Illinois River region, further scholarly and historical research into the watershed region will need to be both all-encompassing and concerned with specific facets of life within the basin.

[1] Oklahoma Scenic Rivers Commission, Oklahoma State University, NPS, *The Illinois River Management Plan, 1999* (Washington, D.C.: Government Printing Office, 1999), 3.

[2] Ibid., *Illinois River Management Plan, 1999*, 22-23.

[3] Ibid., *Illinois River Management Plan*, 1999, 2-3. Table 1

[4] For an in-depth look at the Cherokee Nation and its role within the bioregion of the Illinois, please see the following titles: William Anderson, *Cherokee Removal: Before and After* (Athens: University of Georgia Press, 1991), T.A. Ballenger, *Around Tahlequah Council Fires* (Oklahoma City: Cherokee Publishing Company, 1945), Carolyn Comstock, *Cherished Possessions: The Meaning of Material Culture in the Oklahoma Cherokee* (M.A. Thesis, OSU, 1993), Deborah Duvall, *An Oral History of Tahlequah and the Cherokee Nation* and *The Cherokee Nation and Tahlequah* (Charleston, SC: Arcadia Publishing Co., 1999), Odie B. Faulk and Billy MacJones, *Tahlequah, NSU, and the Cherokees* (Tahlequah: Northeastern State University Educational Foundation, 1984), William G. McLoughlin, *After the Trail of Tears: The Cherokees' Struggle for Sovereignty, 1839-1880* (Chapel Hill: University of North Carolina Press, 1993), Circe Sturm, *Blood Politics: Race, Culture, and Identity in the Cherokee Nation of Oklahoma* (Berkeley: University of California Press, 2002), Morris L. Wardell, *A Political History of the Cherokee Nation, 1838-1907* (Norman: University of Oklahoma Press, 1938). For the earliest account of the short-lived Sequoyah statehood movement, see Clinton Allen, *The Sequoyah Movement* (Oklahoma City: Harlow Publishing Co., 1925).

[5] *Illinois River Management Plan, 1999*, 2-3.Table 1

[6] *The World Almanac and Book of Facts, 2005*, 668. Published by World Almanac Books, Inc., 2004.

[7] Ibid., 669.

[8] Ibid., 680.

[9] C.S. Burch Co., "Handbook of the Arkansas River Valley in Arkansas along the Valley Route Between Van Buren and Little Rock," Published by C.S. Burch Company, Chicago, 1887.

[10] Morris S. Arnold, *Colonial Arkansas, 1686-1804* (Fayetteville: University of Arkansas Press, 1991).

[11] S. Charles Bolton, *Territorial Ambition: Land and Society in Arkansas, 1800-40* (Fayetteville, University of Arkansas Press, 1993).

[12] Jeannie M. Whayne, *Arkansas: A Narrative History*, (Fayetteville: University of Arkansas Press, 2002).

[13] C. Fred Williams, *Documentary History of Arkansas* (Fayetteville: University of Arkansas Press, 2000).

[14] United States Department of Agriculture and Economic Research Service, "An Economic Inventory and Evaluation of the Arkansas River flood plain from Ft. Smith to Pine Bluff, Arkansas," Published by Southern Resource Programs Group, Natural Resource Economics Division, 1974.

[15] Arkansas Game and Fish Commission, *Arkansas Wildlife: A History* (Fayetteville: University of Arkansas Press, 1998).

[16] Daniel D. Badger, Gerald M. Lage, and Larkin Warner, *Impact Study of the Construction and Operation of the Tenkiller Ferry Lake, Oklahoma* (Stillwater: Oklahoma State University Research Foundation, 1973).

[17] Roy M. Gittinger, *Formation of the State of Oklahoma* (Norman: University of Oklahoma Press, 1939).

[18] Grant Foreman, *A History of Oklahoma* (Norman: University of Oklahoma Press, 1942).

[19] Edward Everett Dale, *History of Oklahoma* (New York: Prentice-Hall, 1948).

[20] Edwin C. McReynolds, *Oklahoma: A History of the Sooner State*, (Norman: University of Oklahoma Press, 1965).

[21] Davis D. Joyce, ed., *An Oklahoma I Had Never Seen Before: Alternative Views on Oklahoma History* (Norman: University of Oklahoma Press, 1994).

[22] Donald E. Green, ed., *Rural Oklahoma* (Oklahoma City, Oklahoma: Oklahoma Historical Society, 1977). Please see Garry L. Nall, "King Cotton in Oklahoma, 1825-1839," p. 37-56.

[23] H. Wayne Morgan and Anne Hodges Morgan, *Oklahoma: A History* (New York: Norton Publishing Co., 1984).

[24] Anne Hodges Morgan, *Oklahoma: New Views of the Forty-Sixth State* (Norman: University of Oklahoma Press, 1982).

[25] Howard F. Stein and Robert F. Hill, *The Culture of Oklahoma* (Norman: University of Oklahoma Press, 1993).

[26] Robert Murray Davis, "The World of John Steinbeck's Joads," *World Literature Today* 64 (Summer 1990): 22-27.

[27] *The Historical Atlas of Oklahoma* (Norman: University of Oklahoma Press, 1981). Edited by John W. Morris, Charles R. Goins, and Edwin C. McReynolds.

[28] John Downing Benedict, *Muskogee and Northeastern Oklahoma* (Norman: University of Oklahoma Press, 1922).

[29] Grant Foreman, *The Lore and Lure of Eastern Oklahoma* (Norman: University of Oklahoma Press, 1932).

[30] George A. Moore and John M. Paden, *The Fishes of the Illinois River in Arkansas and Oklahoma* (M.S. Thesis, Oklahoma A&M College, 1943).

[31] Meryl Benenati, *Field Guide to Oklahoma* (Norman: University of Oklahoma Press, 1974).

[32] John Cairns, Jr., ed., *Rehabilitating Damaged Ecosystems* (New York: Seneca Publishing Co., 1989).

[33] Oklahoma Department of Agriculture, *O.D.E.P. Report for Cherokee County* (Prepared by the County Program Planning and Resource Development Council, 1963).

[34] NSU Kaleidoscope Series, "Status and Future of the Illinois River," Symposium transcript from April 30, 1981.

[35] United States Department of Agriculture, Soil Conservation Service, United States Forest Service, "Illinois River Cooperative River Basin Resource Report," 1991.

[36] Kenneth L. Smith, *The Illinois River: A People River* (Little Rock: Ozark Society Foundation, 1993).

Chapter Two

History of Landforms and Resource Use in the Illinois River Basin of Oklahoma and Arkansas, 1820-1907

Having investigated the historiographic basis of environmental study in the Illinois River region, it is necessary to discuss the historical and contemporary roots of land and resource use in the Illinois basin. As a precursor to human impact on the river and its watershed, information on the prehistoric formation of the basin and a physiographic/climactic description will be provided. Land and resource use patterns will be established from the period of Thomas Nuttall's expedition in 1818 to the end of the Civil War in 1865 and from 1865 to Oklahoma's unification and statehood in 1907. This chapter will establish nearly one hundred years of historical precedent dealing with land/resource use and exploitation in the Illinois basin. With 3.5 million residents spread over 68,667 square miles (nearly 51 persons per square mile), rural Oklahoma is a relatively pastoral and environmentally adaptive region in terms of ecology and environment.[1] There are over fifteen different ecoregions in Oklahoma, a fact surprising not only to many environmentalists but to Oklahomans, also.

It is not the suggestion of this study to claim that the ecology and environment of eastern Oklahoma and northwest Arkansas is hopelessly tarnished. However, as a federally protected and funded aquatic system there should be stringent pollution standards and subsequently, a cleaner river that both local residents and visitors to the Ozark foothills can enjoy. There is a need for an established land ethic in the Illinois River basin and region, based on a stewardly and sustainable approach for the future of

the Illinois watershed. Interested parties and potential stakeholders include local town and city residents, as well as rural landowners, local political leaders, the Oklahoma Scenic Rivers Commission, non-profit organizations such as Save The Illinois River, Inc., along with resort operators/owners, and tourists. Additionally, a basis of cooperative conservation between the state governments of Arkansas and Oklahoma is an essential aspect in protecting the Illinois River. Visitors supply over ten million dollars of tourist spending in the basin annually, and non-residents of the region should certainly be considered in a sustainable and stewardly vision of the Illinois watershed.[2]

Geologic and Physiographic Nature of the Illinois River Region

The natural ecology of the Illinois River takes its characteristics from the Ozark and Ouachita Highlands as well as the tallgrass prairie ecosystem bordering to the west. In 1819 while traveling through the Illinois basin, naturalist Thomas Nuttall described the geology of the Illinois. While attempting to penetrate the thick forests of what would become eastern Oklahoma, Nuttall noted, "among the scattered boulders and gravel of the bar, there were fragments of limestone and petrosilex, containing organic remains, also pebbles of chalcedony; we likewise saw specimens of coal, accompanied by the usual carbonaceous, or zoophitic, remains." Nuttall went on to write of the basin's agricultural potential and Major William Braford informed him that, "the uplands as well as the prairies along this creek (the Illinois) were uncommonly fertile, and well watered by springs."[3]

In 1990, John Morris described the Illinois basin in *Geography of Oklahoma*, writing that the basin lies in the "high-wet" area and contains acidic soils high in clay

content.[4] Local soils include limestone, sandstone, and shale associations.[5] Soils in Cherokee and Adair Counties have developed from deep chert beds and are strongly leached; other soils in the area have developed from impure limestones, shales, and limy shales and are largely unaffected by chert. All soils in the Illinois River watershed area are low in phosphorous. The natural lack of phosphorous in the Illinois River area is a significant factor in the river's health and vulnerability to ecological damage. Leaching in the soil provides ample opportunity for the intrusion of phosphorous loading. Although phosphorous is a naturally occurring element found in all living organisms, it is terribly harmful to aquatic systems, especially those that flow into reservoirs. Phosphorous that "over-occurs" in the aquatic system of the Illinois basin acts as a hindrance to energy flow and the cycling of nutrients and other elements in the river. In a more regional context, the human acceleration of the phosphorous cycle is not singularly a problem in the Illinois River of Oklahoma. Phosphorous loads in the Illinois River are an example of the human interference with an aquatic system that ends up affecting a much larger regional biosystem. From the headwaters of the Illinois in northwestern Arkansas, the river flows through eastern Oklahoma into Tenkiller Reservoir, which feeds the Arkansas River roughly forty miles from the Tenkiller Dam. The organic nutrients in the Illinois overload the Arkansas River as it flows towards the Mississippi River, eventually emptying the Illinois burden of phosphorous into the Gulf Of Mexico in South Louisiana. The effects of phosphorous are cumulative and act as a hindrance to ecological sustainability in soil and aquatic systems within the Illinois watershed. Although industrial agriculturalists in the Illinois watershed may not notice an environmental connection with the Mississippi River Delta or the Gulf Of Mexico, their practices may

contribute to environmental problems not only in their own locale but in areas nearly 1,000 miles away from the Illinois watershed.

The two primary soils indicative of the sloped physiographic extremities of Cherokee and Adair counties are the Clarksville and Hector-Linker Associations.[6] Soils in the area are of generally of low durability and Clarksville stony silt loam soils (between 5 and 50 percent slopes) comprise 41 percent of soil in Cherokee County.[7] Also called the Clarksville-Baxter-Locust Association, these soils consist of very gently sloping to steep soils that occupy narrow areas between numerous streams. These soils formed under trees in the cherty limestone areas of the basin. Clarksville soils range from very gently sloping to steep but are steep in most places. They have a surface layer of dark grayish-brown stony silt loam and a subsoil of brown clay loam that is very stony and silty in composition. About 60 percent of the predominant soils in Cherokee County are used for trees and grass. Most areas provide fair grazing for cattle, though some areas support very little in the way of grass. The native vegetation consists mostly of hardwoods and an understory of big bluestem, little bluestem, indiangrass and purpletop grasses. The rest of the Clarksville association is used mainly for tame pasture, small grains and grain sorghum.[8]

The Hector-Linker (H-L) association soils claim 31 percent of soil types in Cherokee County. This association consists of gently sloping to steep soils that descend from ridges into deep valleys about 100 to 400 feet below the crest of the ridges. Most of this soil area is rugged, and there are a few flat topped mountains and rocky cliffs. H-L soils were derived from sandstone and some limestone and shale. Hector soils are very shallow or shallow over sandstone. They have a dark-brown sandy clay surface layer that

is stony in places. 70 percent of this association consists of woodland and grassland. Trees do not grow well on much of the H-L association. The soils in this association are suited to grass except in areas of thick brush. The native vegetation consists mostly of hardwoods of low quality and an understory of big bluestem, little bluestem, indiangrass, and purpletop grasses.[9] Farmers and livestock operators in the basin have realized through the years that management of crop residues and utilization of terrace farming are effective means of controlling erosion problems on H-L soils.

Soils change further east in the basin closer to the Arkansas state line, especially in Adair County. The northern section of the county is drained by the Illinois River, which exposes the Cotter formation soils along the riverbanks. Cotter Formation soils are dolomite-based with minor amounts of sandstone, chert and formational conglomerate. Major soil associations in Adair County are the Bodine-Dickson association and the Etowah-Huntington Association, as well as the aforementioned Hector-Linker association.[10]

Bodine-Dickson soils canvass roughly 55 percent of the total area of Adair County, and this association is part of the Ozark Plateau, extending westward from Missouri and Arkansas, and includes the northern and central portions of Adair County. In Adair County, the Plateau consists of rough hills formed by the dissection of the cherty plateau. Many deep, narrow valleys and a few natural prairies occur near Stilwell and Westville.[11]

Bodine soils occupy the largest acreage in this soil association. They have mainly steep or very steep slopes, but in a few places they have gentle slopes. These soils are deep, but they have stones and chert on the surface and in the surface layer of the soil.

About one-fourth of the acreage has been cleared, and the rest is in cutover woodland, in savannahs, or in brush.

The Etowah-Huntington (E-H) association includes soils on benches and flood plains in Adair County. Soils of this association occur along nearly all perennial and intermittent streams, along rivers, and in broad valleys throughout the county. The E-H association covers about 16 percent of the total area. Most of the soils range from nearly level to strongly sloping second bottoms and occur in some of the broader valleys. The Etowah soils claim the largest acreage in this association.[12] They can vary in texture from loamy to gravelly and are fairly deep, on average. The amount of gravel in the surface layer ranges from none to as much as 30 percent by volume.[13] Etowah soils, especially those that have nearly level or gentle slopes, are utilized for green beans, corn and other local crops. When these soils are in close proximity to perennial streams, they are often irrigated. Under good management, Etowah soils provide some of the best soils for agricultural production in the basin.

Huntington soils occupy only a small amount of acreage in Adair County, but they are important agriculturally. Huntington soils occur on nearly level soil bottoms and are deep, loamy or gravelly soils. Agriculturalists claim that about 80 percent of the acreage of original hardwood forests on which these soils are found is cleared by timber cutting; the rest is in hardwoods and brush. Weather erosion is a serious problem in the Etowah-Huntington soils, and at least partially explains the decline of once-flourishing strawberry production in Adair County.

Particularly important in the river ecosystem is the gravelly alluvial land that makes up a sizable part of the Etowah-Huntington association. This would include

streambanks and channels, areas highly visible to outdoor recreationists on the Illinois River.

Perception of region and material properties of the Illinois River basin

Adair and Cherokee Counties are located on the western fringe of the Ozark Plateau, which has the form of a broad, asymmetrical dome and encompasses approximately 40,000 square miles in Missouri, Arkansas, and Oklahoma.

The Illinois watershed is geographically surrounded by "constructed nature" in the form of lakes and reservoirs. The Illinois river itself is the wildest and most unrestrained non-renewable resource in eastern Oklahoma. Driving in from the West, one traverses three major lakes and recreation areas (Keystone Lake/Dam, Ft. Gibson Lake, Tenkiller Ferry Lake). Three others, Grand Lake, Robert S. Kerr Lake, and Eufaula Lake, are located nearby. Northeastern Oklahoma is often viewed as the state's "lake country," a notion that upends the idea of Oklahoma belonging solely to the arid, dusty plains. As Donald Worster points out in *Dust Bowl: The Southern Plains in the 1930s*, misconceptions and misinterpretations of eastern Oklahoma's environmental history have often been connected with the imagery of dust storms from 1930-1950."[14] In J. Neil Henderson's article, "Spa in the Dust Bowl: Oklahoma's Hidden Paradise," the author contends that southern Oklahoma is the state's "lake country." Although Henderson's work is interesting and undoubtedly well-intentioned, it is blatantly incorrect to assert that the Sulphur/Davis area is Oklahoma's only "hidden paradise" offering aquatic recreation. The northeastern quarter of the state, including the Ozark highlands, would be the best representation of Oklahoma's "lake country." Furthermore, Henderson uses what

1,500 feet. Tahlequah, the historic capitol of the Cherokee Nation, lies at an elevation of 864 feet.[18]

The last killing frost in the basin is generally between April 5th-10th, and the first killing frost in the autumn generally falls from October 25-30th. Growing season in the basin varies between 200 and 205 days. Although rainfall is common and can be expected in any season in the basin, the average of 43 inches per year at times drops to lows ranging from only 18 to 28 inches of rain at Fort Gibson Dam.[19] The average temperature is 38 degrees in January and 82 degrees in July. Recorded highs in Tahlequah are 23 degrees on January 18, 1930 to a high of 118 on July 18th, 1936. The Illinois River basin is a climactic anomaly in comparison with the perception of Oklahoma weather. An example of this can be noticed in wind speeds, which are generally low in the basin in contrast with the rest of Oklahoma. Windspeeds average 10 miles per hour for the year, ranging from 12 miles per hour in the normally windy spring to 8 miles per hour in July and August.[20] Only 19 tornadoes have ever hit Cherokee and Adair County in over a century of weather records. Two tornadoes accounted for 60 deaths at Peggs in central Cherokee County on May 2, 1920.[21]

The Ozark highland includes 1.6 million acres; although this acreage is small compared with other Oklahoma ecosystems, the Ozark province is the most ecologically sensitive of Oklahoma's fifteen different ecoregions. Two-thirds of the land in the Ozark highlands is forested primarily with post oaks, red oaks, hickory and shortleaf pine.[22]

Most human land-use activities in the basin have been relegated to the valleys. Time deadening and clearing of brush has historically been practiced in the region to improve and increase grass production in the region. Diversified agricultural pursuits

have historically been the standard practice of small-acreage owning farmers in both Cherokee and Adair Counties due to variations in soil types and climactic issues that hinder large scale monocropping production. This is a practical and sustainable approach when one considers the differing varieties of soil associations found within the Illinois watershed.

A farmer in Cherokee County might own 140 acres of land, of which 60 produces hay. The farmer might divide typically 40 acres to nursery or viticulture, and the remaining 40 acres as open pasturage for diary cattle.

Land and Resource Utilization in the Basin, 1818-1865

The earliest historical accounts in the area come from the ill-fated Arkansas River expedition of Thomas Nuttall. Nuttall was an English-born naturalist who surveyed the Arkansas Territory and Indian Territory from 1818-1820. Nuttall traveled from Philadelphia to Belle Point, Arkansas with the goal of traveling the entire distance of the Arkansas River to its origins in Colorado. As Russell Lawson noted, "The wilderness of Oklahoma interfered with Nutall's goal of the Rockies."[23] Although his ultimate goal of reaching the Rocky Mountains by way of the Arkansas River was a failure that nearly cost him life and limb, Nuttalls' description of early 19th century Arkansas and Oklahoma provided a helpful and detailed physiographic account of western Arkansas and what would become Indian Territory. Nuttall was a member of the earliest known American expedition into Indian Territory. Nuttall collected over one hundred new herbs in his first week at Belle Point, present-day Fort Smith, Arkansas.[24] After leaving Fort Smith,

Nuttall and company went 130 miles further up the Arkansas River near the mouth of the Verdigris and Neosho Rivers and camped along the banks of the Illinois River.

Aside from the geologic description Nuttall provided in his journal, the naturalist mentions salt deposits in the Illinois River and adjacent streams, stating, "A few miles from its mouth, its banks present salt springs similar to those of Grand River, and scarcely less productive; most of the streams on this side of the Arkansa(s) are said to afford springs of salt water which might be wrought with profit."[25] This description highlights the importance of resource extraction underlying Nuttall's approach to the pastoral virginity of the basin. Nuttall also described hunting buffalo in prairies nearby the Illinois River. Three days after leaving Belle Point, Nuttall and Bradford reached the confluence of the Illinois and Arkansas Rivers, near the site of present-day Tenkiller Resevoir. Nuttall described the river, writing, "the current of the Arkansa(s) was here unusually rapid; on the right hand side the water was clear, but on the left, red and muddy. The clear water issued from the Illinois River, to which we were now contiguous."[26]

In mid-May of 1818, Major William Bradford, commanding officer of Belle Point, invited Nuttall to accompany a party of six soldiers and two Cherokees traveling to the Red River to remove white settlers from their illegal occupation of Osage lands. Nuttall bisected half of present day Oklahoma in the height of spring and collected a wide array of plant and flower species. He wrote that, "the singular appearance of these vast meadows, now so profusely decorated with flowers…can scarcely be described."[27] Nuttall was particularly enraptured by what he called, "the millions of flowers of

Rudbeckia amplexicaulis…and a new species of *Corandium*." Nuttall spent almost a week collecting Centaurea, which he called, "the only species of this numerous genus indigenous to America." Nuttall wrote of the "conspicuously beautiful" scissor-tailed flycatcher, hardly knowing that Oklahoma would adopt it as the state bird in 1910. Russell Lawson writes that the contemporary Lake County of Oklahoma, largely constructed by the Army Corps of Engineers after WWII, "would have amazed Nuttall."[28] Although Thomas Nuttall's expedition into the wilderness of Oklahoma presents little in the way of land production or resource use information, one must consider that in 1819, Oklahoma was largely inhabited by only one tribe of people, the Osage Indians. Nuttall's description of the flora, fauna, and resources of the Arkansas River valley were utilized by U.S. officials to assess the value of Arkansas territory and eastern Oklahoma for a nation insatiably driven to move westward. Nuttall's physiographic description of what would become western Arkansas and eastern Oklahoma provides a stark contrast to the prevailing perception that Native Americans were removed west to land in Indian Territory that was considered uninhabitable.

The U.S. Army established Ft. Gibson in April 1824 near the banks of the Grand, or Neosho River in present day Muskogee County, twenty-five miles west of the Illinois River basin. The military built the fort originally to provide assistance and protection for whites against the fierce Cherokee-Osage rivalry.[29] In the spring of 1834, the Fort became home to a staging area for a major army expedition whose mission was to bring the Indians of the Southern plains under the control of the federal government. The War Department assigned the elite First Dragoon Regiment to lead the expedition. Officers hand picked

the men of the First Dragoon Regiment, and the regiment soon developed a reputation as ruthless enforcers of Washington's newfangled Indian policy. As a young officer Jefferson Davis served at Fort Gibson from 1833-34.

In *A Short History of Fort Gibson*, famed Oklahoma University historian Grant Foreman provided a romantic, man-against-nature description of the geography around Fort Gibson: "The land skirted by the river near their landing was low and fertile and covered by an immense cane-break, great forest trees, and a jungle of vines and undergrowth. (Upon arrival) The soldiers were soon engaged in clearing sufficient space in which to set up their tents. Then began the weeks and months of labor which was necessary to remove the cane, vines, and brambles from an area large enough for an army post; the ring of the ax and the crash of the falling giants of the forest were heard, and roaring fires consumed the prodigality of nature.(87-88)"

In his work *Fort Gibson: Terminal on the Trail of Tears*, Brad Agnew provided a clear interpretation of the Fort and its purpose. "Fort Gibson's mission was to guard an area in which whites were not permitted to settle permanently."[30] Agnew argued that Army soldiers at Fort Gibson served as a defensive "cultural buffer" for Osage and newly-arrived Cherokee Indians against land-hungry whites in order to allow the various tribes of northeastern Oklahoma an opportunity to adjust gradually to the technology and culture of white society.[31] The Fort's proximity to the watershed of the Illinois River serves as an early example of the conflict between Natives and Whites for control of the basin's resources. However, this is not to say that Native Americans were not equally eager to convert natural resources into economic product, as noticed in Miner's work on

the historic relationship between railroads, corporations, and the Cherokee Indian.

In 1838-39, most of the Cherokee Nation was forcibly removed from their homelands in the southeastern United States to Indian Territory, now Oklahoma, on what is known as the "Trail of Tears." Nuttall wrote of the Cherokee and their interactions with the environment in an almost envious fashion: "Almost unrestrained by artifice or moral education, we should perhaps expect the man of nature to become the prey of passion, like the irrational creation…nature is not a cruel demon, nor delights in the accomplishment of destruction. Those who are fed by her frugal bounties are but seldom hurried into excess."[32] After praising Native tribes for their pastoral (but ultimately ignorant) life ways, Osage warriors robbed Nuttall and he wrote, "surrounded by a fertile country, the Indian…finds it difficult to obtain subsistence, trespasses upon his neighbors, lives in insecurity, and in implacable enmity with those of his own race."[33]

Cherokees were the first Indians to request removal to the West, as early as 1810. In 1835, a group of unauthorized tribal members signed the infamous Treaty of New Echota. Congress ratified the treaty over the protests of the vast majority of the people and legitimate leadership of the Cherokee Nation. The Treaty of New Echota exchanged the tribe's southeastern homeland for land in the Indian Territory. Famous tribal leader John Ross declared the Cherokee people would never regard the Treaty of New Echota as a Treaty.[34] The Cherokee Nation and Tahlequah were originally settled after the Treaty of New Echota and subsequent journey west on the Trail of Tears in 1839. Both Washington Irving (1832) and Josiah Gregg (1839-40) led expeditions near the Illinois basin shortly after the remaining Cherokees moved to Oklahoma.

Native Americans settled Eastern Oklahoma, termed Indian Territory, some 70 years before the famed Oklahoma land runs in the late 19th century. Cherokee and Adair Counties were settled during a pre-industrial time prior to the technological and agricultural advances that marked the "land runs" of the 1880s. Land use patterns of the 1840s Cherokee were not that much different from small, non-industrial agriculturalists in the Illinois basin today.[35] Diversified crop and livestock production ensured the agricultural and ecological integrity of many early (and contemporary) residents of the Illinois basin. However, some of the earliest Indian settlers Cherokee County also pursued extractive, exploitatable resources. Unlike many of the other tribes in Oklahoma, the Cherokees were willing to diversify their economy and infrastructure before statehood in 1907. However, as Carolyn Merchant claims, "the rich resources of the American environment were developed at the expense of Indians."[36]

Although settled in a time imbued with the values of romanticism towards nature, there was a distinct lack of an Emersonian, transcendental view of nature during the era of Cherokee re-settlement in Indian Territory.[37] The Native arrival in the new lands of Oklahoma was built on a foundation of racial subjugation and resettlement for benefit of whites, in particular, southern whites. The arrival of western Cherokees in 1808 and other tribes later into eastern Oklahoma disrupted a relatively pristine area.

From 1820 to 1865, agricultural activities in the Cherokee Nation and Illinois basin included small herd cattle raising, spotty cotton farming, and the cultivation of corn as the major grain/subsistence crop.[38] Cherokee land use and interaction with the environment was far less taxing and ecologically damaging than white contact with the

physical environment of the Illinois basin. The use of corn by the Cherokees serves as an example of agricultural sustainability in Indian Territory. Sofka, or Connehany as the Cherokees called it, was corn meal important in both sustenance and spiritual practices like the Green Corn Ceremony. Sustainability was rooted into the life ways of the Cherokee; the tribe had a pronounced predilection towards settlement in river valleys, whether the New River in Virginia and North Carolina, or the Neosho and Illinois Rivers in Oklahoma. Small acreage farms were the norm in Cherokee Nation, far from the huge plantations of Choctaw and Chickasaw tribes.[39]

The planting and growing of multiple crops adjacent to each other is called polycropping (or biocropping?) and was a common Cherokee Indian agricultural practice in the antebellum Indian Territory. Polycropping kept down insect pests and weeds, and gardens packed with crops resulted in higher yields per acre than in fields where monocropping was employed. Cherokees often planted and grew beans and corn, and this practice helped ease the strain on topsoil while providing a larger infusion of nitrogen into both the plants and soil. In contemporary agriculture, multicropping is seen as one of the most effective methods of sustainable production.

As the most populous tribe in Indian Territory, the Cherokees transferred proven agricultural techniques from the southeast to Indian Territory. It is important to realize that this was a relatively easy transition, due to the similarities between the Southeast and Indian Territory in terms of climate, soils, physiography and topography. Average land allotments for Cherokees were 110 acres to each member of the family, but the four years of political and social turbulence during the Civil War decimated the Cherokee Nation. In his notes on the Indian Territory, James Carselowey wrote, “the Cherokee Nation was a

no-man's country during the War," and, "when Cherokees came back to the Nation after the war, they found desolation, houses destroyed, livestock stolen, and what remained running wild through the country, desolated by the War."[40] In his work on the political condition and resources of Indian Territory, J.B. Moore wrote less than ten years after Appomattox that the Cherokee Nation was, "greatly devastated during the war."[41]

The most dominant form of environmental ideology that influenced Indian Territory from 1818 to the end of the Civil War was the supposedly divinely inspired march of progress westward and the subjugation of Native American tribes in what would become Oklahoma. D.C. Gideon encapsulates this deterministic view of the environment and Indian Territory in his first paragraph. Of westward expansion and the conquering of nature Gideon wrote, "the elements of success in life consist in both innate capacity and determination to excel…where either is wanting, failure is almost certain in the outcome."[42] Gideon displays the interwoven ideologies of progress and determinism in "excelling" towards the white settlement and development of the Indian Territory. In order to assimilate or even keep up with encroaching white society, Cherokees were forced-by way of coal extraction, railroad and infrastructure development, land sales and speculation resource exploitation-to incorporate environmentally harmful practices and ecological determinism much along the same lines as white Americans. Land use and resource utilization for Cherokees in Indian Territory shifted from being an ideologically valued entity to a corrosive sub-sector of their economy.

Following the end of the Civil War, residents of the Indian Territory saw their political and economic sovereignty decrease. The encroachment of white settlement in

the territory brought massive changes in regards to land and resource utilization from the post-bellum period to Oklahoma statehood in 1907.

Postbellum and Industrial resource utilization in the Illinois Basin, 1865-1907: Cattle Trails, Railroads, Extraction and Settlement

After the rampant destruction of economic, political, and social systems in the Cherokee Nation during the Civil War, the reconstruction period after the war that included increasing white settlement helped undermine both Indian Territory sovereignty and stewardly human approach towards the natural environment of the Illinois basin from 1865-1907. The increased development of infrastructure systems like cattle trails, railroads and market roads had a profound effect on the Illinois watershed region and Indian Territory in general. The extraction of natural resources, thought to be a predominately Anglo activity, soon ensnared the Cherokees and other tribes living in Indian Territory. The overarching principle of human interaction with the Illinois watershed following the Civil War is that the environment and infrastructure of Indian Territory was accessible for development and exploitation, and was utilized towards these means.

The white American presence in the area was felt immediately on an ecological level. Benjamin Miller told of rampant cattle thievery rings in southern Kansas and Indian Territory in the 1870s in his work, *Ranch Life in Southern Kansas and the Indian Territory: How a Fortune was Made in Cattle/As Told by a Novice.* His writing evokes and exacerbates the romantic and often mythical nature of cowboy life.[43] Some of the

earliest forms of land use and resource utilization in the basin have been described by Frank Eaton in his memoirs, entitled *Pistol Pete: Veteran of the Old West*. Eaton recalls many problems with the lawless nature of cattle rustling in Indian Territory from its inception through statehood.[44] Cattle barons in Indian Territory usually leased grazing land from Indians; this type of alien land and animal management led to a mutually exploitatitive relationship between Indians and whites in the Territory.

Trails from Texas through the Indian Territory became well-established routes for the transportation of cattle. Railroads in Missouri and eastern Kansas determined the route of the first northern drives from Texas through Indian Territory. In 1866, the drives followed the Texas Road, a trail filled with difficulties and dangers: deep streams that were hard to ford, Indians who resented cattle drives across their insufficient pasture lands, and rough, timbered areas where wild Texas steers might cause endless delay by hiding in the brush. The most important trail in eastern Indian Territory was known as the East Shawnee Trail, and from Fort Gibson a branch trail developed along the north bank of the Arkansas River, and many Indian ranchmen from northeastern Indian Territory followed this route into Cowley County, Kansas. Former cowhand Joe Roff, in his semi-autobiographical look at the early history of north Texas and Indian Territory, wrote of the prevalence and, at least among whites, popularity of cattle rustling in Indian Territory.[45] Texas ranchers needed a means for delivering their cattle to a point where railroad lines made connections with markets in Kansas City and Chicago. It can be stated that the intrusion of white cattlemen into Indian Territory was the first major sign of environmental and ecological disruption in the Illinois basin.

Additionally, cattle rustling and trails acted in conjunction with the development of railroad lines through northeastern Indian Territory. The first rail line in the Illinois river watershed was the Kansas City Southern Railroad, which bisected Adair County. From 1865-1907, no direct rail service was available in Cherokee County, but railheads were near enough to spur development nonetheless. In 1874, only 30 years following Indian removal to Oklahoma, J.B. Moore wrote that, "the rapid extension of the railway system in the last decade to parts…almost unknown has quite reversed the commercial tide."[46] Railroads in the basin led to the industrialization and commercialization of the once-remote Indian Territory. In *The Corporation and the Indian*, author Craig T. Miner asserts that the encroachment of railroads into Indian Territory brought with them the first trappings of consumer and environmental industrialization.[47] Miner states that, "by 1885, Cherokees were showing a tendency toward land sales and speculation." The development of the railroads coincides with the decline of Indian sovereignty and control over railroad rights-of-way. The consequence of railroad development was a great escalation of Indian Territory corporate activity of other kinds, particularly the cattle and oil businesses.[48]

In the waning years of the 19th century, railroads equated with expansionism, westernization, and industrialization. Railroad encroachment also represented the first mass-environmental assault on areas like Indian Territory, and later, Oklahoma. Since the late 1800s, railroads have historically symbolized environmental degradation, particularly in the west and Oklahoma. The infringement of rail lines into Indian Territory represented the roots of corporatism and commercialism during a time of increased Cherokee resource utilization. In many ways, railroad development equated with the

death knell of Cherokee sovereignty. Environmental historian Carolyn Merchant claims that, "native Americans were removed from the lands they had managed for centuries, not only during settlement…but during the creation of the national parks and national forests. Indians resisted these moves in an effort to maintain autonomy and access to resources, which were once again stripped from them by whites migrating to Indian Territory.[49] Although Cherokees had a role in the exploitation of lands and resources in Indian Territory, they were also at least partially responsible for the exploitation of their own lands and tribal community. Cherokees were had an exploitative relationship with coal extraction, much like the Choctaws, Seminoles, and Chickasaws. However, Cherokees were not as involved in clearing land and forests as were the Choctaws and Chickasaws. In fact, clear cutting in Indian Territory was such a problem that the Federal Government took control of Choctaw timberlands in 1898, issuing regulations to permit lumbering operations to continue only under its guidance. Miner writes that oil extraction and corportization in the Cherokee Nation was the last sovereign attempt at resource extraction and abuse.[50]

However substantial the ecological footprint left by Cherokees at the end of the 1800s, white eagerness for settlement and exploitation shoulders at least partial blame for the environmental and ecological upheaval of the once-pristine eastern Indian Territory. As in most areas of the trans-Mississippi west in the early 20th century, "booster" writing attempted to influence white Americans to settle in areas like Indian Territory. D.C. Gideon termed Indian Territory, "a beautiful and practically virgin country, abounding in the finest streams of the purest waters."[51] Although written as a means of "boosterism" for settlement in the region, Gideon's work was specific enough to term the Illinois

River, "one of the most beautiful streams in the south."[52] He wrote that black bass, catfish, buffalo and red horse fish were all abundant in the territory. Gideon goes on to state that, "some of the finest grazing lands in the world are found in Indian Territory."[53] Many other boosters attempted to entice white male cattlemen with financial backing to move or start a cattle operation in the territory. Although moving a cattle operation to Indian Territory may have seemed a risky proposition, Gideon's boosterism encourages the risk-reward calculation by claiming that Indian Territory was home to the finest grasslands in the world while generously stating that, "about one-half the lands in the Cherokee Nation are splendid agricultural lands."[54] However true, Gideon aims the idea of boundless agricultural fertility in Indian Territory to white-American settlers eager to make their fortune from the loamy soil and pasturelands of Indian Territory over hell and high water.

Another example of the blatant use of boosterism by writers in their "home seeker's guides" is the writing of James Earle Dunn. In 1904 he wrote, *Indian Territory: A Pre-Commonwealth*, in which he described the geographic and economic history of Indian Territory. Dunn had much to say about the westward progress of farmers toward Indian Territory:

> "The farmer moves slowly onward, a little nearer each year. But this movement, slow and irregular, as it may seem, tells of a sad, sad future for the peaceful acres of prairie grass- an evil omen that the day is at hand when their nature's dressing must (italics mine) soon be torn by the plowshare like unto the history of its sister sections which have all gone before it. (34)"

Dunn's work represents the notion of the progressive faith in the conquest of a natural area full of potential resources, in this case, Indian Territory. Dunn, however, considered the drive to prosperity to be primarily a white characteristic:

> "In 1902 Indian Territory produced 4.5 million bushels of wheat, corn and oats, 4 million bushels of vegetables, and 175,000 tons of hay, valued at 1 million dollars. Most of this was grown and gathered by white non-citizens on land leased to them by Indians, who had ownership in it only because they belonged to the tribes that owned it in common…the Indians own a great many herd of cattle and yet the majority of the cattle grazing in the IT is the property of white non-citizens who pay the citizens twenty-five cents per head for grazing privileges."[55]

Together, Dunn and Gideon are exemplary messengers of the environmental and cultural determinism utilized in the progression to unlawful white encroachment and eventual settlement in Indian Territory. In a matter of less than one hundred years after Nuttall's expedition up the Arkansas River, the ecological and environmental realities of the Indian Territory and the Illinois River basin had been turned upsidedown. By 1907, Indian Territory no longer belonged to the Native American as white settlement arrived with the baggage of industrialization, commercialization and a pronounced exploitive determinism towards the ecological surroundings of the Illinois River ecosystem and Oklahoma in general. Since 1907, industrial agriculture has become the most dominant system of farming in the Illinois region, particularly in northwest Arkansas. Ecological and environmental imbalances go hand in hand with industrial farm production and resource exploitation in Oklahoma following unification and statehood. Unfortunately, the historical precedent set by land use in Indian Territory has left us with no one to

blame but ourselves. As the late Nobel Laureate Henry Kendall once said, "environmental problems at root are human, not scientific or technical." The remaining chapters will argue that the Illinois River basin is a clear example of an area in need of regulated adaptation to human-created environmental problems.

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[1] William A. McGeveran and others, eds., *The World Almanac and Book of Facts 2005* (New York: St. Martin's Press, 2005), 680.
[2] The canoeing and rafting season on the Illinois River lasts from mid-April through September, and tourists spend anywhere from $10-20 million annually in the Illinois basin. Oklahoma Scenic Rivers Commission, Oklahoma State University, and the National Park Service, *The Illinois River Management Plan 1999* (Washington, D.C.: Government Printing Office, 1999).
[3] Thomas Nuttall, *Journal of Travels into the Arkansas Territory, During the Year 1819: With Occasional observations on the manners of the Aborigines* (Philadelphia, PA: Printed and Published by Thomas H. Palmer, 1821), 140-156.

[4] John W. Morris, *Geography of Oklahoma* (Norman: University of Oklahoma Press, 1990), 34-41.
[5] United States Department of Agriculture, Soil Conservation Service in cooperation with Oklahoma Agricultural Experiment Station, *Soil Survey for Adair County, Oklahoma* (Washington, D.C.: Government Printing Office, 1965), 5-62.
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[47] Craig T. Miner, *The Corporation and the Indian: Tribal Sovereignty and Industrial Civilization in Indian Territory, 1865-1907*, (Norman: University of Oklahoma Press, 1976), 1-211.
[48] Miner, ibid., 111-115.

[49] Carolyn Merchant, "Shades of Darkness: Race and Environmental History," *Environmental History*, 8, no.3 (July 2003): 380-394. Also see Merchant, "Gender and Environmental History," *Journal of American History*, 76, no. 4 (March 1990): 1117-1121.
[50] Miner, ibid., 130-139.
[51] Gideon, ibid., 129-131
[52] Gideon, ibid., 132. It is interesting to note here Gideon's perception of Indian Territory as a "southern" entity. Pre-statehood perception of Indian Territory was distinctly Southern. Only with migration of settlers (and unification of the territories) from the Missouri, Kansas, Illinois, Indiana, and Ohio does Oklahoma take on its "Midwestern" hue or definition in terms of social culture.

[53] Gideon, ibid., 133-137.
[54] Gideon, ibid., 141-155.
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Chapter Three

Land use and agricultural patterns in the Illinois Basin, 1907-Present

From 1818 to the early 20th century, Indian Territory was a region rooted in locally sustainable, non-commercial agriculture. However, Oklahoma's admission to the Union in 1907 marked a transitional period in the Illinois watershed due to the official unification of the territories and the subsequent elimination of Indian tribal sovereignty. As America's final agricultural frontier, Oklahoma had been subdued by whites sufficiently enough by 1907 to claim the state as a star on the flag. Statehood in the Illinois basin brought mechanized agriculture and increasing polarity in land-use patterns in Oklahoma and Arkansas. This polarization is pronounced in nearly every facet of agricultural production when comparing the Arkansas counties of Benton and Washington with Adair and Cherokee Counties in Oklahoma. This agricultural schism was so pronounced that after 1945, northwest Arkansas and northeastern Oklahoma forged different paths in terms of agriculture and human interactions with the natural environment. This chapter will serve as an introduction to the description of Industrial agriculture and the resulting human interactions with the Illinois River ecosystem.

Physical demographics have historically influenced land use patterns in the Illinois River watershed. Land use patterns and natural resource alteration have affected social, economic, and political systems in the basin. The Illinois River is just one watershed; as such, it is only one biotic section of the larger Ozark highlands system. However, its story of human ecological impact is exemplary of the American wilderness and the negative impact of humans and commercial agriculture on a localized level.

Agricultural activities do not necessarily equate to ecological destruction. Many farmers and livestock producers attempt stewardly and sustainable approaches toward land management, but are constrained in their efforts by capitalist market competition and high production costs. Non-commercial agricultural producers are not the problem; corporate agriculture, particularly the poultry industry, is the primary obstruction to agricultural and ecological sustainability in the Illinois basin. Historical records of agricultural development in the basin from 1907 to 1945 tell a great deal about the emergence of commercial agriculture in the Illinois watershed. Industrialized progress in agricultural technology brought newer forms of more effective diversified agriculture to the Illinois River region. Commercial poultry and dairy production, as well as nursery agriculture, were all new developments at the dawn of the 20th century in the basin, and all have had tangible effects on the ecology of the Illinois watershed. In a larger context, the pattern from localized agriculture to capitalistic, commercialized agricultural development has been noticed in other formerly pristine, now industrial agricultural areas like the central valley of California and converted tallgrass prairies of Iowa.

The historical origins of the present tension between environmental sustainability and protection versus the strong arm of commercial agriculture have their genesis in the years following industrialization and Oklahoma statehood in 1907. Following the implementation of New Deal agricultural policy and increased access to electricity in the 1930s and 40s, agricultural activities on the Arkansas side of the basin became rapidly commercialized and industrialized. The post-World War II emergence of industrial poultry production stands in stark contrast to the stable, localized agriculture and resource use patterns historically displayed on the Oklahoma side of the Illinois watershed. The

differences noticed on each side of the politically constructed borders of Arkansas and Oklahoma show that an imbalance between man and nature is taking place with industrial agricultural activities creating ecological disturbances still noticed downstream today. James C. Malin once wrote that, "Disturbance is the normal condition in nature and a positive contribution to the well-being of vegetation and soil."[1] Although Malin's quote may serve as a sound land and stewardship ethic, disturbance in the Illinois basin has been predominantly caused by human interaction and agro-industrial development. Nature is not disturbing nature in a natural way; humans and their economic activities are disturbing ecological activities and ecosystems. Commercialized land-use patterns have created a true imbalance between humans and their environment that is unsustainable in the most extreme sense of the word.

In this section, I will examine agricultural patterns first from 1907-1945 and then 1945 to the present for the Arkansas and Oklahoma counties contained within the Illinois watershed. For the geographical purposes of this study, I have utilized agricultural and population census records from the Illinois watershed counties of Benton and Washington in Arkansas and Adair and Cherokee counties in Oklahoma.

Agricultural Development in the Illinois Basin, 1907-1945.

It is safe to assume that until the turn of the 20th century, agricultural activities throughout the Illinois basin were largely relegated to a localized, subsistence economy. Although the term "Yeoman" is often over or misused in agricultural history, a majority of farmers and growers before 1910 on both sides of the Illinois basin could be termed

"yeoman." The transition from yeoman farmer to commercial producer occurred much earlier in the northwest Arkansas counties than in Adair or Cherokee counties in Oklahoma. Brooks Blevins, in his work entitled *Hill Folks: A History of Arkansas Ozarkers and their Image*, argues that, "the self-sufficient subsistence farmer was a dying breed by 1900 and already comprised only a minority of the Arkansas Ozarks' farm population."[2] Although this may have been true for the Arkansas side of the Illinois watershed, the persistence of the diversified yeoman farmer remained strong on the Oklahoma watershed for several decades after its decline in northwest Arkansas. Blevins claims that subsistence agriculture had vanished in the basin by 1900, and writes later that, "Washingon County was from an agricultural standpoint…heterogeneous and prosperous," and that, "the Ozark interior, meanwhile, provided a final, temporary haven for subsistence and general farming."[3] Blevins' description of agricultural activities in northwest Arkansas may be applied more practically and truthfully to the Oklahoma Ozark counties of Adair and Cherokee. In reality, the end of the great depression marked the beginning of commercialized, industrialized agriculture in Benton and Washington counties. Blevins' work is disappointing in that it neglects the unsustainable nature of industrial agricultural development in northwest Arkansas as well as the increasing agricultural polarization between the western Ozarks (Benton/Washington counties) and the Oklahoma Ozark counties (Adair and Cherokee counties) from 1900 through 1950. Surprisingly, Blevins' work ignores the environmental ramifications of industrial agricultural development in the Ozarks and Illinois watershed.

Additionally, the growth of extractive industries in the Arkansas watershed affected human relationship with the ecology of the Ozarks and the Illinois basin. The

environmental history of the Arkansas Ozarks following the Civil War is intertwined with the development of extractive resource removal. A prime example of the emergence of extractive industry is the founding of the Northwest Arkansas Lumber Company in 1885 by lumber baron C.W. Philips. The NALC harvested and purchased timber from all of northwestern Arkansas and the northeastern Indian Territory and by 1900, shipped a total of 200 cars of lumber daily from its rail yards in Springdale and Fayetteville in Washington County.[4]

From 1907 to 1940, increasing modernization and mechanization of farms in Arkansas created changes in farming systems and production in the watershed. Northwest Arkansas farmers not only invested and gained more from mechanization and the development of commercial agriculture in the Illinois basin, but were also more able and willing than their Okie neighbors to industrialize their operations for profit gain. Mechanization and increased profit led to a pronounced shift in the agricultural economy of northwest Arkansas from its focus on local or regional markets to a globally significant agricultural marketplace. It is necessary to now compare and contrast agricultural production in Benton/Washington counties with the neighboring Oklahoma counties of Adair and Cherokee. The Illinois River runs directly through each aforementioned county and the study area is relatively confined and shockingly polarized in terms of historical agricultural production. Though the use of agricultural and population census statistics, I assert that agricultural development in the Illinois River watershed has been marked by the birth and emergence of industrial agricultural production on the Arkansas side, while Adair and Cherokee counties have persisted as the domain of small, localized agricultural producers. The ever-increasing polarization of human ecological interaction on each side

of the watershed is first noticed after the Great Depression and passage of the New Deal. Although the Oklahoma Illinois watershed has remained a largely non-commercial agricultural area, it has been directly and significantly affected by the affluent and "end products" of industrial agricultural production in the Arkansas Illinois watershed.

Agricultural production in Benton/Washington Counties, Arkansas, 1907-1940

Agricultural census statistics can often serve as the foundation of research concerning human interactions with the environment.[5] Benton and Washington counties have ranked as the two most agriculturally productive counties in Arkansas since their settlement in the early 1820s. From the post-bellum period forward to 1940, Benton and Washington counties were primarily inhabited by locally sufficient agricultural producers engaged in diversified (or "mixed crop" farming, according to the USDA) and livestock raising. However, the conclusion of the Great Depression, implementation of New Deal programs, and the end of World War II brought increased agricultural mechanization and a subsequent rise in commercially and industrially efficient agricultural production. According to the 1910 Census of Agriculture, 75 percent of lands in Benton and Washington Counties were engaged in farm activities and production. 432,409 of Benton County's 560,640 total land acres were in farms that produced 26,406 tons of hay and 62,615 acres of corn. Average acreage per farm in Benton County was a sustainable 93.2 acres and 100.8 acres per/farm in Washington County. As early as the dawn of the 20th century, Benton and Washington were the leading poultry counties in Arkansas with over 400,000 poultry recorded in both counties from 1900-1910. Aside from chicken production, dairy cattle and corn were important in Benton and Washington County

during the early 1900s, as well. Both counties recorded over 120,000 acres of corn planted, as well as 17,000 dairy cattle in Benton and Washington County farms. Apple orchard production in the two counties was unparalleled anywhere in the state, with Benton and Washington Counties reporting over 4 million apple trees from 1900-1910. Farmers in both counties produced nearly 55,000 tons of hay, enough to satisfy the needs of the counties' livestock. In addition to chickens and dairy cattle, northwest Arkansas farmers produced corn, hay, and apples and were active (if subconscious) proponents of sustainable, diversified agriculture as early as 1900.[6] However, each agricultural census year notices a decline in the heterogeneity of agricultural activities in the Arkansas watershed. By the release of the 1930 agricultural census, corn and apple production were completely absent from the statistical profiles of Benton and Washington Counties, with dairy production declining as well.[7]

The agricultural census of 1920 deemed the state of Arkansas 83.4 percent rural, with Benton and Washington Counties seeing increases in number of farms. Both counties recorded 80 percent of their total land area in farms.[8] With nearly 40,000 dairy cattle in both counties, northwest Arkansas was the leading dairy area in the state in 1920. Benton and Washington County farmers increased their hay production (over 100,000 tons produced) and the counties continued their stranglehold on poultry/egg numbers and production.[9] However, agricultural production diversity was still a priority in both counties through the 1930s. Benton and Washington County growers reported nearly five million quarts of strawberries grown, and over four million bushels of apples produced from 1910-1920.[10] By the release of the 1930 agricultural census, both Benton and Washington counties saw increases in corn production (over 50,000 acres harvested

in Benton County, among the highest in the state), hay production, as well as spikes in apple and berry acreage and production. An all-time record strawberry harvest produced nearly nine million quarts of strawberries for Benton and Washington growers. Washington County even saw a spike in potato production, with 1,111 acres reported as producing 83,828 bushels of potatoes.[11] One can assume that the tubers grown on Washington County farms from 1920-1930 were produced for an economically viable and locally stable market.

Although 80.7 percent of Benton County land remained in farms by 1940, the end of the Great Depression and implementation of New Deal programs created an increase in the momentum of industrialized agriculture in Benton and Washington Counties. New Deal agricultural programs stressed the conversion of row crops to pastures and hay fields, with extension agents helping secure thoroughbred diary cattle for interested farmers.[12] The Rural Electrification Administration began at this time supplying electricity to greater numbers of farmers and in turn created the Arkansas Power and Light Company to extend its services into rural areas. New dairy machinery and techniques helped Benton County become the top milk producing county in Arkansas by 1940, with 5,305 farms reporting 28,547 dairy cattle.[13] Over four thousand Benton County farms reported nearly 200,000 chickens, but the county was second only to Los Angeles County, California in broiler production with 2,636,394 birds raised from 1930-1940.[14] In both counties, hay production continued to increase (most likely in order to feed the growing number of poultry and cattle on farms) while corn and strawberry outputs noticed their first decline in production in 30 years. Washington County farms reported nearly 30,000 head of cattle and over 2 million broilers to accommodate steady

hay production.[15] Much like their neighbors to the north, apple producers in Washington County saw their production numbers drop, as did strawberry growers in the county.[16] By 1940, agriculture in northwest Arkansas had moved beyond localized, subsistence-based patterns in Benton and Washington counties. The end of World War II and continued effects of New Deal agricultural agents and legislation brought industrial, commercialized changes to agricultural production in the counties. Increases in commercial production of chickens and broilers in northwest Arkansas were the first step in creating an agro-industrial complex in the Illinois River watershed region.

Agricultural Production in Benton/Washington Counties, Arkansas, 1950-Present

From 1919 through 1939, the percent of all farms raising chickens in Arkansas increased from 63.6 (1919) to 83.1 percent in 1939. [17] The increase in broiler production in Benton and Washington counties is no doubt responsible for the rise in percentage of poultry on farms from the end of World War I to the end of the Great Depression. The years 1940-1950 noticed the first trappings of commercialized industrial agricultural production in northwest Arkansas. Electricity was and remains a vital element to any successful poultry operation, and growers in Benton and Washington saw a surge in electrical accessibility by 1950. In 1945, the first agricultural census year to report electricity access statistics, 2,023 farms in Benton County reported electricity; by 1949, the number of rural farms with electricity climbed to 4,240. Washington County saw an even greater increase in farm electricity. In 1945, only 1,987 farms in the county had electricity; by 1950, over 4,000 farms had access to electricity thanks to rural power programs created in New Deal legislation.[18] By 1950, roughly half of the revenue dollars

from poultry production in the state of Arkansas were attributed to farms in Benton and Washington counties. Benton County poultry growers raised 9.7 million dollars from 1940-1950, while their neighbors to the south in Washington County raised 8.5 million dollars in chicken and broiler sales. Benton County growers sold over eleven million chickens and broilers from 1940-1950.[19] Although the commercial sale of poultry products brought a substantial amount of revenue into each county, Benton and Washington County growers did not attain increased financial status because of the development of companies like Tyson's Foods and JB Hunt. Corn, strawberry and apple production all continued to decrease in reported figures from 1940-1950, but Benton and Washington County farmers helped their counties' become the only million-dollar grossing dairy region in the state. Washington County was the leading cattle livestock producing county in the state, with 4,080 farms reporting over 44,000 cattle worth over five million dollars.[20] However, much like Benton County, poultry production was a top priority for most Washington County growers. From 1940-1950, 2,315 Washington County farms sold over 10 million chickens and broilers. Potato, strawberry, and apple production all declined during this time in Washington County, and it is clear from the above evidence that a major agricultural shift occurred in both counties from 1940-1950.[21] Industrialized commercial agricultural (or perhaps more precisely, monocultural) production became the norm in northwest Arkansas by 1950, and all other farm pursuits were based around the needs of livestock. This explains the importance of year hay harvests in Benton and Washington counties, but this facet of agricultural production also symbolizes the transition from market-subsistence agriculture to agro-industrial production in northwest Arkansas.

Environmental historians have pondered the effects of urban industry on the environment for years. But what happens when agricultural pursuits become industrial in nature? The story of northwest Arkansas agriculture after 1950 provides a clear picture of agro-industrial production and its ill effects on nature. The 1964 census of agriculture was the first to provide statistics on the number of "commercial farms," and unsurprisingly, Benton and Washington counties were home to the greatest number of commercial farms in Arkansas with 1,700 farms apiece in both counties.[22] From 1954-1964, Benton and Washington County farms produced a staggering 80 million dollars in agricultural revenue. Overall poultry sales in the counties increased by seven million dollars from 1950-1964, and while the number of chicken farms decreased in both counties from 1959-1964, the number of birds increased by over 600,000 head in five years.[23] Smaller numbers of operations produced an increasing amount of birds that generated multi-million dollar revenues and an agro-industrial complex. Washington County farmers alone sold over 31 million chicken eggs from 1959-1964, and the total number of birds in the county increased from 517,817 in 1959 to a whopping 2,709,603 broilers in 1964.[24] Interestingly, dairy, crop and vegetable production all declined in both counties from 1959-1964. This was due not to a lack of efficient local markets, as Blevins claims, but due to the emergence of agro-industrial poultry production patterns among farmers in Benton and Washington counties.

The 1960s and 70s saw a continuance of agricultural production patterns noticed through the 1950s in Benton and Washington Counties. In both counties, the number of farms decreased with a rise in the average farm size,[25] even though the amount of land devoted to agriculture declined in Washington County due to urban development. Growth

in the cities of Springdale, Fayetteville and Bentonville contributed to the decline of larger farms to only 54.6 percent of Washington County lands by 1974. In the meantime, poultry sales continued to increase through the 1970s. In 1964, poultry sales totaled over 94 million dollars of revenue for Washington County growers; by 1974, revenue reached nearly 125 million dollars. By the release of the agricultural census of 1974, apples, strawberries and other non-industrial (anything other than chickens, cattle or hay) agricultural production was completely absent from the farm reports of Benton and Washington counties.[26]

Industrial agricultural production and urban growth marked the human relationship with the Arkansas Illinois River watershed in the 1970s and 80s. Growth and subsequent urban sprawl in Benton County can be attributed to the emergence of Wal Mart, Inc, JB Hunt, Tyson's Foods, and other large-scale businesses that either relocated or originated in northwest Arkansas. In both Benton and Washington Counties, total land in farms decreased but poultry revenues rose to over 115 million dollars from 1974-1987. The number of small farms in both counties with fewer than 500 acres decreased drastically during this time, while farms larger than 500 acres saw a large increase in number.[27] The agro-industrial complex of northwest Arkansas was fully established by 1987, and ten years later, commercial agricultural production stood alongside globally-significant (and ecologically damaging) consumer companies in the region. The number of poultry farms in Benton and Washington counties decreased from 1987-1997, but production and revenues continued to increase. The last gasp of agricultural diversification occurred in northwest Arkansas from 1974-1997, with dairy cattle, berry and vegetable production all declining to almost non-existent levels by the end of the

millennium.[28] In both counties, broiler and chicken production continued with steady increases in number and revenue from sales, and farm production expenses increased, as well. In order to stay competitive, growers in northwest Arkansas have either applied industrial agricultural methods or removed themselves from the business. In other words, the rich in Benton and Washington counties get rich, stay rich and get richer from the trappings of an agro-industrial complex in northwest Arkansas. Diversification and sustainable approaches on the farm are no longer economically viable for producers in either county, a concept that shows the agricultural metamorphosis northwest Arkansas has undergone since 1950. By the late 1990s, revenues reported for berry, vegetable, and grain crops, as well as orchard production, were nearly non-existent.[29]

From 1997-2002, Benton County growers raised over 128 million broiler chickens. This marks an all-time high in single county production in the history of the United States.[30] Washington County growers were not far behind, with 110 million broilers and nearly 3 million layer chickens produced in five years.[31] With approximately 238 million chickens in both counties, poultry outnumber human beings in the Arkansas-Illinois Watershed by a ratio of 696 to 1. Not even the most ardent proponent of industrial agricultural would claim this to be a sustainable system of production. Agricultural producers and agro-business companies have sacrificed their unspoken bond with the environment for revenue and dollar signs. Along the way, industrial producers and the companies they are contracted to have absolved themselves of any ecological responsibility, as seen in the loading of phosphorous nutrients into a federally-protected aquatic system. The mother of Benton and Washington counties' agricultural "holy trinity" is poultry production, followed by hay and cattle raising, all driven by a capitalist

economy that encourages industrial development and extraction no matter what the cost. Fortunately, there is a much different story to tell of historical agricultural pursuits on the Oklahoma side of the watershed, where localized, diversified, and non-commercial agriculture has been the dominant system of farming since the mid 19th century.

Agricultural Production in Adair and Cherokee Counties, Oklahoma, 1907-1940

From the dawn of the 20th century forward, Benton and Washington Counties have seen yearly growth in population and development of urban centers like Fayetteville, Springdale, Bentonville and Siloam Springs. From 1960 to 1990, both counties experienced a 200 percent growth in population. Although Blevins's work on the Arkansas Ozark provides surprisingly little insight into the environmental ramifications of urban development, it is clear that the Oklahoma-Illinois watershed differs from the Arkansas-Illinois basin in terms of not only population growth and sprawl, but agricultural production as well. In this section I will outline the historic roots of farm production in Adair and Cherokee counties, which serve as the home counties of the Illinois River as it flows from northwest Arkansas through eastern Oklahoma. It is my contention that Adair and Cherokee counties are nearly polar opposites of their Arkansas neighbors in terms of agricultural production and population dynamics since the modern settlement and development of the two areas in the early 1900s.

One primary difference between the Arkansas counties and Adair and Cherokee counties is population stability. As mentioned before, the Arkansas-Illinois watershed

noticed tremendous growth throughout the 20th century. In contrast, Adair County reported 9,115 residents in the 1907 population census. At the reporting of the 1995 census, Adair County counted 19,900 citizens, a growth of only 10,000 in 88 years. The population of Cherokee County in 1910 stood at 16,778, and if one added the populations of the Oklahoma-Illinois watershed counties through time, the results would fail to equal the population of Benton or Washington counties.[32] Although Cherokee County has grown from reporting 10,345 citizens in 1907 to 43,045 in 2000, stable population growth has been the story of non-agricultural development in the Oklahoma-Illinois watershed. The primary difference in the development of each side of the Illinois watershed is that the Oklahoma counties never saw an influx of fortune-500 companies, urban sprawl (and Midwestern retirees, in the case of the Arkansas Ozarks) or the development of a large-scale agro-industrial complex in the area. On the other hand, neither Adair nor Cherokee county have seen an exodus of people out of the region, a circumstance that plagues many rural Oklahoma communities. Growth in the Oklahoma Ozarks historically has been slow, steady, and relatively sustainable. Much the same can be said for agricultural development and production in the area, as the following section will display. Often, environmental historians equate the principles of sustainability and small farming with poverty and a lack of economic mobility. This has been proven to be untrue in the case of Adair and Cherokee counties, with farm and land ownership remaining constant throughout the 20th century. Farm turnover rates and transience has remained low in northeastern Oklahoma, particularly in the Illinois River watershed.

During the reporting of the 1910 agricultural census, roughly 33 percent of land in Adair County was reported as "in farms." With a human population of nearly 10,000,

cattle outnumbered people in the county, but agricultural activities were decidedly localized and subsistence-based. Strawberries (Adair County still claims its crown as the "Strawberry Capital of Oklahoma"), corn and hay were all important crops to the isolated Adair farmer, and the county reported only 45,729 poultry on all farms in 1910 (compared with over 500,000 over the border in Benton and Washington counties).[33] Adair and Cherokee farmers usually held between 88 and 95 acres and produced hay for their dairy cattle and subsistence poultry flocks. With only 35 percent of land in both counties in farms during the 1910 agricultural census, the hilly terrain and thinner soil of the Oklahoma-Illinois watershed counties played a role in the historically non-commercial agricultural profile of Adair and Cherokee counties.

Significantly, both counties remained out of reach for the influence of oil in Oklahoma's boom years from 1920 to 1939. The state produced one-third of America's crude oil from 1928-1931.[34] Tulsa was considered the, "New York of the Prairie," but oil extraction activities in Tulsa and Glenpool remained distant from the rural Illinois watershed. Although Oklahoma's percentage of rural population declined from 80.7 in 1910 to 73.4 percent in 1920, both Adair and Cherokee counties saw a substantial increase in number of farms and land in farms by that same year.[35] This growth can be partially credited to the meteorological advantages of eastern Oklahoma in terms of plentiful rain, mild winters, and a longer growing season. Although the hilly soils and terrain of Adair and Cherokee counties were not conducive to commercial row-crop or even mass-livestock production, the area was suitable for the diversified farm activities of the yeoman. A majority of farms in the two counties were between 50 and 99 acres, and the combined poultry statistics for Adair and Cherokee counties show that in 1920,

farmers in the Oklahoma watershed produced less than a third of the agricultural products sent to market in the Arkansas counties.[36]

From 1920 to 1930, the percentage of land and number of farms in Adair and Cherokee counties increased, as did farm-market sales. Farmers in both counties produced milk, eggs, hay and strawberries, along with small crops of corn.[37] Most agricultural products grown in the Oklahoma watershed found markets in nearby towns with populations relatively removed from other larger markets, unlike the Benton and Washington county farmers who had rail access to urban areas like Little Rock, Kansas City, and Chicago. Adair and Cherokee growers sold a wider array of produce to area markets in Tahlequah, Stilwell, Wagoner and occasionally, Fort Smith. Farmers on the Oklahoma side were active in subsistence production well into the late 20th century, setting the stage for agricultural sustainability and stability in the Illinois watershed. Although the relatively modest market potential and revenue gains in Adair and Cherokee counties from 1910-1930 would likely dismay proponents of agri-business, the multi-faceted nature of agricultural production in Adair and Cherokee counties has had far less impact on the ecosystems of the Illinois watershed than commercialized production so common on the Arkansas side through the 1900s.

By 1940, the end of the Great Depression and implementation of New Deal programs helped Arkansas farmers develop commercially, but in the Oklahoma watershed, farm population and production remained at a localized level. As mentioned before, by the 1940s farmers in Benton and Washington Counties became increasingly tied into a system of production that included only hay foraging alongside cattle and poultry sales. The statistics of the 1940 agricultural census show that Adair and Cherokee

farmers were still growing strawberries, corn, apples, along with hay, cattle and poultry through the second half of the 1900s.[38] Dairy cattle, corn, potato, and berry production fluctuated on a yearly basis in the Oklahoma watershed, but unlike their Arkansan neighbors, farmers in Adair and Cherokee remained largely subsistent with modest surpluses sold to their local markets in a non-industrial fashion. In contrast to the 13 million chickens produced in Benton and Washington counties in 1940, only 55 farms in the entire state of Oklahoma could report ownership of 3,200 or more head of poultry during that same time.[39] None were located in Adair or Cherokee counties. The pronounced transition from subsistence agriculture to commercial production that took hold in Arkansas during the 1930s and 40s was non-existent across the border in Adair and Cherokee counties.

Agricultural Production in Adair and Cherokee Counties, Oklahoma, 1950-Present

After the end of World War II through the 1960s, the Oklahoma-Illinois watershed persisted as the domain of small, subsistence-based localized farming patterns. Across the border, northwest Arkansas counties were undergoing a transition to commercial production while their Oklahoma neighbors noticed an increase in number and acreage of small, non-commercial farms.[40] This shift served as a primary starting point of a persistent social, economic and agricultural polarization of the two Illinois watershed regions in Arkansas and Oklahoma. Additionally, the "dust bowl" that had persisted in the 1930s and 1950s was drawing to a close in Oklahoma, as well. As we have noticed, industrial agriculture replaced subsistence farming in many parts of the Southern plains and the mid-South. The Dust Bowl was incredibly important in the public

perception of Oklahoma's environmental reality. Dust storms of the 1930s coincided with a nationwide exodus from the farm to urban areas. However, with plentiful rainfall and a relatively stable population base, Adair and Cherokee counties can be seen as environmental anomalies at a time when Oklahoma was viewed as an arid, worthless plain. Farm employment and ownership rates in Adair and Cherokee counties remained relatively stable through the 1930s, 40s, and 50s, which is surprising when one considers the historically prevailing landowning practices of small, localized farmers. Additionally, rates of turnover in farm ownership and labor were much higher in most other Oklahoma counties than in Adair and Cherokee counties. If exodusters, as Worster calls them, did move from Cherokee and Adair Counties, they most likely moved to regional cities like Tulsa, Fort Smith, and Oklahoma City, not Bakersfield or Needles.[41] Agricultural patterns in the Oklahoma watershed remained closely linked to diversified production that was most successful on a localized, regional-market scale, while northwest Arkansans increased poultry production and sales year-by-year.

From 1944 to the agricultural census report of 1950, average farm size in Adair County increased from 84 acres to 98 acres, and like their neighbors to the east, the development of rural electricity had a profound effect on farmers in rural eastern Oklahoma.[42] Out of 2,000 farms, only 465 reported access to electricity in 1944. By 1950, the number of farms receiving electricity had increased to 1,231.[43] However, increased poultry production and chicken housing was not the primary goal of New Deal electricity programs in Adair or Cherokee counties, as it was in northwest Arkansas. In fact, overall poultry ownership and production in both counties decreased from 1930-1960. Farm mechanization was much slower in its development and implementation in

the Oklahoma watershed; in 1950, only half of the farms in Cherokee County reported ownership of tractors and/or two or more horses.[44] Although crop production did decrease in Adair and Cherokee counties from 1940-1960, hay and strawberry production, small livestock raising, and the development of nursery agricultural remained important during this time. Apple and grape crops offered alternatives for smaller, localized growers in Adair and Cherokee counties, as well.[45] The 1960 census was the first to report the number of "commercial farms" (farms with over 2,000 acres selling more than $2,500 worth of produce annually), and only ten commercial farms existed in the Oklahoma-Illinois watershed from 1940-1960.[46] Farm size in Cherokee County increased to nearly 124 acres/farm, and 57.5 percent of land in the county was engaged in agriculture by 1960.[47] Woodland pasturage increased in both Oklahoma counties after the 1950s, as did the total woodland area in Adair and Cherokee counties.[48] The "wise-use" protection and revitalization of woodland areas in the Oklahoma Ozarks is just one of the many land-use patterns in the Illinois watershed that makes this study between Arkansas and Oklahoma a lesson in environmental contrasts.

From 1964 to 1974, the overall number of farms and percentage of land in farms in Oklahoma decreased.[49] However, the percentage of land in farms increased in both Cherokee and Adair counties during this period, albeit slightly. And although farm production costs increased in both counties through the 1970s, farmers were able to counter increasing expenses by keeping their landholdings small (average acreage in Adair County at this time was 30-49 acres/farm) and sustainably productive. Poultry production in the Oklahoma counties has traditionally been overshadowed by their Arkansan neighbors, and only 801 poultry farms were reported in Cherokee County

during the agricultural census year of 1974.[50] Of those 801, just 350 farms reported sales over $2,500. Adair County reported only 219 poultry farms in 1974, and only 48 of these farms reported sales over $2,500.[51] Having no oil fields or wells within a seventy mile radius, the oil boom and bust of the late 1970s and early 80s had little effect on the Oklahoma-Illinois watershed in terms of local economy, and the number of farms in both counties increased from 1974 to 1987 while population growth remained slow. During this time, hay production, cattle and dairy sales, and nursery farm product sales all increased in both Adair and Cherokee counties, but certainly not to a commercial level.[52]

Moderate population and agricultural production levels have been the hallmarks of agriculture in the Oklahoma Illinois watershed for the past twenty years. Although the population of Cherokee County increased from 17.762 in 1960 to 30,684 in 1980, human impact on the environment through agricultural activities has remained limited due to small landholding size and non-commercial approaches to production. In both counties, farms with 500-2,000 acres have remained a minority in terms of number and growth. On the other hand, the number of farms containing 10-499 acres has increased in Adair and Cherokee County every census year since 1974. As farm production costs have increased, so has agricultural production in the Oklahoma watershed. Hay tonnage, as well as number of cattle and number of nursery farms increased from 1974-87. Strawberries, blueberries and blackberries have all become (and in some cases, remained) important cash crops at local markets for growers in Adair and Cherokee counties.[53]

By the reporting of the most recent agricultural census in 2002, a majority of farms in both Adair and Cherokee counties remained small, with an average between 50-179 acres. A little over 90,000 acres in both counties are in current use as cropland, and

cattle have remained an important facet of agricultural production.[54] Hay, berry and nursery production have all remained constant, if not unspectacular in the region, also. Land-use patterns that employ diversification of produce have remained important in the Oklahoma watershed from the early 20th century forward. The divergence of agricultural and ecological systems in eastern Oklahoma and northwest Arkansas have created a polarization in terms of human interaction with the environment that has yet to be recognized or addressed. One interesting aspect of agriculture in the Oklahoma watershed is that poultry production has continued to decrease in Adair and Cherokee counties from 1960 to the present day. These may be questions better answered by an agronomist or poultry scientist, but why has production nearly ceased in the Oklahoma watershed while at the same time taking on enormous industrial levels of production in northwest Arkansas? Are the environmental conditions of counties within 50 miles of each other that much different? Superficially at least, the mass production of poultry in Arkansas makes it virtually impossible to raise poultry for market sale in anything less than full-blown industrial production. Small operators simply cannot compete. Significant for this study are the ecological results of a fully-developed industrialized agricultural economy with seemingly little regard for the surrounding natural environment. Poultry companies and their growers in Benton and Washington counties have absolved themselves of environmental responsibility with the promise of jobs and the vague assurance of "a better economy" in order to placate what they view as a largely rural, apathetic and ignorant populace. Proponents of the poultry industry in northwest Arkansas argue that other factors contribute to environmental degradation in the Illinois basin. And while landfills, wastewater treatment plants and urban development and sprawl in the watershed

continue to be monitored closely in the region, industrial poultry production has had the most tangible effect on the Illinois River basin in both Arkansas and Oklahoma. However unlikely it may seem, perhaps agricultural companies and producers could learn from the thriving examples of sustainability and stewardship set forth in northeastern Oklahoma. Groups like the Oklahoma Scenic Rivers Commission, Save The Illinois River, the J.T. Nickel Ranch and Preserve, the Kerr Center for Sustainable Agriculture in nearby Sallisaw as well as Tahlequah's Oh-Gi-La Cherokee historical center have proven that environmental sustainability is alive and well in eastern Oklahoma. Perhaps commercial agriculturalists in northwest Arkansas should heed the words of environmental historian Richard White, who once stated that, "a natural area will receive protection only if the value a society assigns to services provided in its *natural state* is higher than the value the society assigns to converting it to a more direct human use."[55]

The next section of this report will describe the human interest conflict that is present on several different levels in the historic protection of the Illinois River watershed. The river is a priceless and precious resource for humans, a fact often taken for granted in the watershed area. The tension between the romantic ecological image of the region and the willful neglect of the Illinois River, especially in northwest Arkansas, is alarming. The ideological battle for the Illinois basin is a fight waged on both sides of the river between industry and sustainability, corporate agricultural production and localized farming activities, the poor versus the rich, and perhaps most importantly, the interests of the environment versus the interests of the economy. Whatever side wins out-and the fight is certainly leaning toward Oklahoma interests, residents, and leaders-will have a large say in the future of the Illinois River watershed.

[1] James C. Malin, *History and Ecology: Studies of the Grassland* (Lincoln: University of Nebraska Press, 1984). Ed. by Robert P. Swierenga, 23-28.

[2] Brooks Blevins, *Hill Folks: A History of Arkansas Ozarkers and their Image* (Chapel Hill: University of North Carolina Press, 2002), 94-97.

[3] Blevins, 108-110.

[4] Blevins, 34-40.

[5] For this section, I have utilized information from the United States Census of Agriculture from 1910-1950, 1964, 1974, 1987, 1992, 1997, and 2002.

[6] U.S. Department of the Interior, Office of the Census, *Thirteenth Census of the United States, 1910: Agriculture*, (Washington, D.C.: GPO, 1911).

[7] U.S. Department of Commerce, Bureau of the Census, *Fifteenth Census of the United States, 1930: Agriculture*, (Washington, D.C.: GPO, 1932).

[8] U.S. Department of Commerce, Bureau of the Census, *Fourteenth Census of the United States, 1920: Agriculture*, (Washington, D.C.: GPO, 1921).

[9] Ibid., *Fourteenth Census of the United States, 1920: Agriculture, Arkansas County statistics*, (Washington, D.C.: GPO, 1921.)

[10] *Fifteenth Census of the United States, 1930: Agriculture*, (Washington, D.C.: GPO, 1932).

[11] Ibid., *Arkansas and Oklahoma County statistics*, (Washington, D.C.: GPO, 1932).

[12] Blevins, *Hill Folks*, 152-153. Also see Chestnutt, "Rural Electrification in Arkansas," 246, 250, 253; AAES and Agricultural Marketing Service, *Price and Price Indexes*, 45.

[13] Ibid., *Census of Agriculture, 1940: Statistics for Counties-Arkansas, vol.1, part 1-35,* (Washington, D.C.: GPO, 1944).

[14] Ibid., *Census of Agriculture, 1940: Special Poultry Report, p.27-38,* (Washington, D.C.: GPO, 1944).

[15] Ibid., *Census of Agriculture, 1940: Statistics for Counties-Arkansas, vol.1, part 1-35* (Washington, D.C.: GPO, 1944).

[16] Ibid., *Census of Agriculture, 1940: Statistics for Counties-Arkansas, vol.1, part 32-33* (Washington, D.C.: GPO, 1944).

[17] Ibid., *Census of Agriculture, 1940: Statistics for Counties-Arkansas, vol. 1, part 22-24* (Washington, D.C.: GPO, 1944).

[18] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 1950: Statistics for Counties-Arkansas, vol.1, part 4-56*, (Washington, D.C.: GPO, 1953). The 1950 agricultural census was the first to provide electricity access statistics, which were especially significant in the south and the southern plains.

[19] Ibid., *Census of Agriculture, 1950: Statistics for Counties-Arkansas, vol. 1, part 50-56* (poultry section), (Washington, D.C.: GPO, 1953).

[20] Ibid., *Census of Agriculture, 1950: Statistics for Counties-Arkansas, vol. 1, part 38-39*, (Washington, D.C.: GPO, 1953).

[21] Ibid., *Census of Agriculture, 1950: Statistics for Counties-Arkansas, vol.1, part 1-15*, (Washington, D.C.: GPO, 1953).

[22] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 1964: Statistics for Counties-Arkansas, vol.1, part 1-58,* (Washington, D.C.: GPO, 1967). Note that the 1964 agricultural census was the first to report the classification and size of "commercial farms."

[23] Ibid., *Census of Agriculture, 1964: Statistics for Counties-Arkansas, vol.1, part 22-25*, (Washington, D.C.: GPO, 1967).

[24] Ibid., *Census of Agriculture, 1964: Statistics for Counties-Arkansas, vol.1, part 22-28*, (Washington, D.C.: GPO, 1967).

[25] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 1974: State and County Data-Arkansas, vol.1, part 4*, (Washington, D.C.: GPO, 1977).

[26] Ibid., *Census of Agriculture, 1974: State and County Data-Arkansas, vol.1, part 4*, (Washington, D.C.: GPO, 1977).

[27] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 1987: State and County Data-Arkansas, vol.1, part 5-30*, (Washington, D.C.: GPO, 1990).

[28] Ibid., *Census of Agriculture, 1974-1997: State and County Data-Arkansas, vol. 1, part 1-58*, (Washington, D.C.: GPO, 1999).

[29] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 1997: Statistics for Counties-Arkansas, vol.1, part 1-52*, (Washington, D.C.: GPO, 2000).

[30] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 2002: Statistics for Counties-Arkansas, vol.1, part 1-43*, (Washington, D.C.: GPO, 2003).

[31] Ibid., *Census of Agriculture, 2002: Statistics for Counties-Arkansas, vol.1, part 37-41*, (Washington, D.C.: GPO, 2003).

[32] United States Department of the Interior, Office of the Census, *Thirteenth Census of the United States, 1910: Population*, (Washington, D.C.: GPO, 1910-1990). I gathered population statistics for Adair and Cherokee County from 1910-1990.

[33] Ibid., *Thirteenth Census of the United States, 1910: Agriculture*, (Washington, D.C.: GPO, 1911).

[34] Oklahoma Gas and Energy Comission, *Statistics for Production, 1927-1932*. Tulsa, OK: OG&E, Inc. 1-37.

[35] U.S. Department of Commerce, Bureau of the Census, *Fourteenth Census of the United States, 1920: Agriculture*, (Washington, D.C.: GPO, 1921).

[36] Ibid., *Fourteenth Census of the United States, 1920: Agriculture, Oklahoma County statistics*, (Washingon, D.C.: GPO, 1921).

[37] U.S. Department of Commerce, Bureau of the Census, *Fifteenth Census of the United States, 1930: Agriculture*, (Washington, D.C.: GPO, 1932). See Adair and Cherokee County statistics section, part 13-29.

[38] Ibid., *Census of Agriculture, 1940: Statistics for Counties-Oklahoma, vol.1, part 1-39,* (Washington, D.C.: GPO, 1944).

[39] Ibid., *Census of Agriculture, 1940: Statistics for Counties-Arkansas and Oklahoma, vol. 1, parts 1-35 and 1-39*, (Washington, D.C.: GPO, 1944).

[40] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 1950: Statistics for Counties-Oklahoma, vol.1, part 1-58*, (Washington, D.C.: GPO, 1953).

[41] Donald Worster, *Dust Bowl: The Southern Plains in the 1930s* (Oxford: Oxford University Press, 2004).

[42] Ibid., *Census of Agriculture, 1950: Statistics for Counties-Oklahoma, vol. 1, part 1-39*, (Washington, D.C.: GPO, 1953).

[43] Ibid., *Census of Agriculture*, *1950: Statistics for Counties-Oklahoma, vol. 1, part 17-18*, (Washington, D.C.: GPO, 1953).

[44] Ibid., *Census of Agriculture, 1950: Statistics for Counties-Oklahoma, vol. 1, part 13-14*, (Washington, D.C.: GPO, 1953).

[45] Ibid., *Census of Agriculture, 1950: Statistics for Counties-Oklahoma, vol. 1, part 37-39*, (Washington, D.C.: GPO, 1953).

[46] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 1964: Statistics for Counties-Oklahoma, vol.1, part 1-56,* (Washington, D.C.: GPO, 1967).

[47] Ibid., *Census of Agriculture, 1964: Statistics for Counties-Oklahoma, vol. 1, part 11-14*, (Washington, D.C.: GPO, 1967).

[48] Ibid., *Census of Agriculture, 1964: Statistics for Counties-Oklahoma, vol. 1, part 23-33*, (Washington, D.C.: GPO, 1967).

[49] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 1974: State and County Data-Oklahoma, vol.1, part 10-61*, (Washington, D.C.: GPO, 1977).

[50] Ibid., *Census of Agriculture, 1974: Statistics for Counties-Oklahoma, vol. 1, part 10-13*, (Washington, D.C.: GPO, 1977).

[51] Ibid., *Census of Agriculture, 1974: Statistics for Counties-Oklahoma, vol. 1, part 13-14*, (Washington, D.C.: GPO, 1977).

[52] Ibid., *Census of Agriculture, 1974: Statistics for Counties-Oklahoma, vol. 1, part 22-25*, (Washington, D.C.: GPO, 1977).

[53] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 1987: State and County Data-Oklahoma, vol.1, part 1-52*, (Washington, D.C.: GPO, 1990).

[54] U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture, 2002: Statistics for Counties-Oklahoma, vol.1, part 1-56*, (Washington, D.C.: GPO, 2003).

[55] Richard White, "Environmental History, Ecology, and Meaning," *The Journal of American History 76* (March 1990): 1111-1116. See also, Richard White, "Environmental History: Watching a Historical Field Mature," *Pacific Historical Review* 70 (February 2001): 103-111 and White, "Historiographical Essay,

American Environmental History: The Development of a New Historical Field," *Pacific Historical Review* 54 (March 1985).

Chapter Four-"A History of Preservation, Conservation and Environmental Protection in the Illinois River Watershed"

Having discussed the historic development of land and resource utilization in the basin, it is now necessary to examine the general role of conservation, protection, and environmental awareness in the history of the Illinois watershed. Additionally, this final section will canvass the future and continuation of ecological protection of Oklahoma's most significant scenic river area. In describing the legislative and political history of environmental protection in the watershed, I will utilize information from court battles between Arkansas and Oklahoma, along with the implementation and importance of the 2004 Joint Monitoring Program and the Illinois River Management Plan between the two states. For the purposes of this study, I will also highlight what most consider the significant present-day organizations involved with protecting the Illinois River. The Oklahoma Scenic Rivers Commission and Save the Illinois River, Inc., a non-profit ecological interest group formed by Ed Brocksmith, will be canvassed in this section. Additionally, I will investigate the historic function of Oklahoma State University and Northeastern State University in the protection and conservation of the river and its resources. These institutions have proven vital in revising the perception of Oklahoma as an ecologically unfriendly environmental disaster zone, an image ranging from Dust Bowl exodusters to gushing oil derricks. As the group presumably most concerned with the assumed decline in economic health resulting from environmental protection, canoe and resort operators will be thoroughly scrutinized, as well. Water-based recreation has

drawn increased attention in the past three decades, and I will attempt to outline the aim of operators and the battle between economic and environmental interests in the basin. How environmental protection and awareness fits into the future of the Illinois River will be extremely important in the ongoing struggle between the conservation of nature and persistence of corporate agriculture in the basin. However, it should be duly noted that this report only serves as a window to the river's past, and recognizes that humans will indeed have continued interaction (whether good or bad) with the Illinois watershed. There are still many questions to be asked, many problems to be solved, and undoubtedly, more issues to arise in the Illinois River basin.

A History of Conservation and Preservation in Oklahoma

Shortly after Oklahoma senator Herb Rozell and state representative Jim Townsend introduced the Oklahoma Scenic Rivers Bill to the state legislature in 1977, Laurence Drake, Leonard Solomon, and Harry Birdwell prepared and published "The History of Conservation in Oklahoma**"** under the direction of the Oklahoma Association of Conservation Districts.[1] A short history of conservation in Oklahoma is necessary to understand the significance of conservation and preservation in a state thought of as ecologically unsound and aesthetically worthless. In the 1920s, only minimal conservation work was being done throughout the state.[2] The primary emphasis of Oklahoma farmers and agricultural lobbyists was on increased production. Conservation in Oklahoma was not originally the product of an organized, statewide effort; federal grants and loans via New Deal legislation and policy helped enact funds for conservation districts in Oklahoma.[3] Hugh Bennett and W.R. Chapline's "Soil Erosion, A National

Menace," received much attention from Congress and was the first comprehensive look at erosion problems in the United States.[4] Bennett and Chapline's work undoubtedly paved the way for attention and funds directed towards Oklahoma agriculture and soil conservation.

In 1929-30, the passage of the Buchanan Amendment by Congress established regional soil experiment stations in Oklahoma,[5] with the first soil experiment and demonstration station in the state located in Guthrie.[6] In the midst of the Dust Bowl years of the mid 1930s, Congress created the Soil Conservation Service, or SCS. The SCS had several immediate projects in Oklahoma, the first of which was work on erosion in the Stillwater Creek Watershed.[7] Work done in Payne County was successful in describing problems with erosion and providing solutions for conservation. The Stillwater Creek Watershed is significant as a success model, as evidenced by the increased amount of funds for additional studies in 17 different districts in Oklahoma.

Widespread conservation work began in the late 1930s as the Civilian Conservation Corps set up camps in 37 Oklahoma towns, including Tahlequah in Cherokee County.[8] Each camp included on its staff a conservationist who sought to make agreements with farmers to begin conservation programs. Trucks transported workers from camps to farms, with most camps employing 200 workers alongside five technicians. Their labor was free, with farmers furnishing equipment and supplies.

From the early 1930s through the 1940s, Oklahoma farmers viewed integrated conservation methods with palpable suspicion. Many farmers were misinformed, or shared a fear of federal control and intervention. This was especially true in Cherokee and Adair counties, two rural areas in which residents saw themselves as relatively

unattached to the federal government. The economic difficulties associated with the Great Depression also played a role in the slow acceptance of Soil Conservation Services in Oklahoma.[9]

Arkansas was the first state to pass the Conservation District Enabling Act in 1937.[10] Conservation districts served as special purpose sub-divisions of their state, similar to dependent school districts. Therefore, conservation districts lacked the power to tax or make assessments. On January 28, 1938, the McIntosh Soil Conservation District became the first soil conservation district in Oklahoma. On March 2, 1940, the Cherokee County SCD was established, and Adair County SCD operations began on January 24, 1946.[11] Since the formation of the first conservation district in Oklahoma, there have been several name changes of districts. Watershed boundaries formed some of the first districts in Oklahoma, including SCDs in Adair and Cherokee counties. However, county lines served as district boundaries for a majority of Oklahoma SCDs. The passage of Senate Bill 78 on April 28, 1945 took conservation coordination control away from the Oklahoma Agricultural and Mechanical College. This legislation in turn created the State Soil Conservation Board. In the literature available on the history of SCDs and soil conservation in Oklahoma, one notices a distinctly deterministic ideology towards water. The writers of *The History of Conservation in Oklahoma*, remark that the results of a flood were "a sickening sight," and that water was meant to be controlled by humans for human purposes. The notion of what I will call "water resource control" shows that state and federal agriculture agencies have done a poor job of educating farmers and growers about the benefits of wise agricultural practices.[12]

Moving past the deterministic outlook of farmers and soil conservation district managers, the 1950s through the 1970s were a time of modest progress in advancing ecological and environmental education in the state.[13] In the 1950s, local SCDs emphasized the need for education of young people not involved with groups like 4-H or the Future Farmers of America. The goal of improving both student and teacher knowledge of environmental problems led to the creation of "Outdoor classrooms" in the 1960s. The "outdoor classroom" concept consisted of acquiring all available personnel from agencies dealing with natural resources to present concepts in conservation to 5th and 6th grade students and teachers.

The 1970s brought a change in philosophy regarding conservation education in Oklahoma. Many teachers and lobbyists believed that conservation education should be included in the curriculum for all students from Kindergarten through high school. An increased emphasis on training teachers to use the environment in teaching conservation values was incorporated, also. In 1972, state colleges in Enid, Tahlequah, Muskogee, and Alva began to develop workshops and environmental seminars for teachers throughout the state. Also, Oklahoma State University in Stillwater offered a course in outdoor education at the USGS Geology Camp in Colorado.[14] For the first time in Oklahoma, proponents of conservation education developed a multi-disciplinary method that continues to be utilized today.

In addition to the role of state and federal agencies in the protection of the Illinois basin, former State Representative Jim Townsend, State Senator Beau Selman, and conservationist David Strickland were visionaries in the conservation of Oklahoma scenic rivers. Their earliest attempts to legislate protection were defeated by plans to construct

another dam on the river. However, these individuals and members of the Ozark Wilderness Waterways Club and other organizations did not give up. In 1970, the Oklahoma State legislature adopted the federal Scenic Rivers Act and offered the Illinois River inclusion in the bill. Six state rivers were under special consideration for protection including the Illinois River, Flint Creek, and Barren Fork Creek.

Another important process in the development of conservation and environmental protection in the Illinois River watershed was the creation of the Arkansas River Basin Compact between Arkansas and Oklahoma in 1972. This agreement for state cooperation in protection of the Arkansas River served several major purposes. The first of these, according to the compact, was to promote interstate harmony between Oklahoma and Arkansas. Secondly, the compact serves to provide an equitable apportionment of the waters of the Arkansas River between the states of Arkansas and Oklahoma to promote the orderly development thereof.[15] As a tributary of the Arkansas River, the Illinois River gained protective rights described in the compact. The Arkansas River compact established an agency for administering the protection and conservation of watershed resources, including the maintenance of an active pollution abatement program in each of the two states.[16] The compact sought further reduction of both natural and man-made pollution in the waters of the Arkansas basin. The final, and perhaps most successful component of the Arkansas River compact was to facilitate the cooperation of the water administration agencies of the states of Arkansas and Oklahoma in the total development and management of the water resources of the Arkansas River basin. Prior to 1972, cooperation between water quality and protection agencies in Arkansas and Oklahoma was virtually non-existent.

The compact between Arkansas and Oklahoma has been most effective in creating a foundation for centralized management and cooperation between the two states in regards to water quality monitoring. That being said, the passage of the Arkansas River compact has failed to lessen the tension between both states with regard to their protection strategies and approaches in dealing with the Illinois River basin. The state of Oklahoma is currently attempting to hold Concentrated Animal Feeding Operations (CAFOs) in the Illinois River in northwest Arkansas liable under the Federal Superfund Law for animal wastes. Oklahoma initially faced a challenge from the state of Arkansas, which viewed the proposed legislation as unconstitutional. In November 2005, Arkansas petitioned the U.S. Supreme Court to intervene, claiming that Oklahoma's actions represent an attempt to impose its laws and regulations on Arkansas businesses. Asserting a violation of state sovereignty and the Commerce Clause, Arkansas also argued that the 1970 Arkansas River Basin Compact is the proper venue for resolving any water quality issues. In February of 2006, the Supreme Court denied Arkansas Attorney General Mike Beebe's request to countersue the state of Oklahoma.[17] Beebe has been termed, with some justification, a tool of the poultry industry for trying to complain about the water standards Oklahoma is imposing on a stream that passes through Arkansas. Beebe countered that Oklahoma is trying to regulate economic activity (i.e., chicken farming) in Arkansas. The attorney general noted that the poultry industry is very important to Arkansas, but failed to mention the overarching importance of industrial chicken production to political candidates.

Oklahoma's proposed litigation is ecologically progressive for a state condescendingly referred to as a "red state." Conversely, Arkansas' attempt to use a

thirty year old agreement as legal protection against Oklahoma's efforts to reduce pollution on the river casts "the Natural State" as ecologically insensitive and crassly pro-development. It is clear that the interests of corporate livestock agriculture are intertwined with the economic interests of Arkansas. It is equally clear that legislation set forth in the Arkansas River Compact has been unable to overcome the evasiveness of industrial agriculture and its lobbyists in Little Rock.

Much of the current controversy between Arkansas and Oklahoma concerns precedents set by a 1992 Supreme Court ruling in the case of the state of Oklahoma versus Fayetteville, Arkansas. The case between both states decided the water quality and pollution standards implemented at the state line. Environmental groups, the Cherokee Nation, and the states of Illinois, Tennessee, Alabama, Arizona, California, Connecticut, Delaware, Florida, Maine, Michigan, Mississippi, New Jersey and South Carolina all sided with Oklahoma. Agricultural and mining interests in only seven states- Colorado, Montana, Nevada, North and South Dakota, Pennsylvania, and New Hampshire-aligned with Arkansas.[18] The case was heard by Supreme Court Judge Clarence Thomas, among others, with an initial ruling that the Environmental Protection Agency acted properly in granting the city of Fayetteville, Arkansas, a permit to release treated sewage into the Illinois River.[19] OSRC administrator Ed Fite called the ruling, "one of the most painful blows to environmental advocates since the controversial fight began nearly a decade ago."[20] Represented by former U.S. Representative Ed Edmondson of Muskogee, the Oklahoma Scenic Rivers Commission and Save the Illinois River, Inc. joined the State of Oklahoma in appealing the EPA's decision to the United States Tenth Circuit Court of Appeals. The Appeals Court made a precedent-setting ruling in the Fayetteville case,

holding that under the Federal Clean Water Act, upstream states must meet the water quality standards of downstream states. This decision is used today throughout the nation as states attempt to address pollution of their shared waters. In August of 1992, Oklahoma Senator Don Nickles passed a $300,000 program to aid water pollution monitoring across eastern Oklahoma and on the Illinois River. Nickles' package was significant because it benefited not only the Illinois River, but also the Little River, the Mountain Fork, James Fork, the Poteau River, along with the Arkansas River and Lee Creek. It is clear that the Supreme Court initially sacrificed Oklahoma's environmental interests in not wanting to set a precedent of a downstream state setting pollution standards for every river that crosses a state border.

The Illinois River Management Plan represents another important measure in the protection and conservation of Oklahoma's wild and scenic rivers. In the summer of 1993 a group of concerned citizens convened to discuss the future of the Illinois River and gained support from representatives in the Oklahoma Scenic Rivers Commission (OSRC), the National Park Service, and Oklahoma State University. A comprehensive management plan was soon developed for the Illinois River corridor so that the river's integrity and future could be preserved.[21] The management plan established direction by providing a set of management strategies which provided the OSRC with the overall resource protection, maintenance, and level of use intended by the public. Also, the river management plan provides a general construct for implementing the identified management strategies. Although the design of the management plan may initially seem overly bureaucratic in nature, it is important to remember that citizens of Cherokee and

Adair counties provided the impetus for the creation of the river management guidelines.[22]

Perhaps most significantly, the Illinois River Management Plan sets forth ambitious, if not encompassing, environmental protection goals for the watershed.[23] Maintaining and enhancing the economic viability of existing resource uses and developing a management plan that respected the rights of property owners was of great importance to the OSRC staff and for successful implementation of the Illinois River Management Plan. The plan seeks to conserve and enhance instream biological and physical resources such as native fish and other aquatic life and their habitats. In maintaining long-term protection of important instream and shoreline resources, the managers provide appropriate recreational use guidelines and maintenance of public access areas. Also, the basin compact stresses the need to protect land–based biological and physical resources such as plants, animals, riparian ecology, and species diversity, along with historical and archaeological resources. The plan seeks to understand the effects of resource protection actions on private property rights as well, including commercial operations and their related economic impact on the watershed region. Finally, the river management plan provides for recreation activities compatible with not only themselves, but river resources as well.[24] "Compatible activities" are defined as recreation activities that carry the least amount of impact. For example, the Illinois River Management Plan excludes marine activities involving engine-powered machinery. Therefore, there are no motorized boats or jet skis allowed on the river. Wakeboarding and waterskiing are also prohibited.

Politically, the plan seeks to increase the level of county, state, and federal support for management of the Illinois River. Ninety-five percent of land in the Illinois River corridor is privately owned, and the management plan places a strong emphasis on public involvement.[25] Newsletters, direct mailings and surveys with landowners and river recreationists are a vital part of this process. In using the management plan, the OSRC and Save the Illinois River, Inc., have provided the public with media releases, public meetings and open houses, as well as focus meetings with interests groups and affected individuals.

Implementation of protection strategies can often be the most difficult aspect for realization of a management plan, especially one dealing with as many controversial aspects as the Illinois River Management Plan does. Idealistic answers to problems are usually found to be difficult to implement because of inadequate resources, political compromises, and public demands. Because of limited resources, there are only so many issues that can be realistically addressed in the short and long term, and short term gains that may be politically astute must be balanced with long term goals. The OSRC was specifically created in 1977 to develop strategies for short and long-term protection in the river basin and is the legally authorized agency responsible for management of the Illinois River corridor.[26] Also, the commission has responsibility for other streams as designated by the Oklahoma legislature. Oklahoma politicians have noticed the growing significance and successes attained in the preservation of the watershed by the OSRC. Streambank stabilization efforts coordinated by the OSRC have resulted in the reduction of soil loss, increased riparian area protection, and reduction in sedimentation loading. An example of this occurred at the Echota Bend project, where a 15-20 foot high eroding

bank migrated roughly three hundred feet down the valley. OSRC workers stabilized Echota Bend by reconfiguring using native materials and following the natural tendency of the river. Following the streambank revitalization work at Echota Bend, the OSRC has entered into cooperative agreements with riverfront property owners to assist with bank stabilization planning and restoration.[27]

The Oklahoma legislature reviews the OSRC every five years, and because of its "at-call" status, political influences on the OSRC have historically made it difficult to properly carry out its mission of managing the river. The continuance of the OSRC as a permanent commission was one of the more pressing suggestions of the Illinois River management plan. The Commission is significant because it is the only micro-organization in Oklahoma devoted to the protection of federally-mandated wild and scenic areas. The most recent development in the push to make the OSRC an indissoluble permanent agency includes the consideration of Oklahoma Senate Bill 1785. The bill, introduced by Senator Charles Wyrick in early 2006, will shift accounts payable and other administrative duties with the OSRC from the Oklahoma Tourism and Recreation Department to the Oklahoma Department of Environmental Quality. ODEQ will also provide an additional employee for the Oklahoma Scenic Rivers Commission. Moving control of the OSRC from the tourism department into the ODEQ represents an important step in the continued protection of the Illinois River basin. The proposed bill shows a reshuffling of priorities with regards to the river, and an increase in the environmental concern of legislators.[28]

Few people understand the circumstances of the Illinois River better than Ed Fite, who has served as head administrator of the OSRC since 1983.[29] A native of Muskogee

and graduate of Northeastern State University in Tahlequah, Fite has placed himself and the OSRC at the front of the controversial environmental and protection battles between Arkansas and Oklahoma. As the longest-tenured administrator in the history of the OSRC, Fite provides stability for the agency while also helping advance its strategies and goals in managing the Illinois. Fite believes that the river is in trouble from overdevelopment in Arkansas, road construction, timber clearing, fertilizer loading, and human use. He also contends that fifteen corporate poultry companies in Arkansas have a heavy hand in water quality regulation and have managed to vertically integrate their companies by forcing growers to neglect sustainable practices.[30] According to Fite, wastewater treatment facilities in Fayetteville, Arkansas and Tahlequah, Oklahoma as well as phosphorous loading represent the primary pollutants to water quality in the Illinois River. Regional zoning is vital to the protection of both the river and farmers in Oklahoma, as well as allowing for sustainable development and investment in northwest Arkansas. Zoning in the basin would provide a higher level of interconnection and cooperation between the two states.[31] Fite maintains that canoe and resort operators represent a major thorn in the side of environmental advocates in the basin. "They believe that they own the river, and they take a lot without giving back" says Fite, adding that, "the people of the state of Oklahoma own the river, and we're only talking about a sixteen to eighteen week season." Canoe operators were outraged with the OSRC when, in 2000, it implemented a one dollar fee for canoe, kayak, and tube users while placing a two dollar fee for each member of a raft trip.[32] "The world canoe operators have enjoyed will be over when I die and finish this job," says Fite, who adds that 80 percent of poultry farms in the basin remain unaffected by the 1998 implementation of water quality

standards.[33] Although they undoubtedly have a monopoly on making money from the Illinois River, operators and resort owners are notoriously wary of regulation and any imposition of visitor carrying capacity on the Illinois, a program the OSRC has attempted to apply since 2001.

Another group working in collaboration with the OSRC is Save the Illinois River, Inc (STIR).[34] Tahlequah area citizens formed STIR in the early 1980's in response to a permit allowing Fayetteville, Arkansas to discharge treated sewage into the Illinois River Basin. STIR, is the only private, not-for-profit organization chartered exclusively for the preservation of the Illinois River, Flint Creek, Barren Fork Creek, Tenkiller Lake, and their tributaries. STIR has been instrumental in the adoption of an instream numeric limit for phosphorus for Oklahoma Scenic Rivers, probably the most important protection for Oklahoma Scenic Rivers since adoption of the Oklahoma Scenic Rivers Act. STIR members helped generate more than 600 supportive comments submitted to the Oklahoma Water Resources Board, helping insure adoption of the historic phosphorus standard. No previous issue prompted such a favorable response to an Oklahoma Water Resources Board rule. STIR actively monitors water quality issues such as citizen's concerns about water pollution and participates as a member of the Oklahoma Water Quality Management Council while closely following matters before the Oklahoma Legislature, Oklahoma Scenic Rivers Commission, Greater Tenkiller Area Association, Cherokee Nation of Oklahoma, and state and federal agencies. Under the direction of Ed Brocksmith in 2003, STIR welcomed the merger of the Scenic Rivers Association of Oklahoma, the original scenic rivers advocacy group, into STIRs statewide membership.

The processes of management and implementation of resource goals in the Illinois watershed are actively evolving. Developed and released on September 22, 2004, the *Joint Arkansas/Oklahoma Scenic River Monitoring Proposal*[35] is symbolic, but not encompassing, of the progress made for environmental preservation and cooperation between Arkansas and Oklahoma. Both states are responsible for monitoring, with the goal of full-compliance with water quality standards by the year 2012.[36] Various monitoring programs in both Arkansas and Oklahoma have shown an increase in various pollutants including phosphorous, suspended sediments, and bacteria. In response to the eutrophication of Tenkiller Lake, the Arkansas-Oklahoma Arkansas River Compact Commission set a phosphorous reduction goal of 40%. In 2002, the Oklahoma Water Resources Board stressed a total phosphorous criterion of 0.037 mg/L in Scenic Rivers with full compliance by 2012. Only by then will we know the full extent of successful cooperation between Arkansas and Oklahoma in keeping the Illinois basin ecologically sound.

Several common goals for water quality in the watershed include improving water quality, reducing phosphorus through control of point and non-point sources, developing coordinated strategies to meet water quality goals in the watersheds, and developing a watershed Plan according to the EPA Clean Water Act legislation. The third goal of developing coordinated strategies for environmental protection in the Illinois River area is especially problematic. Both Arkansas and Oklahoma have historically counted on the development of coordinated strategies for river protection, but there has been little cooperation outside of the notion of developing ideas and strategies.[37] With drought and pollution continuing to increase, there is little time to waste in developing and turning

strategies into action. Twenty eight of the thirty-two proposed monitoring stations listed in the Arkansas-Oklahoma joint Monitoring Proposal are located in the Illinois River basin, with Mountain Fork in southeastern Oklahoma and southwestern Arkansas comprising the four remaining scenic river monitoring stations.[38]

The Role of Local Communities and Institutions of Higher Education: Tahlequah, NSU and Oklahoma State University

Having discussed the most significant legislation, management plans, and advocacy groups in the Illinois watershed, it is necessary to examine the role of localized institutions in the basin. The city of Tahlequah and Northeastern State University, as well as Oklahoma State University, comprise an integral aspect of conservation and protection of the Illinois River. All three of these establishments have either provided or benefited from increased environmental awareness in the watershed. With nearly 20,000 residents, Tahlequah is the largest city in the Oklahoma-Illinois River basin. It is often considered Oklahoma's most ecologically-friendly community, and Northeastern State University plays a significant role in Tahlequah's progressive approach to its natural surroundings. According to Ed Brocksmith, chief administrator of STIR, local attitudes towards river protection have improved in the last two decades.[39] Due to efforts in keeping the Illinois River clean, there is a greater environmental awareness in the Tahlequah area than in any other area of Oklahoma. Citizens and students alike realize the importance of the river and Lake Tenkiller to the economy of northeastern Oklahoma. Both the city of Tahlequah and NSU have become favored destinations for eco-tourists and are significant in overcoming the label of an unconcerned "red state."

One example of the emphasis on environmental integrity can be found northeast of Tahlequah at the J.T. Nickel Family Nature and Wildlife Preserve, formerly the J-5 Ranch.[40] Formed in 2000 from a land gift from the John Nickel family, the Preserve is the largest privately protected conservation area in the Ozarks. Its 15,000-acre landscape rests in the Cookson Hills and overlooks the Illinois River. Spring-fed creeks make their way through a rugged topography of steep slopes and narrow valleys harboring a mosaic of oak-hickory forest, lofty pine woodland, and a diverse mix of savanna, shrubland, and prairie. Additionally, the preserve provides optimal habitat for a suite of uncommon breeding bird species, including some whose survival requires large blocks of intact habitat. Local residents claim that the Nickel Preserve is the last landscape-scale opportunity to address ecological threats in the Oklahoma Ozarks by protecting and restoring a fully-functioning ecosystem.[41] In its approach to valuing the Illinois River as a community-shared resource, Cherokee County, Tahlequah, and NSU all have the ability to serve as vanguards in developing ecological awareness throughout the south-central United States.

Although nearly 150 miles to the west, Oklahoma State University in Stillwater has also contributed to heightened environmental consciousness in the Illinois watershed. As a land-grant University, OSU operates several extension agencies and water quality monitoring stations in Adair and Cherokee counties. Professors and researchers at OSU like Dr. Michael Smolen, Dr. Mike Summerfelt, Dr. Sarah Kimball, and Dr. Will Focht have left an indelible mark on how we research and perceive the Illinois River basin. A majority of the primary studies and scientific analysis of the Illinois watershed are undertaken and completed in Stillwater, as well.

Impact of Human Recreation on the River

Although Tahlequah, NSU and the surrounding basin area are becoming known for their environmental attentiveness, human impact on the river is a major cause of ecological damage in Adair and Cherokee counties. Because of their accessibility, primitive character, and fishing opportunities, the Illinois River and its tributaries have been a popular recreation destination for decades. Local citizens, as well as urban families and groups all utilize the river's resources, primarily between May and September. Peak months for recreation are July and August, and canoeing is the most popular activity associated with the river during this period.[42] The prevalence of canoeing has increased dramatically within the last twenty years. In 1970, there were only 600 canoes rented while in 1975 the number had grown to over 36,000, a 600% increase in demand within a five year period.[43] Fifteen commercial canoe-rental operations operate on the Oklahoma side of the river. These concessionaries provide services ranging from canoe, raft, and kayak rentals to camping, motel services, R.V. hookups, and grocery sales. There are presently eleven access areas located along the river to provide accessibility to both operators and the public.

A majority of environmental advocates, including both Ed Fite and Ed Brocksmith, believe that outfitters on the Illinois River are not as progressive as they should be when it comes to protecting and ensuring the future of the river.[44] Establishing a river carrying capacity represents a possible lasting solution to the problems of pollution and overcrowding on the river. However, a majority of operators and resort

owners object to regulation and organizations like the OSRC and STIR. As Fite remarked, "most outfitters care more about the bottom line for their business and don't give much thought to the future of the resource."[45] Sustainability is a fundamental principle in the protection of the Illinois River, and limiting the number of canoes and recreationists allowed on the river in a 24-hour period is necessary to ensuring the water quality and ecological integrity of the watershed.[46]

Conclusion

Efforts to protect the Illinois River are examples of the effect of environmentalism in the American heartland. Environmental conservation in the Illinois watershed has been more gradual and, in many ways, more effective than in other rural areas. As recently as a decade ago, many people saw environmentalists as tree-hugging hippies with convoluted ideas about man and nature and a general disconnect from capitalist society. Now, Tahlequah, NSU, and the Illinois River are evolving examples of what can be done with the notion of sustainability intertwined with community value. This change has stemmed partly from education and, perhaps more significantly, citizens seeing the effects of pollution on the river and its ecosystem. There are many river enthusiasts who recreated on the Illinois in the 1960s and continue to do so today. The ecological changes river recreationists have seen in the watershed naturally foster concern. Transformations in the natural environment have made American environmentalism and ecological concern a reality for all citizens. The future of environmental protection and conservation in the south-central United States is promising, and we need to cease looking towards other areas as models of protection and appreciate what we have while realizing how we can

shape and influence the future. Planning is especially important considering the Illinois River basin is sandwiched between two increasingly urban areas-Tulsa, Oklahoma and Northwest Arkansas- that will be facing environmental issues in the future. In terms of agricultural production and its role in the protection of the Illinois corridor, we have to realize that the majority of farmers involved with corporate agriculture in the basin are between 60 and 70 years old. What will the next generation of rural landowners do? It is up to younger farmers to implement responsible agricultural techniques. Producers need to inherit the land with a sense of sustainability and stewardship, something that has been missing in the post-industrial agricultural practices of northwest Arkansas growers. Also, agricultural interests including the Oklahoma and Arkansas Farm Bureau have resisted water quality regulations aimed at controlling nonpoint (agricultural) sources of pollution and nutrient pollution of streams and lakes. Increasing profit is the motive behind the Oklahoma Farm Bureau's status as the primary enemy to clean water in the state, and many residents are becoming concerned with a widening gap between clean water advocacy and the agriculture industry. Cooperation between farm interests and environmental interests must be reached to ensure the posterity of precious areas like the Illinois River watershed and basin.

One program that could serve as a model for environmental organizations concerned with the Illinois River originated in Macon County, Missouri.[47] In late December 2005, Macon county commissioners approved an ordinance requiring that large scale livestock operations obtain a county health permit. The public health ordinances for industrial hog operations came as a result of Cargill Pork, Inc. expanding its operations in northern Missouri. Shelby County, Missouri, is also considering similar

ordinances. Public health ordinances could be applied in the Illinois River basin, as well, with its issues of corporate, industrial agriculture and ecological depletion in northwest Arkansas. County commissioners in Benton, Washington, and Adair Counties should follow Missouri's lead and require large-scale poultry productions in Northwest Arkansas to obtain a county health permit to operate.[48]

It is greatly important for state agencies and educational institutions to emphasize a sustainability factor for the Illinois River region. Equally crucial are efforts to make stewardship and sustainability approachable for less educated, older rural residents. Responsible use-patterns should be implemented in the region, as well. This includes limiting the number of canoes on the river. Canoe owners and operators, as well as local residents, must hold themselves accountable to protecting and enforcing stewardship in the basin. Local enforcement is vital to full sustainability in the basin. Although the river is a source of recreation for many Oklahomans and their neighbors, water recreation is not why the river exists. The Illinois thrives as an ecosystem, not as a playground or potential source of income for humans.

Right now, many operators, riverside landowners, and agricultural growers and producers are not acting in accordance with the ecologically friendly tenets of sustainability. These groups are exploiting current resources at a higher rate than they are able to be sustained. The discharging of chicken litter into the Illinois is but one example of the sacrifice of the river for profit. I hope it is obvious from this report that large-scale poultry production has transformed the Illinois River region, as commercial production and infrastructure changes have provided humans with different modes of interaction with the Illinois River environment.

Urban development also continues to be a problem in northwest Arkansas. Unfortunately, there are no established regulations that specifically protect the river from increased growth and development. The principles of stewardship are alive and well in the Illinois River region: one need only visit the J.T. Nickel Preserve to understand that ecological consciousness remains vital in the basin. Richard Wright once wrote that, "A natural area will receive protection only if the value a society assigns to services provided in its natural state is higher than the value the society assigns to converting it to a more direct human use." It is time that Oklahomans and Arkansans worked together to form a union of protection with the Illinois River as its centerpiece.

[1]Laurence Drake, Leonard A. Solomon, Harry Birdwell. *The History of Conservation in Oklahoma*. Oklahoma City: Published by Oklahoma Association of Conservation Districts, 1978.

[2] *The History of Conservation in Oklahoma*, 7.

[3] Ibid., 13.

[4] Hugh Bennett, W.R. Chapline, "Soil Erosion, a National Menace." Washington, D.C.: GPO, 1928.

[5] Congress, House, *Hearings on Proposed Buchanan Amendment, 1929*, 73rd Cong., 1st sess., H.R. 1213, Congressional Record, 125, no. 126, daily ed. (23 February 1929): H3290-3291.

[6] Oklahoma agricultural historians may argue that, technically, the first experiment station in Oklahoma was created in Stillwater with the opening of Oklahoma Agricultural and Mechanical College (now Oklahoma State University). However, the soil experiment station created in Guthrie was under the federal control of the Soil Conservation Service rather than the state.

[7] *The History of Conservation in Oklahoma*, 11-12.

[8] Ibid., 14-16. All of the information summarized in this paragraph can be found in *The History of Conservation in Oklahoma*.

[9] For more information on the resistance of southern plains farmers to New Deal programs, see *The Changing American Countryside: Rural People and Places*, ed. by Emery N. Castle. Sections by Castle and Howarth are particularly enlightening.

[10] *History of Conservation in Oklahoma*, 17.

[11] Ibid., 19.

[12] Ibid., 23-24. Many conservationists and environmental advocates in Oklahoma believe that the miseducation of Oklahoma farmers from the Dust Bowl period forward has hindered progress in developing sustainable agricultural methods.

[13] "Modest progress" basically symbolizes the notion that before 1960, there were virtually no environmental or ecological education programs in the states of Oklahoma or Arkansas.

[14] *History*, ibid., 26.

[15] *Arkansas River Basin Compact*, involving states of Arkansas and Oklahoma. Washington, D.C.: GPO, 1972.

[16] Ibid., 34-36.

[17] *Muskogee Daily Phoenix* (Muskogee, OK), 20 February 2006, "Supreme Court Sides With Oklahoma." Arkansas Attorney General Mike Beebe is seen as an enemy to environmental protection in both Oklahoma and Arkansas. Political ambitiousness may play a role, also; Beebe is commonly thought of as a candidate for Arkansas gubernatorial position in upcoming elections.

[18] *Muskogee Daily Phoenix*, 8 December 1991, "Supreme Court Case in Illinois River Dispute Set to Begin."

[19] United States Supreme Court Hearings, case of *Oklahoma v. Arkansas*, 15 January 1992.

[20] *Tahlequah* (OK) *News-Press*, 27 January 1992. "River Advocates Disappointed in Court Ruling."

[21] Oklahoma Scenic Rivers Commission, Oklahoma State University, National Park Service, *The Illinois River Management Plan*. Washington, D.C.: Department of the Interior, GPO, 1999.

[22] *Illinois River Management Plan*, 3-4.

[23] Ibid., 7. All of the goals of the Illinois River Management Plan are described in the first section of the plan, entitled, "Creating a Vision."

[24] "Compatible activities" are defined as recreation activities that carry the least amount of impact. For example, the Illinois River Management Plan excludes marine activities involving engine-powered machinery. Therefore, there are no motorized boats or jet skis allowed on the river. Wakeboarding and waterskiing are also prohibited.

[25] *Illinois River Management Plan*, 15

[26] *Rules and Regulations, Oklahoma Scenic Rivers Commission*. Published in September 1989 by the OSRC. There have been several small policy changes in OSRC legislation since 1989.

[27] Ibid., 43. Since 1999, continued efforts on the Echota Bend Project have been successful to the point of nearly full restoration in the project area. See *Riparian Forest Buffers: Function and Design for Protection and Enhancement of Water Resources*, published by United States Forest Service and Department of Agriculture, NA-PR-07-91.

[28] *Tulsa World*, 28 January 2006, "Legislature Opens with OSRC Bill." Page A12.

[29] All of the information presented in this section was developed in a series of personal interviews with Mr. Fite at the Oklahoma Scenic Rivers Commission Office, June 19-21 and July 18-20 of 2005.

[30] As mentioned in previous sections, the primary poultry producers headquartered in northwest Arkansas include Tyson's Foods, Sanderson Farms, Pilgrim's Pride, and Butterball, Inc.

[31] Admittedly, zoning may be hard to achieve in more rural areas of the watershed. The isolated and rural nature of Adair County, in particular, would pose the greatest challenge to land zoning commissions.

[32] Float trip fees of one and two dollars help the OSRC maintain their peak-season monitoring and other activities in the basin.

[33] Ed Fite, interview by author, 19 June 2005.

[34] Information regarding Save the Illinois River, Inc., was developed in interviews in Tahlequah, Oklahoma on September 23-25, 2005, with Mr. Ed Brocksmith, chief administrator of STIR.

[35] *Joint Arkansas/Oklahoma Scenic River Monitoring Proposal*, September 22, 2004. Technically, the proposal is an unpublished document. Copies can be found in only two places that I know of: the Oklahoma State University library and the OSRC office off Highway 10 east of Tahlequah, OK.

[36] *Joint Arkansas/Oklahoma Scenic River Monitoring Proposal*, 3.

[37] Ambitious politicians like Arkansas Attorney General Mike Beebe have made coordination and cooperation between Oklahoma and Arkansas extremely difficult and tenuous, at best.

[38] Ibid., 12-13.

[39] Mr. Ed Brocksmith, interview by author, 23 September 2005.

[40] For the purposes of research and this report, I visited the J.T. Nickel Family Preserve on September 24, 2005.

[41] Suzanne Winckler, *Prairie: A North American Guide*, Iowa City: University of Iowa Press, 2004. For information on Oklahoma prairie and nature reserves, see pages 93-96. For land trust information, see Eve Endicott, *Land Conservation through Public/Private Partnerships*, Lincoln Institute of Policy, Washington, D.C., 1993. Also see Watson Stokes and Keller, *Saving America's Countryside: A Guide to Rural Conservation*, National Trust for Historic Preservation. Baltimore, MD: Johns Hopkins University Press.

[42] *1993 Illinois River Floater Survey*, published by the Oklahoma Tourism and Recreation Department in conjunction with the OSRC, 1993.

[43] *The Illinois River Management Plan, 1999*. 35-36.

[44] Only one canoe/resort operation, Arrowhead Resort, is a member of the STIR. In the future, it will be necessary to align canoe/resort interests with those of environmental advocacy in the basin.

[45] Ed Brocksmith, interview by author, 23 September 2005.

[46] Lowell Caneday and Kim Hutchinson, *Recreation Carrying Capacity of the Illinois River Corridor: Final Report*, OSRC and NPS, May 1995.

[47] *Center for Rural Affairs Newsletter*, February 2006. Listed under "Corporate Farming Notes," p.3.

[48] Center for Rural Affairs Newsletter, February 2006. Sidney, Nebraska.

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I like to call a dead model; The storied past of Sulphur's "national park" and supposedly healing mineral water is a tough sell on the vibrancy, accessibility, and significance of water in Oklahoma.

Much of the outside or national opinion of Oklahoma's environment centers on the monotony of its geography. The "flat" landscapes that travelers see as miles of "sameness" have constituted an incorrectly formed notion of Oklahoma's environmental reality, a concept that pushes Oklahoma to the bottom of the heap in terms of environmental and ecological significance. This persistent ignorance may be credited to the notion that most non-resident travelers in Oklahoma are eager to go east, west, north or south on one of Oklahoma's many highways. Those traveling in Oklahoma are more than likely doing so by car, so the state's cavalier inattention to highway and road structure is highlighted in the impressions of outsiders, as well. It is well established that Oklahoma has a history of marginalization and lies on the periphery of the plains and the Southern United States. Likewise, the Illinois River basin lies on the periphery of the tallgrass prairie to the west and the more-southeastern influenced ecosystems to the south and east.

The Illinois River region supports an oak-hickory forest type, receiving about 43 inches of precipitation annually, which supports three large categories of natural vegetation: Grasslands, Savannahs, and Woodlands/Forests. [15] Twenty-two percent of the total land area of the basin is classified as forest land.[16] This is something of an ecological anomaly, especially when one considers that there are 144 different tree species in Oklahoma.[17] Located in the Ozark Plateau, the Illinois River basin has a mild, temperate climate. Elevations in Cherokee and Adair County range from 600 feet to

Miscellaneous:

Personal Interview with Mr. Ed Fite, Oklahoma Scenic Rivers Commission Head Administrator, July 8th, 2005.

Personal Interview with Mr. Ed Brocksmith, Chairperson, Save the Illinois River, Inc., July 9th, 2005.

Personal Interview with Mr. Robert Parks, Head Interpreter, Cherokee National Historical and Cultural Museum, Tahlequah, OK. February 7, 2005.

VITA

Robert Edward Krause, Junior

Candidate for the Degree of Master of Arts

Thesis: AN ENVIRONMENTAL HISTORY OF THE ILLNOIS RIVER BASIN IN EASTERN OKLAHOMA AND NORTHWEST ARKANSAS

Major Field: History

Biographical:

Personal Data: Born September 6, 1980, the son of Bob and Pam Krause.

Education: Graduate from Bozeman High School, Bozeman, Montana, in June 1999; received Bachelor of Arts degree in History and Southern Studies from the University of Mississippi, University, Mississippi, in May 2004. Completed the requirements for the Master of Arts degree with a major in History at Oklahoma State University in May, 2006.

Experience: Raised on farm twenty miles north of Bozeman, Montana; worked at privately owned sporting clays facility in Logan, Montana from 1995 to 1999; also employed as a farm laborer during summers; served as an intern park guide and ranger at Horseshoe Bend National Park, Daviston, Alabama, in the summer of 2002; employed by Oklahoma State University as an Graduate Teaching Assistant; Oklahoma State University, Department of History, 2004 to present.

Professional Memberships: Phi Alpha Theta, 2001 to Present; *Chancellors List* of Who's Who in Graduate Studies, 2005.