Mississippi River Corridor Study
Volume 2: Inventory of Resources and Significance



MISSISSIPPI RIVER CORRIDOR

78992

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May 1996

Mississippi River Corridor

Mississippi River Corridor Study Commission

The Arch normally is St. Louis' biggest tourist attraction. But not now. Now the people turn their backs on the Arch's silver span and look instead to the mighty river.

They take their pictures against the water, hold their children's hands so they won't fall in.

But mostly they sit quietly and stare in awe and wonder.

— Carol Byrne, (Minneapolis) *Star-Tribune* July 25, 1993

≪ Dedicated to the 1993 Flood Victims ≫

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PREFACE

The river spoke. During the summer of 1993 the mighty Mississippi River reminded mere humans of its power and its moods. It had help from a prolonged change in the weather. Beginning in April, a shift in the Jet Stream served as a barrier to a high-pressure system that brought warm moist air from the Gulf of Mexico. The clash resulted in thunderstorms, which brought 150% to 200% more rain than normal to the upper Midwest. Literally FEET of rain dropped over the Mississippi River drainage basin, which collects water from 40% of the area covered by the 48 contiguous states.

Newsweek's July 26, 1993, cover story headline: "Deluge: Lessons of a Disaster." And the lesson to be learned: "never underestimate nature." Reading through the various news clippings, one is struck by the recurrent themes of heroism, cooperation, and stoic acceptance of the river's power. Millions of heartland people live alongside a dynamic hydrological system that shapes or influences their daily lives. How people choose to live with that system in the future will be debated not only in local coffee shops but in the halls of the United States Congress.

It staggers the imagination to think of the human stuff lost to the river, some of it meaningful, some not: high school diplomas, family bibles, wedding dresses, the good china, the everyday juice glasses, all the junk in the junk drawer, schoolbooks, Grandmother's dressing table, Grandfather's pocket watch, refrigerators, Dad's favorite chair, a "Beauty and the Beast" videotape, Nintendo games, any number of compact disks and computers, souvenirs from Niagara Falls and Yellowstone, super-8 movies of the kids learning to walk, and worse yet, sometimes the family pets. It is no wonder people fought valiant fights to save not only each other, but their homes, churches, schools, businesses, barns, stables, historic houses, and other places where meaningful and not-so-meaningful human stuff was kept.

Consider the animals. There were stories of snakes coming over the levees in the moonlight, looking for dry ground; raccoons coming in cat doors, looking for food; fish swirling in the floodwaters, yet stranded when the waters receded. Ducks, field mice, red foxes, muskrats, songbirds, squirrels, rabbits, mussels, clams, egrets, herons, deer, beavers — all caught by the lack of refuge and sometimes by violent, fast-rising waters. The short-term effect was the mass evacuation of wildlife from the floodplain to higher ground, just like the human inhabitants. But in the long run, any wildlife that has lived in the floodplain has adapted to flooding conditions over thousands of years. Animals were lost, but generally the natural schemes will assert themselves.

Much can be done to bring people in the Mississippi River valley together to talk, to celebrate, to seek common ground, and to solve problems. In the end, however, the river speaks for itself, whether in quiet content or in rage. Its voice reaches every person who lives with it, who journeys to see it, or who describes its magnitude through human language. The Mississippi River's voice touches everyone.

INTRODUCTION

The Mississippi River is unquestionably of great significance to the nation and our heritage. There is only one Mississippi River, and generations of explorers, Native Americans, fur traders, steamboat pilots, writers, painters, and musicians have contributed to its legend.

In recognition of the Mississippi River's importance to the nation, Congress passed legislation in 1990 that established the Mississippi River Corridor Study Commission. Congress directed the commission to undertake a study to determine the feasibility of designating the river a national heritage corridor. The commission also was charged with recommending methods for preserving and enhancing the unique natural, recreational, scenic, cultural, scientific, and economic resources of the corridor.

Today there is renewed interest in the Mississippi River valley. The 1993 flood brought national and international attention to the issues facing valley residents today. Everyone agrees that response to the 1993 disaster has to include a vision of working with the river, not against it. The designation of a Mississippi River Heritage Corridor would bring together the myriad voices that speak of the river. Together the voices would attempt to put the river's moods into perspective, explain its vagaries, treasure its beauty, and explore its possibilities.

This volume, which is a companion to *Volume 1: Feasibility Report*, provides an inventory of the resources along the river, with discussions of their significance. It also describes the ongoing activities and the organizations involved in managing and using the resources of the Mississippi River.

MISSISSIPPI RIVER PREHISTORY AND HISTORY

There was a great river in the middle of America. Indians knew it intimately, Europeans used it for exploration and conquest, and later Americans changed its course and tried to control its power. Civilizations rose and fell along its banks. Colonial powers used it as a boundary for a new country. Flags were raised and lowered along the river, sometimes three in one day. It was a military objective in more than one war. The river was a destination, a landmark to be reached by internal transportation infrastructure such as canals and toll roads. It linked interior America with the rest of the world.

There had possibly been early sightings of the Mississippi River by Europeans lost in the wilderness. Hernando de Soto heard tales of a river and, seeking gold, he saw it in 1541. To him the river was an obstacle, and it became his grave. It was left to the French to capitalize on de Soto's sighting and to explore the river's entire length. Travels by Father Jacques Marquette and Louis Joliet and by Robert Cavalier de La Salle culminated in French claims to territory extending from Canada to New Orleans. *Coureurs du bois* traveled far into the interior to bargain with various tribes for furs, and shaped the region's economy.

> The significance of the Mississippi Valley in American history was first shown in the fact that it opened to various nations visions of power in the New World — visions that sweep across the horizon of historical possibility like the luminous but unsubstantial aurora of a comet's train, portentous and fleeting.
>
> — Frederick Jackson Turner 1939, 179

Constant movement had been a characteristic of life along the river for thousands of years before the Europeans arrived. Several hundred thousand people roamed the interior, seeking sustenance through hunting, gathering, and agriculture. There was cultural movement as well. Small bands roamed, sometimes due to tribal warfare, other times due to their subsistence economy. The Mississippi River valley was home to many tribes of several different language families.

In the south these tribes lived in farming towns, formed confederacies, and had a rich culture with roots in past mound-building societies. There were Choctaws, Chickasaws, Natchez, and Houmas in Mississippi; Tunicas and Chitimachas in Louisiana; Cherokees in Tennessee, and Arkansas and Quapaws in Arkansas. They were descended from small nomadic bands that hunted through the Paleo-Indian and Archaic periods lasting thousands of years. Gradually migrants from other regions introduced different cultures during the Burial Mound period, including the Poverty Point Culture in Louisiana and the Tchefuncte Culture on the shores of Lake Pontchartrain.

Native Americans of the Hopewell Culture (A.D. 500–700), were in the central Mississippi and Illinois river valleys. It was one of the most impressive cultures, with burial mounds and an almost continent-wide network of trade from the Rocky Mountains, the Gulf Coast, the Atlantic Coast, the Appalachians, the Great Lakes, and the Upper Mississippi Valley.

The Mississippian Tradition originated about A.D. 700 during the Temple Mound period in the central Mississippi Valley — northeastern Arkansas, southeastern Missouri, southern Illinois, and western Tennessee. Mississippian ideas moved up the rivers as far as the Great Lakes and to the east and the west as well.

To the north at the time of European contact were the Algonquin-speaking tribes of Lakes Michigan and Superior, including Sauk and Foxes, Potawatomis, Ottawas, Menominees, Kickapoos, and Ojibwas. In Illinois were the Kaskaskias, Peorias, and other tribes of the Illinois Confederacy. Kentucky was used as a

hunting ground by many tribes, particularly the Shawnee. In the prairie country of the lower Missouri River basin were various Siouan-speaking peoples, including the Osages, Missouris, Kansas, Otos, Omahas, Iowas, and Poncas — semiagricultural tribes that lived along the eastern fringe of the plains.

In later years, the native people moved, or were forced to move, in reaction to the onslaught of the invading European culture and people. Cultures first met, and then clashed. The native people did not fare well. In the Northwest Territory the tribes were disrupted by the fur trade, and their cultural traditions broke down. When the trade moved west, the tribes had to face the successive waves of settlers. Most were forced to sell their lands and move west of the Mississippi River. The same scenario was played in the south, when many of the tribes were wiped out, including the Natchez. Others were moved west of the Mississippi River as their northern brothers had been: thousands of Choctaws, Creeks, and Cherokees were transported partially down the river to their new destinations.

Territory changes hands in wars, and it did not take long for the original inhabitants of the Mississippi River valley to lose their ancestral homes forever. Following the defeat of Pontiac in the Northeast in 1763 and the death of Tecumseh in 1813, final resistance was offered by a band of Sauk and Foxes under Black Hawk in 1832. Chased from Iowa through northern Illinois and southern Wisconsin by regular troops and militia, Black Hawk's people were massacred at Bad Axe, Wisconsin, on the Mississippi River.

> Farewell, my nation! Black-hawk tried to save you, and avenge your wrongs. He drank the blood of some of the whites. He has been taken prisoner, and his plans are stopped. He can do no more. He is near his end. His sun is setting, and he will rise no more. Farewell to Black-hawk.
>
> — Black Hawk (Sac-Potawatomi), August 1835
> (quoted in Moquin and Van Doren, 154)

The native peoples lost their land, but they were followed by several colonial powers, who, in turn, lost their claims to the interior of the continent as well. By 1783, after two wars, a new power claimed the river. In the north the river was a national boundary; in the south 20 more years passed before France sold the last of its holdings to United States President Thomas Jefferson in the greatest land sale of all time.

The Mississippi River had been a highway for American Indians, who used dugouts and canoes to conduct trade and travel the continent's interior. Europeans followed their lead and used the river for moving people and goods and for claiming territory. The natural bounty of the continent's interior was gleaned — chickens, pigs, cows, corn, barley, wheat from the Ohio valley; "plews" from the Missouri high country; cotton, rice, sugar, tobacco, indigo, whiskey from the South; and timber from the great North. Keelboats, rafts, and canoes and assorted craft made their way to Saint Louis, Natchez, and New Orleans.

> I'm a Salt River roarer! I'm a ring-tailed squealer! I'm a reg'lar screamer from the ol' Massassip! WHOOP! . . . I can out-run, out-jump, out-shoot, out-brag, out-drink, an' outfight, rough-an'-tumble, no holts barred, ary man on both sides the river from Pittsburgh to New Orleans an' back ag'in to St. Louiee. . . .
>
> — Mike Fink
> (quoted in Marquis Childs 1982, 30)

Steamboats saved time and money. In 1811 a sidewheeler named *New Orleans* was the first to travel from Pittsburgh to New Orleans, and the race was on. It was a race for goods and profit. Isolation in the river valley had demanded self-sufficiency, and westerners had thought for themselves and taken care of themselves. But steamboats moved upstream, and eastern and foreign goods helped tie westerners to the east in outlook as well as in economic practice. The steam era brought together a cast of characters, American characters, intermingling on the edge of old and new frontiers.

The railroads and the Civil War put an end to the romance. Several railroads had reached the river before the war; many more drank its waters after the war. The river system, filled with twists and bends, could not grow, but the railroads, with their straight lines of track, could. River-based towns were left sleeping while railroad towns roared with healthy lungs. Many river towns reacted by building bridges to attract the rail networks, but they were too late. Around 1868 the river's role shifted from that of transportation prima donna to that of supporting player.

It is agriculture that remains foremost in river economy. The river ties together Iowa corn, Illinois soybeans, Minnesota timber, Kentucky bourbon, Arkansas chickens, Louisiana rice, Mississippi cotton, Tennessee tobacco, Wisconsin cheese, and Missouri cows. The river also supports processing and manufacturing centers dependent on mineral wealth. The backbone is the river, linking the arms and legs of transportation systems where trucks, barges, and railroads greet each other with a knowing nod. Efficient tugs and barges are the direct heirs of steamboats, and they ply their trade from Saint Anthony Falls to New Orleans. The U.S. Army Corps of Engineers converted the wild river into a navigable river complete with locks, dams, seawalls, levees, and spillways.

The Mississippi River not only moves goods, it moves ideas. It unites north and south, east and west; disparate, yet linked together through the moving water. The history of the river heartland binds America together through its meaning, impact, and significance. The river is the tie that binds: intellectually and physically.

ETHNIC HERITAGE

The river's diversity is central to its history and appearance. The river is known as "The Father of Waters" "Big Muddy," and "Old Man River," but also as "Old Devil River" and "the Great Sewer." The people who live along the river are diverse as well, tied together by the river's linking of the North to the South. As the stream of life through America's heartland, the Mississippi River invited many peoples from many countries to its abundant forests, prairies, and swamps. The mix of human heritages continues to contribute to the river's texture.

The makeup of the river valley population reflects the Mississippi's past. The river supported the American Indians and attracted immigrants from all over the world. The river also provided a home for those who were forced to come from Africa. Today, community composition can still be traced to old river ways of life. The cultural representation can be seen in the names of cities and towns up and down the river — Bemidji, Red Wing, Maiden Rock, Stockholm, Trempealeau, Desoto, Prairie du Chien, Potosi, Guttenberg, Dubuque, Keokuk, Nauvoo, Portage Des Sioux, Cahokia, Herculaneum, Sainte Genevieve, Cape Girardeau, Osceola, Wilson, Marion, Natchez, New Orleans, and Venice.

The initial waves of immigrants to the American colonies and new nation included English, Spanish, Africans, Scots-Irish, Scots, French, Scandinavians, Welsh, Irish, and Germans. As the Mississippi River valley was inundated with the newcomers, there developed a bustling population defined only by its diversity. For instance, at the height of the fur trade the polyglot streets of Saint Louis revealed a rich mixture of color, clothing, and heritage. As for the American Indians, there were Delaware, Sioux, Mandans, Shoshoni, Nez Perce, Seminoles, Illinois, and representatives from more distant tribes.

> And as for the whites, they, too, came from everywhere — Creoles from Louisiana, Cuba, Mexico, Pensacola, Canada; occasional pure-blooded Spaniards; late emigres from France who had come to escape one political storm or another. There were the half-breeds, quarter-breeds, and eighth-breeds. . . . In the diverse crowd it was always possible to single out the gaunt settlers with harsh, hard-bitten mouths, bound West from every part of the settled world. Blacks, hardly a year from the kraals of Guinea and the Congo coast, had exotic tribal marks cut on their foreheads and gold rings in their ears. Others had stopped long enough in

> the Antilles to pick up a patois of Spanish or French and bright silk bandannas to tie about their cropped heads. . . .
> — Marquis Childs 1982, 45

From the start, New Orleans was a foreign city to the English and the Americans, and it has not lost its foreign flavor. When the United States purchased New Orleans it was a mature city that resisted assimilation. After all, the New Orleans Creoles were proud of Franco-Spanish civilization, which they believed was superior to that of England and especially superior to American ways. New Orleans and southern Louisiana retain ethnic pride and traditions.

Sieur de la Salle descended the Mississippi River to the Gulf of Mexico and claimed the entire watershed for Louis XIV in 1682, but it was not until Pierre le Moyne Iberville brought colonists to Biloxi in 1699 that the French established a line of posts and settlements from Mobile to Detroit. During the 18th century there was a substantial French presence in the middle Mississippi region; descendant populations still live in southern Illinois and Missouri as well as in the better-known New Orleans and Louisiana.

The lead mines of Missouri, the iron mines of Minnesota, the bayous of Louisiana, and the rich lowland of the Mississippi Delta lured immigrants in the past just as river industries, commerce, agriculture, and raw resources attract immigrants today. After 1890 the immigration tide from northwestern Europe shifted to eastern and southern Europe, and new immigrant groups — Russian Jews, Ukrainians, Slovaks, Italians, Greeks, Hungarians, and Poles — arrived in river communities for the same reasons that colonials had.

In the late 20th century the patterns of immigration have once again shifted. The largest numbers of the latest immigrants are from Mexico, Vietnam, the Philippines, Korea, China, Taiwan, Cuba, the Dominican Republic, and Jamaica. River cities and towns, challenged by changing economies, are absorbing the newcomers just as they are trying to reclaim and celebrate their river past. The racial and ethnic heritage of the Mississippi River will continue to change, grow, and be visible on the streets of river communities.

Few groups of people have had more impact on the Mississippi River than the African-American citizens of the valley. From Minnesota to Louisiana the legacy of black contributions to river history and culture can be found in the character and lay of the land. Particularly in the South, historical evidence of African-American labor, both enslaved and free, can be seen everywhere, from the construction of early levees, to the endless fields of cotton and sugar cane, to the antebellum mansions of Louisiana and Mississippi.

Various sites along the river boast of black participation in historic events. Fort Snelling, just south of Minneapolis-Saint Paul, and the Old Courthouse in Saint Louis factored into Dred Scott's trials for freedom and the infamous Supreme Court decision of 1857. General Andrew Jackson enlisted the aid of two black battalions to defeat the British in 1815 at Chalmette Battlefield in Louisiana. "Fort Pillow" became a rallying cry among black soldiers after African-American Civil War defenders were massacred when the Tennessee fort was surrendered to General Nathan Bedford Forrest's Confederates in April 1864. The Lorraine Motel in Memphis is a memorial to Dr. Martin Luther King as well as to others involved in the 1960s civil rights efforts.

Black experiences, as well as those of the diverse American Indian and immigrant groups, are interrelated and weave together to form a seamless fabric of ethnic heritage along the Mississippi River. River history is an evolving record of American strength and pride.

MISSISSIPPI RIVER LITERATURE, MUSIC, AND FOOD

The river has been an enduring theme in American literature. It is the source of great fiction and fancy, history and twice-told tales,

being an inspiration to generations of writers. They have all contributed to the legend.

> . . . so many have written about the river . . . I have read what most have written, and without them I could not add another book to the list. Yet when you leave them you are still confused, for their eyes saw different things and at different times. The navigator tells his story and the explorer his, and the historian and the planter, the naturalist and the pilot and the soldier. The river is in all of them. But if you try to use them piecemeal, you find a patternless puzzle.
>
> — Hodding Carter 1942, 6–7

Hodding Carter was one of many writers who described a piece of the puzzle, regardless of how patternless, that is the Mississippi river at any given point in time. The variations on the theme are infinite. They begin with the Indian inhabitants, whose stories have been handed down orally from generation to generation and finally transcribed onto paper. Theirs are the tales of creation, spiritual worlds, rhythms of the land, tricksters, woodland life, and inland waters.

The Europeans who arrived to explore or exploit left accounts of the river as well. Starting with members of Hernando de Soto's 1541 expedition, accounts of gold and glory, death and disease provide a record of a river that now exists only in memory. Henry Schoolcraft explained how he named Lake Itaska; Father Jacques Marquette and Father Louis Hennepin described the Piasa monsters, and countless others have written of their personal discoveries by way of their physical and mental journeys through the unknown.

For more than two centuries travelers have described their journeys to, and sometimes up or down, the river. Jonathan Carver and Samuel S. Forman in the mid- to late-1700s were followed by Zadoc Cramer, who described the river in 1801. John Bradbury, Frances Trollope, Charles Dickens, and John James Audubon wrote about river inhabitants, both human and winged, in the early to mid-1800s. The Mississippi River continues to attract people who opt for a slower pace. Question: How many modern travelers on the *Delta Queen* write of their impressions of the river?

Then there are the historians who not only told us of the river's legacy, but interpreted its meaning and significance: Francis Parkman and Henri de Tonti retelling the exploits of LaSalle, Clark Wissler's celebration of the American Indians, Ray Allen Billington's assessment of the Mississippi valley frontier, Frederick Jackson Turner's discussion of the Mississippi valley's significance in American history, and John Francis McDermott's celebration of French culture and accomplishments in the Mississippi valley. Others have chronicled lives of gambling and speculation, the romance of steamboats, the horrors of war, the tragedy of floods, and the river's supposed conquest by railroads and bridges, dams and dikes.

Both fictional and autobiographical interpretations of life along the river reach into our collective memory to help us recall the sickness, adversity, wonder, and insight that Mississippi River life brought to many. These accounts are cultural classics: Mark Twain learning how to "read" the river; William Alexander Percy walking the levees looking for "boils"; Lyle Saxon describing the "flotsam and jetsam, the riffraff of the world" who gathered above the barrooms of Gallatin Street in New Orleans; Richard Bissell describing Moline and Davenport and Dubuque as the "most romantic and wonderful in the world because they are old upper Mississippi River towns"; William Johnson, a freeman, detailing everyday life in antebellum Natchez; George Washington Cable's portrait of Louisiana Creoles; and John McPhee describing the shaking Old River control structure during the 1973 flood.

There are also authors who grew up along the Mississippi and, suffering its influences, chose to write about other subjects. The river is not central in their writings, but it contributes to the authors' outlook. There is Sinclair Lewis describing main street in the context of his Minnesota upbringing; Richard Wright, born outside Natchez, depicting

harsh truths about slavery, segregation, and racism; F. Scott Fitzgerald, born in Saint Paul, chronicling the jazz age; poet T.S. Eliot, raised in Saint Louis, calling the river a "brown strong god"; Kate Chopin of Saint Louis and New Orleans, writing of a married woman's "awakening"; Shelby Foote of Greenville, Mississippi, enthralling readers with the personalities, ironies, and triumphs of the Civil War; and Alex Haley of Henning, Tennessee, searching for his African roots.

The collectors of folklore, such as Walter Blair and Benjamin A. Botkin, remind us of the humor and the folk heroes that inhabit the river's twists and curves. Remember the ways of the old river: murderous river pirates and outlaws; curses of the half-horse, half-alligator Kaintuck keelboatmen; chants and hymns of a Beale Street baptism; the indignation of Davy Crockett and a friend being refused a berth on a steamer "bekase we had a barr in our company, an' I wanted a berth for him along with myself"; the hopes of whole families on shantyboats; the flowers and weeds that are pulled or planted around Bayou Pierre cabins — each with a special purpose for the African-American inhabitants; and the legends of Winona, the Falls of Saint Anthony, and the Devil's Punchbowl.

Mississippi River people take their character from the river's wilderness, its civilization, and their memories as recorded in the pages of the gifted and the common. The Mississippi River is a central image of our literary definition of ourselves.

Again, Hodding Carter, of Greenville, Mississippi, in 1942 (p. 437):

> I believe only that Eden is still attainable, though not easily; that the Mississippi, great sewer, father of waters, master and slave of its self-created earth, is destined to become the true artery of a nation's impregnable heart.

People do not survive on literary images alone. They need sustenance in the form of food. The Mississippi River serves as a huge table running the length of the country and offers the best food the middle of the country can produce. The range of offerings is limited only by one's culinary desires. In Nelson, Wisconsin, visitors can tour the Nelson Cheese Factory. Milk cows were brought to Wisconsin in the late 1830s, and by the 1870s the dairy industry was flourishing. Around 1,000 cheese factories operated, but only 500 survived until the 1980s. The Nelson Cheese Factory is one of these, operated by fifth generation Nelsons. Cheddar and colby are still Wisconsin cheese favorites.

Yes, beer is food for some folks. The most famous product from La Crosse, Wisconsin, is G. Heileman's beer. The brewery offers free tours through the 1982 plant, where spigots tap artesian spring water. Saint Louis, Missouri's, most famous competing product is Anheuser-Busch beer, made from Mississippi River water. Visitors to the brewery see the 1891 Victorian gothic Brew House and the 1885 stable, home of the Budweiser Clydesdale horses.

Aquaculture, or fish farming, is a common sight along the Great River Road in Arkansas, Louisiana, and Mississippi. Catfish is the principal product, but crawfish and baitfish contribute to the nation's tables as well — baitfish being used to haul in crappie and other prizes.

Festivals celebrating food, music, or both are numerous along the river. "Livin' on the Levee" is an annual celebration of music, Delta food and culture held in West Memphis, Arkansas. An annual Crawfish Festival is held in Dermott, Arkansas. Eudora, Arkansas, is the Catfish Capital of Arkansas, with an annual festival as well. Of course, Potosi, Wisconsin, the "Catfish Capital of Wisconsin," offers some competition.

Louisiana boasts regional food with national gusto. Their tourism slogan is "We're Really Cookin'!" The diversity of Louisiana food ranges from northern home cooking to authentic Cajun/Creole cuisine in the south. Frequently copied recipes include black iron skillet cornbread, Louisiana pecan pie, Cajun

seafood jambalaya; spinach madeleine, and crabmeat and corn bisque.

Music and the Mississippi are nearly synonymous. From one end to the other the river sparked an emotion that could only be expressed in one way. Musical styles along the river are diverse, with many music festivals celebrating the river's musical heritage throughout the year. The river's jazz heritage is highlighted at the Bix Biederbecke jazz festival in Davenport, Iowa, as well as at several celebrations in New Orleans, including Mardi Gras, the Po-Boy Blues Festival, the Louis Armstrong Classic Jazz Festival, and the New Orleans Jazz and Heritage Festival.

Best known around the world are the blues of the Mississippi River Delta. The blues, with its sources in aspects of the African-American experience and its setting in the Arkansas and Mississippi Delta, is tied to the land and daily life. Music was ever-present in the lives of Delta residents, being sung and performed in fields and churches, in tent shows and juke joints. Helena, Arkansas, joints such as the Hole in the Wall hosted blues players like Robert Johnson, Sonny Boy Williamson, Muddy Waters, Howlin' Wolf, Robert Jr. Lockwood, Elmore James, and Jimmy Rodgers. In the early 1940s Helena was home to the Delta's first major radio show with live blues being performed on *King Biscuit Time*. Helena hosts the annual King Biscuit Blues Festival.

Delta Blues came from the Mississippi side of the river, too, and the Delta Blues Museum, in Clarksdale, Mississippi, highlights the rich musical heritage of the region. Internationally known musicians and composers such as W. C. Handy, Muddy Waters, Ike Turner, and Charlie Patton lived in Clarksdale. Other blues landmarks include Handy's house at 317 Issaquena and the Riverside Hotel at 615 Sunflower, which hosted musicians. In Clarksdale, blues men performed along Issaquena by the tracks, a stretch called "The New World." Juke joints included Smitty's Red Top Lounge, Margaret's Blue Diamond Lounge, and Red's South End Disco.

Delta blues influenced other musical styles as well, including honkytonk, boogie-woogie, western swing, and rockabilly. The Sun label in Memphis promoted rockabilly artists Donny Burgess, Ronnie Hawkins, and others, while the clubs of Helena and West Memphis helped launch the careers of Johnny Cash, Charlie Rich, and Conway Twitty. Jerry Lee Lewis and Mickey Gilley, who were raised in Vidalia, Louisiana, contributed to the mixture.

Just as the Mississippi River provides nourishment for plants and animals, it provides inspiration for the cultural life of people who live along its banks. The river's image is reflected literally, figuratively, spiritually, and musically in the rich lives of river residents.

ARCHITECTURAL CHARACTER AND CULTURAL LANDSCAPE

> And as for St. Louis, Quincy, Davenport, Moline, Rock Island, Dubuque, La Crosse, Winona — what are they? River towns, of course. Not towns — *river towns*. And what a difference that makes.
>
> — Richard Bissell, 1950, 111–114 (quoted in Botkin 1955, 7)

River towns. They have an allure, a presence, and a feeling all their own. The Great River Road, a network of federal, state, and county roads paralleling the river on both sides, offers access to both the river and its human inhabitants. Driving through communities oriented to the river reveals dynamic relationships between people and the river. Many of these towns, quiet and isolated, have recently reclaimed their ties with the river. They actively seek visitors to come and share in their scenic and architectural delights, unchanged for so long.

The architectural diversity of the river towns is staggering. They reflect French, British, Spanish, German, or early American influences; they have survived floods and wars and escaped urban renewal. There are hotels and saloons in Alma, landed estates with Greek Revival homes and simple slave quarters in Natchez, sugar plantations along Bayou La-

fourche, and churches in Port Gibson. Architectural masterpieces abound: Saint Louis's Gateway Arch and Eads Bridge, Moline's Deere Company headquarters, the Great American Pyramid in Memphis, and the Vieux Carré in New Orleans.

The architectural heritage of other communities evokes a sense of the past. Some small river towns have physically taken only small steps out of the past century, or sometimes even two centuries. You can envision General Grant in Galena, Samuel Clemens in Hannibal, and Abraham Lincoln in New Boston. The Mormons are living quiet lives in Nauvoo. French fur traders and American Indians linger in the streets of Red Wing, Sainte Genevieve, and Prairie du Chien. Farmers and storekeepers swap stories in Hickman and Helena. Mexican War troops are getting ready to leave Jefferson Barracks, while Civil War soldiers sleep in eternal peace in Vicksburg.

> They have an air of permanence, these old river towns. . . . Facing the river, they seem to belong to it, having no desire to climb the bluffs and live on the prairie beyond.
>
> — Marie E. Meyer, 1926
> (quoted in Botkin 1955, 450)

The river's cultural landscape is composed of human and natural elements combining sometimes in harmony, sometimes in discord. The river begins humbly and flows easily through the landscape, but it soon grows into an overpowering feature. It dominates as it winds through the spectacular pre-glacial remnant landscape of southeastern Minnesota, southwestern Wisconsin, northern Iowa, and northwestern Illinois. High bluffs, rock outcroppings, and deep valleys reach to the river; human-built structures seem to cling precariously to flat spots where they can, protected as much as they can be by levees and floodgates.

As the river winds along over 2,400 miles to the Gulf of Mexico, it turns into an Old Man. The relationship between land and water changes; it is no longer close and intimate, but broad and unknowable. The overwhelming discordant feature is the levee system, running for hundreds of miles on both sides of the river. The lower Mississippi River levee system is a compelling aspect of the landscape and of southern culture. The citizens of New Orleans built the first levees in 1718; now, on the west side of the river, a single continuous levee extends from Little Rock, on the Arkansas River, to the Gulf of Mexico. But the river is never tamed, and when the first levees, often built by slave hands, failed to deter the river's rampages, the U.S. Army Corps of Engineers took over. After 1927, other human-engineered elements became part of the river landscape, including riverbanks stabilized with mats of willows, revetment, mattresses of wire-linked concrete slabs, dikes, floodways, and cutoff channels.

Beyond the levee is the floodplain. In the southern Mississippi River valley the Delta floodplain is an internationally known landscape feature. The Delta covers 35,000 square miles from southern Illinois to the Gulf of Mexico, encompassing 219 counties in seven states, and 8.3 million people. Mile after mile of rich, black alluvial soil stretches before the eye. The Delta supports not only age-old agriculture, but cultural expression. Like the blues of Robert Johnson and Elmore James, the Delta landscape is raw, earthy, sensory, and soulful.

NATURAL RESOURCES

The Mississippi is one of the world's great rivers and one of the most complex ecosystems on the planet. It is a critical migration corridor for millions of birds and is essential to the ecological health of the North American continent. The river environment is home to an incredible array of fish, wildlife, and plants. In turn, millions of people use and enjoy these diverse resources. The river, its floodplain, and its adjacent upland corridor are essential to the survival and dispersal of a large portion of the vertebrate species (particularly birds, amphibians, and fish) and aquatic invertebrate species that inhabit this continent. The Mississippi lies at the heart of what is American, and more than any other natural feature is an unmistakable symbol of this nation.

The Mississippi River is the largest and longest river in North America. Its tributaries spread throughout the central United States, comprising a drainage basin encompassing 41% of the continental Unites States — an area totaling 1.25 million square miles. The drainage basin is defined on the east by the Appalachian Mountains and on the West by the Rocky Mountains.

The bottomlands of the Mississippi make up the largest wetland area in United States, and its bottomland hardwood forests are the most extensive in North America. More than 20% of the nation's duck population migrates along the river, and one-third of the freshwater fish species in North America live in the river. The river flows through 11 different ecoregions; this accounts for the great biological diversity of the river valley.

WILDLIFE HABITAT AND FLYWAYS

The wildlife habitats along the Mississippi River are important to a large number of migratory birds. Mature forested floodplain habitats in the upper Mississippi, usually consisting of maples, cottonwoods, and willows, are important to colonial-nesting birds such as herons, egrets, and double-crested cormorants. Farther south in the lower Mississippi alluvial valley, bald cypress, gum, elm, and various species of oaks provide important breeding, migration, and winter habitat for numerous migratory birds. Neotropical migrant land birds depend on these forests and brushy habitats for migration and breeding; studies are in progress that will demonstrate the importance of this migration corridor to the species of migrants whose numbers are declining. The Mississippi River floodplain forest is also important to the bald eagle both for nesting and wintering habitat.

Most of the area within the floodplain of the river is wetland, this type of habitat is vital to many species of dabbling ducks for both migration and breeding. Both blue-winged teal and mallards nest on islands or in grasslands adjacent to the river, while wood ducks use tree cavities in the forests. Most importantly, the large, deep open pools of the river are vital to diving ducks, chiefly canvasback, redhead, lesser scaup, and ring-necked ducks. Upper river pools are used most heavily by diving ducks. Chief species using the Mississippi alluvial valley, which extends from southern Illinois to the coastal marshes of Louisiana, are the Mississippi Valley and Eastern Prairie populations of Canada geese, snow geese, and lesser white-fronted geese, and ducks such as gadwall, mallard, green-winged teal, American wigeon, American black duck, and northern pintail. Many other species of ducks use the river wetlands in lesser numbers.

Mallards are the chief species using the Mississippi River corridor. The river is becoming more important to giant Canada geese as their populations build locally. The upper Mississippi also is an important stopoff point for tundra swans, which use the area to build fat reserves during migration. Ducks, geese, and swans variably use plant parts of submergent and emergent aquatic vegetation

(seeds, roots, and tubers), and benthic invertebrates are also important foods.

The river is the core of the Mississippi Flyway, one of four flyways recognized as important migratory waterfowl corridors. Over 20% of the nation's duck population feeds and rests along the river during migration. This flyway is an important key to the viability of the nation's waterfowl populations.

Backwater pools in the upper Mississippi are important to furbearers; they provide stable environments for muskrats, mink, raccoons, and beaver. Mink have been adversely affected by river pollutants, but the other species have continued to provide population surpluses for trappers over the past 50 years. River habitats are highly productive for aquatic furbearers, and they provide a home for species such as the river otter. White-tailed deer are another important resident game species using the forests and wetlands throughout the corridor.

Nearly all of the Mississippi River corridor is a waterfowl habitat area of special concern in the North American Waterfowl Management Plan (USFWS 1986). Habitats adjacent to the river are forested and agricultural. Occasionally they are unique; for example, the sand prairies that occur on the loess hills bordering the upper Mississippi. Habitats and wildlife species are subject to the effects of human disturbance accompanying intensive use; disturbances of waterfowl are especially severe when feeding is interrupted. Other human-caused effects such as erosion and sediment, navigation, and chemical pollution also affect habitats and wildlife.

The future health of wildlife populations depends on how people solve the problems affecting the river. The principal manager of wildlife habitat along the upper Mississippi is the U.S. Fish and Wildlife Service (USFWS), which manages 20% of the shoreline in the upper river. In cooperation with the U.S. Army Corps of Engineers, the USFWS has 57 habitat restoration projects under way as part of the Upper Mississippi River System environmental management program. The largest single owner of land along the lower river is Anderson Tully Corporation, which owns most of the land between the levees on the lower river. Anderson Tully has a long history of effective wildlife management, and wildlife management continues to be an important objective of the company's land management plans.

FISHERIES

The Mississippi River supports one of the most diverse fisheries in the world. One-third of all freshwater fish species in North America (195 species) live in the Mississippi River (Fremling et al. 1989). The diversity of the species generally increases from north to south. This abundance of fish depends on 16 habitat categories. The upper Mississippi River is characterized by eight general habitat categories: tailwaters; navigation pool; river, lake, or pond; slough; main channel; main channel border; side channel; and mouth of tributary.

The middle and lower Mississippi River habitats are categorized by their location on the floodplain or between the channel banks. They generally fall into eight types: borrow pit, abandoned (scour) channel, natural bank, main channel, sandbar, emergent middle bar or island, secondary channel, and oxbow lake.

The fishery has been impacted over the years by alteration of the natural habitat of the river. One of the largest impacts has been the loss of natural floodplains. The lower river floodplain has been reduced by 90% since 1787 (Fremling et al. 1989). What is remaining of the floodplain is the primary spawning area for many fish species. Alteration of the natural floodplain results in a direct reduction of fish reproduction.

Sport fishing on the upper Mississippi accounts for 8.5 million activity-days per year, and sport fishing generates $150–175 million per year along the upper Mississippi. Commercial fishing has been in a state of decline

since 1970. This is primarily due to habitat loss, environmental contamination, and conflicts with navigation.

ENDANGERED SPECIES

The Mississippi River corridor is home to a number of endangered species, some of which are bald eagle, peregrine falcon, Higgins eye mussel, fat pocketbook mussel, pallid sturgeon, Blandings turtle, Massassaugua rattlesnake, relict darter, and Louisiana black bear. Wildlife refuges managed by the Fish and Wildlife Service preserve habitat for endangered and threatened species in the corridor. Anderson Tully Corporation is currently revising its endangered species management policies to ensure survival of quality habitat for endangered species that live on the company's lands on the lower river.

The corridor contains microhabitat types that are critical to endangered species. Louisiana black bear exist primarily in bottomland hardwood and floodplain forests. Each bear requires 500–1,500 acres of habitat. Various species of mussels depend on unique river bottom conditions for survival. Sustaining viable populations of various species of neotropical migratory birds, especially warblers, depends on continuous habitat along migration corridors.

VEGETATION AND ECOREGIONS

The Mississippi River passes through 11 ecological regions (ecoregions), as defined by the U.S. Environmental Protection Agency (EPA). This is more than any currently existing or proposed heritage corridor. The EPA ecoregions found along the Mississippi River are listed in table 1. The river itself is the boundary of several ecoregions: the Western Corn Belt Plains and Central Corn Belts, and the Ozark Highlands and Interior River Lowlands. The number of ecoregions encountered by the Mississippi are an indicator of the biological diversity along the river (see EPA Ecological Regions map and appendix A).

Ecoregions along the Mississippi represent 14% of all ecoregions defined in the United States. Vegetative communities along the river represent a bisection of many of the vegetative communities found throughout the central United States. These communities include white pine forests at its source, Lake Itasca in Minnesota; oak bottomland forests in the central valley; cypress bayous in the lower river; and brackish tidal wetlands near the mouth of the river at the Gulf of Mexico. These vegetative communities provide habitat for numerous animal species.

WILDLIFE REFUGES

Refuges located along the river play a key role in preserving key habitat types necessary for the survival of many waterfowl species. The refuge system provides resting spaces for millions of migratory birds along their migration routes. Twenty-one wildlife refuges along the Mississippi help to ensure the survival of many animal species, ranging from bald eagles to black ducks to river otters (see map: National Wildlife Refuges and State Wildlife Areas).

The following federal wildlife refuges, listed from north to south, are located in counties and parishes along the Mississippi River.

The Minnesota Valley National Wildlife Refuge is a 34-mile corridor of marsh, grassland, and forest stretching from Bloomington to Jordan, Minnesota. Within 10 miles of downtown Minneapolis, the refuge, which was established in 1976, is one of the few urban refuges in the nation. It offers nature study and education, hiking, cross-country skiing, and horseback riding trails.

Trempealeau National Wildlife Refuge consists of 5,617 acres at the confluence of the Mississippi and Trempealeau Rivers. Established in 1936, the refuge serves as a resting and feeding area and a breeding ground for migratory birds. The refuge offers hunting, fishing, wildlife viewing, scenic driving, hiking, cross-country skiing, and bicycling on the

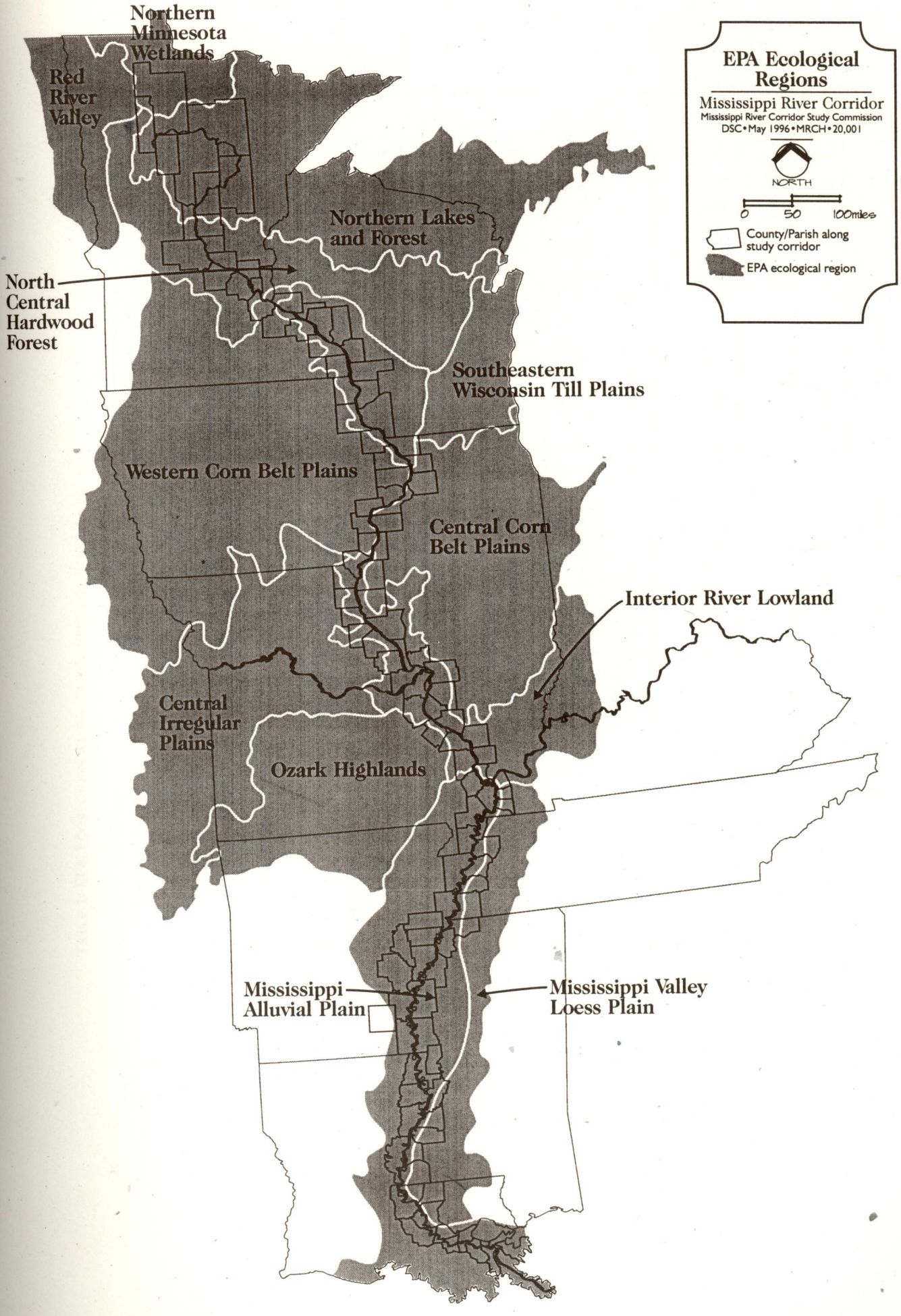

Northern Minnesota Wetlands
Red River Valley
Northern Lakes and Forest
North Central Hardwood Forest
Southeastern Wisconsin Till Plains
Western Corn Belt Plains
Central Corn Belt Plains
Interior River Lowland
Central Irregular Plains
Ozark Highlands
Mississippi Alluvial Plain
Mississippi Valley Loess Plain
EPA Ecological Regions
Mississippi River Corridor
Mississippi River Corridor Study Commission
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NORTH
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County/Parish along study corridor
EPA ecological region

TABLE 1: EPA ECOREGIONS ALONG THE MISSISSIPPI RIVER

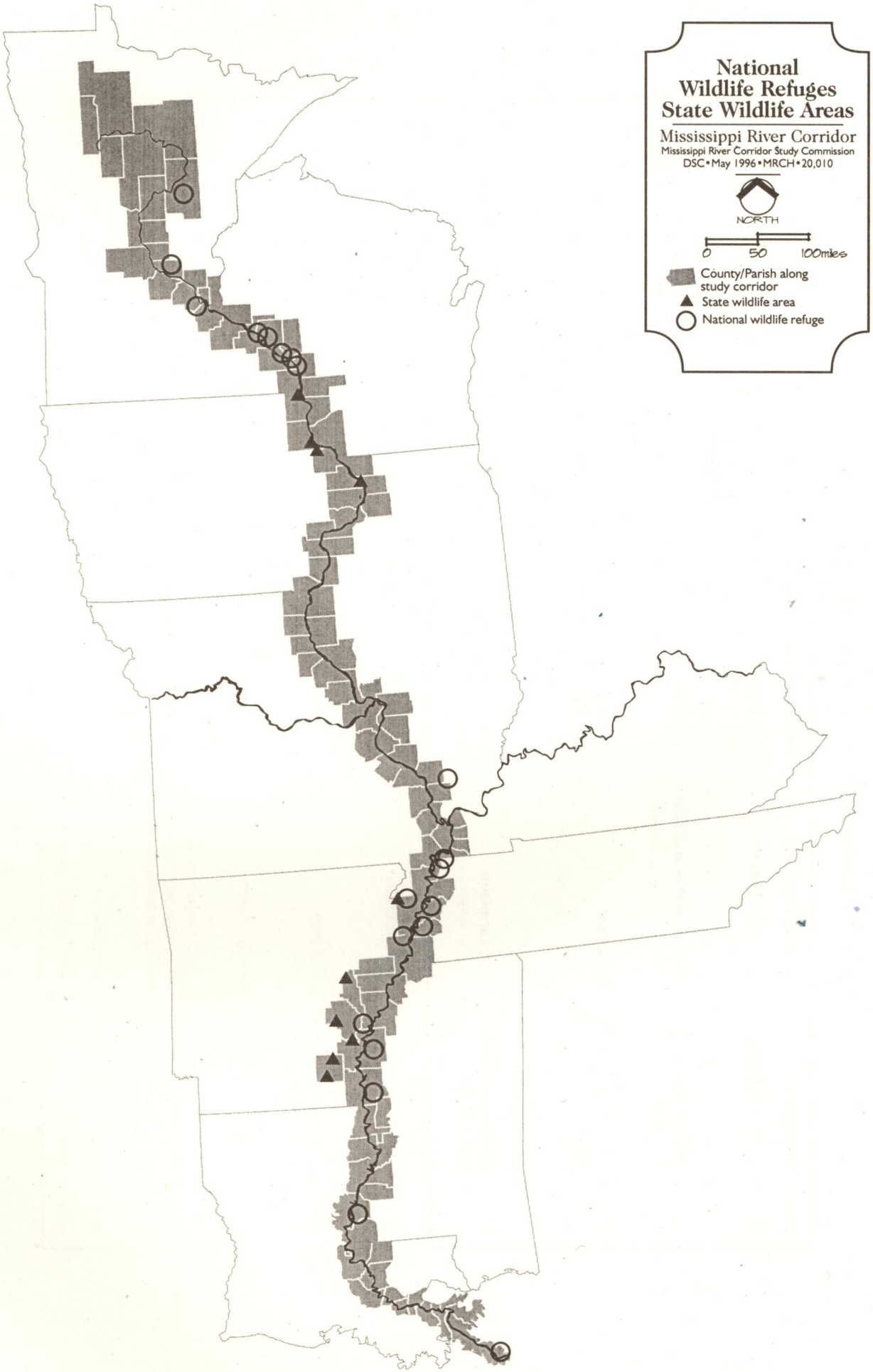
No.[a]	Ecoregion	Land Surface Form	Potential Natural Vegetation	Land Use	Soils[b]
49	Northern Minnesota Wetlands	Flat plains	Conifer bog (spruce, larch, arborvitae)	Swamp, marshland	Dark-colored soils with restricted drainage
50	Northern Lakes and Forests	Smooth to irregular plains, plains with hills, tablelands with considerable relief	Great Lakes spruce/fir, Great Lakes pine, northern hardwoods (maple, birch, fir, hemlock)	Forest and woodland, mostly ungrazed	Podzolic (gray-brown Podzolic, Podzol, and brown Podzolic)
51	North Central Hardwood Forests	Irregular plains	Maple/basswood, northern hardwoods (maple, birch, beech, hemlock)	Cropland with pasture, woodland, and forest	Gray-brown Podzolic
52	Driftless Area	Open hills	Oak savanna (oak, bluestem), maple/basswood	Cropland with pasture, woodland, and forest	Gray-brown Podzolic, gray-brown Podzolic/Humic Gley soils
47	Western Corn Belt Plains	Irregular plains	Bluestem prairie (bluestem, panic, indiangrass)	Cropland	Moist warm Mollisols (Udolls), Brunizems/Humic Gley soils
54	Central Corn Belt Plains	Smooth plains	Mosaic of bluestem prairie (bluestem, panic, indiangrass) and oak/hickory	Cropland	Mollisols, Brunizem/Humic Gley (dark-colored soils developed under prairie vegetation)
40	Central Irregular Plains	Irregular plains	Mosaic of bluestem prairie (bluestem, panic, indiangrass) and oak/hickory	Cropland with grazing land, cropland	Mollisols

a. The numbers are ecoregion numbers assigned by the EPA.

b. Several regional soils maps were evaluated for the characterization of ecoregions because of apparent inconsistencies in accuracy in the soils taxonomy map complied by the Soil Conservation Service, U.S. Department of Agriculture (1970). The variation in soils descriptions presented in this table is due to the lack of uniformity of soil classification systems used in the regional maps.

TABLE 1: EPA ECOREGIONS ALONG THE MISSISSIPPI RIVER (continued)

No.	Ecoregion	Land Surface Form	Potential Natural Vegetation	Land Use	Soils
39	Ozark Highlands	Open hills, high hills	Oak/hickory, oak/hickory/pine	Mosaic of cropland, pasture, woodland and forest	Ultisols
72	Interior River Lowland	Irregular plains and open hills	Oak/hickory	Mosaic of cropland, pasture, woodland, and forest	Alluvial and gray-brown Podzolic, wet Mollisols, Alfisols
73	Mississippi Alluvial Plain	Flat plains	Southern floodplain forest (oak, tupelo, baldcypress)	Cropland, cropland with grazing land, mosaic of cropland, pasture, woodland and forest, swamp	Wet Inceptisols
74	Mississippi Valley Loess Plains	Irregular plains	Oak/hickory, oak/hickory/pine	Cropland with pasture, woodland, and forest	Alfisols (Fragiudalfs, Hapludalfs)


National
Wildlife Refuges
State Wildlife Areas
Mississippi River Corridor
Mississippi River Corridor Study Commission
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NORTH
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50
100miles
County/Parish along study corridor
State wildlife area
National wildlife refuge

Great River State Trail, which traverses the refuge.

Upper Mississippi River National Wildlife and Fish Refuge was established in 1924. Containing about 200,000 acres of wooded islands, waters, and marshes, it extends more than 260 miles from Wabasha, Minnesota, nearly to Rock Island, Illinois. The refuge is unique among wildlife conservation areas; its boundaries are the longest of any refuge in the lower 48 states. It contains several life zones and climatic conditions and is inhabited by 270 species of birds, 57 species of mammals, 45 species of amphibians and reptiles, and 113 species of fish. It offers wildlife observation, boating, fishing, hunting, bird study, and sightseeing to 3 million visitors annually.

The 25,300-acre ***Mark Twain National Wildlife Refuge*** consists of nine units in Illinois, Missouri, and Iowa. It plays an important role in providing protected resting and feeding areas for waterfowl along 250 miles of the Mississippi Flyway. Some of the largest wintering concentrations of bald eagles exist in the refuge, and more than 220 species of birds use the refuge. The refuge offers wildlife viewing, fishing, hunting, and hiking. Several units provide public boat access.

Clarence Cannon National Wildlife Refuge, which was established in 1964, contains 3,747 acres along the Mississippi River in Missouri. Made up of permanent and seasonally flooded impoundments, forests, grasslands, and crop fields, the refuge serves as another link in the chain of migratory bird refuges along the river. A variety of management techniques are use to enhance habitat diversity, including mowing, disking, limited farming, burning, fallowing, and water level manipulation.

The 10,428-acre ***Reelfoot National Wildlife Refuge*** was established in 1941. Reelfoot Lake, in northeast Tennessee and southwest Kentucky, was formed in 1811 as a result of the most violent earthquake recorded in North America. The formation of the lake created a valuable wetland area that became a haven for many wildlife species and attracted such notable hunters and outdoorsmen as Davey Crockett and Jim Bowie.

Lake Isom National Wildlife Refuge, 3 miles south of Reelfoot Lake, was established in 1938. The refuge's 1,846 acres of open water, forested wetlands, and croplands are similar in character to those of Reelfoot Lake. The two refuges offer boat access, hunting, fishing, interpretation, and wildlife observation.

Chickasaw National Wildlife Refuge lies along the Chickasaw Bluff in Lauderdale County in western Tennessee. The refuge, established in 1985, is composed primarily of bottomland hardwood forest, but there are also tracts of agricultural lands, locust/osage upland, and a small acreage of timbered bluffs. The refuge provides habitat for up to 250,000 ducks and is an important wintering and stopover area for large numbers of the Mississippi Flyway mallard population. The refuge offers opportunities for hunting, fishing, hiking, camping, picnicking, and wildlife observation.

Big Lake National Wildlife Refuge occupies 11,038 acres in northeastern Arkansas and southeastern Missouri. It is unique in that 5,000 acres is designated as a national natural landmark and 2,100 acres is included in the wilderness preservation system. The New Madrid earthquake of 1811–12 changed the Big Lake area from a free-flowing river system to the present lake/swamp environment. Like other refuges along the Mississippi, Big Lake is a wildlife oasis in the center of a vast agricultural sea. The refuge offers hunting, fishing, and wildlife observation.

Lower Hatchie National Wildlife Refuge was established in 1980 to preserve and manage this 7,394-acre bottomland hardwood forest tract for wildlife, principally migratory birds. Lower Hatchie, which is administered by Reelfoot National Wildlife Refuge, offers opportunities for hunting and fishing.

The 5,885 acres of ***Wapanocca National Wildlife Refuge*** lie in one of the last areas in the Arkansas Delta where large concentrations of ducks and geese are present. The refuge, which was established in 1961, is composed of equal amounts of bottomland hardwoods, freshwater impoundment, and agricultural land. The refuge is a wildlife island in an agricultural sea. Nearly every species of duck common to the Mississippi Flyway can be found in the refuge, which offers boat access, hunting, fishing, and wildlife observation.

Yazoo National Wildlife Refuge, which encompasses 12,470 acres, was established in 1956. The focus of the refuge, which is managed for waterfowl, is to produce agricultural crops preferred by waterfowl. It includes open agricultural fields and water impoundments.

Saint Catherine Creek National Wildlife Refuge was established in 1990 to preserve, improve, and create habitat for waterfowl. It encompasses 13,478 acres in western Mississippi, seven miles from Natchez. Habitat consists primarily of cypress swamps and hardwood forests. Restoration of several hardwood species within the refuge is a management objective. The refuge offers fishing, hunting, nature observation, and hiking.

Delta National Wildlife Refuge, on the Mississippi River Delta on the southeastern coast of Louisiana, contains 48,800 acres of marsh, shallow ponds, channels, and bayous. It was established in 1935 primarily as a winter sanctuary for migratory waterfowl. It provides winter shelter and feeding and resting places for up to 200,000 ducks and 50,000 geese, including a large wintering population of snow geese. Oil and gas are produced in the refuge, which also offers opportunities for hunting, fishing, and wildlife observation.

Other wildlife refuges along the Mississippi River corridor are Sherburne, Driftless Area, Cypress Creek, White River, Dahomey, Cocodrie, and Bayou Sauvage. The refuge system on the upper Mississippi River gives millions of visitors an opportunity to participate in a vast array of recreational activities.

NATIONAL NATURAL LANDMARKS

The national natural landmarks (NNL) program was established by the secretary of the interior in 1962 under the authority of the Historic Sites Act of 1935. The purpose of establishing the program was to identify and encourage the preservation of the full range of geological and ecological features that are determined to represent nationally significant examples of the nation's natural heritage. National natural landmarks can be on either public or private land. Landowners must indicate consent for designation of a national natural landmark on their property. Designation of a national natural landmark is not a land withdrawal, does not change ownership, does not dictate activity, and does not guarantee public access — it is the designation of a significant feature of the nation's natural heritage. Currently there are 587 national natural landmarks nationwide. There are 18 national natural landmarks in 7 of the 11 states in the Mississippi River corridor; 16 are on public land and 2 on private land. They are shown on the National Natural Landmarks map and in table 2.

The diversity exhibited by the national natural landmarks is a reflection of the diversity of the Mississippi River corridor as a whole. An example of this diversity is the Chippewa River Bottoms in Buffalo County, Wisconsin, the largest single stand of bottomland hardwood forest along the once widespread postglacial forest. Other examples are Cedar Creek Natural History Area/Allison Savanna, in Anoka County, Minnesota, a relatively undisturbed area where three biomes meet (tall grass prairie, eastern deciduous forest, and boreal coniferous forest), supporting 61 species of mammals and 183 species of birds; Fults Hills Prairie Nature Preserve Monroe County, Illinois, an example of unique loess hill prairie environment; and Mark Twain and Cameron Caves in Marion County, Mis-

TABLE 2: NATIONAL NATURAL LANDMARKS IN MISSISSIPPI RIVER CORRIDOR

State/County	Name of NNL
Minnesota	
Anoka	Cedar Creek Natural History Area/Allison Savanna
Beltrami	Upper Red Lake Peatland
Cass	Pine Point Research Area
Clearwater	Itasca Natural Area
Wisconsin	
Buffalo	Chippewa River Bottoms
Grant	Wyalusing Hardwood Forest
Vernon	Kickapoo River Natural Area
Illinois	
Alexander	Horseshoe Lake Nature Preserve
Carroll	Mississippi Palisades
Jackson	Little Grand Canyon Area
Monroe	Fults Hills Prairie Nature Preserve
Union	Giant City Geologic Area
Missouri	
Marion	Mark Twain Cave and Cameron Cave
Mississippi	Big Oak Tree
Ste. Genevieve	Pickle Springs
Tennessee	
Lake	Reelfoot Lake
Arkansas	
Mississippi	Big Lake Natural Area
Mississippi	
Sharkey	Green Ash-Overcup Oak-Sweetgum Research Natural Area

souri, an exceptionally good example of the maze type of cavern development.

Another of the diverse national natural landmarks is Reelfoot Lake in Lake County, Tennessee, an area of water lily glades, sawgrass jungles, cypress swamps, and scattered bodies of open water formed in the winter of 1811–12 as a result of shocks known as the New Madrid earthquake. The area contains domes, sunken lands, fissures, sinks, sand blows, and large landslides. With recent revisions to NNL policy, the potential exists for designation of more national natural landmarks. The national natural landmarks along the Mississippi River corridor are described below by state.

Minnesota

Cedar Creek Natural History Area, Allison Savanna, in Anoka County, Minnesota, is 30 miles north of Minneapolis. This natural history area is owned jointly by the state and private owners. This relatively undisturbed area where three biomes meet (tall-grass prairie, eastern deciduous forest, and boreal coniferous forest) supports 61 species of mammals and 183 species of birds. It is nationally and internationally famous as a research area.

The center of Upper Red Lake Peatland, in Beltrami County, is 15 miles northwest of Waskish. One of the largest peatlands remaining in the conterminous United States, its ownership is divided among the federal and state governments, private interests, and an Indian trust (the Red Lake Tribe). This area illustrates a variety of geological features and plant associations, especially the dominant and rare string bog. It is an outstanding habitat for wildlife, including endangered species.

Pine Point Research Natural Area, in Cass County, is in Chippewa National Forest, 26 miles southeast of Bemidji. This federally owned area contains undisturbed stands of red pine and mixed pine that have been protected for more than 70 years. Bald eagles and ospreys nest in this area.

Itasca Natural Area, in Clearwater County, is in Itasca State Park, 30 miles southwest of Bemidji. The state-owned area contains some of the finest remaining stands of virgin red pine, spruce/balsam fir, and maple/basswood/aspen forest, supporting 141 bird and 53 mammal species, including bald eagles.


National Natural Landmarks
Mississippi River Corridor
Mississippi River Corridor Study Commission
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NORTH
0
50
100miles
County/Parish along study corridor
National natural landmark

Wisconsin

Chippewa River Bottoms, in Buffalo County, Wisconsin, is one-half mile north of Wabasha, Minnesota. The area, owned jointly by the state and the federal government, contains the largest single stand of bottomland hardwood forest along the once widespread post-glacial forest, including a large great blue heron rookery.

Wyalusing Hardwood Forest, in Grant County, is in Wyalusing State Park, 6 miles north of Bagley. The state-owned area exhibits high biological diversity, illustrating nine major vegetation types. It contains several rare plant species and abundant wildlife, including some endangered species.

Kickapoo River Natural Area, in Vernon County, is between Ontario and La Farge. The state-owned area contains the largest undisturbed concentration of exposed seeping sandstone in the state. The river, in the Driftless Area, has many entrenched meanders. A combination of geologic factors has created a multitude of microhabitats, which has resulted in a highly diverse ecological habitat supporting many species of flora, some of which are endangered.

Illinois

Horseshoe Lake Natural Preserve, in Alexander County, Illinois, is 11 miles northwest of Cairo. This state-owned natural preserve contains diverse aquatic and terrestrial flora and fauna and mature stands of bald cypress. The site is on the migration corridor of many waterfowl, as well as being an overwintering area site for thousands of Canada geese.

Mississippi Palisades, in Carroll County, is north of Savanna. Its topography consists of deep V-shaped valleys, caves and sinks, and massive cliffs along the Mississippi River. This state-owned area supports many species of plant and animal life.

Little Grand Canyon Area, in Jackson County, is 10 miles west of Carbondale. This federally owned area, an exceptional example of a large box canyon with vertical overhanging walls, contains a great diversity of ecosystems, including sandstone outcrops and overhangs, ravine slope forest, dry site oak-hickory forest, and hill prairies. The ravine is nationally known as a seasonal haven for a great variety of snakes that hibernate there.

Fults Hills Prairie Nature Preserve, in Monroe County, is approximately 35 miles south of Saint Louis, Missouri. This nature preserve, which is owned by the state of Illinois, contains the largest complex of highest-quality, essentially undisturbed loess hill prairies along the Mississippi River in Illinois, including the largest single prairie opening.

Giant City Geologic Area, in Union County, is in Giant City State Park, 10 miles south of Carbondale. This area is an exceptional example of gravity sliding, consisting of massive joint-bounded sandstone blocks of Pennsylvanian Age. Rich flora include xeric woods and oak/hickory forest.

Missouri

Mark Twain and Cameron Caves, in Marion County, Missouri, are 2 miles southeast of Hannibal. The two privately owned caves on either side of a small valley, Cave Hollow, are exceptionally good examples of the maze type of cavern development.

Big Oak Tree, in Mississippi County, is within Big Oak Tree State Park, approximately 12 miles southeast of East Prairie. This state-owned area is the only sizable known tract of essentially virgin wet-mesic bottomland hardwood forest remaining in the northern part of the Gulf Coast Alluvial Plain natural region.

Pickle Springs, in Sainte Genevieve County, is 7 miles east of Farmington. State and privately owned, it is a deep, forested gorge containing one of the finest Pleistocene relict habitats in Missouri. It supports many relict herba-

ceous plant species, including one rare moss of tropical affinity and several plant species characteristic of the Appalachian Mountains.

Tennessee

Reelfoot Lake, in Lake County, Tennessee, is 18 miles west-southwest of Union City. The state-owned area contains water lily glades, cypress swamps, sawgrass jungles, and scattered bodies of open water formed in the winter of 1811–12 as a result of the New Madrid earthquake, the most severe of any on record in the country. The site contains domes, sunken lands, fissures, sinks, sand blows, and large landslides.

Arkansas

Big Lake Natural Area, in Mississippi County, Arkansas, is 3 miles east of Manila. This federally owned natural area, which contains a significant amount of virgin timber and a mix of southern, midwestern, and Ozark flora, supports several endangered bird species.

Mississippi

Green Ash-Overcup Oak-Sweetgum Research Natural Area, in Sharkey County, Mississippi, is in Delta National Forest. The three noncontiguous tracts of this federally owned research natural area are 18 miles west-northwest of Yazoo City. The area contains three very rare remnants of virgin bottomland hardwood forest in the Mississippi River Delta region. Some of the oldest sweetgum stands are 250 to 300 years old.

FLOODING

Significance of the Mississippi River

The major tributaries of the Mississippi include the second and third largest rivers in the United States, the Ohio and Missouri, as well as numerous smaller yet imposing streams. The Missouri River stretches 2,400 miles to the northwest and carries on average some 82,000 cubic feet per second (cfs) of flow at its mouth. The average flow for the upper Mississippi at this location is 73,000 cfs. The Ohio, on the other hand, is 1,310 miles long and flows from the northeast through six states. It contributes on average 278,000 cfs of discharge at its juncture with the Mississippi River near the small town of Cairo, which is at the southern tip of Illinois.

Near Cairo, the alluvial valley of the lower Mississippi begins. This 35,000-square-mile valley falls from an elevation of 300 feet at Cairo to sea level at the Gulf of Mexico, a distance of some 980 river miles. The valley varies in width from 20 to 80 miles. At Vicksburg, Mississippi (543 river miles south of Cairo), the average flow is 612,000 cfs; however, a flood flow of 2,278,000 cfs has been recorded. At the Old River Control Structures north of Baton Rouge, a portion of the Mississippi is diverted to the Atchafalaya River. This diversion on average includes about 25% of the river's flow.

The Mississippi River has been a vital factor in the physical and economic growth of the United States. No river has played a greater part in the nation's development and expansion. It is a major resource, a national asset, a giant river unequaled among American waters. Yet it is also an ongoing threat to lives and property in the valley through which it flows. From the time of the first permanent settlements along the banks of the river, probably the most fearsome word was "flood." The explorers accompanying DeSoto in 1543 were apparently the first outsiders to see the Mississippi in flood, which they described as severe and prolonged. LaSalle, exploring the heart of the American wilderness more than a century later, also found the Mississippi on a rampage. New Orleans, which was founded in 1718, was badly inundated many times during its early years.

Fragmentary records indicate that great floods occurred frequently. Nine great floods were recorded between 1782 and 1850. In 1882, one

of the most disastrous floods to that time devastated the entire Delta area of 35,000 square miles. The losses were appalling. Hundreds of crevasses occurred in the weak levee lines, leaving thousands homeless and displaced. Additional major floods followed in 1912 and 1913, and in 1927 the "granddaddy" of floods occurred, inundating an area of about 26,000 square miles, or more than 16 million acres. It was the most disastrous flood in the history of the United States, breaching levees and laying waste to cities, towns, and farms. Property damage amounted to more than $2 billion at today's prices; hundreds of lives were lost; and more than 600,000 people were displaced (see 1927 Flood map and map of Lower Mississippi River Levee System).

After the great flood of 1927, other floods occurred in 1929, 1937, 1945, 1950, 1973, 1975, 1979, 1983, and of course in 1993 (see 1993 Flood map). The interval between major floods varies, but from 1879 to the present they have occurred on average once every seven years. Storms that produce floods on the lower Mississippi River occur chiefly during January through April and to a lesser extent in May and June. They generally result from rainfall over large areas. Summer storms ordinarily affect smaller areas and do not usually produce flood stages on the lower Mississippi.

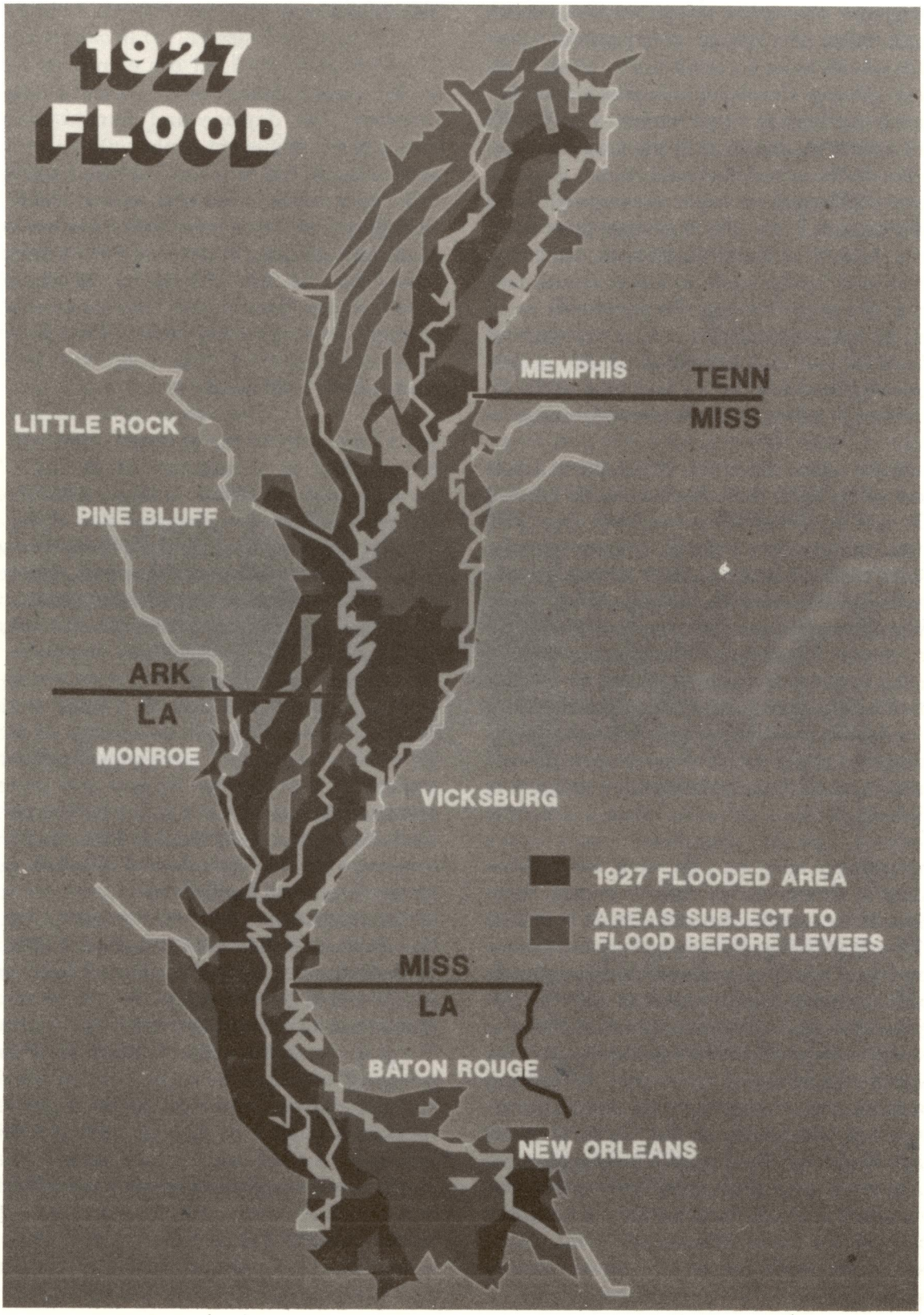
The primary source of flooding is the Ohio Valley, which includes the Tennessee River Basin. For example, the majority of the 1913, 1937, and 1950 flood discharges at Cairo came from the Ohio Basin. The 1927 flood developed as a result of a series of storms that produced major runoff over much of the Mississippi watershed, including the upper Mississippi and Missouri rivers. The 1973 flood, the most severe of the recent floods, developed in a manner much like the 1927 flood. Major floods on the upper Mississippi or on the Missouri, Arkansas, and White tributaries generally can take place without a resultant flood on the lower Mississippi River. However, major floods on the Ohio River usually produce floods on the lower Mississippi.

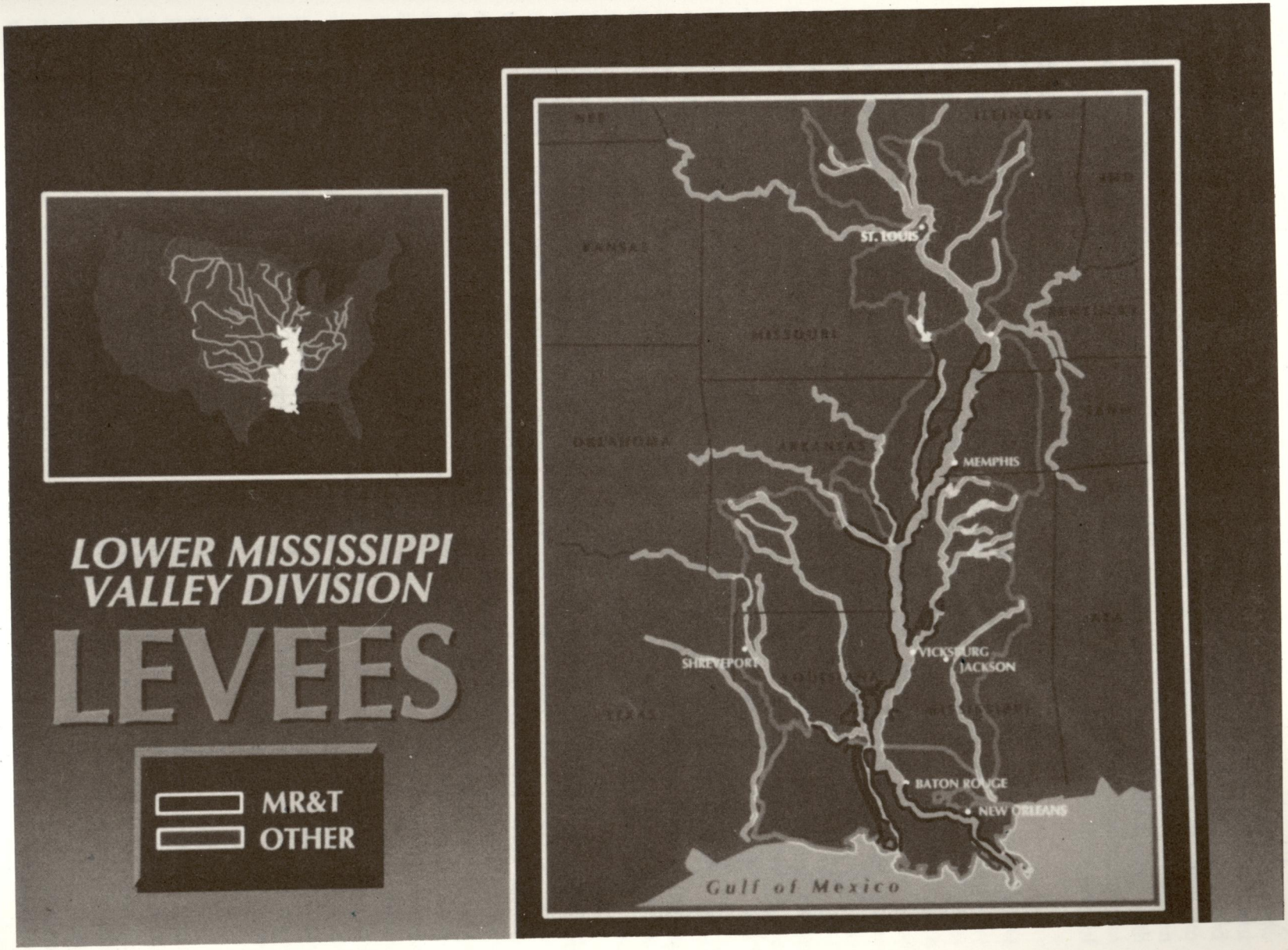
Nightmare in the Heartland: The 1993 Flood

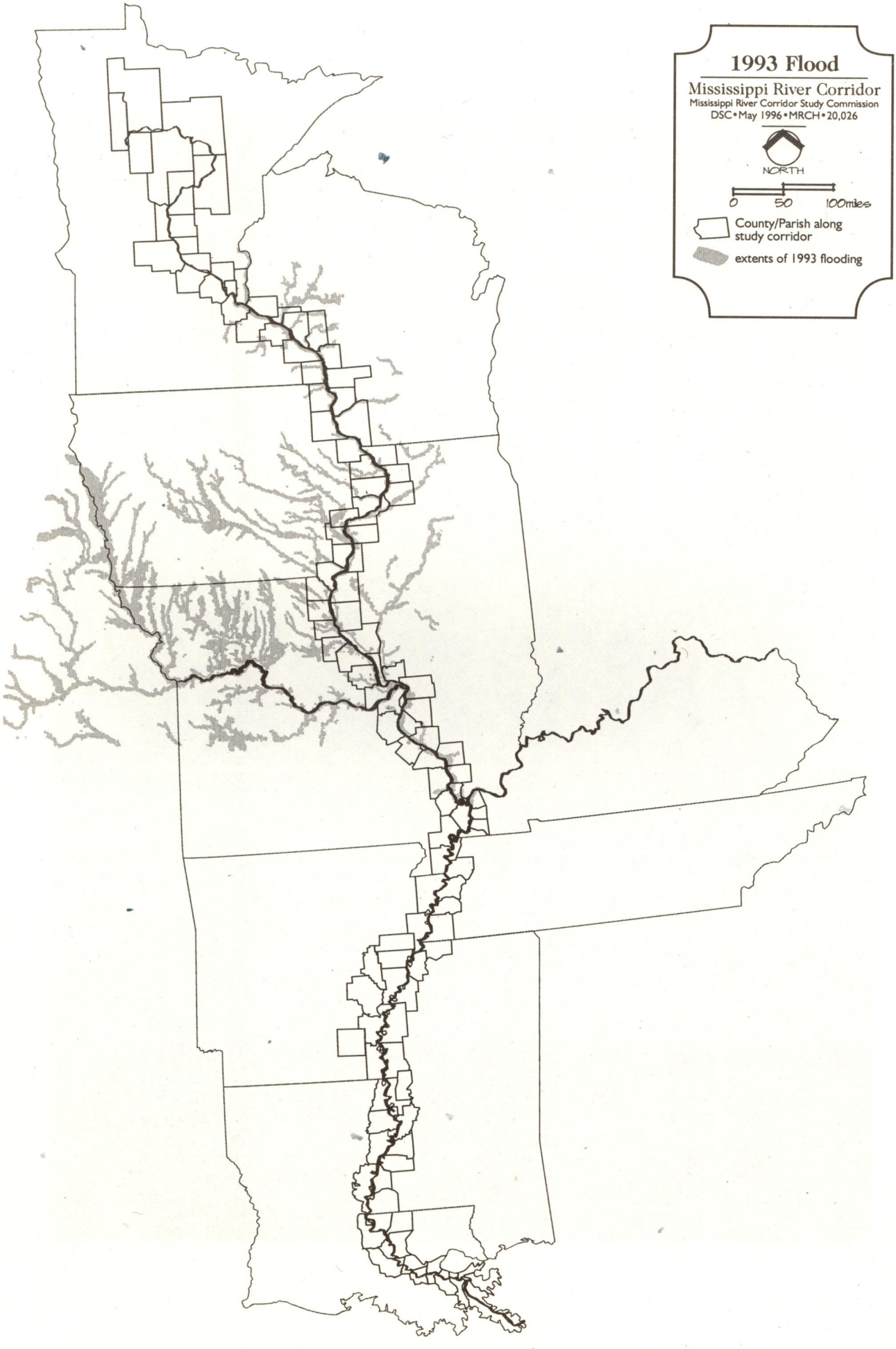
The 1993 midwest flood has earned its niche in the rogue's gallery of the nation's natural disasters. The damage and human trauma wrought by this event ranks with other historic catastrophes. The far-reaching flood was a defining event, the standard by which future floods in this region will be measured. Most historic great floods on the Mississippi have occurred on the lower Mississippi, which is now protected by the massive Mississippi River and Tributaries Project. This systematic approach was conceived in the wake of the 1927 Flood.

For a large part of the Midwest, 1993 will be remembered as a summer of infamy. The flooding was pervasive, intense, and of extended duration as a chocolate tide of devastation overtopped or broke through many flood control works and covered adjacent lands. These inundations were the product of freakish, unprecedented rainfall and runoff patterns.

Between April 1 and July 25, a huge section of the Midwest received an average of more than 1.5 feet of rainfall, with many large areas (especially northeastern Kansas and eastern Iowa) receiving more than 2.5 feet. The series of deluges, especially in late June and July, occurred because of unusual weather patterns. Conditions in the Pacific Ocean set up a series of systems that began moving across the western United States toward the Midwest. Concurrently, the "Bermuda High" pressure system that develops in the summer positioned itself farther north than normal, bringing drought conditions to the southeast, pumping moisture from the Gulf of Mexico into the Midwest, and blocking the movement of storms guided by the Jet Stream, which remained farther south than usual. These conditions spawned wave after wave of intense thunderstorms that swept across the region. Rainfall during July exceeded 433% of normal for the upper Mississippi River basin and 462% for the Missouri River basin.


1927
FLOOD
MEMPHIS
TENN
MISS
LITTLE ROCK
PINE BLUFF
ARK
LA
MONROE
VICKSBURG
1927 FLOODED AREA
AREAS SUBJECT TO
FLOOD BEFORE LEVEES
MISS
LA
BATON ROUGE
NEW ORLEANS


LOWER MISSISSIPPI
VALLEY DIVISION
LEVEES
MR&T
OTHER
ILLINOIS
KANSAS
MISSOURI
OKLAHOMA
ARKANSAS
TEXAS
ST. LOUIS
MEMPHIS
SHREVEPORT
VICKSBURG
JACKSON
BATON ROUGE
NEW ORLEANS
Gulf of Mexico


1993 Flood
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,026
NORTH
0 50 100miles
County/Parish along study corridor
extents of 1993 flooding

Many of the patchwork, segmented levee systems in the upper Mississippi and Missouri basins were overwhelmed. Flood control works built by private and local interests fell first, but eventually even some federal levees — designed and constructed to higher standards — were overtopped or ruptured.

Some 1,000 of the 1,350 private levees in the region were overtopped or breached. Of the 230 federal levees, 37 were overtopped and two were breached. Many of the federal agricultural levees along the Mississippi River were designed to withstand a flood anticipated to occur once every 50 years. Although design levels were exceeded in some cases by several feet, most of these levees held. The deluge of water shattered previous stage and discharge records on major portions of the Mississippi, Missouri, and smaller streams.

The unprecedented dimensions of this historic flood tested the preparedness and ingenuity of the U.S. Army Corps of Engineers as well as those of local and private interests that build, maintain, and operate protective and water control works. The federal Emergency Management Agency, the Corps of Engineers, the U.S. Coast Guard, and other federal agencies worked closely with National Guard units, levee boards, drainage districts, municipal and county governmental agencies, and the American Red Cross to feed and shelter flood victims, ensure the public safety, restore and maintain essential services, and fight the flood.

Throughout the region, thousands of volunteers worked feverishly to raise and strengthen flood control works taxed beyond their design limits. The effort was heroic and herculean. These efforts are largely conducted by local interests, but as in other floods, Corps of Engineers personnel responded to requests for technical assistance and materials.

Throughout the flood, Corps engineers and technicians were in the field working around the clock, helping to assess and stabilize weakened structures and to provide supplies and equipment in response to local requests. Some 1,000 Corps employees were directly involved in the flood response. Furthermore, the Corps furnished 31 million sandbags, lent more than 400 pumps to local interests, and obligated $25.4 million in federal funds to support the flood fight. Various humanitarian organizations responded to the disaster with efforts to ease the suffering of people driven from their homes and to feed thousands of volunteer flood fighters.

The prolonged flooding had a devastating impact on the towing industry. Excessive flood flows forced the Coast Guard to suspend navigation on the locks and dams reach of the upper Mississippi for nearly two months. This idled more than 2,000 barges trapped north of Cairo and limited the movement of hundreds more on the Ohio and lower Mississippi. Navigation was resumed in accordance with a protocol jointly developed by the Corps, the Coast Guard, and the towing industry. The three parties worked together in a traffic control center. The effort proved to be a remarkably successful example of cooperation between the federal and private sectors.

The electronic and printed media were clogged with stories about flooding. Many areas of Davenport, Iowa, were flooded throughout July. A levee breach near Quincy, Illinois, flooded the approach to the last bridge on the Mississippi River that had remained open along a 200-mile stretch of river. Jefferson City, the capital city of Missouri, was cut off by flooding. The water treatment plant serving 250,000 people in the Des Moines area was forced to shut down on July 11. This was followed by subsequent disruptions at Saint Joseph, Missouri, and Alton, Illinois.

Flooding closed U.S. Highway 40 near Saint Louis, triggering massive rush-hour traffic jams on Interstate 70. The Tuttle Creek and Milford reservoirs in Kansas eventually discharged massive flows of water as flood control storage was exceeded, with resultant damage to the structures and downstream flooding. The Chesterfield area of suburban

Saint Louis was hit especially hard by flooding from the Missouri River. In many instances, crops and homes were spared by extraordinary efforts characterized by frenetic passion and a disregard for exhaustion, stress, and personal well-being.

The statistical dimensions of this disaster are stark. By the end of July, throughout flooded areas of seven states, 47 people had died, 20 million acres of cropland had been damaged, 45,000 homes had been damaged or destroyed, 74,000 people had been forced to evacuate, and estimated damages stood at $20 billion. As the crest moved into the lower Mississippi River valley, stages did not exceed bank full because the river's channel capacity is much greater than that of the upper Mississippi.

The extraordinary magnitude of this flood has sparked general interest in the traditional approach to flood control in this region. The 1993 flood may be to the upper Mississippi and Missouri basins what the 1927 flood was to the lower Mississippi — a "defining event" that may mark new directions in national flood control policies and approaches. Elected officials, civic leaders, environmentalists, and engineers throughout the Mississippi River corridor are discussing needs and options that may foster innovations and revisions in the way floodplains are protected and managed. Laws, policies, regulations, and procedures are being reexamined as the nation seeks to learn lessons from this tragic event.

Flood Control

The three principal stretches of the Mississippi River (upper, middle, and lower) vary significantly in practices to control flooding. Flooding on the upper river is controlled throughout the tributaries of the upper Mississippi basin by numerous reservoirs designed to store up to 40 million acre-feet of floodwater. Communities and agriculture are further protected by a series of levees constructed by both the federal government and private flood control authorities.

The upper Mississippi is regulated by a series of locks and dams; additional flood control is intermittently provided for local purposes. The middle Mississippi River extends from the mouth of the Missouri River to Cape Girardeau, Missouri. In this reach, much of the relatively narrow valley is protected against flooding by natural high ground and by a system of levees and floodwalls largely constructed by the federal government. These works protect agricultural lands and control flooding in major metropolitan areas such as Saint Louis. Gated drainage structures have been built through levees at some places to permit drainage of the protected areas to the river during low river stages. At some locations, pumping stations provide interior drainage during floods, when the gates on drainage structures are closed. Tributary projects and flood control dams offer added protection.

The first settlers experienced devastating floods and initiated the battle between people and the river within the lower Mississippi River valley. For nearly three centuries, the main weapon has been earthen levees. The first levees were small in height and section, not very strong, and discontinuous, leaving gaps and openings for the floodwaters to pour through. Even in areas of continuous embankments, levees were often overtopped and crevassed. In these early years, the basic criteria for levee design in terms of height and cross-section was directly related to the height of the prior floods. Levee heights rose and their cross-sections were gradually enlarged as greater floods were experienced.

The first comprehensive effort to gain some understanding of the river's characteristics was made in 1860 when Congress authorized a topographical and hydrographical survey of the Mississippi River Delta. This effort resulted in *Report Upon the Physics and Hydraulics of the Mississippi River, Upon the Protection of the Alluvial Region Against Overflow,* prepared by Captain A. A. Humphreys and Lieutenant H. L. Abbot in 1861.

The report analyzed considerable data and discussed various engineering approaches for controlling flooding, including diverting tributaries, constructing reservoirs and cutoffs, enlarging outlets to the Gulf, and building levees. It related that no flood control advantage could be derived from either diverting tributaries or constructing reservoirs, and that plans for cutoffs and new or enlarged outlets to the Gulf would be too costly and dangerous to attempt. It also recommended that levees could be relied upon to protect all the alluvial valley lands subject to inundation. This approach became known as the "levees only" plan, which shaped the direction of flood control efforts for the next seven decades.

By 1879 the need for improvement of the Mississippi River and coordination of engineering operations through a centralized organization was widely recognized. In that year, Congress established the Mississippi River Commission and asked it to "take into consideration and mature such plan or plans and estimates as will correct, permanently locate, and deepen the channel and protect the banks of the Mississippi River, improve and give safety and ease to navigation thereof, prevent destructive floods, promote and facilitate commerce, trade, and the postal service." The commission consisted of three Corps officers (one of whom was William Henry Harrison, who would later be president), one member from the U.S. Coast Geodetic Survey, and three civilians, two of whom were civil engineers. All appointments were made by the president of the United States, subject to confirmation by the Senate.

When the duties of the commission are examined closely, it appears that there was more emphasis on channel stabilization and navigation than on development of flood control works. The government had not declared a federal commitment to flood prevention through appropriation of funds to maintain or construct levees. Federal funds could be expended on levees only if a specific improvement could be shown to benefit navigation, such as closing breaks in levees.

In 1882, just three years after the commission was established, a disastrous flood literally destroyed existing levee systems. Losses were appalling, and the outlook for a permanent solution to flooding in the Mississippi Valley was disheartening. In the meantime, work and experimentation continued on ways to control the river. Much of this effort involved developing approaches to stabilize bank lines that would help to hold the river alignment and protect the levee system. Local interests, still saddled with the financial burden of strengthening the levee system, raised and lengthened segments as funds would permit.

Back-to-back floods occurred in 1912 and 1913, again causing havoc in the valley. These floods, and another in 1916, convinced Congress to approve a national flood control law. The 1917 Flood Control Act gave the Mississippi River Commission $45 million in flood protection. With this new emphasis, levee designs were reviewed and modified, and much-needed construction was expedited. Local interests, while relieved of the total cost burden, were still required to share in the cost of the work. The outlook for dependable flood protection for the inhabitants of the valley seemed more optimistic. Protection against floods began to reach its greatest extent and highest efficiency.

However, the tremendous disaster of the 1927 flood awakened the nation to the need for a comprehensive program to control the giant river, and the 1928 Flood Control Act (since amended many times) authorized the Mississippi River and Tributaries Project (MR&T), the nation's first comprehensive flood control system.

The 1927 flood illustrated that the "levees only" plan was inadequate to control and safely handle the river's flood flows. From numerous plans, Congress adopted the "Jadwin Plan," which completely abandoned the "levees only" tradition and replaced it with a comprehensive river regulation system with several elements. There was also a significant change in the level of protection provided. This plan was designed to safely pass the

"project flood," which is larger than the record flood of 1927. The hypothetical flood, based on a careful analysis of historical rainfall and runoff data, is about 15% greater than the flood of 1927 at Arkansas City, just downstream from the mouth of the Arkansas River, and 29% greater at the latitude of Red River Landing, about 60 miles below Natchez, Mississippi. The project flood is used as a basis for establishing levee grades and for planning and designing other flood control features such as floodways, reservoirs, and pumping plants.

The four major elements of the MR&T Project are (a) levees that contain flood flows; (b) floodways and control structures that divert excess flows past critical reaches of the Mississippi River; (c) channel improvement and stabilization measures that maintain navigation channel alignments, help develop an efficient channel for passing flood flows, and protect the levee system from encroachment; and (d) tributary basin improvements that provide for drainage and flood control, such as dams and reservoirs, pumping plants, levees, auxiliary channels, and the like.

The mainline levee system begins on the west bank just below Cape Girardeau, Missouri, and extends (except for gaps due to mouths of tributary streams and high ground) along parts of both sides of the river almost to the Gulf of Mexico. The entire MR&T system of levees is vast. Some 3,714 miles have been authorized, and 2,718 miles are completed to grade and section. The main part of the system is some 2,200 miles long, 1,608 miles of which extend along the Mississippi River. The rest lies along the south banks of the Arkansas and Red Rivers and in the Atchafalaya Basin.

Floodways were incorporated into the MR&T plan to divert excess flood flows from the river's main stem so that levees of reasonable height can be used to contain the project flood. The Birds Point to New Madrid, Missouri, floodway reduces stages on the Ohio and Mississippi Rivers at, above, and below Cairo, Illinois. The Morganza and West Atchafalaya floodways in Louisiana, along with the Old River Structures, are capable of diverting half of the project flood into the Atchafalaya River Basin. The Bonnet Carré Spillway just upstream from New Orleans diverts flows from the Mississippi River into Lake Pontchartrain in order to hold down flood stages at New Orleans.

The Old River Control structures on the west bank of the Mississippi River, 50 miles northwest of Baton Rouge, were completed in 1962. Their purpose was to prevent the capture of the Mississippi by the Atchafalaya River and to regulate flows into the Atchafalaya River and basin. The complex includes a low sill structure and an overbank structure, as well as an auxiliary structure completed in 1986. These structures are used to divert a sufficient amount of water from the Mississippi River to maintain a distribution of 30% of the total latitude flow (the combined flows of the Mississippi and Red Rivers) in the Atchafalaya River and 70% in the Mississippi. There is also a lock and dam on the former Old River Channel slightly downstream of the control structures that preserves navigation between the Mississippi River and the Atchafalaya-Red River system.

The Morganza Flood Control Structure is located about 15 miles downstream from Old River on the west bank of the Mississippi. A gated structure built into the levee line, it is designed to divert 600,000 cfs from the Mississippi into the Atchafalaya floodway.

Channel stabilization and improvement are also an essential part of the flood control and navigation plan. Overall, it consists of stabilizing the banks of the Mississippi to a desirable alignment and obtaining efficient flow characteristics from the standpoints of flood control and navigation. Dikes made of rock confine the river to a single low-water channel, reduce excessive widths, and develop desired alignments in the interest of navigation. Revetment, consisting of large concrete blocks joined together with wires, helps fix the channel and protect nearby levees by preventing bank caving (also see table 3).

TABLE 3: MISSISSIPPI RIVER AND TRIBUTARIES CHANNEL IMPROVEMENT FEATURE (JANUARY 1, 1993)

Feature	Miles Authorized	Miles Built
Revetment	1,085.0	992.0
Dikes	339.1	256.1
Foreshore protection	160.4	128.6

Improvement dredging is used to adjust flow patterns, and maintenance dredging deepens shallow channel crossings that tend to form during low water. In the lower part of the river, foreshore protection (rock structures built lateral to the bank) protect the bank and nearby levees from wavewash attack produced by ocean-going vessels.

During the 1930s and early 1940s a series of cutoffs created on the lower Mississippi shortened the river by more than 150 miles. This effort enhanced the flood-carrying ability of the river's channel and reduced flood heights; for example, river stages were lowered by 12 feet at Arkansas City, Arkansas, and 6 feet at Vicksburg, Mississippi. The MR&T Project also includes tributary basin improvements such as dams, reservoirs, canals, levees, and pumping plants that provide for flood control and drainage.

NAVIGATION

The river is the trunk of a treelike navigation system that extends into the heart of the nation. During the 20th century this waterway has become highly regulated and developed. Work by the U.S. Army Corps of Engineers over many decades has transformed the unruly, meandering giant into a relatively safe transportation artery. In their natural condition, various reaches of the Mississippi featured sandbars, snags, split channels, and rocky outcroppings that claimed hundreds of antebellum steamboats. Measures such as locks and dams, bank protection, dikes, and maintenance dredging, although compromising much of the natural ecosystem, have transformed, sculpted, and fixed reliable channels far different from those of Mark Twain's day.

The upper Mississippi was once characterized by a series of deep pools separated by shoals and rapids. Its channel was obstructed by bars and snags, and during late summer and fall little water ran in this reach of the river. In the late 19th century, the Corps of Engineers removed major obstructions, constructed reservoirs on headwater streams, and built wing dams as well as closed chutes to successfully develop a 4.5-foot channel from Saint Anthony Falls (at present-day Minneapolis) to the mouth of the Missouri River. The success of these undertakings was marginal because waterway vessels were growing in size and capacity, soon exceeding the dimensions of the channel.

A nearly century-long quest for reliable navigation on the upper Mississippi culminated in 1930 with congressional approval of a 9-foot channel between Minneapolis and the mouth of the Illinois River. A system of 29 locks and dams was subsequently built, most of them during the decade of the 1930s. The structures changed the upper Mississippi into a stairstep series of slackwater pools that river tows and other boats could climb or descend as they traveled the river. The lowermost structure is lock and dam 27, near Granite City, Illinois. The locks structure is located at the lower end of the Chain of Rocks Canal, which was built to allow river traffic to bypass shallows on the Mississippi that pose hazards during low water. The Upper Saint Anthony Falls lock and dam, the uppermost structure, is located at Minneapolis-Saint Paul, some 660 miles above the mouth of the Missouri River. The dams are spaced at irregular intervals varying from 10 to 47 miles; the average pool length is 25 miles. Most sites feature a main lock 110 by 600 feet. Auxiliary locks 110 by 360 feet are sometimes included (see figure 1).

The keystone of the upper Mississippi system is the Melvin Price locks and dam near Alton, Illinois. It replaced lock and dam 26, which was razed in 1990. The 1,160-foot-long dam features nine tainter gates, each 42 feet high and 100 feet long. The installation has twin locks. The main structure is 110 by 1,200 feet; the auxiliary 110 by 600 feet. The Melvin Price structure constitutes the first replacement of an original 9-foot channel project structure. It represents the state of the art in river navigation control works.

River traffic increased rapidly after completion of the 9-foot project. Total commerce between Minneapolis and the mouth of the Missouri River rose from 2.4 million tons in 1939 to 85,459,000 million in 1990. The principal commodities transported are petroleum products, coal, and grain. Harbors, terminal facilities, and riverside industries have developed at many river cities and towns as a result of improved navigation.

The 200-mile reach of the Mississippi from the mouth of the Ohio to the mouth of the Missouri is called the middle Mississippi. This short section is the hub of a vast inland waterway system that totals 16,000 miles. In its original condition, the middle Mississippi channel was obstructed by numerous snags; the stream was divided at many places into

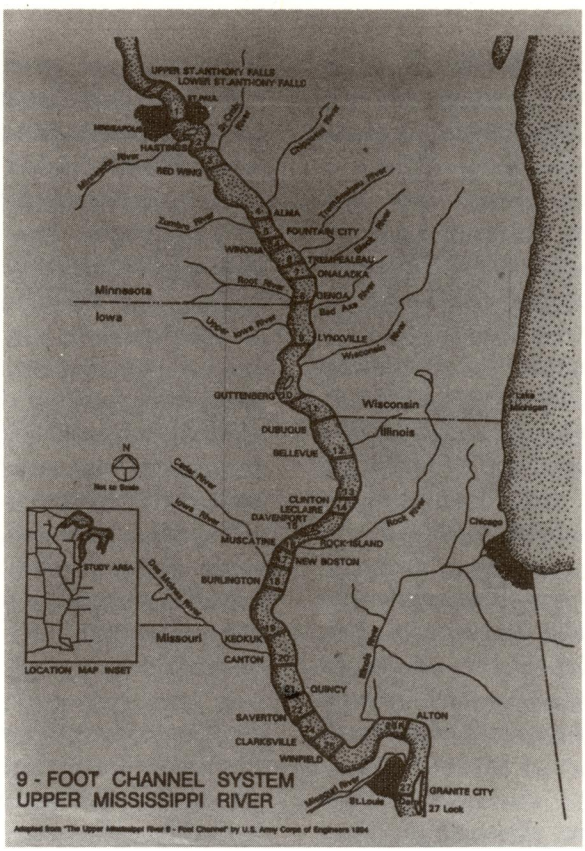


Figure 1: Upper Mississippi River Lock and Dam System

separate channels or chutes; and sandbars sometimes reduced depths to less than 4 feet.

The growth of Saint Louis as the major metropolis on this part of the river led to the first navigation improvements. As early as the 1830s, the federal government provided small amounts of money to improve Saint Louis Harbor, a project undertaken by then Lieutenant Robert E. Lee. The subsequent rapid growth of river commerce led to intermittent attempts to decrease navigation hazards by removing snags and wrecks from the channel.

In the 1870s the Corps of Engineers began a series of improvements, including bank revetments, reducing the channel width where excessive and forcing flows into the main channel by closing chutes and secondary channels. During this initial effort the middle Mississippi became a "laboratory" for river engineering techniques used elsewhere on the Mississippi and on other streams. In 1910 Congress authorized a minimum channel depth of 8 feet between Saint Louis and the mouth of the Ohio River and 6 feet between Saint Louis and the mouth of the Missouri. Dredging for channel maintenance was also authorized.

The latest major authorizations for navigation improvements on the middle Mississippi were included in the 1927 and 1930 Rivers and Harbors Acts. These provided for obtaining and maintaining a minimum channel depth of 9 feet and a minimum width of 300 feet (with greater widths in the river bends). In contrast to the navigation pools of the upper Mississippi, the channel over most of the middle Mississippi is maintained by "open river" techniques such as stone dikes, dredging, bank revetments, and some rock removal.

On the lower Mississippi, navigation-related activities of the Corps began with authoriza-

tion of the removal of snags in 1824. Funding for navigation improvements was inconsistent for a half-century until a systematic program began.

In the 1870s, improving the mouth of the Mississippi for oceangoing ships became a great national issue. Dredging efforts by the Corps failed, so it proposed building a ship channel that would reroute the deep-draft traffic into and out of the river. James B. Eads, a brilliant civilian engineer, offered another approach. He proposed to build jetties in one of the passes and allow the river to scour out a deeper channel. The Corps attacked his plan, but Congress accepted Eads's vision because he agreed to work on a "no cure, no pay" basis. The jetties succeeded, and by June 1879 a 30-foot depth existed in South Pass that stimulated a bold federal approach to addressing the river's other navigation and flood hazards.

The daunting task of the Mississippi River Commission required its engineers to study, test, adopt, and discard river engineering techniques employed in Europe and elsewhere throughout the world. Congress initially prohibited flood control work, since it viewed levee construction as a local responsibility. Until the authorization of federal flood control in 1917, the MRC fieldwork focused on mapping the Mississippi, studying its hydrologic patterns, and making navigation improvements. The latter consisted of closing crevasses in levee lines that caused shoaling in the river, building experimental dikes, and placing great mattresses formed out of willows on the banks to prevent scouring and caving.

These tentative measures did little to deepen channel crossings. Pressed by commercial interests, the Mississippi River Commission began experimenting with dredges, and in 1896 Congress authorized the development and maintenance of a 9-foot channel 250 feet wide from Cairo, Illinois, to Head of Passes. Between 1896 and 1928, dredging and bank revetment became the principal means of sustaining reliable low-water navigation as dikes were dropped from the river engineering inventory. The Mississippi River Commission examined several alternatives and by the early 1920s adopted articulated concrete mattress as the best means of armoring the banks. The technique, first developed in Japan, consisted of joining together small concrete blocks with wires and cables to form resilient, flexible mats.

Generous funding for navigation work continued throughout the 1930s, due to MR&T appropriations, as well as additional support under the National Industrial Recovery Act and other work-relief programs. The Mississippi River Commission also conducted a cutoff program on the Lower Mississippi that shortened the river's navigation channel by some 150 miles and reduced flood stages.

By December 1941 more than 12,000 miles of navigable waterways existed within the Mississippi River basin. Improvements on the middle and lower Mississippi River provided a reliable 9-foot channel from Baton Rouge to Saint Louis. Forty-six locks and dams offered the same navigable depth up the Ohio River to Pittsburgh; similar works extended barge traffic to vital industrial and mining areas on the Allegheny, Monongahela, and Kanawha rivers. The once treacherous and unreliable upper Mississippi featured a stairstep system of navigation pools created by 26 locks and dams that linked Minneapolis to other major transportation routes. Canalization of the Illinois River connected the Mississippi and the Great Lakes. Farther south the Gulf Intracoastal Waterway neared completion, providing 12-foot navigable depths from Corpus Christi to Florida's west coast.

The MR&T Project and other federal measures helped to revitalize waterway traffic on the Mississippi. The glory days of Mississippi River packet boats had lasted until the Civil War, but the river fleet had been devastated and only partially rebuilt after the end of hostilities. Waterways traffic fell off because of railroad expansion, and competitors expedited the demise of waterborne transportation by buying up Mississippi River packet lines

to destroy the industry. By World War I, common carrier use of the Mississippi navigation system was at a virtual standstill. Steel, oil, and coal companies owned the few towboats and barges that plied the river.

Wartime demands so congested the railroads that Congress federalized all existing navigation equipment and allotted $3.9 million for the construction of new towboats and barges. This federal barge service became the Inland and Coastwide Waterways Service in 1920. The service struggled because year-to-year funding inhibited effective planning. In 1924 Congress accepted proposals to transform the fleet into a publicly owned corporation, creating the Inland Waterways Corporation. The legislation provided for $5 million in stock subscribed entirely by the federal government. The legislation further stipulated that the corporation would be sold once private river traffic revived on the Mississippi River system. Throughout its first 15 years, the Inland Waterways Corporation demonstrated to the private sector the profitability of navigation on the inland waterways. The federal barge fleet complemented Corps river improvement projects and attracted private carriers to the rivers.

The river improvements and revitalization of the towing industry enabled the Mississippi River navigation system to play a major role in World War II mobilization. Ultimately, the river made two major contributions to victory: providing a thoroughfare for miliary vessels built at inland shipyards and facilitating the flow of petroleum products upriver to the oil-short East Coast.

The war years were as an important transition period, beginning with the renaissance of the inland navigation industry and closing with an era of rapid growth. The cost-effectiveness of waterborne transportation, the continuing efforts of the Mississippi River Commission and other Corps of Engineers entities to make the Mississippi more navigable, and the general economic boom of the postwar period led to more than four decades of general expansion.

Since World War II, oceangoing vessels plying the river below Baton Rouge have increased in tonnage and draft. Consequently, in 1962 a navigation channel 40 feet by 500 feet was authorized between Baton Rouge and New Orleans. Due to subsequent legislation, a 45-foot channel exists for most of this reach of the river, and a 55-foot channel has been authorized.

In addition, after World War II the Mississippi valley experienced a renaissance of harbor facilities at both large and small river communities. The influx of federal dollars spurred municipal and private sector investment in terminal facilities, which upheld the boom in waterway commerce after World War II. Major developments included the President's Island slackwater harbor at Memphis, Tennessee, and the Devil's Swamp Harbor built near Baton Rouge, Louisiana. Smaller towns such as Hickman, Kentucky; Helena, Arkansas; Vicksburg, Mississippi; and Lake Providence, Louisiana, have reaped the benefits of harbor projects and corresponding economic development. The tonnage of Mississippi River traffic in selected years is shown in table 4.

TABLE 4: TONNAGE OF MISSISSIPPI RIVER TRAFFIC MINNEAPOLIS TO GULF OF MEXICO

Year	Tons
1990	472,448,000
1980	441,544,078
1970	250,821,078
1960	128,347,795
1950	66,825,030
1940	32,372,232
1930	13,969,537

From the standpoints of flood control and navigation, those who struggled to manage the mighty Mississippi have left a monumental legacy. Their efforts comprise a major part of the history, culture, and economy of the Mississippi River corridor.

THE BARGE INDUSTRY

Today the Mississippi River provides a navigable water highway from Head of Passes, Louisiana, to Minneapolis, Minnesota. Coupled with the navigable parts of its connecting tributaries, this river corridor opens the nation's interior to worldwide commerce. Accordingly, the Mississippi River corridor is extremely important to the national economy.

Deep draft ocean vessels access ports as far north as Baton Rouge. Beyond that, commodities are shipped aboard barges wired together to form tows, which are pushed by towboats. A "typical" tow on the Lower Mississippi River (generally considered to be the 954 miles south of Cairo, Illinois, where the upper Mississippi and the Ohio river join) consists of 35 barges arranged in a five long, seven wide configuration. The length of such a tow exceeds 1,700 feet and carries enough product to easily fill more than five 100-car "unit" trains. The standard tow on the pooled upper Mississippi River consists of 15 barges in a five long, three wide configuration. This tow size makes possible efficient passage through locks that step the tow to its destination.

THE INLAND FLEET

The American public tends to equate waterborne commerce with the deep draft, ocean going fleet. At the close of 1989, that fleet consisted of 385 vessels. In comparison, the towing industry consists of 5,218 towboats and 31,004 barges. Of that fleet, 3,306 towboats and 26,551 barges operate on the Mississippi River system.

Approximately one-quarter of the towboats range in size from 2,000 to 10,000 horsepower. These are the "line-haul boats" that ply long stretches of river, moving commodities between inland ports and the sea. Their crews consist of 6 to 11 members, enabling the boats to operate 24 hours a day, seven days a week. The typical work schedule aboard these vessels is six hours on watch, six hours off.

The line-haul boats move tows of 6 to 50 barges. Barges are picked up and dropped off at fleeting areas located along the entire inland river system. Similar to railroad freight yards where cars are assembled to form trains, fleeting areas are locations where barges are combined to form tows for the long haul.

Once underway, line-haul boats seldom stop until their destinations are reached. While the vessels are underway, supplies are brought to them by "boat stores." These midstreamers provide the boats with supplies while underway. Even boat fuel is supplied in this manner. A tank flat is pushed alongside and secured to the line boat, oil transfer lines are connected, and the midstream transfer is completed.

The majority of inland towboats are smaller vessels that tend to work specific geographic areas. These are the boats that move barges from terminal to terminal within a port, between terminals and fleeting areas, and between ports within their geographic areas of operation. Their crews are smaller, and the vessels may or may not work extended hours.

Barges are classified into two basic categories, tank barges and dry cargo barges. Tank barges carry bulk liquid products. There are approximately 3,231 tank barges in the inland fleet with a combined cargo capacity of 6,959,669 short tons. About 80% of the inland tank barges are double-skinned vessels. Dry cargo barges consist primarily of open hopper barges, covered hopper barges and deck/flat barges. There are approximately 23,320 dry cargo barges in the inland fleet with a combined cargo capacity of 32,756,017 short tons.

Nearly 80% of the nation's commercial vessel fleet is associated with the Mississippi River system. To operate it, there are more than 1,200 towing companies. The total inland waterways workforce has been estimated at approximately 225,000 people.

Intermodalism and NAFTA

The lake-river-ocean transportation system from the Great Lakes through the U.S. Inland Waterway to the Caribbean and beyond focuses attention on the immense importance of the Mississippi River. As trade expands among Canada, the United States, and Mexico because of the North American Free Trade Agreement, the existence of this naturally cost-effective all-water route through the heartland will be more appreciated.

The Mississippi River, ideally located with respect to industrial and agricultural areas and markets, permits small- to medium-sized firms in the Midwest to participate in international trade. Coupled with exceptional intermodal land connections by truck and rail (see "Railroads," below), this waterway provides a strong link between the central United States and the growing economies of Mexico and the Caribbean, Central America, and South America.

Direct river-to-ocean commodity flows are expected to increase in the coming years as vessel technology improves and as marketing increases through such efforts as the Maritime Administration's "Maritime System of America" project. International marketing and promotion also are being undertaken by inland ports along the river such as the Tri-City Port District in Granite City, Illinois, and the port of Memphis.

From Ontario to the Yucatan Peninsula and even farther south, low-cost freight service on the Mississippi River will be a benefit. Continuing advances in intermodal trends in the central grain belts and industrial complexes will improve connections to the world from the port of New Orleans.

Communications and Radionavigation Services

The Coast Guard provides VHF-FM voice communications through a system of radio transmission sites strategically located along the Mississippi and Ohio rivers. The Coast Guard provides navigational assistance information during regular broadcasts; emergency information is broadcast as needed. The system also provides river users with ready access to Coast Guard assistance, and, indirectly, to other federal and state agencies. Mariners may contact the Coast Guard on channel 16 VHF-FM 24 hours a day.

The Coast Guard provides radionavigation services along the Western Rivers through an electronic positioning system known as LORAN-C. Using this system, mariners can determine their position to within 0.25 mile. A more accurate satellite-based positioning system is available between New Orleans and Saint Louis. This new system, the global positioning system (GPS), provides positioning information to within 100 meters. In addition, the Coast Guard and the U.S. Army Corps of Engineers are installing a derivative system called differential GPS, which will reliably provide even greater accuracy to better facilitate navigation, regulatory activators, and survey work by reducing reliance on buoys, depth sounders, and short range survey systems. Differential GPS coverage of the entire Western Rivers system should be complete by 1998. Receiving equipment for all these systems is available commercially.

THE GREAT RIVER ROAD

Covering 3,000 miles, the Great River Road is the nation's longest scenic byway. When it was begun in the 1930s, the objective was to develop a Mississippi River highway with existing roads that preserved the special quality of the Mississippi River Valley. As first conceived, a Mississippi River parkway was to be developed in the pattern of the Blue Ridge Parkway and the Natchez Trace Parkway. However, as the Great River Road concept developed, it was recommended that existing highways be incorporated into a continuous route, interconnected where necessary with limited sections of new construction (see Great River Road map).


Great River Road
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,002
NORTH
0 50 100miles
County/Parish along study corridor
Great river road
Twin Cities
Minnesota
Wisconsin
Iowa
Quad Cities
Illinois
St. Louis
Missouri
Kentucky
Tennessee
Memphis
Arkansas
Mississippi
Louisiana
Baton Rouge
New Orleans

In the summer of 1938, representatives of each of the ten Mississippi River states met with U.S. Secretary of the Interior Harold Ickes to discuss the Mississippi River Parkway concept. The Mississippi River Parkway Planning Commission, later known as the Mississippi River Parkway Commission, was established in 1938. To facilitate the development of a Great River Road, the governor of each river state formed a state parkway commission. The commissions have since worked together to define issues and coordinate the development, promotion, and maintenance of the Great River Road and its amenities.

As a result of a feasibility study conducted by the Bureau of Public Roads, the Federal Highway Act of 1954 appropriated $250,000 for the first phases of planning for the parkway. Early planning recommended that each state determine one existing route within its boundaries to be designated as the parkway.

The early objectives of the Mississippi River Parkway Commission included such activities as improvement of highway communication between population centers and the conservation and development of recreational and scenic resources. Between 1974 and 1989, more than a billion dollars was spent from various federal, state, and local sources on projects associated with the Great River Road.

In conjunction with the ten states, the Mississippi River Parkway Commission has been involved in promoting and marketing the Great River Road for more than 50 years. The commission has worked closely with the tourism offices in each state to develop domestic marketing plans. These include travel shows, travel writer and travel planner familiarization tours, public relations events, and limited advertising in newspapers and magazines. International travel markets have also been developed.

The Great River Road is signed along its length with the green and white logo to mark the route. Travelers are encouraged to follow the signs to interpretive centers, historic sites, and other amenities along the route. State agencies have produced Great River Road historic tour guides, region brochures, and suggested tour itineraries.

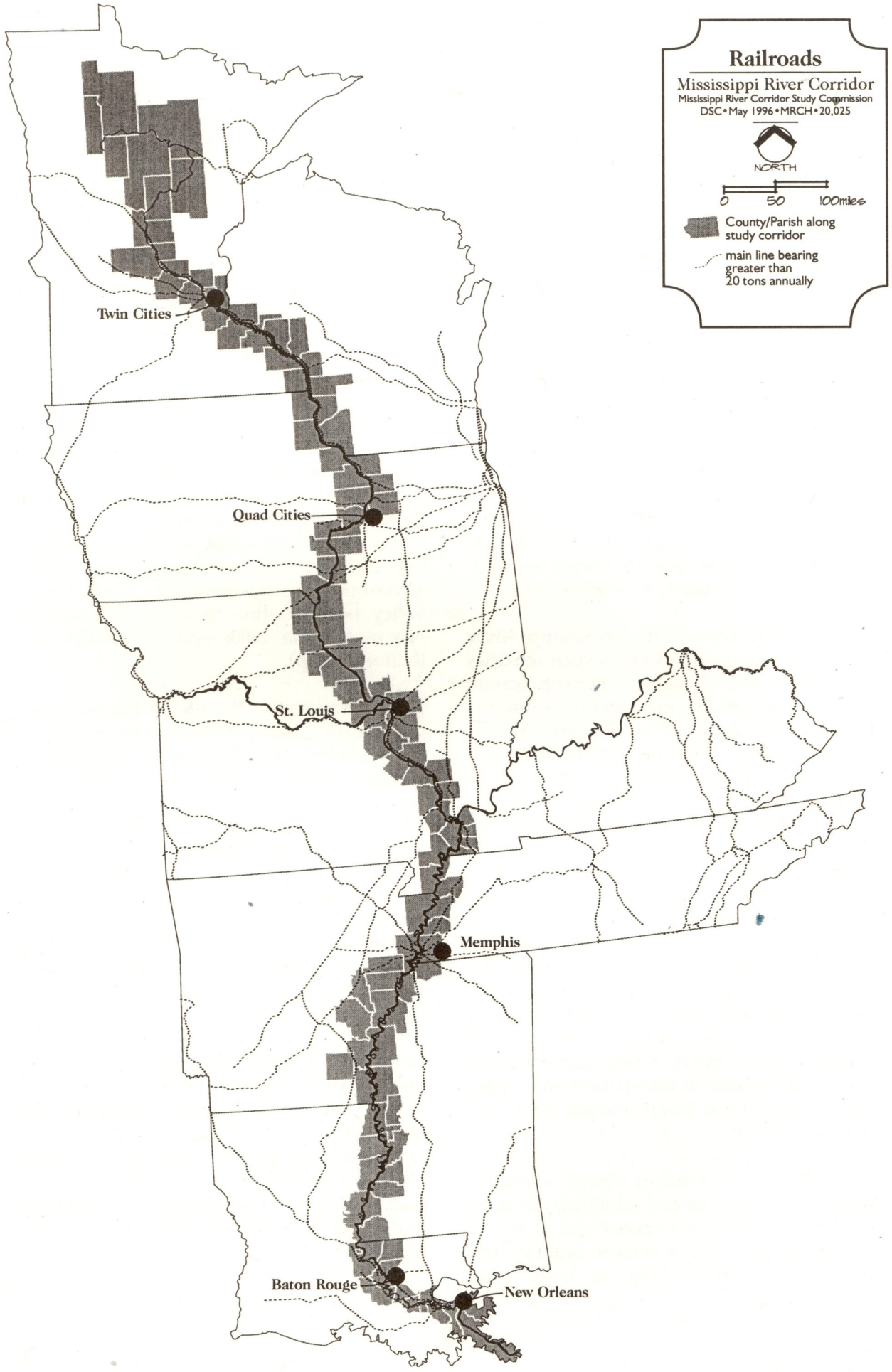
RAILROADS

The Mississippi River is crossed and paralleled by railroads over much of its length. A flexible multimodal system exists in the major urban centers along the river where the interchange between river and rail moves produce, raw materials, and manufactured goods to national and international markets. Today each large city along the river shows this pattern, and many river industries benefit from the ability to pick the transportation mode that best suits their needs and "bottom lines." But this has not always been the case. The story of steamboat and freight train is one born out of opportunity, rivalry, and government management. The story of river valley transportation today is far from the one of the late 1800s and early 1900s (see Railroads map).

The information in the rest of this section is paraphrased from Richard Hoops, *A River of Grain: the Evolution of Commercial Navigation of the Upper Mississippi River* (Hoops 1994).

From the 1820s through the 1840s, the river carried lead from mines in Wisconsin and Illinois to markets in Saint Louis, floated timber downstream from the north woods, carried cotton from the south, and fostered life on the Mississippi. The river's commercial value was destined to fail, though, because in the context of national and international trade, it ran the wrong way.

Steamboat business thrived on the upper Mississippi during the 1850s as immigrants moved into Iowa, western Wisconsin, and Minnesota, many arriving by rail. The Chicago and Rock Island Railroad connected Chicago with the Mississippi River town of Rock Island in 1854, prompting a surge of immigrants to Saint Paul over the rail-water route.


Railroads
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,025
NORTH
0 50 100miles
County/Parish along study corridor
main line bearing greater than 20 tons annually
Twin Cities
Quad Cities
St. Louis
Memphis
Baton Rouge
New Orleans

In the mid-1800s midwestern commerce was oriented not to the south but to the east; the region's produce flowed across the Great Lakes and Erie Canal. The nation's railroads reached the Upper Mississippi River valley in the 1850s, and as tracks lined the banks of the river and crossed its channel, they choked river commerce.

Steamboat disasters such as boiler explosions and fires weakened public confidence in river transportation. Prolonged disruptions caused by periods of low water discredited steamboat transportation with commercial shippers. The growing competition steamboats faced from railroads and Great Lakes shippers began to add to the problems of the steamboat companies.

The commercial influence of Great Lakes ports, particularly Cleveland, Toledo, Chicago, and Milwaukee, reached inland by way of canals and rail lines, and vast territory that once had trade outlets only in the south fell within reach of Great Lakes shipping. Railroads reached west from Chicago and Milwaukee in the 1850s, making the two cities magnets for the agricultural produce of the Midwest and major outlets for manufactured products from the Northeast.

In 1855, the Illinois Central arrived at the river town of Dunleith, near Galena, and deflected wheat and flour shipments toward Chicago. The Milwaukee and Mississippi railroad reached Prairie du Chien, Wisconsin, in 1857, and the La Crosse and Milwaukee line reached La Crosse in 1858. Both funneled Minnesota produce to the port and markets of Milwaukee. Beginning in the late 1860s, railroads began to span the river itself and tie directly into the wheat fields of Minnesota and the Dakota territory. Their basic advantages lay in their freedom from interruptions due to weather and their ability to spread across the landscape.

As the Civil War raged, a blockade of the lower river permanently drove traffic to the new trade routes, and cities on the Atlantic coast eclipsed New Orleans as ports. The railroad network that spread across the continent during the middle of the 19th century was concentrated in the northern states. By 1860, the eastern third of the nation had 30,000 miles of track; two-thirds of that mileage was in northern states.

Railroads carried much of the postwar grain shipments. They had discovered enough profit in grain shipping to make it a distinct part of their operations, and by the mid-1870s they hauled two-thirds of the grain that was shipped east. Railroads also handled much of the commerce for communities that had moved inland and for businesses in river towns that no longer were concentrated on waterfronts.

Changes in transportation needs and inherent differences between railroads and steamboats contributed to the demise of waterborne commerce in the Mississippi River valley after the Civil War. With fierce competition between the rail lines and accusations of unfair discriminations and extortionist practices toward steamboat companies, the Congress set forth in the mid-1870s to enunciate a new federal policy toward inland water transportation. Its objective was cheap transportation through competition, and it endorsed the waterways as the natural competitors to the railroads.

The stage was set, although much time and public debate elapsed, for the approval of the 9-foot channel in 1930, and the rebirth of river commerce (see "Navigation").

Today several urban centers on the Mississippi are hub cities of major rail lines (see Railroads map). In each major metropolitan area railroads provide intermodal access to the river as well as moving cargo off the river to eastern and western markets. This interconnection between rail and river enhances the competitiveness of Midwest producers and enables them to respond to changing markets.

ECONOMICS

SUMMARY

The types and intensities of economic activity in the Mississippi River corridor are a mix, as much as those found anywhere else. There are sizable metropolitan areas on the banks of the river, and there are vast acreages of highly productive agricultural lands and forestlands. One of the consistent features of the valley, from upper river to lower river, is the relative economic depression that has resulted from changing transportation and trade patterns and increased efficiency in agricultural production. Throughout much of the corridor, the levels of poverty and unemployment are higher than those found on average in other parts of the Mississippi River states. This characteristic is more pronounced in the rural areas and especially in the Delta. It is less of a factor in the corridor's urban areas.

In total, however, significant economic activity takes place along the river. In 1990, 8,480,900 people were living in the counties and parishes that make up the corridor. Manufacturing was the greatest producer of income, generating more than $27 billion in income in 1990 (Bur. Econ. Anal. 1994).

Tourism produces substantial revenue for the corridor. In 1988, the U.S. Travel and Tourism Administration estimated that $10 billion of direct revenue was generated by travelers to the corridor counties. This produced more than 20,000 travel-related jobs and a total payroll of $161 million.

Agriculture and forestry are the mainstay of much of the corridor. In 1990, the two produced $7.1 billion dollars in gross revenue. Each dollar from these activities tends to support more of the county economy than does a dollar from other sectors. Farmers typically get most of their supplies, equipment, and financing from local sources; thus, their income tends to stay in the local economy longer, generating more secondary activity than other types of economic activity. Agriculture also provides proportionately more income in corridor counties and parishes outside of urban areas (most of the counties and parishes) than in the states as a whole. Agriculture in the corridor and throughout the Midwest relies on the river to move much of its production to market. This supports substantial activity along the river to distribute commodities.

COMMODITY MOVEMENTS

Barges are ideally suited to move commodities in bulk. The inland rivers provide convenient transshipment points for both domestic and international commerce, and the cost of moving cargo on the rivers is less than moving it by rail or truck.

In 1990, 472,447,000 tons of cargo were moved along the Mississippi River corridor between Minneapolis, Minnesota, and Head of Passes, Louisiana. Of this total, 105,884,000 tons (22.4%) were exported commodities.

Whole grains (wheat, corn, rice, barley, rye, oats, and sorghum grains) accounted for 102,537,000 tons (21.7%) of cargo shipped by barge. Of all grains shipped, 52,516,000 tons (51.2%) were destined for export markets, representing 46% of U.S. grain exports.

The second largest commodity shipped on the Mississippi River corridor was coal, with 73,523,000 tons. While most of that amount (60,649,000 tons) was for domestic use, a substantial quantity (12,874,000 tons, or 17.5%) was shipped overseas.

Refined petroleum products accounted for 72,798,000 tons; crude petroleum, 54,998,000 tons. Of the crude petroleum shipped, 47,103,000 tons (85.6%) was imported.

Hundreds of other commodities are also transported by barge. Fertilizers, chemicals, and related products move on the inland

waters. Crude materials, such as forest products, sand and gravel, rock and stone, and iron ore, are shipped by barge, as are finished products manufactured from those materials.

SUPPORT FACILITIES

The Mississippi River corridor contains hundreds of communities that are closely tied to, and often dependent on, the river. Many communities developed along the river because it was a source of water power for grain and lumber milling and hydroelectric generation. Water power has been replaced by electric power to drive the mill equipment, and electric power generation has been replaced by coal-fired steam plants, but the river still plays a critical role in the economies of these towns and cities.

Power plants using steam generators require large volumes of cooling water to condense steam back to boiler feedwater. The river provides a natural source for this water. The large amounts of coal necessary to fire the steam generators are also conveniently shipped to the plant by inland river barges.

Similarly, because shipping commodities by water is economically advantageous, many industries choose to locate adjacent to the river to take advantage of this means of transportation, both for bringing in unfinished materials with which to manufacture their products and for shipping the finished products to their final destinations.

In addition to private industrial facilities, there are many ports along the inland waterways that provide commercial docks. Of the approximately 2,600 commercial docks on the inland river system, about 1,300 handle dry bulk products, 800 handle liquid bulk products, and 500 handle non-bulk general cargo, forest products, building materials, and unitized cargo.

GAMING

Gambling along the Mississippi River dates back to New Orleans at the time of the Louisiana Purchase. It spread upriver with the riverboats and settlers and became a part of the Mississippi River mystique. Gaming has once again taken a foothold along the river and has capitalized on its association with the river to achieve a competitive advantage over nonriver gaming ventures. Natchez, Vicksburg, Tunica, Alton, East Saint Louis, and the Quad Cities are current riverboat gambling sites, and more are planned.

Gaming has provided economic benefits to the communities in which it has been established. Unemployment, which is prevalent in the Delta states, has been somewhat affected. Tunica, a small town that has been seriously affected by the depressed Delta economy, has seen a 5% decrease in unemployment that is directly attributed to the arrival of gaming. Larger towns and cities in the Delta with more diverse economies, such as Vicksburg and Natchez, have not experienced significant decreases in unemployment but have received other benefits attributable to the presence of the gaming industry.

The Quad Cities in Illinois and Iowa report that gaming has stimulated downtown business, resulting in the opening of new restaurants and shops that cater to the gaming tourist. Major hotel chains are either moving in or evaluating the opportunity.

Another lesson from gaming is that visitors attracted to the river for one opportunity will frequently stay longer and travel elsewhere to experience other opportunities. In all river towns, their association with the river provides a wealth of opportunities for visiting historic, scenic, or recreation sites. Tour operators will frequently package tours that include a number of river attractions in addition to the initial draw of gambling. Festivals are also major events that capture the attention of gaming visitors. The key is information upon which visitors can make decisions, and all communities that are hosting

gambling are seeking ways to market their broader assets to their newfound visitors.

ECONOMIC EFFECTS OF HERITAGE AREAS

Heritage areas often arise from conditions of regional economic stress. For regions that have lost or seen a decline in their traditional and mainstay economic activities, heritage area designation offers an opportunity to reap economic benefit through tourism and preservation of significant features of a community's heritage.

But heritage areas do more than offer tourism benefits. With an increase in a community's awareness of its heritage comes an increase in community pride, which is often projected to new businesses seeking to relocate into an area and ultimately results in improved quality of life in the community. Increased investments in the community by governments and businesses become a magnet for other sources of funding and capital. According to a 1993 report, $130 million has been invested in projects for the Illinois and Michigan Canal National Heritage Corridor since 1984 (Canal Corr. Asso. 1993). Research conducted by Pennsylvania State University indicates that in the nine-county Western Pennsylvania Partnership heritage area, $300 million invested by public and private sources has generated $3 billion in local business revenue (Gitelson, Kerstetter, and Graefe 1992). The benefits of heritage planning by Mississippi River corridor states can be summarized by a statement by the chairman of the Delta Cultural Center Commission in the Arkansas Statewide Comprehensive Outdoor Recreation Plan.

> The Delta has not lived up to its tourism potential because most Arkansans classically linked tourism with mountains and streams . . . The new emphasis on heritage tourism will draw out the Delta's tourism potential . . . and will aid not only Helena and Phillips County, but also the entire Delta region."

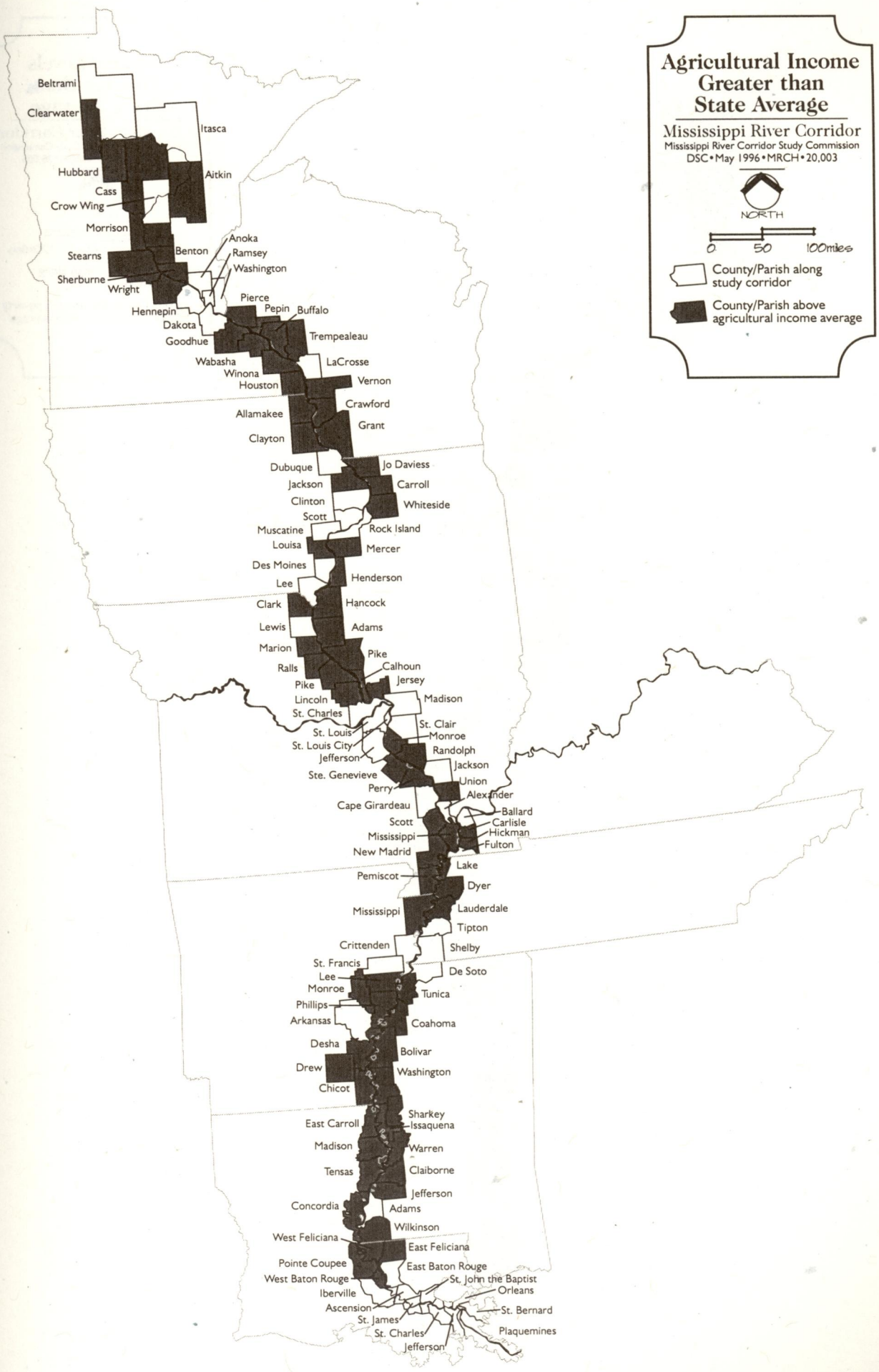
CORRIDOR SOCIOECONOMIC PROFILE

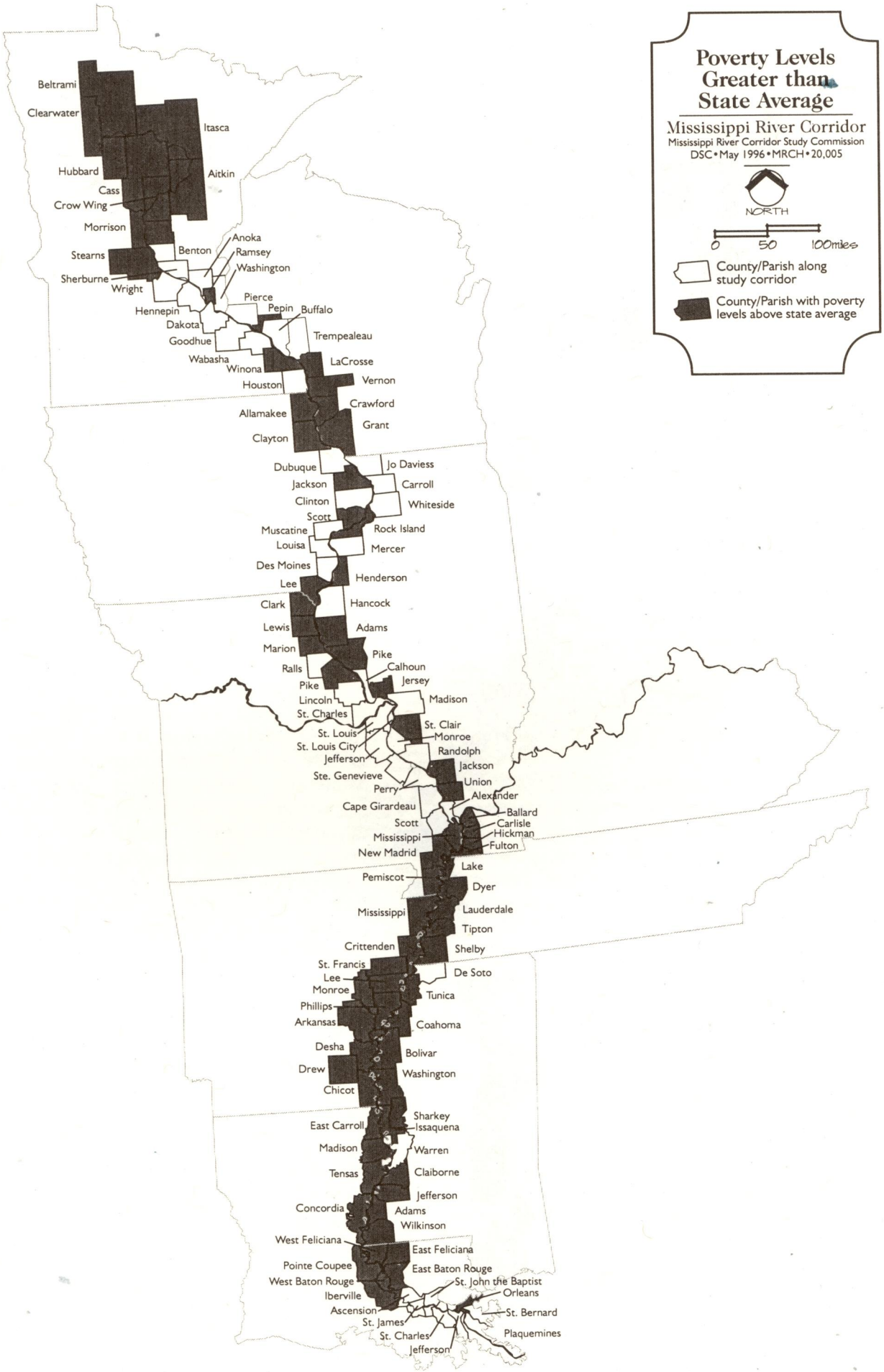
The characteristics of the Mississippi River corridor are presented by state in the following paragraphs. Economic characteristics are derived from the Regional Economic Information System of the Bureau of Economic Analysis, U.S. Department of Commerce, which presents earnings by industry in each county or parish. Earnings are the net income or profit of an industry. Earnings figures are a good measure of overall economic makeup. However, agricultural earnings understate the importance of this sector to the nonurban counties of the corridor. In many cases farmers have shown small profits, but the revenues they receive go to support a substantial portion of the economic activity in the county. Although agriculture, including forestry, is important in all the Mississippi River states, in certain counties and parishes it is especially important. The Agricultural Income map shows the counties and parishes in which agriculture is more important than in the state as a whole.

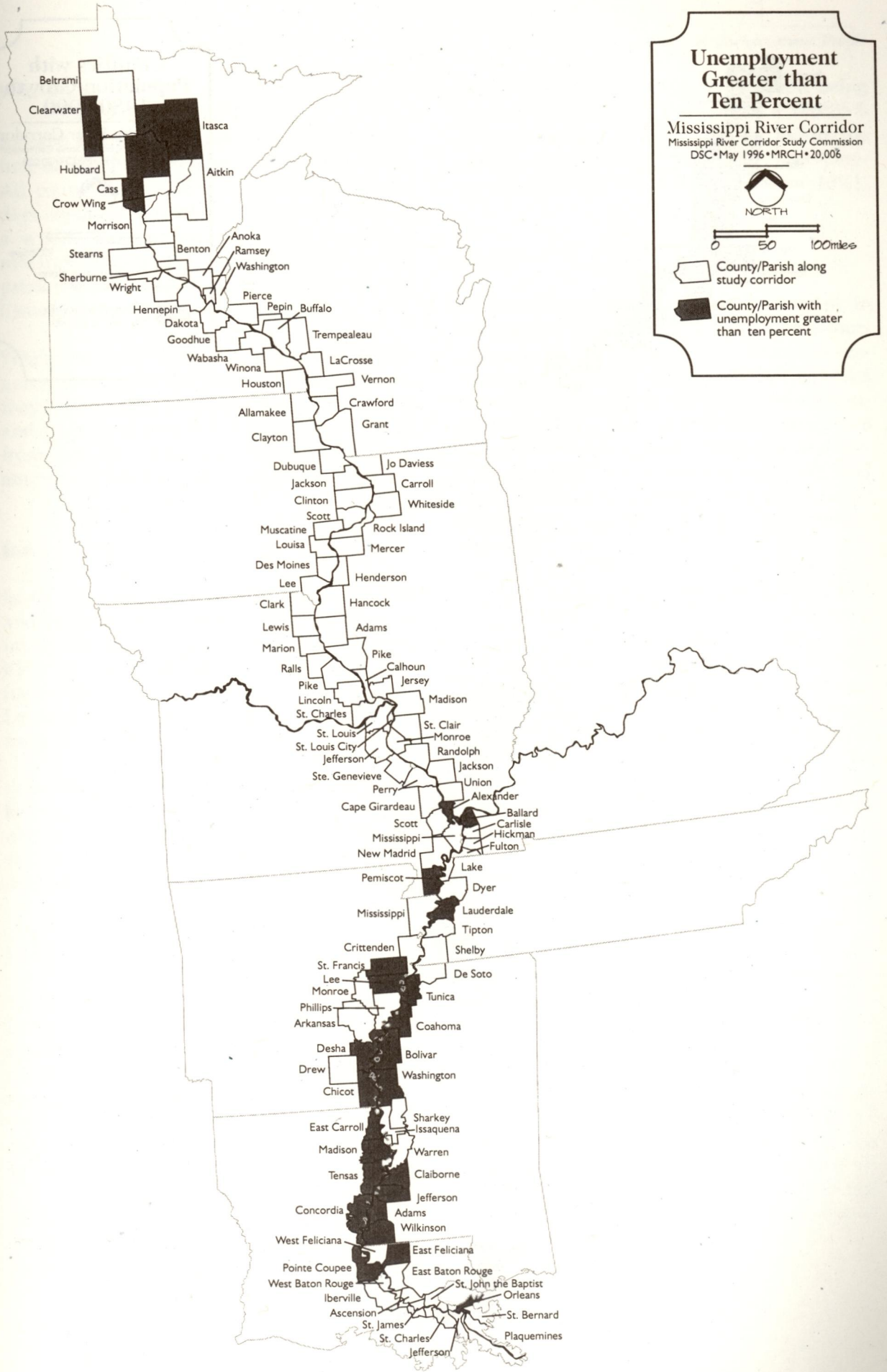
Minnesota

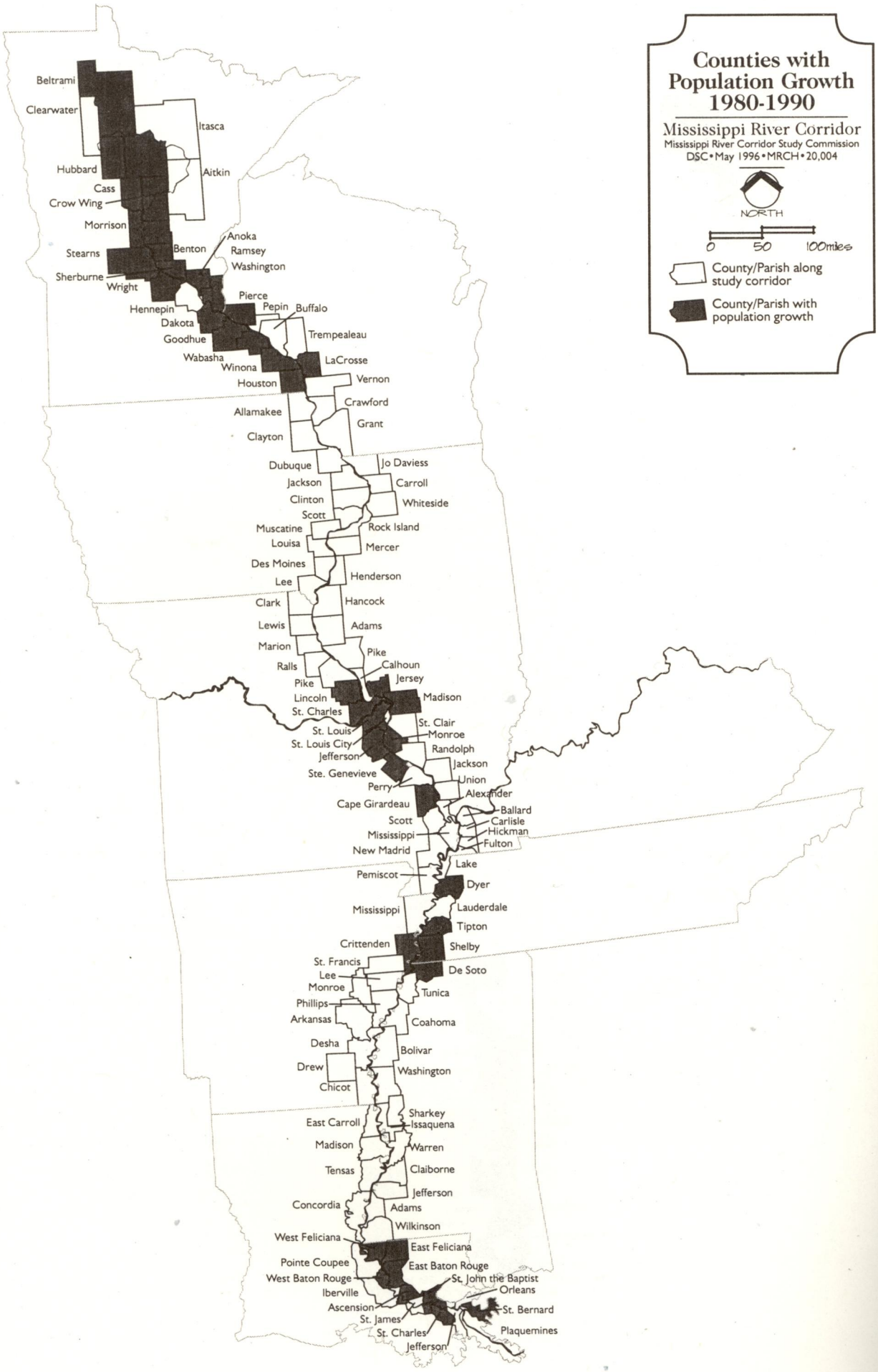
Minnesota counties area economically diverse, receiving earnings from retail, services, manufacturing, and government. Agriculture and forest products are the leading earnings producers in only one county, Houston. However, most counties have greater dependence on agriculture and forestry than does the state as a whole. Manufacturing is heavy in the Twin Cities area. (Population and unemployment for all counties were obtained from the 1990 Census of the United States.)

Poverty levels, which range from 4% to 24% of the population, are highest in the northern rural counties but low compared with many of the Delta counties and parishes. Population generally grew in Minnesota counties between 1980 and 1990 (see the Poverty Levels, Unemployment, and Population Growth maps.


Agricultural Income Greater than State Average
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,003
NORTH
0 50 100miles
County/Parish along study corridor
County/Parish above agricultural income average
Beltrami
Clearwater
Itasca
Hubbard
Aitkin
Cass
Crow Wing
Morrison
Stearns
Benton
Anoka
Ramsey
Washington
Sherburne
Wright
Hennepin
Pierce
Pepin
Buffalo
Dakota
Goodhue
Trempealeau
Wabasha
LaCrosse
Winona
Houston
Vernon
Crawford
Allamakee
Grant
Clayton
Dubuque
Jo Daviess
Jackson
Carroll
Clinton
Whiteside
Scott
Muscatine
Rock Island
Louisa
Mercer
Des Moines
Henderson
Lee
Clark
Hancock
Lewis
Adams
Marion
Pike
Ralls
Calhoun
Jersey
Pike
Lincoln
Madison
St. Charles
St. Clair
St. Louis
Monroe
St. Louis City
Randolph
Jefferson
Jackson
Ste. Genevieve
Union
Perry
Alexander
Cape Girardeau
Ballard
Scott
Carlisle
Mississippi
Hickman
Fulton
New Madrid
Lake
Pemiscot
Dyer
Mississippi
Lauderdale
Tipton
Crittenden
Shelby
St. Francis
De Soto
Lee
Monroe
Tunica
Phillips
Arkansas
Coahoma
Desha
Bolivar
Drew
Washington
Chicot
Sharkey
East Carroll
Issaquena
Madison
Warren
Tensas
Claiborne
Jefferson
Concordia
Adams
Wilkinson
West Feliciana
East Feliciana
Pointe Coupee
East Baton Rouge
West Baton Rouge
St. John the Baptist
Iberville
Orleans
Ascension
St. Bernard
St. James
Plaquemines
St. Charles
Jefferson


Poverty Levels Greater than State Average
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,005
NORTH
0 50 100miles
County/Parish along study corridor
County/Parish with poverty levels above state average
Beltrami
Clearwater
Itasca
Hubbard
Aitkin
Cass
Crow Wing
Morrison
Stearns
Benton
Anoka
Ramsey
Washington
Sherburne
Wright
Pierce
Pepin
Buffalo
Hennepin
Dakota
Goodhue
Trempealeau
Wabasha
Winona
LaCrosse
Houston
Vernon
Allamakee
Crawford
Clayton
Grant
Dubuque
Jo Daviess
Jackson
Carroll
Clinton
Whiteside
Scott
Muscatine
Rock Island
Louisa
Mercer
Des Moines
Henderson
Lee
Clark
Hancock
Lewis
Adams
Marion
Pike
Ralls
Calhoun
Pike
Jersey
Lincoln
Madison
St. Charles
St. Clair
St. Louis
Monroe
St. Louis City
Randolph
Jefferson
Jackson
Ste. Genevieve
Union
Perry
Alexander
Cape Girardeau
Ballard
Scott
Carlisle
Mississippi
Hickman
Fulton
New Madrid
Lake
Pemiscot
Dyer
Mississippi
Lauderdale
Tipton
Crittenden
Shelby
St. Francis
De Soto
Lee
Monroe
Tunica
Phillips
Arkansas
Coahoma
Desha
Bolivar
Drew
Washington
Chicot
Sharkey
East Carroll
Issaquena
Madison
Warren
Tensas
Claiborne
Jefferson
Concordia
Adams
Wilkinson
West Feliciana
East Feliciana
Pointe Coupee
East Baton Rouge
West Baton Rouge
St. John the Baptist
Orleans
Iberville
Ascension
St. Bernard
St. James
St. Charles
Plaquemines
Jefferson


Unemployment Greater than Ten Percent
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,006
NORTH
0 50 100miles
County/Parish along study corridor
County/Parish with unemployment greater than ten percent
Beltrami
Clearwater
Itasca
Hubbard
Aitkin
Cass
Crow Wing
Morrison
Stearns
Benton
Anoka
Ramsey
Washington
Sherburne
Wright
Pierce
Pepin
Buffalo
Hennepin
Dakota
Goodhue
Trempealeau
Wabasha
Winona
LaCrosse
Houston
Vernon
Crawford
Allamakee
Grant
Clayton
Dubuque
Jo Daviess
Jackson
Carroll
Clinton
Whiteside
Scott
Muscatine
Rock Island
Louisa
Mercer
Des Moines
Henderson
Lee
Hancock
Clark
Lewis
Adams
Marion
Pike
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Calhoun
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West Feliciana
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Pointe Coupee
East Baton Rouge
West Baton Rouge
St. John the Baptist
Orleans
Iberville
Ascension
St. Bernard
St. James
St. Charles
Plaquemines
Jefferson


Counties with Population Growth 1980-1990
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,004
NORTH
0 50 100miles
County/Parish along study corridor
County/Parish with population growth
Beltrami
Clearwater
Itasca
Hubbard
Aitkin
Cass
Crow Wing
Morrison
Stearns
Benton
Anoka
Ramsey
Washington
Sherburne
Wright
Pierce
Hennepin
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Wisconsin

In most Wisconsin counties, agriculture is the first or second largest producer of earnings. All counties but LaCrosse County are more dependent on agriculture than is the state as a whole. Transportation plays a significant role in Buffalo county, and manufacturing is a primary contributor to the economies of Crawford and Trempealeau Counties.

While the Wisconsin corridor counties are generally poorer than the rest of the state, they are in better condition than the counties and parishes downriver. Poverty levels range from 6% to 14%, and unemployment is among the lowest in the study area.

Iowa

In the Iowa counties of Allamakee, Clayton, and Jackson, agriculture is at least twice as important as it is to the state as a whole. Elsewhere, manufacturing is the leading earnings producer; the contribution is greatest in Lee and Muscatine counties (43% and 54% of respective earnings).

Population in all Iowa counties decreased between 1980 and 1990, but poverty and unemployment levels were low. Poverty levels were highest in the counties most dependent on agriculture.

Illinois

The economies of the 18 river counties in Illinois rely on government, services and manufacturing for their earnings. In only one county (Henderson) is agriculture the greatest source of earnings. Generally, however, agriculture provides a higher percentage of earnings in these counties than it does in the state as a whole.

Population decreased in all Illinois counties except for Madison and Monroe. Poverty levels were higher than the state average in half of the river counties, the highest being Jackson and Alexander, where 28% and 35% of the respective populations were below the poverty level in 1990. However, unemployment is relatively low (generally below 10%).

Missouri

Agriculture is generally more important in the corridor than it is to the state of Missouri as a whole. It is the principal source of earnings only in the southern corridor counties (Pemiscot, Mississippi, New Madrid). Manufacturing is the main source of earnings in 8 of the 16 counties. Like Minnesota and Illinois, Missouri has a diverse economy, and many counties have strong service economies and large contributions from government activities.

The population grew from 1980 to 1990 in 6 of the 16 Missouri counties (Cape Girardeau, Jefferson, Lincoln, Saint Charles, Sainte Genevieve, Saint Louis). The remaining rural counties experienced population decreases similar to those in other areas of the corridor. In half of the Missouri counties, more of the population is below the poverty level than in the state as a whole; this ranges as high as 35% in Pemiscot county. However, unemployment levels are relatively low.

Kentucky

The four Kentucky counties that border the river depend principally on light manufacturing, except for Carlisle County, which receives the greatest part of its earnings from agriculture.

Population decreased in all the Kentucky corridor counties between 1980 and 1990. All had poverty levels higher than the state; the poverty level in Fulton County was highest, with 30% of the population below the poverty level. Only Ballard County had as unemployment rate greater than 10%.

Tennessee

Tennessee counties are among the most dependent on their manufacturing base for earnings. Dyer and Lauderdale Counties derive nearly half of their earnings from manufacturing. The economy of Shelby County (Memphis) is based on service industries.

The counties along the river have a greater percentage of the population below the poverty level than the rest of Tennessee, as high as 27% in Lake County. Unemployment is generally below 10%.

Arkansas

Agriculture is the leading source of earnings in four of the nine Arkansas counties along the river. In these counties (Chicot, Desha, Lee, Monroe) up to one-quarter of the economy's earnings comes from agriculture, and it is proportionally more important to the economies of these counties than agriculture is to the state as a whole. Manufacturing and government are also important, principally in Arkansas and Mississippi counties.

Population decreased between 1980 and 1990 in all but Crittenden County. Decreases were as high as 19% in Monroe county. Unemployment in 1990 was as high as 14%, with four of the nine counties experiencing unemployment greater than the state average. Poverty levels are high in the river counties, ranging from a low of 20% of the population below the poverty level in Arkansas County to a high of 47% in Lee County. All 9 counties had higher poverty levels than the state as a whole.

Mississippi

The Mississippi counties are among the poorest in the study area. With the exception of DeSoto and Warren Counties, poverty is well above the state average. In half of the counties (Claiborne, Coahoma, Sharkey, Issaquena, Tunica), half of the population was below the poverty level.

While agriculture provided the greatest portion of earnings in several Mississippi counties (Issaquena, Sharkey, Tunica), unemployment rates were high. Manufacturing made a prominent contribution in Adams, Bolivar, DeSoto, and Wilkinson counties. Population growth occurred only in DeSoto County, which benefited from its proximity to Memphis.

Louisiana

Few of the Louisiana river parishes received earnings primarily from agriculture. Most parishes relied on nonfarm earnings, except for East Carroll and Tensas Parishes, where 25% and 45% of the respective earnings came from agriculture. The Louisiana parishes tend to be more diverse than other counties along the river, with high levels of earnings being derived from a greater number of sectors (manufacturing, wholesale and retail trade, services, and government).

Half of the river parishes had poverty levels greater than the statewide 1990 average of 23%. East Carroll Parish had the most impoverished population, with 56% below the poverty level. Unemployment also was high in the poorer parishes, ranging from 12% to 24%. The southern parishes, associated with Baton Rouge and New Orleans (East Baton Rouge, Jefferson, Plaquemines, Saint Bernard, Saint Charles, Saint James, Saint John the Baptist, and West Baton Rouge), tended to have the lowest poverty and unemployment levels. These parishes were also the only parishes to experience population growth between 1980 and 1990.

INTERPRETIVE THEMES

Interpretation is a process of education designed to stimulate curiosity and convey ideas and stories to people. Interpretation helps people to enjoy resources through personal understanding, and it helps them to discover deeper meanings and relationships. What should people know about the Mississippi River, its history, its resources, and its significance, not only to the nation's economic strength, but to the American people? The answers are found in the interpretive themes — the stories and ideas, and their context. These should be presented up and down the river in exhibits, activities, films, presentations, and in a variety of other ways. The interpretive themes serve as a framework from which interpretation programming can be developed.

ORIGIN OF THEMES

The Mississippi River Corridor Study Commission identified significant Mississippi River themes as part of this study. The commission used a procedure of commentary and feedback called the "Delphi" process, which involved people who had knowledge of the Mississippi River and its significance. The Delphi process was designed to gather all relevant information that would otherwise be difficult to gather without a common group discussion.

In the first round of the process, participants were asked to list all themes of the Mississippi River that should be considered when telling the story of the river. These themes should also be appropriate in the context of a river-long heritage corridor. All responses were anonymously compiled and returned to participants for further review and comment.

The following definition of an interpretive theme was used in the Delphi process:

> An interpretive theme is an idea about a resource (in this case, the Mississippi River) that is so important that visitors need to know and understand the idea in order to understand the significance of the resource.

In the second round of the process, participants were asked to evaluate the compiled ideas and evaluate them for completeness, strength, and accuracy. After further review and consolidation, the commission developed a list of 12 primary interpretive themes, with subthemes for clarity and scope. During the study process the interpretive themes were used not only to identify potential interpretive messages but to guide data gathering and analysis. See appendix B for a list of the Delphi process participants.

THEMES AND SUBTHEMES

The interpretive themes listed below are used in the rest of this document to analyze the presence and distribution of significant resources and locations where the stories of the river are presented to the public.

> The transformation has been so complete: from the canoes of Nicolet and La Salle to the locks and dams of a canal for waterborne traffic on a scale that even dreamers who foresaw another Golconda on the banks of the Mississippi could never have imagined — four centuries of discovery and conflict, encompassing so much of life and death, joy and sorrow, triumph and tragedy.
>
> — Marquis Childs 1982, 204

It is important for all visitors to the Mississippi River to know the information described in the following sections about the river's natural and cultural resources, recreation, tourism, transportation, and economic development. Subthemes (designated by letters) are shown following each numbered theme.

Natural Resources

Theme 1. The Mississippi River is a ribbon of life for people as well as for many plant and animal species.

a. The Mississippi River system provides a vast array of diverse habitats, including sloughs, side channels, and oxbow lakes, which support a wide variety of plant and animal species comprising a significant component of the continent's biodiversity. The upper Mississippi is recognized by Congress as a nationally significant ecosystem.

b. Prior to settlement by Europeans and hydrologic modification, the Mississippi River flooded approximately 21 million acres, depositing rich alluvial sediments that supported millions of acres of forested wetland; today fewer than 5 million acres of these forests remain as important sources for timber and wildlife habitat. The rich alluvial soils support agricultural production.

c. The Mississippi River is home to many rare, threatened, and endangered species, including both state-listed and federally listed species. Federally listed species are bald eagle, peregrine falcon, Louisiana black bear, pallid sturgeon, Massassauga rattler, and two freshwater mollusks: Higgins' eye and fat pocketbook.

d. The Mississippi River has international importance as a migratory corridor for midcontinent waterfowl populations. The river corridor is important for maintenance, conservation, and preservation of diverse midcontinent fish and wildlife populations.

e. Development and change in the Mississippi River during and immediately after the last glacial advance and retreat have influenced the location and character of the present river, including the deposit of "Ice Age" loess soil.

f. The Mississippi River is a dynamic system involving sedimentation, erosion, channel changes, floods, and droughts.

g. The Mississippi River's watershed — about 1,250,000 square miles — extends from the Allegheny Mountains to the Rocky Mountains and drains parts of 2 Canadian provinces and 31 states.

h. The natural history of the Mississippi River, including its geography, geology, flora, fauna, and ecology, is a vital component in the river's importance and relationship to the entire United States.

i. Human inhabitants of the Mississippi River valley have adapted to its rich biotic resources; these adaptations, which involve hunting, fishing, and resource-gathering techniques, a great variety of watercraft and water-related material culture, and centuries of folk wisdom, constitute an essential unit of Mississippi River ecological analysis.

j. The origin, characteristics, and development of the river's land forms affects human use of the river corridor.

Theme 2. Management of the Mississippi River's natural resources strives to maintain and improve habitat on an ecosystem basis, stressing biodiversity.

a. Some local, state, and federal agencies regulate, protect, preserve, and enhance natural resources. Wetlands are restored with use of state-of-the-art resource management and environmental engineering approaches in both the upper and lower Mississippi River. A large portion of the upper river corridor is a federally designated refuge.

b. Individuals and private and interagency groups (such as the Upper Mississippi River Conservation Committee, the Izaak Walton League, GREAT, and Environmental Management Programs) have played pioneering roles, especially on

the upper river, in protecting the welfare and integrity of the river environment for the enjoyment of future generations.

c. Many areas along the river are relatively pristine and isolated despite the environmental transformation caused by historic and contemporary human activity.

Theme 3. Current problems and concerns relating natural resources and values in the Mississippi River system involve disturbance of the complex interrelationships that maintain healthy plant and animal communities and diverse habitats.

a. Sedimentation alters fish and wildlife habitats, impedes commercial and recreational navigation, increases the frequency of dredging, and can contribute to degraded water quality conditions. Historical erosion and displacement of rich topsoil of the Midwest has had negative effects on Midwest agriculture and way of life, but it helped create and maintain the Delta in Louisiana.

b. Exotic plant and animal species pose severe threats to the river's natural inhabitants and municipal, industrial, and recreational activities on the river.

c. Pollutants from a number of sources, including spills, continue to degrade Mississippi River water quality. This results in fish consumption advisories, nonattainment of water quality standards, algae blooms, nutrient enrichment, high turbidity, and decreasing populations of intolerant aquatic species.

d. The cumulative effects of recent human intervention in the Mississippi River natural system are many: channel modifications have altered erosion cycles, channel bed stability and sediment loads.

Cultural Resources

Theme 4. The Mississippi River has nurtured prehistoric and historic cultures for almost 11,000 years.

a. A great diversity of cultures existed in pre-European times, beginning around 12,000 years before the present (B.P.), with the Paleo-Indian hunters of the mammoth and mastodon. They were followed by the Archaic hunters and foragers of 9000 B.P., the Woodland Mound builders of the Hopewell culture, and the Mississippian and Oneota cultures, in which prosperous farmers flourished in the half-century before the time of Columbus.

b. From the earliest settlement, patterns of economic exchange and alliance facilitated by the Mississippi River system influenced cultural developments in the Midwest and Old Southwest that distinguished these regions from their counterparts on the East Coast.

c. The most sophisticated prehistoric Indian civilization north of Mexico, centered at Cahokia Mounds, established a regional center for Mississippian culture at the principal confluences of the Mississippi, Missouri, Illinois, and Ohio Rivers.

Theme 5. The Mississippi River has inspired a variety of folklife, literary, fine art, and musical forms.

a. The indigenous music of the Mississippi River includes folk, gospel, blues, jazz, rock, country, and folk songs of traditional river people. It is the result of an interweaving of Creole, Cajun, Anglo-, Celtic-, and African-American musical traditions.

b. The Mississippi River valley nourished a rich oral tradition that contributed to a

distinctive regional literature and nurtured and disseminated regional linguistic diversity.

c. The fluidity of populations in "golden era" river towns (before lock and dam) gave the settlements a diverse and boisterous character. Long-lasting stereotypes of "river rat" behavior and character emerged, furnishing never-ending fuel for literary imaginations and contributing to the mythology of the American frontier.

d. The Mississippi River has served as a channel for the movement of ideas, and the dissemination and diffusion of material, folk, and popular culture can be traced both east and west from the Mississippi River, as well as along its north–south course.

e. A wealth of intricate traditional knowledge regarding the Mississippi River survives among the few people whose livelihoods still depend on the river. While river people have adapted this knowledge to modern times, it still shares much with what the pilots of Mark Twain's time knew, connecting river users through the ages.

f. The Mississippi River Valley has a multicultural history, with many ethnic peoples playing significant roles and contributing to the arts, letters, music, historic events, and traditional culture.

Theme 6. The Mississippi River valley profoundly affected American history.

a. The historical Mississippi River fur trade created a merging of Indian and European cultures. Native people, trappers, and the parent trading companies interacted to have an impact on European settlement, regional economic growth, European American and American Indian culture, and American Indian/European American relationships. As the fur trade moved up the Missouri River, the trans-Mississippi west was opened to American settlement.

b. The central story of post-Columbian American Indian history in the Mississippi River valley is the process by which European and American settlers displaced native tribes and disrupted their cultural base.

c. The history of the Mississippi River is significant not only to Americans but to Europeans, as the river was an important border zone between rival colonial powers and played a major role in opening the continent to French, Spanish, British, and American exploration, trade, and settlement.

d. The Mississippi River system (including the Ohio and Missouri Rivers) provided access to the interior and a southern outlet for surplus goods, linked the eastern states with the west instead of with Europe, allowed for political unity via the Louisiana Purchase, supported the spread of the southern cotton economy and slavery-based labor system, and sustained a distinct American culture.

e. Slavery became a significant political, economic, and social issue in American history because of its expansion into the Mississippi River valley. The river was central to the operations of the plantation and the creation of a planting "aristocracy" in the antebellum South, which dominated political, economic, and social affairs in the lower Mississippi River valley. The river also served to transport enslaved people downriver and offered a route north to freedom for escaping fugitives.

f. By providing growth and opportunity, the Mississippi River valley supported an American democracy composed of individuals with strong beliefs in social ideals, responsibility, and populist reform.

g. The Mississippi River has played a central role in American Indian, American, and international military history. Not only was the river a prize of war and a boundary in treaties, but it served as home to Civil War presidents and generals, was key to the Civil War's outcome, and supported mobilization in World War II .

Theme 7. Mississippi River towns reflect a distinct architectural style affected by many cultural and natural influences.

a. Architectural styles in Mississippi River towns were affected by climate, topography, natural resources, ethnic culture, and dates of construction.

b. Consistent architectural styles in Mississippi River towns reflect rapid communication and flow of ideas along the river, the rapidity with which the river was settled, the cultural backgrounds of the first immigrants to make permanent settlements, and a deep cultural and communicative gap between river people and inland farming people.

c. Vernacular architecture along the Mississippi River reveals many ethnic influences.

d. Surviving river town architecture represents the boom years of wealth along the river, wealth generated through transportation and other river-based commercial activities.

Recreation and Tourism

Theme 8. The Mississippi River attracts visitors from around the world to enjoy its beauty and grandeur.

a. A regional effort to preserve and promote Mississippi River resources resulted in the establishment of the Mississippi River Parkway Commission and the development of the Great River Road from Canada to the Gulf of Mexico.

b. The ethnic diversity of the small upper river towns provides international visitors with shared architecture, language, cultural events, and history.

c. The Mississippi River is a major recreational resource. The river's easy access and diverse resources attracts millions of people annually, but the increasing number of people using the river creates problems and concerns among different user groups.

d. The richness and beauty of much of the Mississippi River corridor remain one of the nation's "best kept secrets." Scenic resources along the Mississippi River are many and varied, offering majestic bluff vistas as well as tranquil, low-lying views.

Transportation

Theme 9. The history of Mississippi River transportation reflects the economic and commercial change of the nation.

a. The Mississippi River is a vital interstate trade route linking North and South, and through its tributaries, the Missouri, Illinois, Ohio, and Arkansas rivers, linking East and West.

b. Mississippi navigation has evolved from the transportation of goods in dugouts, pirogues, rafts, bateaux, flatboats, and keelboats to the heyday of the steamboat era to establishment of the present inland waterway system with its towboats and barges.

c. Eastern attempts to reach the Mississippi, the interior river of commerce, resulted in internal improvements such as canals, turnpikes, and railroads.

d. The four steam paddlewheelers on the Mississippi, *Delta Queen, Mississippi Queen, Julie Belle Swain,* and *Natchez,* reflect a golden age in the 19th century when frontier outposts on the river were transformed into urban and industrial centers.

e. Evidence of historic river transportation is preserved in the numerous documented and undocumented shipwrecks that are recorded for the Mississippi River channels and its backwaters.

f. The Mississippi River plays an important role in bulk commodity transportation and world trade and provides the nation's most inexpensive means of transportation.

Theme 10. Navigation and flood control improvements on the Mississippi have changed the river's landscape to such an extent that both the upper and lower Mississippi River today differs markedly from the natural river viewed by Indians, explorers, and early settlers.

a. The river's hydrology is manipulated to meet human demand for flood control, commercial transportation, industrial uses, and hydropower.

b. In the upper Mississippi River valley, between the Twin Cities and Saint Louis, is a stairstep system of locks and dams to facilitate navigation. In the lower Mississippi River valley, some 2,700 miles of levees and floodwalls are in place that pass once-destructive flood flows to the Gulf of Mexico.

c. The complex of the Old River Control Structures, which regulated the diversion of flow from the Mississippi River into the Atchafalaya Basin, is the nation's most critical civil works undertaking, where an ongoing drama is played out between the forces of nature and the ingenuity of humankind.

d. The Mississippi River System is a federally designated navigation channel providing economic benefits to river communities and the region.

Economic Development

Theme 11. Many Mississippi River towns and cities are living museums of mid-19th century urban development.

a. For most towns, the river was *the* location and site factor in economic development before the 1870s. Only limited, capital-intensive conventional economic development has ensued, but the river now offers important opportunities for tourism development.

b. The physical layout of river towns provides access to the river and to adjacent lands, providing an economic and cultural advantage over inland towns.

Theme 12. The Mississippi River sustains many industries.

a. Many industries depend on the river for water power and transportation and use the river as a source of natural resources.

b. Historic river-based industries, including commercial fishing, pearl button, ice, lead, and timber, have given way to the present-day oil, cement, limestone, grain, and coal industries. Other industries, including milling and hydroelectric generation, have spanned the decades.

CULTURAL RESOURCES AND RESOURCE MANAGEMENT

We live in a cultural environment composed of many rich and diverse forms. It is an environment of dirt roads and interstate highways; wedding gowns and jeans; television and movies; backyards and front porches; jazz clubs and Sunday choir. These places, objects, and activities are part of our common social organization. Cultural resources represent our social traditions and have the power to inspire and touch people. They are expressions of our own humanity.

There are several types of cultural resources: archeological resources that describe and explain human behavior; cultural landscapes that illustrate the ties between the land and people; structures wherein we live, work, travel, worship, and recreate; objects that represent both our society's technical development and our own personal growth; and ethnographic resources that are associated with cultural expressions of art, language, and spirituality.

Cultural resources are significant when they are from the past, when they have important historical, cultural, scientific, or technological associations, and when they display those associations physically.

Significant cultural resources have both social and physical dimensions. For example, the Gettysburg, Pennsylvania, battlefield and national cemetery are significant not only for the three-day battle but for President Abraham Lincoln's address at the cemetery's dedication. Another example: Thomas Edison's laboratory in West Orange, New Jersey, is filled with significant objects reflecting his genius and curiosity, for here he developed the phonograph and invented the movie camera. Similarly, folklorist and writer Zora Neale Hurston's house in Fort Pierce, Florida, is a fifty-foot square concrete block structure that illustrates the poverty of her last years.

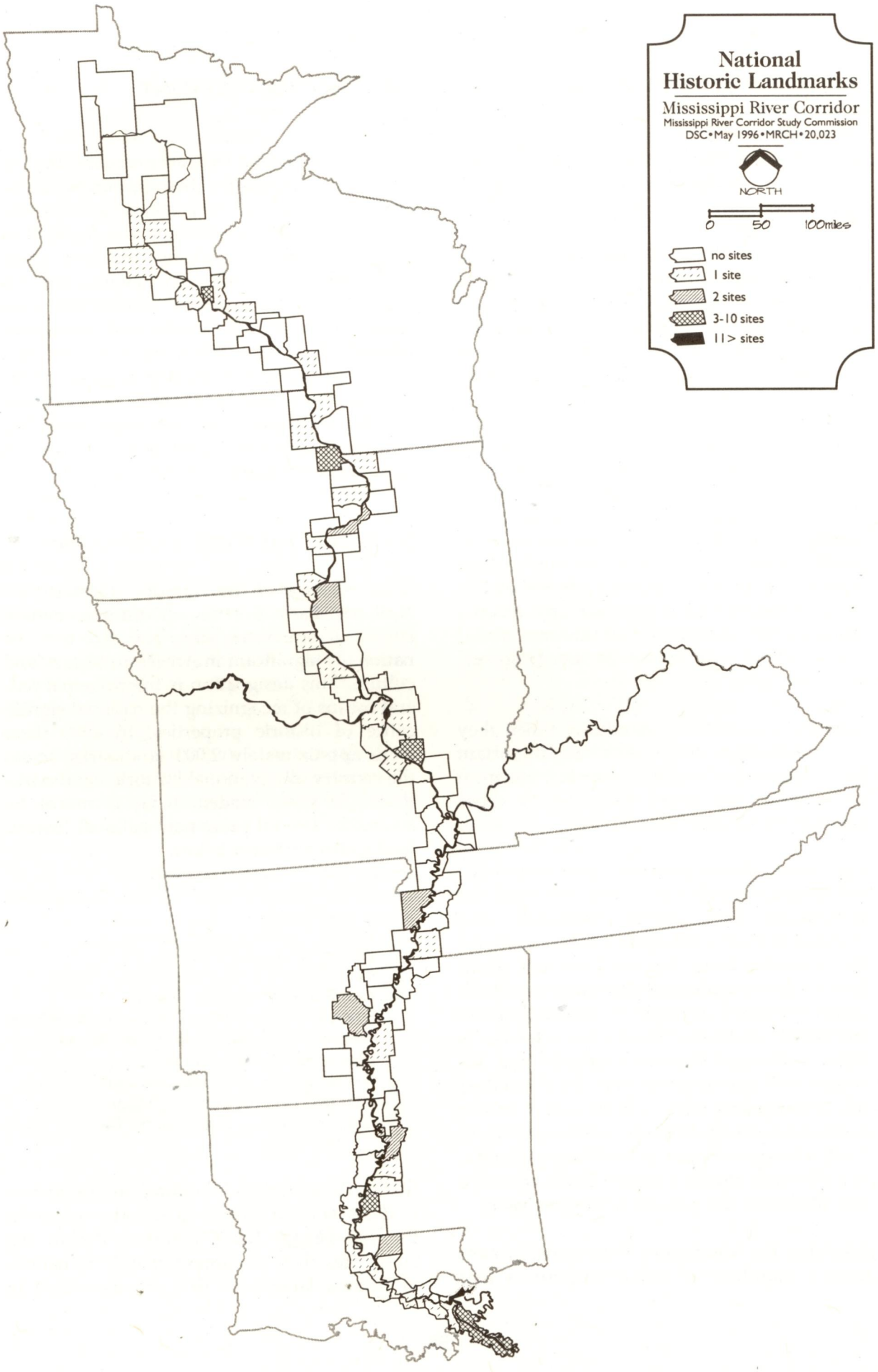
Likewise, the Mississippi River corridor contains a multitude of cultural resources that help us understand the past and contribute to our national heritage. These resources can be found in museum collections and in the streets of Mississippi River towns, as well as in people whose knowledge and long memories help us remember past events and cultural traditions. Identifying and documenting these resources is a lengthy and sometimes difficult task. The following describes two federal programs that attempt to preserve the river's cultural resources and illustrate several of the deficiencies in providing adequate preservation and interpretation over the full range of Mississippi River themes.

NATIONAL HISTORIC LANDMARKS

The secretary of the interior, through the National Park Service, determines certain buildings, structures, sites, and objects to be nationally significant in American history and culture. This designation is the principal federal means of recognizing the national significance of historic properties. In 1990 there were approximately 2,000 landmarks across the country (see National Historic Landmarks map). To show readers what is meant by *landmarks*, several prominent national historic landmarks are listed below.

Dexter Avenue Baptist Church, Montgomery, Alabama
Carmel Mission, Carmel, California
Library of Congress, Washington, D.C.
Cape Canaveral Air Force Station, Florida
Taos Pueblo, Taos, New Mexico
Susan B. Anthony House, Rochester, New York
Wounded Knee Battlefield, South Dakota
Alamo, San Antonio, Texas
Temple Square, Salt Lake City, Utah
Monticello, Charlottesville, Virginia
Old Faithful Inn, Yellowstone National Park, Wyoming

Just as these sites and buildings are important to the American people, so are other places in the Mississippi River corridor. Within the study area there are approximately 80 national historic landmarks that are significant in


National
Historic Landmarks
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,023
NORTH
0
50
100miles
no sites
1 site
2 sites
3-10 sites
11> sites

United States history. The landmarks are distributed among the 10 states in the study area as follows: Arkansas, 2; Illinois, 7; Iowa, 5; Kentucky, 0; Louisiana, 28; Minnesota, 9; Missouri, 5; Mississippi, 15; Tennessee, 2; Wisconsin, 7.

The Mississippi River interpretive themes were used to determine how the landmarks are related to the river and how they can be interpreted for river visitors. The following examples of national historic landmarks within the corridor illustrate what types of resources and which interpretive themes are represented in the states along the river:

- Fort Snelling, Saint Paul vicinity, Hennepin and Dakota counties, Minnesota — Zebulon Pike recommended that a post be built on this site, where 14 stone buildings and 2 log structures still remain. This was an important post on the edge of European-American settlement in the old Northwest. The fort was used as a troop training center in the Civil War and in both World Wars. Interpretive theme: 6 (history).

  Astor Fur Warehouse, Prairie de Chien, Crawford County, Wisconsin — This stone building was one of the American Fur Company's principal establishments. It is a remnant of the vast John Jacob Astor empire and Prairie du Chien's prominence as a fur trading center. Interpretive theme: 6 (history).

- Toolesboro Mound Group, Toolesboro, Louisa County, Iowa — This is the best-preserved Hopewell site in Iowa. It represents an extension of the "classic" Hopewellian mortuary practices in the Illinois River Valley. Interpretive theme: 4 (culture).

- Cahokia Mounds, Collinsville, Saint Clair County, Illinois — This United Nations world heritage site is the largest prehistoric Indian site in the United States and the center of Mississippian culture. Interpretive theme: 4 (culture).

- Louis Bolduc House, Sainte Genevieve, Sainte Genevieve County, Missouri — This house, which was built by a prosperous farmer and miner, shows French–Canadian and Caribbean architectural influences. It survived the 1993 flood. Interpretive themes: 6 (history) and 7 (architecture).

- Beale Street Historic District, Memphis, Shelby County, Tennessee — Saloons, gambling halls, and theaters on this street gave birth to the blues, a unique African-American contribution to American music. W. C. Handy wrote "Memphis Blues" here. Interpretive themes: 5 (music) and 8 (recreation).

- Arkansas Post, Gillett, Arkansas County, Arkansas — Established by Henri de Tonti, this was the first successful French settlement in the Lower Mississippi Valley. Interpretive themes: 4 (culture) and 6 (history).

- Longwood, Natchez, Adams County, Mississippi — Built for cotton planter Haller Nutt and known as "Nutt's Folly," this is the largest and most elaborate octagonal house in the nation. The eclectic decorative detail of the unfinished structure includes both Italianate and Moslem motifs. Interpretive theme: 7 (architecture).

- The Cabildo, New Orleans, Orleans Parish, Louisiana — This building originally housed the administrative and legislative council that ruled Spanish Louisiana. The structure shows the strong influence of Spanish architecture in the Louisiana Territory. Interpretive themes: 6 (history) and 7 (architecture).

NATIONAL REGISTER OF HISTORIC PLACES

The National Register of Historic Places is the official list of this country's cultural resources worthy of preservation. It is part of a national

program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. The national register is administered by the National Park Service under the secretary of the interior. In 1990 there were more than 50,000 listings on the national register (see National Register of Historic Places map).

The national register lists all historic areas in the national park system, all national historic landmarks, and properties significant to the nation, to a state, or to a community.

National Register Properties in the Mississippi River Corridor

For the purposes of this study, the commission gathered data only on national register properties in the study area that are significant to the nation or to a state. There are approximately 1,100 of these properties in the study area. **Within the significant constraints of time and money, this study needed to characterize the cultural and archeological resources of the Mississippi River valley as they relate to the primary interpretive themes;** therefore, those themes were used as a guide to determine which properties are related to the Mississippi River and how they can be interpreted for visitors.

Many of the properties are significant for their architecture, their relationship to historic people or events, or their contributions to the fields of music, art, and literature. **By looking at the slice of the National Register of Historic Places represented by the national and state significant sites, this study offers a representative picture of resources that can contribute to the telling of major river stories.**

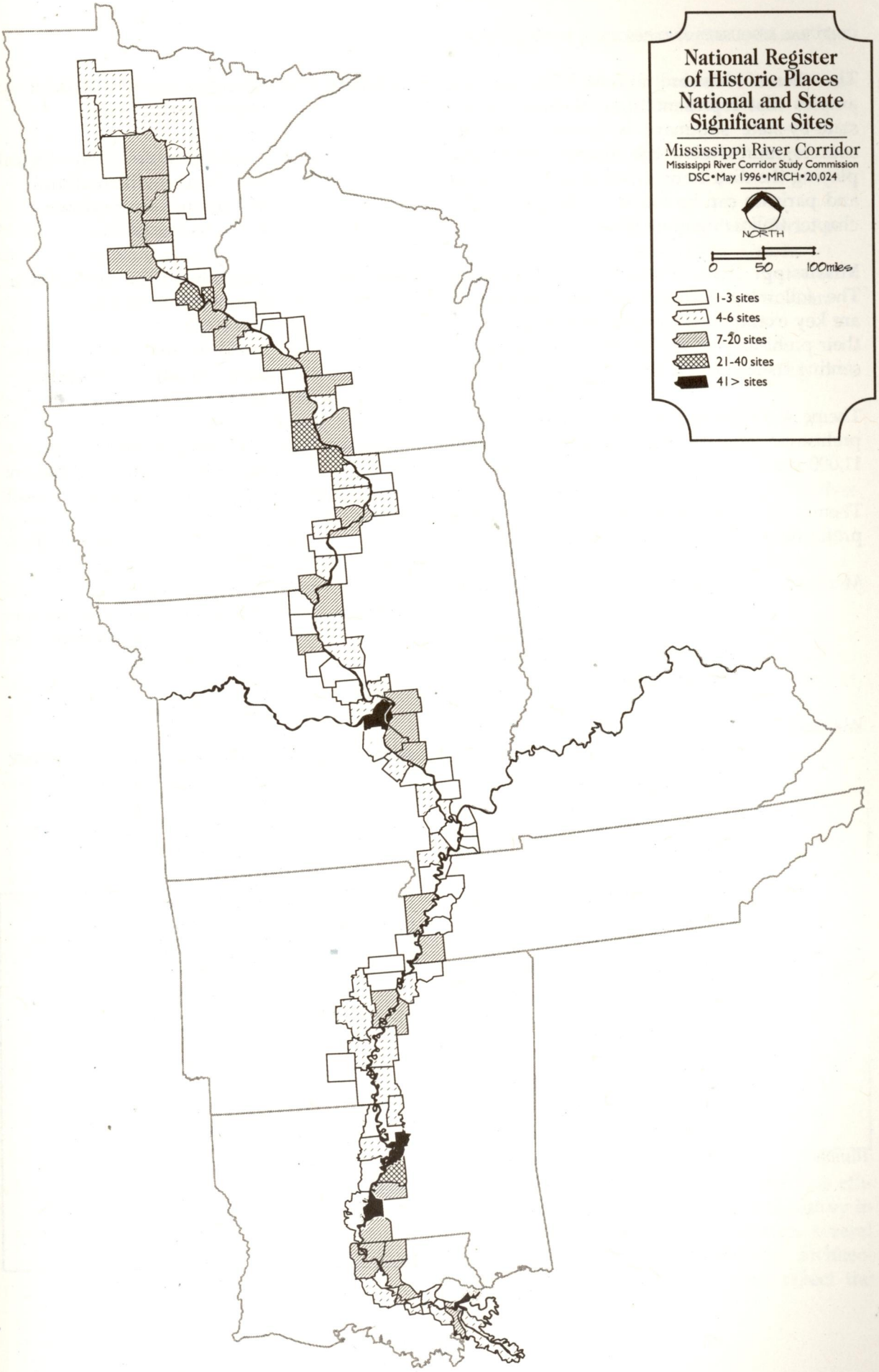
This does not mean that local resources are not important to river stories; they are invaluable. For example, there is a wealth of buildings that never have been sorted in any comprehensive manner. From an architectural standpoint, the local and regional vernacular and high style adaptations represented by these resources are nationally significant. This is a pool of building stock that defines the architectural tradition of the Mississippi River valley. Local communities face significant obstacles in protecting these resources; those obstacles are discussed later in this study.

Several problems are associated with using national register properties to illustrate the river's interpretive themes, to differentiate property types, and to determine the numbers of cultural properties along the river. Properties are nominated to the national register on the basis of several criteria, including significance. Some properties are significant in several areas, including prehistoric and historic archeology, architecture, art, education, industry, military, religion, transportation, or other areas. Other properties were nominated to the national register many years ago, and their areas of significance do not reflect current historical trends, which emphasize social history, including African-American, Hispanic, Asian, American Indian, and women's history.

Another problem is that the national register areas of significance do not match the river's interpretive themes, developed through the Delphi process. Several properties illustrate more than one interpretive theme, and often themes are interrelated and overlap. Thus, the following breakdown of national register sites regarding types and locations of properties according to thematic relationships (that is, areas of significance and interpretive themes) should be considered *a general description of the multitude and variety of cultural resources along the Mississippi River.* Obviously, if a Mississippi River Heritage Corridor is established, further documentation and accurate analysis of cultural resources would be required.

Representation of Themes in National Register Properties

Interpretive themes represented in various Mississippi River cultural resources are discussed in this section. For each topic, the appropriate theme or themes are repeated.


National Register
of Historic Places
National and State
Significant Sites
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,024
NORTH
0
50
100miles
1-3 sites
4-6 sites
7-20 sites
21-40 sites
41 > sites

The theme texts are followed by key examples that represent those themes, then a state-by-state summary is given of the resources representing the themes. Maps displaying the distribution of themes in counties and parishes can be found at the end of this chapter (following page 68).

Mississippi River Prehistory and History. The following National Register properties are key examples of properties significant for their prehistory or history associations, representing themes 4 and 6.

Theme 4: The Mississippi River has nurtured prehistoric and historic cultures for almost 11,000 years.

Theme 6: The Mississippi River valley profoundly affected American history.

Minnesota
- Itasca State Park, Park Rapids
- Lower Rice Lake Site, Bagley (cultural affiliation: Plains-Woodlands)

Wisconsin
- Midway Archeological District, Midway (cultural affiliation: Middle Woodland, Late Woodland)
- Swennes Archeological District, Onalaska (cultural affiliation: Middle Woodland, Oneaota)

Iowa
- Turkey River State Preserve Archeological District, Millville (cultural affiliation: Late Middle Woodland)
- General William Worth Belknap House, Keokuk

Illinois
- New Piasa Chautauqua Historic District, Chautauqua
- Lyman Trumbull House, Alton

Missouri
- Jefferson Barracks Historic District, Saint Louis
- Double Bridges Archeological Site, Portageville (cultural affiliation: Late Baytown, Black Bayou phase)

Kentucky
- Columbus-Belmont Civil War State Park, Columbus
- Wickliffe Site, Wickliffe (cultural affiliation: Mississippian)

Tennessee
- Chucalissa Indian Village, Memphis (cultural affiliation: Walls phase, Boxtown phase)
- Mason Temple, Church of God in Christ, Memphis

Arkansas
- Chickasawba Mound, Blytheville (cultural affiliation: Mississippian, Nodena)
- Battery C Site, Helena

Mississippi
- Grand Village of the Natchez Indian, Natchez
- Vicksburg National Military Park, Vicksburg

Distribution of Properties Representing Prehistory and History

State	Prehistoric or Historic Archeology	History
Minnesota	36	139
Wisconsin	33	25
Iowa	15	48
Illinois	28	49
Missouri	36	118
Kentucky	12	3
Tennessee	4	4
Arkansas	8	16
Mississippi	44	76
Louisiana	21	79

Louisiana
- Jackson Square, New Orleans
- Evan Hall Slave Cabins, Donaldsonville

National Register listings for archeology and history sites along the Mississippi River are the most numerous and reflect the register's primary focus. Every state along the river contains properties that can teach and inspire visitors with river history and prehistory.

Ethnic Heritage. The following national register properties are key examples of properties significant for their ethnic heritage associations, representing themes 4, 5, 6, 7, and 8.

Theme 4: The Mississippi River has nurtured prehistoric and historic cultures for almost 11,000 years.

Theme 5: The Mississippi River has inspired a variety of folklife, literary, fine art, and musical forms.

Theme 6: The Mississippi River valley profoundly affected American history.

Theme 7: Mississippi River towns reflect a distinct architectural style affected by many cultural and natural influences.

Theme 8: The Mississippi River attracts visitors from around the world to enjoy its beauty and grandeur.

Minnesota
- Chippewa Agency Historic District, Pillager
- Itasca State Park, Park Rapids

Wisconsin
- Hanson Petroglyphs, Viola
- Gale College Historic District, Galesville

Iowa
- Village of Saint Donatus Historic District, Saint Donatus
- Florence-Council on the Iowa Site, Oakville

Illinois
- French Colonial Historic District, Prairie du Roche

Missouri
- Lincoln School, Canton
- Trail of Tears State Park Archeological Site, Oriole

Tennessee
- First Baptist Church, Memphis
- Tri-State Bank, Memphis

Arkansas
- Menard-Hodges Mounds, Nady

Mississippi
- Grand Village of the Natchez Indian, Natchez
- I. T. Montgomery House, Mound Bayou

Louisiana
- Kenner and Kugler Cemeteries Archeological District, Norco
- Southern University Archives Building, Scotlandville

Distribution of Properties Representing Ethnic Heritage

State	Properties
Minnesota	3
Wisconsin	2
Iowa	2
Illinois	1
Missouri	9
Kentucky	0
Tennessee	3
Arkansas	2
Mississippi	3
Louisiana	2

Interpreting the contributions of various ethnic groups to American culture and history in the Mississippi River valley crosses several Mississippi River themes. American architecture, music, art, and culture all reflect the

influence of various racial and ethnic groups contributing to their development. These same groups played a role in significant historical events in river history. However, few National Register sites are listed as significant for their ethnic heritage. It is apparent that additional research is needed within the 10 Mississippi River states to identify, inventory, and document sites with significant ethnic heritage associations.

Mississippi River Literature, Music, and Art. The following national register properties are key examples of properties significant for their associations with Mississippi River literature, music, and art, representing theme 5.

Theme 5: The Mississippi River has inspired a variety of folklife, literary, fine art, and musical forms.

Minnesota
- Sinclair Lewis Boyhood Home, Sauk Centre
- F. Scott Fitzgerald House, Saint Paul
- Emil J. Oberhoffer House, Lakeville

Wisconsin
- Hamlin Garland House, West Salem
- Agger Rockshelter, Stevenstown

Iowa
- Alice French House, Davenport
- Leon Bismark Beiderbecke House, Davenport

Illinois
- Mermaid House Hotel, Lebanon

Missouri
- Mark Twain Boyhood Home, Hannibal
- Mark Twain Historic District, Hannibal

Tennessee
- W. E. Palmer House, Henning
- Beale Street Historic District, Memphis
- Graceland, Memphis

Mississippi
- Old Delta Democrat Times Building, Greenville
- William Johnson House, Natchez

Louisiana
- Robert Penn Warren House, Prairieville
- George Washington Cable House, New Orleans
- Saint Louis Cemeteries no. 1 and no. 2, New Orleans

Distribution of Properties Representing Literature, Music, and Art

State	Literature	Music	Art
Minnesota	5	2	5
Wisconsin	1	0	5
Iowa	1	1	0
Illinois	1	0	1
Missouri	5	5	10
Kentucky	0	0	0
Tennessee	1	3	1
Arkansas	0	0	0
Mississippi	6	0	6
Louisiana	3	0	13

This theme and representative sites clearly show that very few surveys have been conducted within the 10 Mississippi River states to identify, inventory, and document sites with significant literature, art, performing arts, and music associations.

Transportation History and Economic Development. The following national register properties are key examples of properties significant for their associations with transportation

and economic development, representing themes 9, 11, and 12.

Theme 9: The history of Mississippi River navigation and transportation reflects the economic and commercial change of the nation.

Minnesota
- Saint Anthony Falls Historic District, Minneapolis
- Saint Croix Boom Site, Stillwater

Wisconsin
- Soo Line High Bridge, Stillwater

Iowa
- Burlington and Missouri River Railroad Passenger Station, Burlington
- William M. Black (dredge), Dubuque
- Geo. H. Verity (steamer), Keokuk
- Keokuk Lock and Dam

Illinois
- Rock Island Arsenal, Rock Island
- Elsah Historic District, Elsah

Missouri
- Eads Bridge, Saint Louis
- Mark Twain Historic District, Hannibal

Kentucky
- Illinois Central Railroad Station and Freight Depot, Bardwell

Arkansas
- Lick Skillet Railroad Work Station Historic District, Brinkley

Mississippi
- Yazoo Pass Levee, Moon Lake
- Mississippi River Bridge, Delta

Louisiana
- Delta Queen, New Orleans
- Chandeleur Light, New Orleans

Distribution of Properties Representing Navigation and Transportation

State	Properties
Minnesota	22
Wisconsin	1
Iowa	9
Illinois	13
Missouri	12
Kentucky	1
Tennessee	1
Arkansas	2
Mississippi	16
Louisiana	4

The national register's transportation area of significance is very broad. It is defined as the entire process and technology of conveying passengers or materials. Listings on the national register that are significant for transportation history include not only bridges, but levees, clusters of buildings, railroad stations and depots, and a variety of boats and ships. It is obvious there are additional sites on the river that illustrate its transportation history, but they have not been identified, inventoried, or documented for the national register.

Theme 11: Many Mississippi River towns and cities are living museums of mid-19th century urban development.

Examples of national register properties in the study area that are significant for their association with urban development along the Mississippi River are as follows:

Minnesota
- Old Frontenac Historic District, Red Wing
- Saint John's Abbey and University Historic District, Avon

Iowa
- Mines of Spain Area Rural Community Archeological District, Dubuque

Illinois
- Free Frank McWorter Grave Site, Barry
- Elsah Historic District, Elsah

Missouri
- University Heights Subdivision Number One, University City

Tennessee
- Overton Park Historic District, Memphis

Arkansas
- Dyess Colony Center, Dyess

Mississippi
- Natchez Bluffs and Under-the-Hill Historic District, Natchez

Louisiana
- Vieux Carré Historic District, New Orleans
- Garden District, New Orleans

Distribution of Properties Representing Urban Development

State	Properties
Minnesota	13
Wisconsin	0
Iowa	2
Illinois	4
Missouri	14
Kentucky	0
Tennessee	2
Arkansas	2
Mississippi	4
Louisiana	12

Once again, finding national register sites or objects on the Mississippi River to illustrate its urban development was problematic. The national register does not have an "urban development" area of significance; rather, the topic is included under the "community planning and development" area of significance. The sites listed above are national register properties with significant community planning and development history. However, verifying direct association with Mississippi River urban development will require further research.

Obviously, there are sites on the river that illustrate its evolving urban development, but they have not been identified, inventoried, or documented for the national register. Such sites may include Nauvoo, Sainte Genevieve, Quincy, and Hannibal, among others.

Theme 12: The Mississippi River sustains many industries.

Examples of National Register properties in the study area significant for their association with Mississippi River industry are as follows:

Minnesota
- Pillsbury "A" Mill, Minneapolis
- Marine Mill Site, Marine on Saint Croix

Wisconsin
- Saint John Mine, Potosi

Iowa
- Dubuque Brewing and Malting Company Buildings, Dubuque
- W. J. Young Company Machine Works, Clinton

Illinois
- Weyerhauser House, Rock Island
- Grand Tower Mining, Manufacturing and Transportation Company site, Grand Tower

Missouri
- Rockcliffe Mansion, Hannibal
- Broadway District, Hannibal

Mississippi
- Buena Vista Cotton Gin, Port Gibson
- Biedenharn Candy Company Building, Vicksburg

Louisiana
- Upper Central Business District, New Orleans

Distribution of Properties Representing Industry

State	Properties
Minnesota	21
Wisconsin	1
Iowa	10
Illinois	8
Missouri	21
Kentucky	0
Tennessee	0
Arkansas	0
Mississippi	3
Louisiana	4

The national register definition of "industry" as an area of significance is broad and includes diverse examples, as shown above. It is obvious that there are many additional sites on the river illustrating its industrial history, but they have not been identified, inventoried, or documented for the national register.

Architectural Character and Cultural Landscape. The following national register properties are key examples of properties significant for their associations with architectural character and cultural landscape, representing themes 7 and 8.

Theme 7: Mississippi River towns reflect a distinct architectural style affected by many cultural and natural influences.

Minnesota
- William G. Le Duc House, Hastings
- Saint Anthony Falls Historic District, Minneapolis
- Old Frontenac Historic District, Red Wing

Wisconsin
- Michael Brisbois House, Prairie du Chien

Iowa
- Dubuque City Hall, Dubuque
- Sinnett Octagon House, Muscatine

Illinois
- Pierre Menard House, Ellis Grove
- Church of the Holy Family, Cahokia

Missouri
- Oliver-Leming House, Cape Girardeau
- Ephraim J. Wilson Farm Complex, Palmyra

Kentucky
- Hickman County Courthouse, Clinton
- Illinois Central Railroad Station and Freight Depot, Bardwell

Tennessee
- Victorian Village District, Memphis
- Mason Temple, Church of God in Christ, Memphis

Arkansas
- Barlow-Coolidge House, Helena
- Merchants & Farmers Bank, Dumas

Mississippi
- Jefferson College, Washington
- Pemberton's Headquarters, Vicksburg

Louisiana
- Old Ursuline Convent, New Orleans

- Parlange Plantation House, Mix

Theme 8. The Mississippi River is known around the world for its beauty and grandeur.

Minnesota
- Chippewa Agency Historic District, Pillager
- Itasca State Park, Park Rapids

Wisconsin
- Hanson Petroglyphs, Viola
- Gale College Historic District, Galesville

Iowa
- Village of Saint Donatus Historic District, Saint Donatus
- Florence-Council on the Iowa Site, Oakville

Distribution of Properties Representing Architecture and Cultural Landscape

State	Properties
Minnesota	107
Wisconsin	20
Iowa	49
Illinois	55
Missouri	159
Kentucky	3
Tennessee	9
Arkansas	19
Mississippi	108
Louisiana	128

Illinois
- French Colonial Historic District, Prairie du Roche

Missouri
- Lincoln School, Canton
- Trail of Tears State Park Archeological Site, Oriole

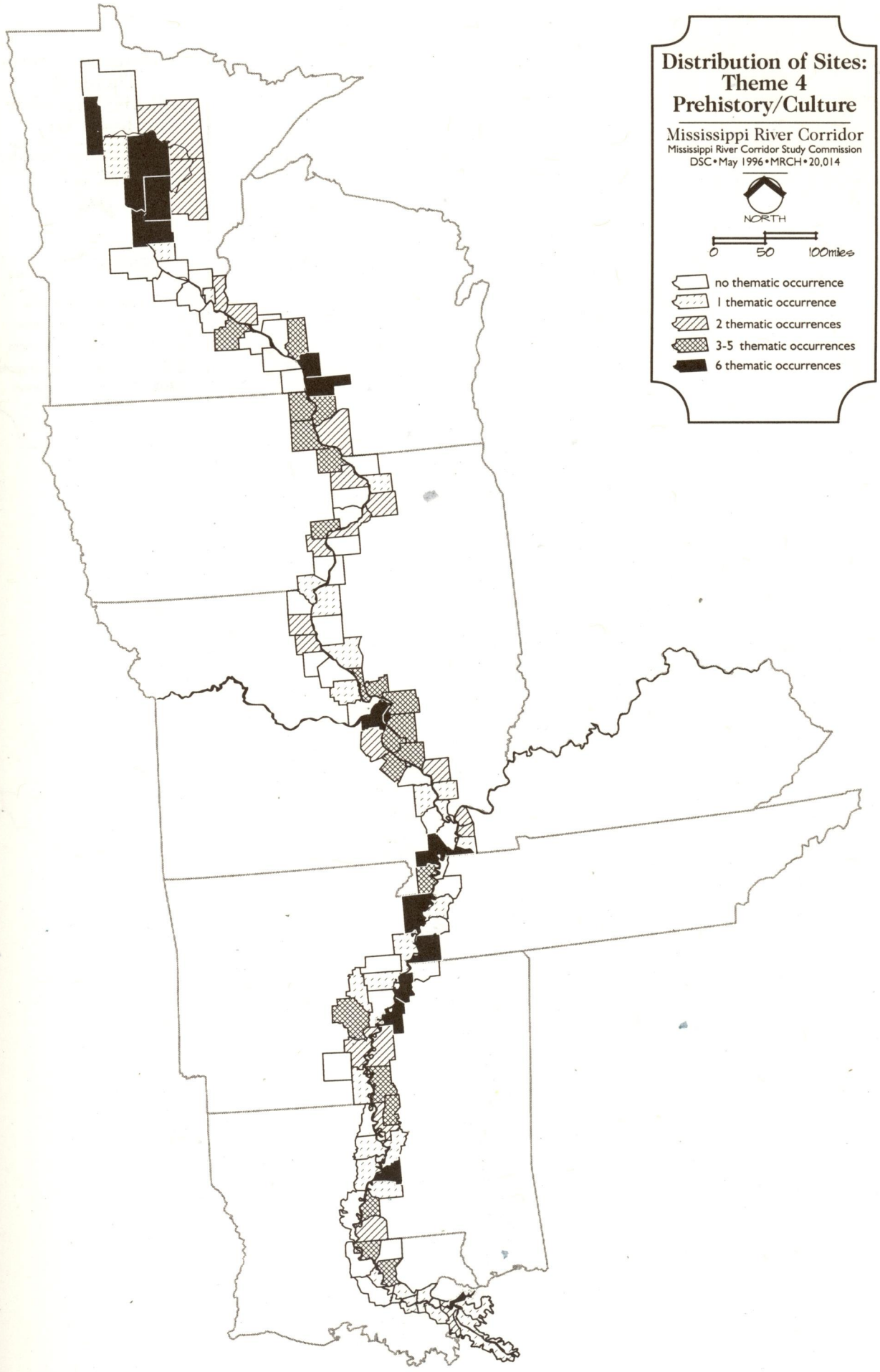
Tennessee
- First Baptist Church, Memphis
- Tri-State Bank, Memphis

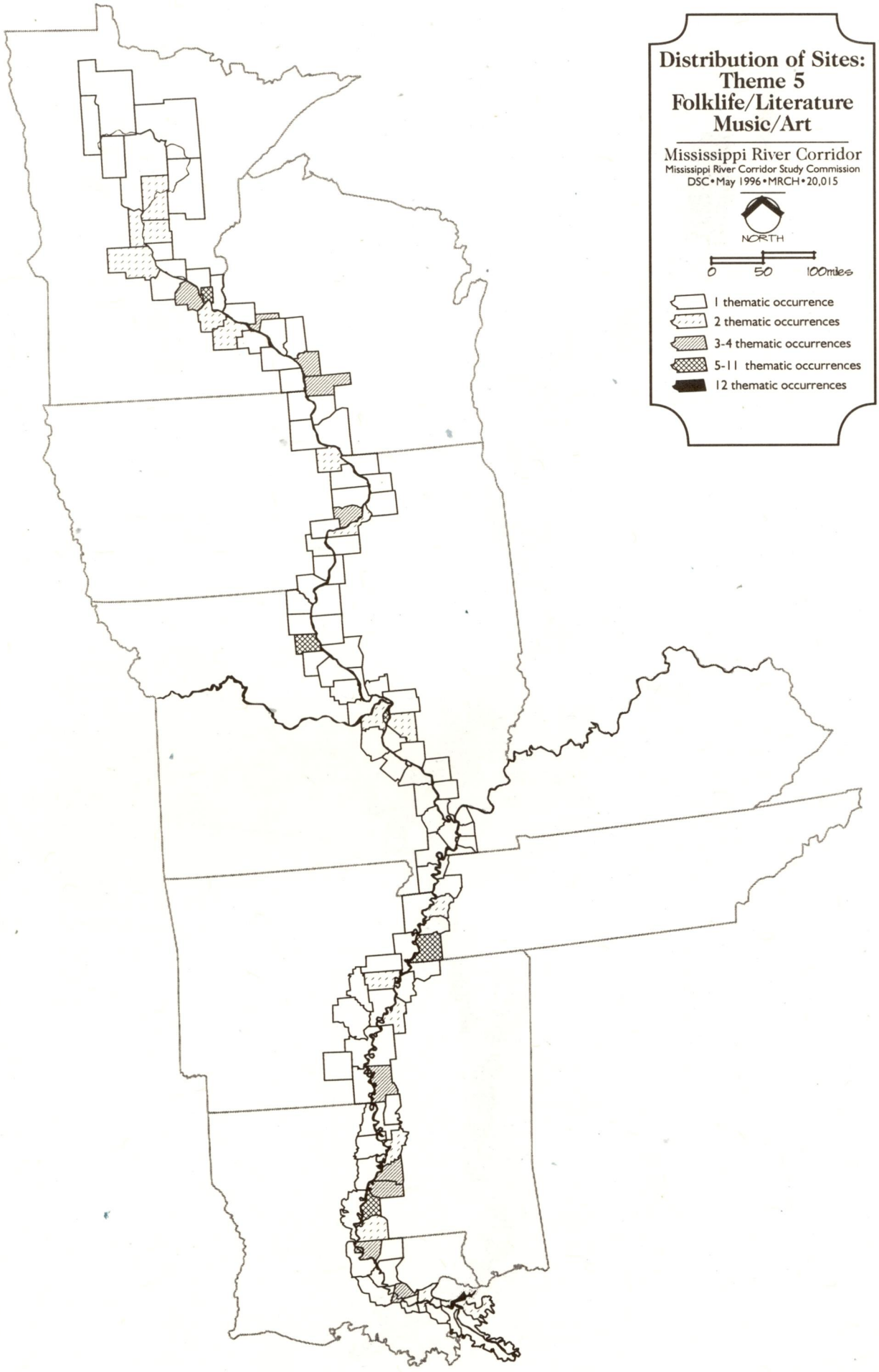
Arkansas
- Menard-Hodges Mounds, Nady

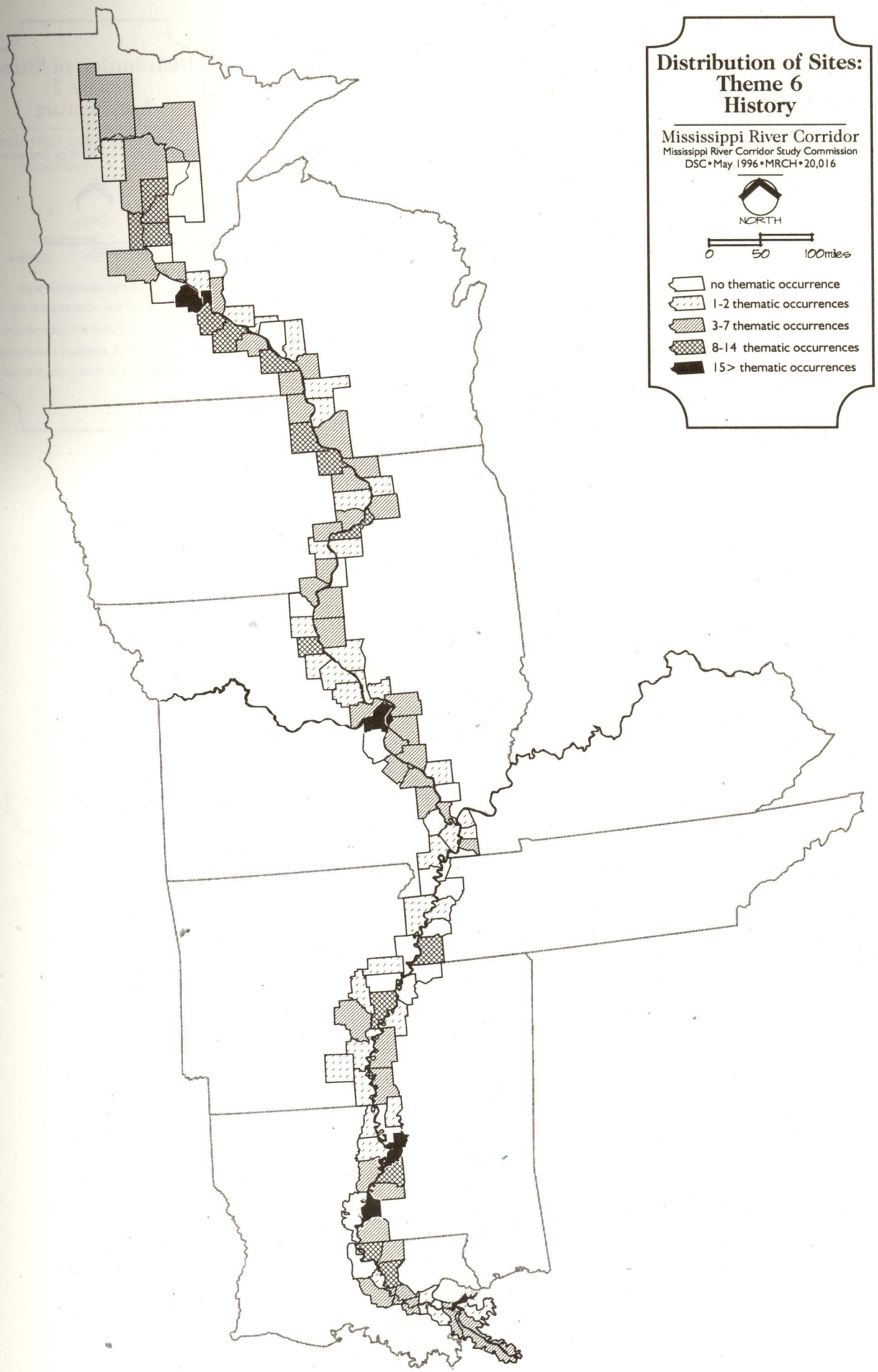
Mississippi
- I. T. Montgomery House, Mount Bayou

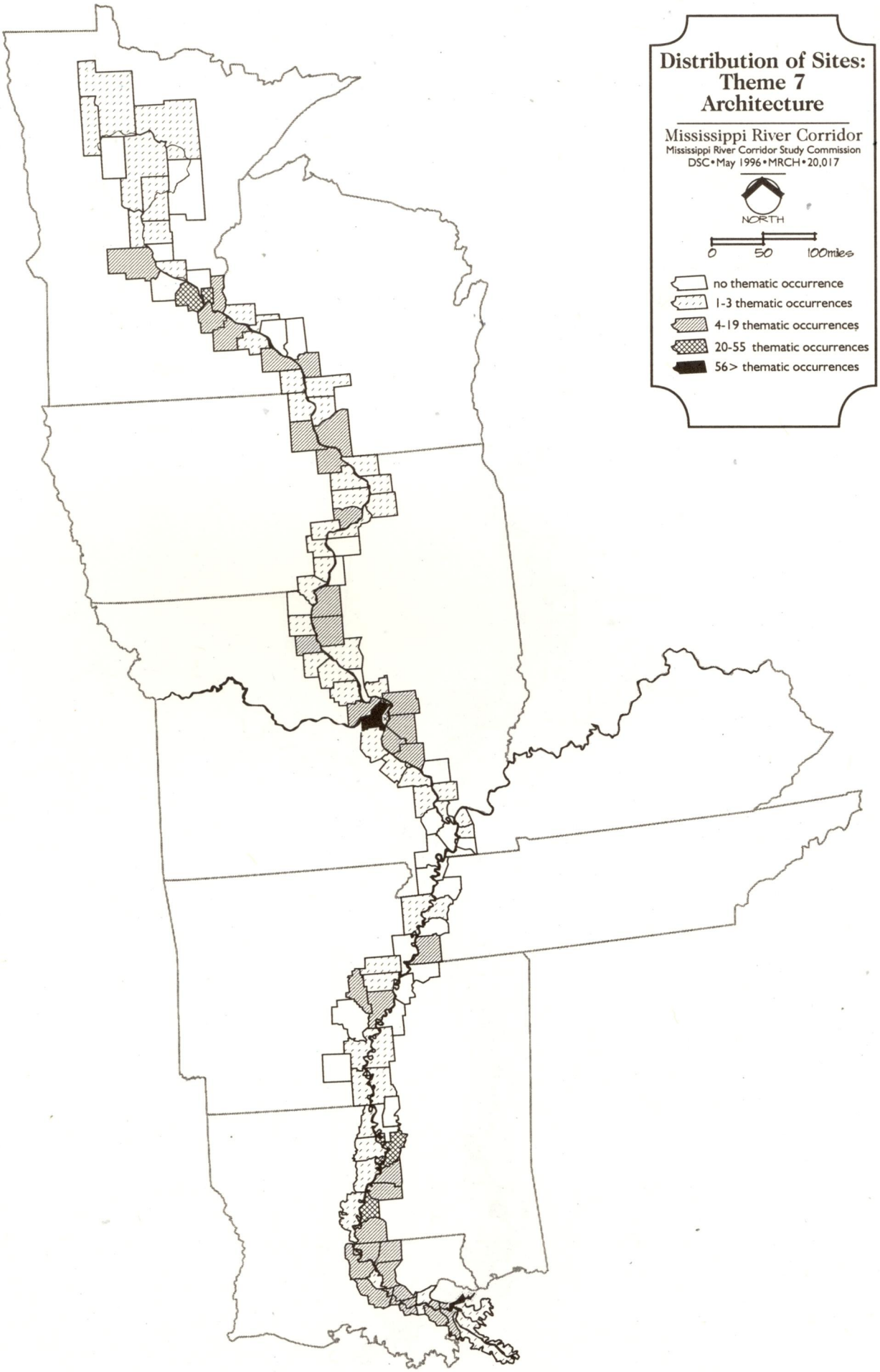
Louisiana
- Kenner and Kugler Cemeteries Archeological District, Norco
- Southern University Archives Building, Scotlandville

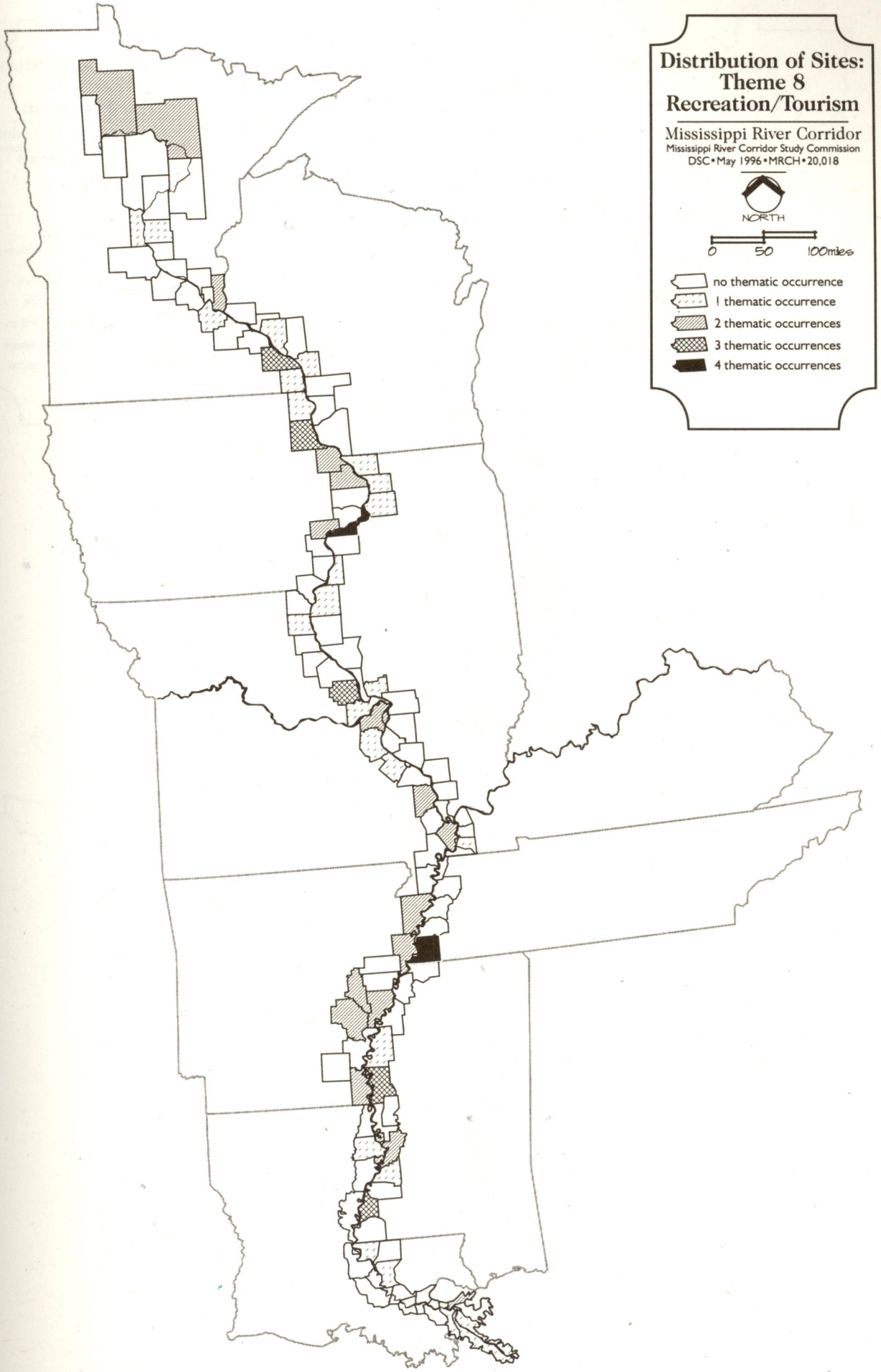
National register listings for sites along the Mississippi River with architectural significance are numerous and reflect the register's past emphasis on extant structures. Every state along the river contains architectural properties that reflect everyday life and preserve physical manifestations of lofty human aspirations.

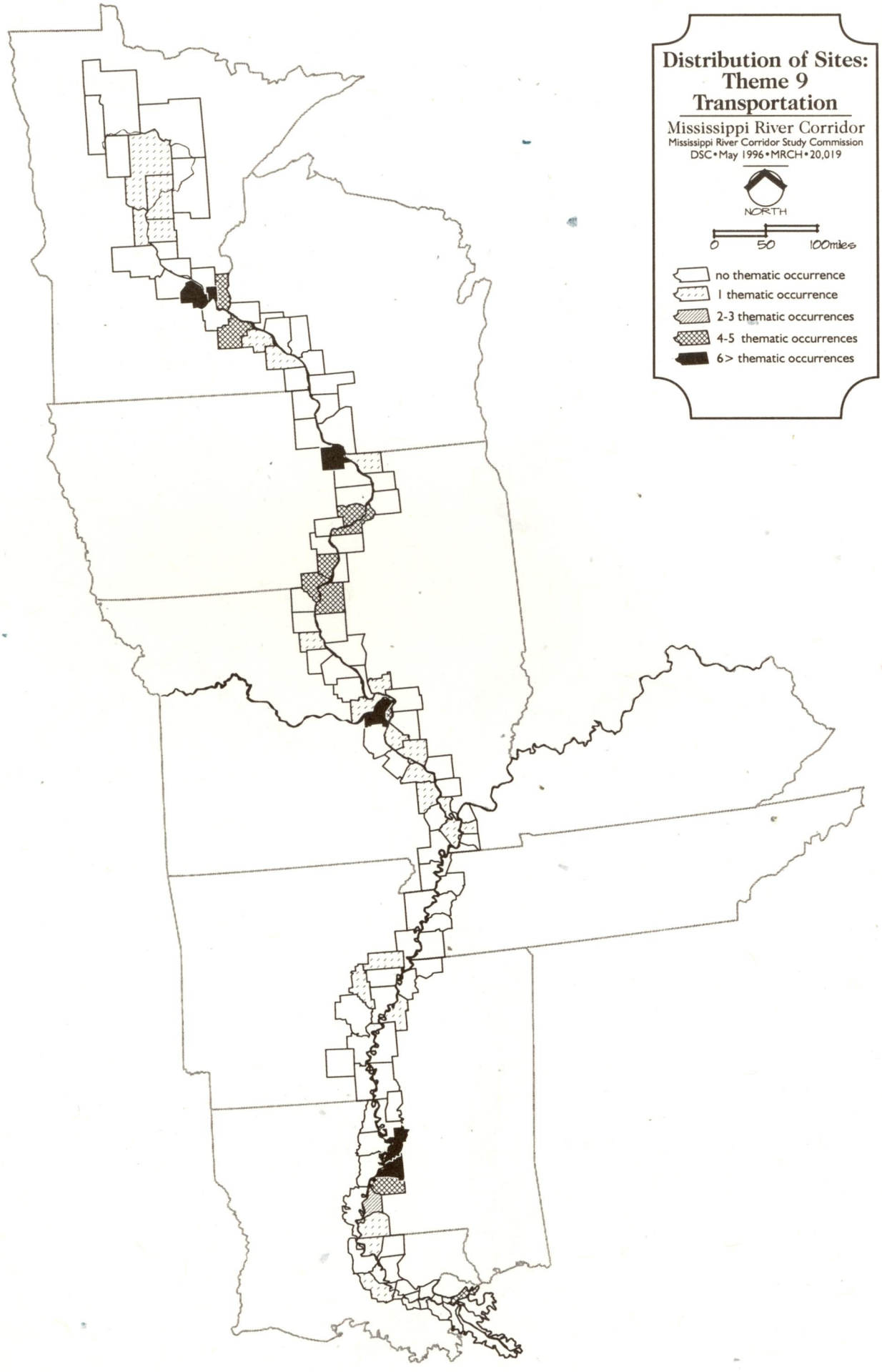

Distribution of Sites:
Theme 4
Prehistory/Culture
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,014
NORTH
0
50
100miles
no thematic occurrence
1 thematic occurrence
2 thematic occurrences
3-5 thematic occurrences
6 thematic occurrences

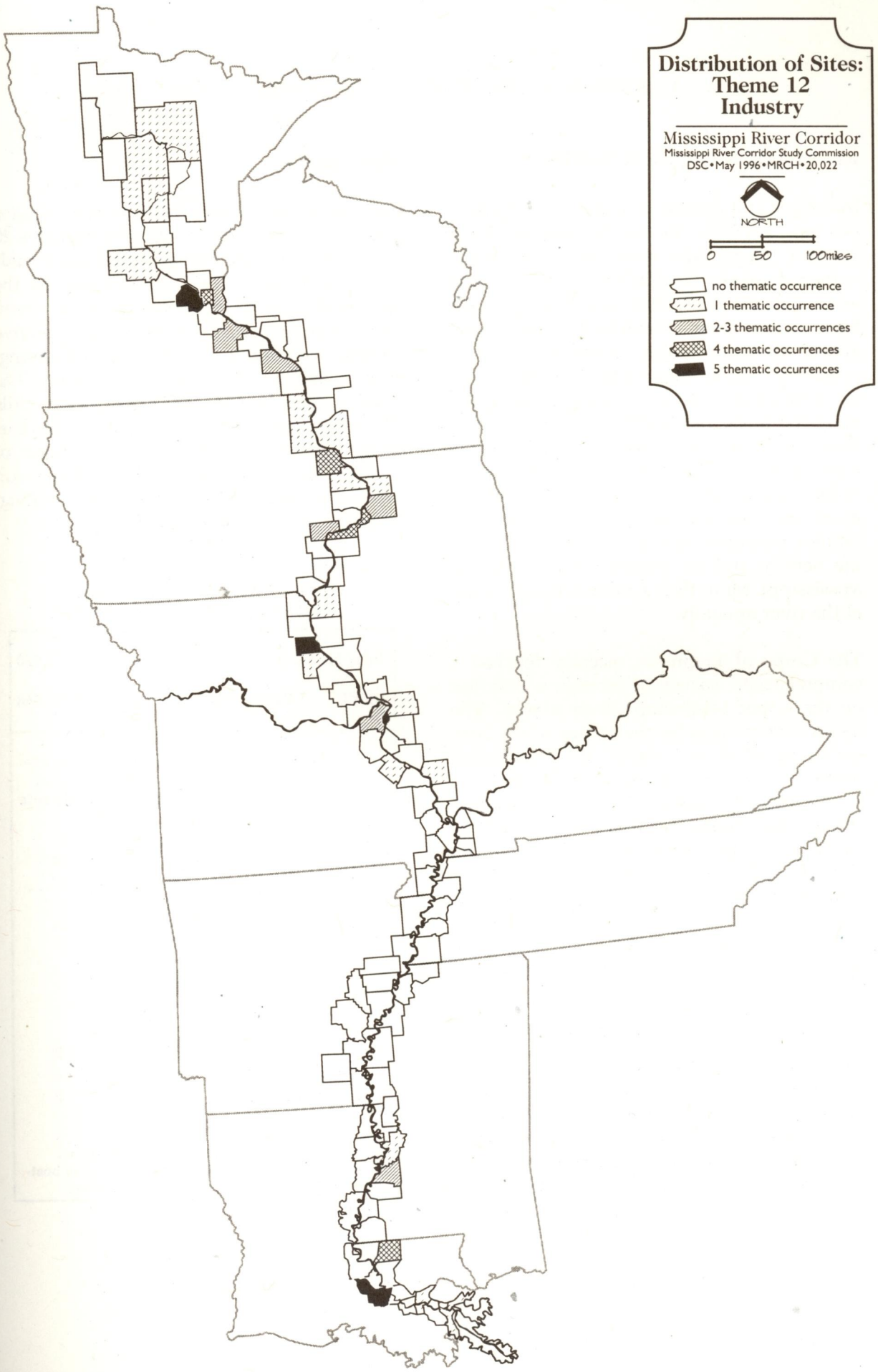

Distribution of Sites:
Theme 5
Folklife/Literature
Music/Art
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,015
NORTH
0
50
100miles
1 thematic occurrence
2 thematic occurrences
3-4 thematic occurrences
5-11 thematic occurrences
12 thematic occurrences


Distribution of Sites:
Theme 6
History
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,016
NORTH
0
50
100miles
no thematic occurrence
1-2 thematic occurrences
3-7 thematic occurrences
8-14 thematic occurrences
15> thematic occurrences


Distribution of Sites:
Theme 7
Architecture
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,017
NORTH
0
50
100miles
no thematic occurrence
1-3 thematic occurrences
4-19 thematic occurrences
20-55 thematic occurrences
56> thematic occurrences


Distribution of Sites:
Theme 8
Recreation/Tourism
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,018
NORTH
0
50
100miles
no thematic occurrence
1 thematic occurrence
2 thematic occurrences
3 thematic occurrences
4 thematic occurrences


Distribution of Sites:
Theme 9
Transportation
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,019
NORTH
0
50
100miles
no thematic occurrence
1 thematic occurrence
2-3 thematic occurrences
4-5 thematic occurrences
6> thematic occurrences


Distribution of Sites:
Theme 12
Industry
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,022
NORTH
0
50
100miles
no thematic occurrence
1 thematic occurrence
2-3 thematic occurrences
4 thematic occurrences
5 thematic occurrences

RECREATION OPPORTUNITIES

Incredible and diverse recreational opportunities are available in the Mississippi River corridor. There are more than 250 state-managed areas, including parks, natural areas, historic sites, fish and wildlife areas, boat access areas, waterfowl management areas, recreation areas, memorials, nature preserves, scenic overlooks, forests, forest preserves, trails, and scenic areas. These state-managed areas are visited annually by more than 3 million people. Sixteen areas administered by the National Park Service receive 8.6 million visits annually. Millions of visitors hunt and fish on the 23 national wildlife refuges managed by the U.S. Fish and Wildlife Service and on private lands along the Mississippi. More than 2 million boaters travel the river annually.

The Corps of Engineers recently finished a comprehensive survey of recreation activities on the upper Mississippi River system. The upper system includes the commercially navigable parts of five rivers: the Mississippi north of Cairo, Illinois; the Illinois, the Saint Croix, the Minnesota, and the Kaskaskia. Within the Mississippi River portion of the study area, the Corps reported an annual total of 1,622,019 recreation trips involving 3,465,566 people.

No comprehensive recreation studies have been conducted on the lower Mississippi; however, the character of the lower river discourages most water and shoreline activities. The Corps of Engineers estimates that 80% of all boating and shoreline recreation on the Mississippi takes place on the upper part of the river. Table 5 contains a breakdown of recreation activities on the upper Mississippi as revealed by the Corps of Engineers study. Also see the National and State Parks map.

Minnesota

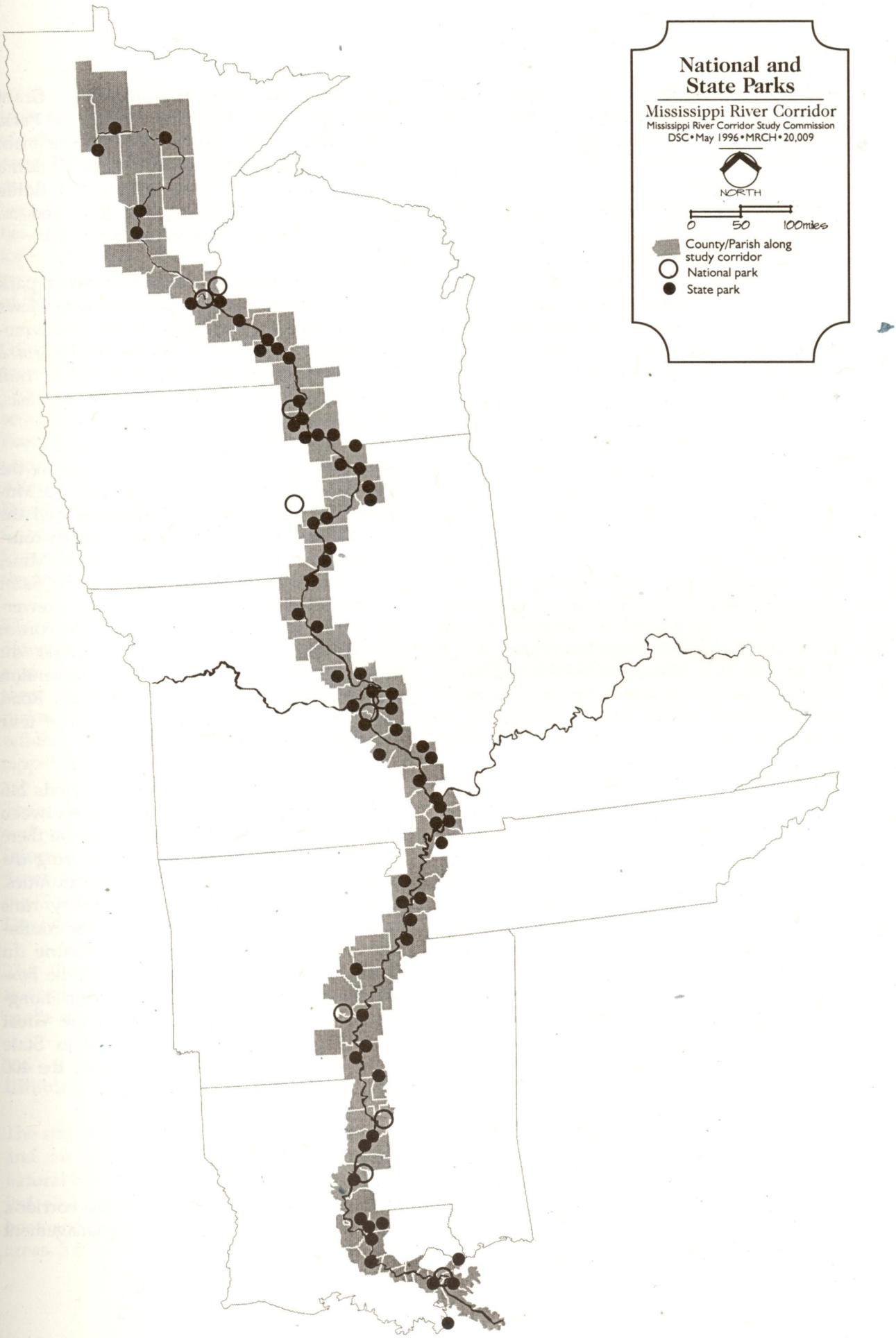
The state of Minnesota manages several sites and areas within the corridor; this includes 20 state parks, 21 state forests, and 3 state wildlife management areas. At least nine of the state parks are in the vicinity of the river. They include features such as interpretive centers, scenic vistas of the river, camping, recreational facilities, and historic sites. The state also manages several long-distance trails and recreational waterways within the corridor, and the Minnesota Department of Natural Resources provides brochures on snowmobiling, skiing, bicycling, hiking, camping, and canoeing in these areas.

TABLE 5: RECREATION ACTIVITIES ON THE UPPER MISSISSIPPI RIVER

Total Number of Trips	**1,622,020**
Number of People Participating	**3,465,566**

Activity	Number of Participants	Percentage of Total Participants
Boating (total)[a]	1,580,213	46
Boatfishing	1,125,690	33
Sightseeing (only)	918,139	27
Recreational boating	611,077	18
Bankfishing	532,503	15
Camping	197,952	6
Hiking	154,535	5
Picnicking	121,544	4
Duck hunting (bank)	121,897	4
Waterskiing	70,684	2
Swimming	63,497	2
Miscellaneous	60,744	2

a. Some people took part in both recreational boating and boatfishing, so the total number of boaters is smaller than the two numbers combined.


National and
State Parks
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,009
NORTH
0
50
100miles
County/Parish along
study corridor
National park
State park

In virtually every county along the river and in many of the river communities are museums celebrating the area's history and pioneer heritage. Several communities along the river are upgrading the riverfront areas and developing a linear park system along the Great River Road.

The Fish and Wildlife Service manages two national wildlife refuges in the corridor. The National Park Service manages the Lower Saint Croix National Scenic Riverway, the Mississippi National River and Recreation Area, and the North Country National Scenic Trail. The Corps of Engineers has interpretive facilities at several of the Minnesota locks and dams on the Mississippi River.

Major tourist attractions include the Paul Bunyan Statue, the Mall of America, and the Saint Paul Winter Carnival Ice Palace. Other recreational opportunities are provided by the riverboat rides along the Mississippi and the Saint Croix. There are 770 miles along the Great River Road through Minnesota. Long-distance trails in Minnesota are the Red Wing to Hastings State Coach Line, the Heartland State Trail, the Cannon Valley Trail, the Luce Line Trail, the Minnesota Valley Trail, and the Root River Trail.

Wisconsin

Several Wisconsin state parks are along the Mississippi River: Wyalusing, Perrot, Merrick, Nelson Dewey, and Kinnikinnic. Many of these parks offer views of the river area plus recreational activities such as camping, hiking, and water access. The State Historical Society manages Stonefield Village, a reconstructed 1890 village, and Villa Louis, an 1870s mansion. The state manages the Eagle Nature Preserve, which is a haven to nearly 1,000 migrating bald eagles, and the Van Loon Wildlife Area, which provides hunting, fishing, canoeing, and camping. Many communities along the river also have parks, so that opportunities for enjoying the river environment are readily available.

The Corps of Engineers manages the Grant River Recreation Area and Blackhawk Park, which offers year round access to the main river channel. Trempealeau National Wildlife Refuge, managed by the Fish and Wildlife Service, offers an automobile tour and an observation deck for viewing waterfowl.

The Great River State Trail is a linear park along the river that offers breathtaking views of the river for bicyclists, hikers, snowmobilers, and cross-country skiers. The LaCrosse River State Trail provides 22 miles of trail between Sparta and Medary for bicyclists, hikers, and snowmobilers .

Museums in the corridor in Wisconsin are the Swarthout Museum, the Pepin Railroad Museum, the Pepin Historical Museum, and the Fort Crawford Medical Museum. Other tourist attractions are the Saint John Lead Mine, Saint Feriole Island, Riverside USA, Fort Saint Antonie, and tours of local wineries, breweries, and cheese factories. There are Wisconsin tourist information centers in Prairie du Chien and La Crosse, a La Crosse convention and visitors bureau, and a Great River Road Welcome Center in Prescott. Seven river tour boat operators serve the local area.

The Great River Road in Wisconsin winds 246 miles through communities tucked between the river and the bluff. Along this route there are numerous opportunities for viewing the river and enjoying recreational opportunities. The Lower Wisconsin State Riverway runs from the dam at Prairie du Sac to the confluence of the Mississippi River at Prairie du Chien. This riverway also is part of the Fox-Wisconsin Rivers Heritage Corridor. Long-distance trails in Wisconsin are the Great River State Trail, the LaCrosse River State Trail, the Elroy-Sparta Bike Trail, and the 400 bike Trail.

Iowa

Iowa manages 20 state areas in the corridor, including parks, forests, wildlife management

areas, nature centers, and preserves. The National Park Service manages Effigy Mounds National Monument and the Mormon Pioneer National Historic Trail. These areas, which provide various hiking, picnicking, camping, and/or educational opportunities, offer such features as a garden sanctuary for butterflies, prehistoric Indian burial grounds, restored mills, and panoramic views of the river.

Other tourist attractions are diverse in their scope. Examples include the Mississippi River Visitor Center in Dubuque, the Putnam Museum of History and Natural Science, the Pearl Button Museum, the Buffalo Bill Museum, the Keokuk River Museum, the Snake Alley Historic District, the Clinton County Historical Society, the Fenelon Place Elevator Company, and "Old Fort" Madison Historical Site. Many of these focus on the resources of the Mississippi River.

There are a number of public hunting areas along the corridor, mostly in the northern part of the state. Principal game species in these areas are deer, squirrel, rabbit, quail, turkey, pheasant, and grouse. Two national wildlife refuges are located along the Mississippi River in Iowa.

There are many boat ramps along the river, and camping areas are sporadically located. Information is provided by The Mississippi River Recreational Boating Guides, the Fishing Guide, and other publications by the Iowa Department of Natural Resources.

The Great River Road covers 318 miles through Iowa. There is one long-distance trail in the corridor; the Heritage Trail.

Illinois

The state of Illinois manages a wealth of sites and areas along the Mississippi River: 24 natural areas, 13 state parks, 13 state historical sites, 13 state fish and wildlife areas, 7 boat access areas, 6 waterfowl management areas, 5 state recreation areas, 4 state memorials, 3 nature preserves, 3 scenic overlooks, 2 state forests, 2 forest preserves, 1 state trail, and 1 scenic area. These areas provide a vast number of recreational opportunities, including hiking, camping, wildlife viewing, fishing, hunting, river access, interpretive programs, and river views. The Great River Trail offers biking and hiking opportunities along an old railway bed.

Cahokia Mounds State Historic Site commemorates the largest known prehistoric Native American city north of Mexico. It has been designated a World Heritage Site. Nauvoo was once the largest town in Illinois; now the state park preserves and interprets the area's rich history and Mormon ancestry. Exceptional scenic driving along spectacular river bluffs is now preserved by the Alton Lake Heritage Corridor. The scenic road and protected viewshed lie between the city of Alton and Pere Marquette State Park, at the confluence of the Mississippi and Illinois Rivers. Horseshoe Lake Conservation Area is nationally recognized for its waterfowl and fishing. Fort de Chartres State Historic Site, near Prairie du Rocher, commemorates a French colonial fort.

Mark Twain National Wildlife Refuge includes several dispersed areas in southwestern Illinois, and the Corp of Engineers manages two public use areas within this refuge. Shawnee National Forest covers parts of Jackson, Union, and Alexander counties. The National Park Service manages Jefferson National Expansion Memorial and administers Lewis and Clark National Historic Trail, Mormon Pioneer National Historic Trail, and Trail of Tears National Historic Trail. The Mississippi River Center in Rock Island, which is operated by the Corps of Engineers, highlights navigation and the global importance of the ecosystem of the upper Mississippi River.

The I-80 Welcome Center and three convention and visitors bureaus assist area visitors. More than 40 museums, including 17 house museums, interpret resources for visitors. A number of river tour boats are operated along this part of the Mississippi River, and there are several riverboat casinos. The Great River

Road (629 miles), Illinois River Road Route of the Voyageurs, and the Bluff Road Scenic Route offer vehicular touring opportunities. Popular tourist attractions are the National Shrine of Our Lady of the Snows, a popular Catholic destination; Hamilton, a seasonal American bald eagle viewing area; Galena, a striking Victorian town of which 85% is listed on the National Register of Historic Places; and the Illinois River Valley, prehistoric home to Native Americans. Long-distance trails in Illinois are Bike Route 76, the Great River Trail, Hennepin Canal State Trail, Lewis and Clark National Historic Trail, Mormon Pioneer National Historic Trail, River-to-River Trail, Trail of Tears National Historic Trail, and Vadalabene Bike Trail.

Missouri

Eight Missouri state parks and nine state historical areas are located within the corridor. Mastodon State Park preserves an archeological site important for information about ice-age people and animals. Trail of Tears State Park interprets the historic walk and the story of the Mississippi River. Wakonda, Dr. Edmund A. Babler Memorial, Castelwood, Hawn, and Big Oak Tree provide recreational activities such as nature walks, information centers, and hiking trails. The state also manages the Ted Shanks Wildlife Area, the August A. Bush Memorial Wildlife Area, the Powder Valley Nature Center, and Rockwoods Reservation; three of these facilities offer conservation education opportunities.

The Corps of Engineers manages the Riverlands Environmental Demonstration Area, which provides conservation education opportunities along the Mississippi River, and Mark Twain Lake, which has three camping areas in the corridor. The U.S. Fish and Wildlife Service manages the Clarence Cannon National Wildlife Refuge. The National Park Service manages the Jefferson National Expansion Memorial (with the Gateway Arch), the Ulysses S. Grant National Historic Site, the Lewis and Clark National Historic Trail, and the Trail of Tears National Historic Trail.

There is a wealth of museums in Missouri, among them the Mark Twain Boyhood Home and Museum, the Saint Louis Art Museum, the Golden Eagle River Museum, the Soldier's Memorial Military Museum, the Museum of Transportation, the Sainte Genevieve Museum, the America Heritage Museum, and the New Madrid Historic Museum. Some other attractions are the Saint Louis Union Station, Grant's Farm, the Anheuser-Busch Brewery, the Becky Thatcher House, and the Daniel Boone Home. River tours include the Spirit of the Saint Charles Riverboat, the Goldenrod Showboat, and the Mark Twain Riverboat.

The Great River Road Interpretive Center in Sainte Genevieve offers orientation to river resources, and the River Heritage Museum interprets river history and features river memorabilia and historic papers. Redevelopment of riverfronts is increasing; this includes the establishment of river districts, historic districts, riverfront trail projects, and riverfront urban renewal.

The Great River Road (443 miles) serves as a recreational byway along the Mississippi River throughout Missouri, and the 131-mile Mississippi River Valley Scenic Drive is in southeast Missouri. Long-distance trails in the state are the Lewis and Clark Trail and the Trail of Tears.

Kentucky

Columbus-Belmont State Park in Kentucky features a historic Civil War fortification occupied by the Confederate and Union forces. It has a museum, camping facilities, hiking trails, and picnic areas. The Kentucky Department of Fish and Wildlife Resources manages eight sites in the corridor. These areas offer opportunities for hunting, fishing, hiking, camping, and bird watching. Area museums include the Warren Thomas Museum and the Barlow House Museum. The U.S. Fish and Wildlife Service manages Reelfoot National Wildlife Refuge, and the National Park Service administers the Trail of Tears National Historic Trail.

Corridor tourist attractions include Wickliffe Mounds, which is an excavation of a ceremonial site and trade center of the prehistoric Temple Mound culture; the International Banana Festival; and the historic Delta Queen and Mississippi Queen riverboats, which frequent the region. The Great River Road runs for 51 miles along the four counties bordering the Mississippi in Kentucky.

Tennessee

Tennessee manages three state parks, two wildlife management areas, and a state historical area within the corridor. Recreational facilities at the parks include hiking trails, picnic areas, camping areas, cabins, swimming pools, and interpretive centers. Fort Pillow State Historical Area is the site of a Confederate fortification that overlooks the Mississippi River and includes one of three long-distance trails managed by the state in the area.

The U.S. Fish and Wildlife Service manages four wildlife refuges in the corridor that offer interpretive centers, boating, fishing, hunting, and wildlife observation. The National Park Service manages the Trail of Tears National Historic Trail.

Major tourist attractions in Tennessee are the National Civil Rights Museum, Mud Island, the Memphis Zoo and Aquarium, the Mississippi River Museum, Graceland, and the Beale Street Historic District. The Mississippi River Museum assists in the preservation and interpretation of the natural and cultural history of the "Father of the Waters".

Memphis Queen Line Riverboats operate locally on the river. Tennessee Scenic Parkways and the Great River Road (187 miles) parallel the Mississippi in this area. The two long-distance trails in the corridor are the Chickasaw Bluffs Trail and the Fort Pillow State Historic Area Trail.

Arkansas

The state of Arkansas manages 24 sites within the corridor, including state parks, wildlife management areas, recreation areas, and natural areas. Amenities such as hiking, camping, hunting, fishing, boating, picnicking, interpretive programs, and cabins are found in these areas. Twelve museums, cultural centers, and information centers serve area visitors.

The U.S. Fish and Wildlife Service operates three national wildlife refuges in the corridor, offering camping, boating, and hunting opportunities (federal wildlife refuges are described below). Saint Francis National Forest is the only national forest in the corridor. The National Park Service manages Arkansas Post National Memorial, and the Corps of Engineers manages Merrisach Lake.

Major tourist attractions along the corridor in Arkansas include the Confederate Cemetery, the Japanese Relocation Center Cemetery and Monuments, the King Biscuit Blues Festival, the Annual World Championship Duck Calling Contest, and the Wings Over the Prairie Festival.

The Delta Cultural Center combines entertainment and education to allow visitors to explore the culture of the Delta region. The center offers interactive museum exhibits, a boardwalk along the Mississippi, craft demonstrations, outdoor music and festivals, and tours of archeological sites, wetlands, and historic sites.

The Arkansas Archeological Survey plans to convert Eaker Air Force Base into a regional archeological heritage center called the Mississippi Valley Heritage Center. The center, which is located in the midst of numerous nationally significant archeological sites, will interpret the early cultural history of the valley. It also will serve as a regional archeological curation center, serving the needs of state and federal agencies in the lower Mississippi River valley.

Throughout the corridor are roads that have been included in the Arkansas Great River Road (309 miles), scenic byways, or scenic highways programs. Long-distance trails within the corridor are the Levee Tour, Village Creek State Park trails, Bear Creek Trail (in Lake Chicot State Park), Delta Woodlands Trails, the Louisiana Purchase Boardwalk, and Delta Heritage Trail State Park (under development).

Mississippi

In Mississippi, the Great River Road State Park celebrates the Mississippi as the "Father of the Waters." From an observation tower in the park, visitors can view the river. The park also offers fishing, boating, camping, a visitor center, and a nature trail. Winterville Mounds State Park has one of the largest Indian mound groups along the Mississippi valley. Leroy Percy State Park provides an interpretive center, a nature trail, and swimming opportunities. Fishing and water sports are available at Natchez State Park. The state also manages six wildlife management areas and two waterfowl areas within the corridor, which allow seasonal hunting. Seven welcome centers and visitor bureaus serve area visitors.

The National Park Service manages Natchez National Historical Park and Vicksburg National Military Park. Parts of the Delta and Homochitto National Forests are within the corridor. The U.S. Fish and Wildlife Service manages Matthews Brake and Morgan Brake National Wildlife Refuges and Yazoo National Wildlife Reserve. The state manages Grand Gulf Military Monument.

The area's rich history is featured in several tourist attractions. Area museums include the Delta Blues Museum, the Greenville Flood Museum, the Museum of Afro-American History and Culture, the Archeological Museum, and the Cairo Museum. Several antebellum homes and estates are in the southern half of the state, including many in Vicksburg and Natchez. Delta Queen Steamboat Company and Mississippi River Adventures offer local river trips. The Million Dollar Mile provides a drive along the Mississippi River levee and opportunities to observe towboats and barges under construction. The Waterways Experiment Station offers tours of the Corps of Engineers research and testing facility.

The Great River Road runs adjacent to the river for 352 miles through many small towns and vast antebellum plantations in Mississippi. The Natchez Trace Parkway, which is managed by the National Park Service, starts in Tupelo and terminates at Natchez. It offers vehicle or bicycle tours through forests, fields, and historic landscapes. Long-distance cycling opportunities are available through Bicycling on the Trace.

Louisiana

Twelve state commemorative areas in Louisiana celebrate the area's rich history. Among these are civil war sites such as Port Hudson, scene of one of the longest genuine sieges in the United States military history, and engineering feats such as Plaquemine Lock, which, when completed, had the highest freshwater lift of any lock in the world. Lake Bruin, Grand Isle, Saint Bernard, and Bayou Segnette state parks are located within the corridor. These provide views of the Mississippi River and opportunities for outdoor recreation activities such as swimming, camping, boating, and crabbing.

Louisiana prides itself on being a sportsman's paradise. Eight state wildlife areas and five national wildlife refuges in the corridor provide abundant fishing and hunting opportunities for area outdoor enthusiasts.

Poverty Point National Monument and Jean Lafitte National Historical Park and Preserve are managed by the National Park Service. Jean Lafitte offers exhibits on Louisiana folklife, historical walking tours, nature trails, and civil war site interpretation. There are no state or national forests within the corridor in Louisiana.

Museums in the area are many and varied — among them are the Confederate, Ducros, Baker Heritage, Tibermill, Gallier House, and Louisiana State museums. Other Local tourist attractions are Historical Fort Jackson, the Aquarium of the Americas, the U.S.S. Kidd Historic Warship, the Audubon Zoo, Mardi Gras World, and an array of antebellum homes. Eight different companies offer river tour boat rides in the area. The Great River Road travels on 408 miles of road throughout Louisiana. Several tourist information centers and welcome centers are located along the Mississippi river corridor throughout the state. Two long-distance trails are proposed; the Pontchartrain Path (Ring Around the Lake) and the Tellulah to Ferriday Trail.

STATE RECREATION GOALS AND TRENDS

Every state along the corridor has a Statewide Comprehensive Outdoor Recreation Plan (SCORP). These documents, prepared with extensive public input, identify present and future needs for outdoor recreation in the state and recommend ways and means of meeting those needs. These reports have been prepared under the provisions of the Land and Water Conservation Fund Act of 1965.

The 10 states' recreation efforts show parallel concerns and desires for recreation resources, and there are several common threads relating directly to the overall purpose and function of a national heritage corridor. Each of the 10 states shares concern for meeting the needs of a health-conscious society, providing appropriate recreation for the growing aged population, offering enough recreational opportunities for the increased populations in urban areas, acquiring adequate funding for recreation, properly maintaining existing recreational facilities, and addressing the recreational needs of special populations such as the aged, the poor, and African-Americans.

Related to these concerns are common desires to provide an adequate number of recreational opportunities close to home, more opportunities for trail-oriented activities such as jogging or walking for exercise, more automobile routes for driving for pleasure, more areas that allow access for hunting and fishing, and increased funding for acquisition of buffer areas for existing recreational facilities.

Several concerns could rightfully be addressed by a national heritage corridor and are consistent with its purpose and function. These include the desires for more routes developed for pleasure driving and more trail routes for jogging and walking and the development of more recreational activities in major metropolitan areas (for example, the twin cities of Minneapolis and Saint Paul; the Quad Cities of Davenport, Rock Island, Moline, and Bettendorf; Saint Louis, Memphis, Baton Rouge, and New Orleans). The promotion of a means to address these recreational issues would be within the purview of a national heritage corridor.

Another item that relates to the corridor, primarily mentioned by the southern states, was a serious concern over the loss or degradation of the resource base that supports local recreational opportunities — specifically, the Mississippi River. Degradation of the health of the river would cause severe impacts on the recreational opportunities of the southern states. This could include pollution of the waters fished from, hunted along, swum in, boated on, or picnicked by. This issue is considered, not a potential problem, but a present threat.

Minnesota

Minnesota's population will surpass 5 million by the year 2020, with three of every five new residents being persons of color. The median age will rise from the current 32.5 to 40. By the same year 68% of Minnesotans are expected to reside in the major metropolitan areas of the Twin Cities, Rochester, and Saint Cloud.

Minnesota household size declined from 2.74 to 2.58 persons during the 1980s, and it is

expected to decline further. The median workweek of Americans has grown longer, as real incomes have stagnated for many workers. The Minnesota SCORP outlines high-priority outdoor recreation issues, strategies, and actions to address these long-term demographic and economic trends.

The Minnesota SCORP indicates that integrated, interdisciplinary resource management and recreation planning are needed to ensure a balanced, coordinated, environmentally sustainable approach to meeting the future recreation needs of Minnesotans and their visitors. There is also a need to more clearly identify the appropriate roles and responsibilities of public and private sector providers of outdoor recreation. It will be necessary to forge stronger, more effective partnerships between providers to achieve improved recreation programs, services, and facilities. The SCORP notes that capital investment is crucial for outdoor recreation facilities to meet the growing needs for recreation, especially in fast-growing areas. It says that liability and litigation concerns seriously limit recreation opportunities and increase costs to recreation providers. This could lead to an inadequate supply of outdoor recreation opportunities, especially for some high-risk activities.

An issue that Minnesota shares with other states is that funding constraints are impairing the maintenance of many outdoor recreation facilities. Deterioration of facilities poses liability risks and diminishes the value of facilities and the quality of the recreation experience. In addition, a lack of current information hampers recreation providers' ability to establish effective priorities for the development of facilities and programs.

Wisconsin

Wisconsin residents are active participants in outdoor recreation. More than 78% of the state's population participates in outdoor recreation, and many people participate frequently. Outdoor recreation has been determined to be a desirable component in a person's life, and it has high social value. Participants spend a significant amount of their discretionary income on recreation and would continue to participate in these activities even with a hypothesized doubling of the monthly costs. These individuals have identified user fees as a preferred means of financing outdoor recreation facilities.

Recreational needs along the river corridor as established by the state SCORP include bicycling, camping, canoeing, cross-country skiing trails, fishing, organized sports, playgrounds, tennis, swimming pools, and walking and jogging paths.

Iowa

During the 1980s Iowa's population switched from predominantly rural to predominantly urban, resulting in higher demands for recreational opportunities in urban centers and within short driving distances. Currently there is a trend toward a gradually older Iowa population; therefore, recreation opportunities must be able to meet the needs of more passive leisure time opportunities. At present the most popular outdoor recreation activities are driving for pleasure, fishing, bicycling, hiking, and golfing. Activities that people would like to do more of but could not because recreation areas were limited or unsuitable are fishing, boating, water skiing, camping, and bicycling. Surveys project increasing demands for trail-oriented activities (biking, hiking, all-terrain vehicle use, horseback riding, canoeing, and cross-country skiing), traditional outdoor recreation activities (swimming, camping, and fishing), and sport oriented activities (golf and softball).

Priority outdoor recreation issues for Iowa are the acquisition and development of recreational trails, the protection of urban and rural open spaces, the expansion and maintenance of facilities to meet the existing demand, and the shortage of public forestland for recreation. Other priority issues are the acquisition, development, and management of fisheries

resources; the acquisition of land for public wildlife management areas; and recreation management to prevent degradation of unique areas. Also important are the rehabilitation and renovation of state parks and recreation areas to provide safety, comfort, and convenience for users; increased resource protection on existing public areas to provide continued high-quality recreation experiences; and wildlife management on public lands.

Illinois

Population projections for Illinois call for overall reduced growth in the state but increased aging, racial/ethnic diversity, and urban residence. These trends will mean changing demands for outdoor activities, including the design of facilities and visitor programs, information, marketing, staffing, and staff training. The SCORP also reveals public concern over inadequate funding for conservation and recreation and for the protection of natural resources and wildlife habitat. More recently the public has expressed a desire for more public participation in conservation, recreation planning, and management as well as for conservation education. Other public concerns that have been identified are the protection and enhancement of stream corridors, more greenways and public trails, added greenbelts along highways, a statewide trails plan, expansion of state-managed lands for multiple recreational uses, and more land trusts to cope with open space needs.

Recreational activities with the highest rates of participation are driving for pleasure, walking for pleasure, and picnicking. The rate of participation in golfing and nature-oriented activities is consistently rising. Outdoor pool swimming, outdoor basketball, and off-road vehicle use also increased.

Missouri

Walking for pleasure is the top outdoor activity for 68% of the people in Missouri. The second most popular activity for adults is visiting zoos, fairs, and amusement parks. Other favorite activities are outdoor family gatherings, picnicking, and driving for pleasure. The state will focus on four general categories for development in the next five years: boating facilities, golf courses, campgrounds, and trails. This will include the development of an interconnected system of corridors throughout the state for greenways and nonmotorized trails. The state also wants to assure access to outdoor recreation areas for the economically disadvantaged, senior citizens, and people with disabilities.

River-related outdoor recreation issues determined by the state SCORP are providing for the preservation and environmental protection of rivers, streams, lands, and forests; increasing the education of outdoor recreation users in land ethics; promoting the preservation and restoration of pristine natural settings; and protecting fish and wildlife habitat. Other issues are the preservation of wetlands, the acquisition of more public land, especially for larger natural and wilderness areas, and the establishment of a management plan.

Popular water-based activities in Missouri, in rank order, are fishing, swimming, motorboating, canoeing, water skiing, and nonmotor rowboating. There is a high preference for recreational activities within half an hour's drive from home.

Priorities in the state recreation program are meeting the statewide demand for outdoor recreation, including an expansion of water-based recreation activities; exercising preservation and environmental protection for rivers, streams, lakes, and forests; developing more open space and buffer zones; and land acquisition, including land along rivers, streams, trails, and other amenity areas.

Kentucky

Kentuckians participate in the following outdoor recreation activities most frequently: walking regularly, swimming, fishing, boating, sailing, canoeing, jogging or running,

hiking, and hunting. Kentuckians use their state parks and other public areas and facilities often. Most Kentuckians interviewed said that the most important recreational issue is the protection and preservation of the state's natural resources. Kentuckians also value programs that designate trails or protect unique and natural areas, wild rivers, and archeological sites.

The Kentucky SCORP identified five major issues for action. The state would like to improve recreation opportunities by making a wide variety of outdoor recreation opportunities available, making better use of existing recreation facilities, providing for the recreation needs of the elderly and the physically and mentally handicapped, and developing and distributing information concerning the availability of outdoor recreation opportunities. The state would also like to preserve the state's historical and cultural heritage and to ensure resource protection by preserving the state's natural and environmental integrity.

Limited funding for outdoor recreation is a problem that the state would like to address by maximizing the use of existing funding resources for recreation, supporting other worthy funding possibilities, and promoting the effective and efficient use of existing resources for recreation. The promotion of tourism is needed, and the state would like to evaluate and promote the recreation opportunities that are associated with tourism. The state also wants to encourage cooperation and coordination among recreation providers. Included in this would be increasing and promoting coordination and defining roles among the various federal, state, regional, local and private agencies that are responsible for planning, programming, and implementing recreation facilities and opportunities.

Tennessee

Tennesseans spend an average of 10 hours per week recreating. The most popular recreation activities are swimming, fishing, camping, running/jogging/walking, observing nature, pleasure driving, visiting cultural centers, and visiting zoos. Driving for pleasure and observing nature have recently gained in popularity, which may mean that Tennessee should consider improving its scenic parkway system, which connects many recreation areas in the state.

The population of the state is aging, and more passive senior recreation programming will be needed, including the development of more RV/trailer camping sites, restaurants, nature centers, and inns in the state parks. Special populations are growing, and they need more sports facilities, fishing opportunities, swimming pools, zoos, picnicking areas, and jogging and walking paths. These facilities also should be close to home and financially accessible.

Tennessee has recognized the following priority issues related to public recreation areas: identifying and mitigating threats to natural resources that adversely affect the quality of recreation, increasing the delivery and quality of recreation services at the local level, and increasing federal, state, and local government funding for recreation. The state Conservation Strategic Plan focuses on the first of these issues, saying that "Emphasis will be placed upon securing adequate boundary control for existing Department lands including the consideration of high priority inholding and buffer land acquisition."

Arkansas

Arkansans' participation in most outdoor activities is higher than the national average, and they hunt three times more than the national average. Hunting and fishing are a great economic benefit to the state — revenue is gained through the purchase of licenses, equipment, and accessories. People are more wellness-inclined; activities such as walking for pleasure, jogging, aerobics, and soccer are increasing. The state population is aging; this fact should be incorporated into future outdoor recreation plans. The needs of select populations, such as African-Americans, need

to be addressed in the planning of areas as well. The recreational activities most frequently participated in are walking for pleasure, fishing, driving for pleasure, picnicking, and swimming.

Mississippi

Outdoor recreation holds a very important place in the daily lives of most Mississippians; they spend an average of 26 hours per week on leisure activities. Activities that are popular at present focus on more active, rather than passive, outdoor recreation; this includes jogging, running, and walking for exercise. Hunting and fishing are also immensely popular activities in Mississippi.

The present recreational concerns of the public are better maintenance, additional new facilities, improved existing facilities, additional swimming and beach facilities, more youth programs, more senior citizen facilities and programs, and more facilities for persons with disabilities. There is also great concern over the shrinking availability of public hunting and fishing access. Economic pressures have increased the cost of leasing hunting and fishing areas, and vast amounts of land previously available to Mississippians are being leased by out-of-state clubs and taken out of public use.

Louisiana

Louisiana has long been considered a sportsman's paradise because of its millions of acres of fertile marshes and swamps, which provide some of the best hunting and fishing in the nation. Recently, however, the state has been losing the very resources that gave it this title. The state's faltering economic condition has resulted in an unemployment rate among the highest in the nation. Drastic cutbacks in government programs, especially in recreation, were necessary; this resulted in difficulty in maintaining even minimal services, and some areas have been closed. The state is also losing approximately 50 square miles of coastal wetlands each year to erosion; however, efforts are underway to reverse this trend.

The two highest priority recreation issues in Louisiana are funding and the protection of resources. Issues related to the latter are (a) more emphasis on the protection of the state's unique natural resources — its streams, rivers, and lakes and its offshore fisheries, (b) the development of plans to better utilize the state's wildlife management areas and refuges for recreation, (c) acquisition of more parklands around cities to meet growing demands (two of the state's largest urban areas are in the corridor).

The following factors will influence recreation in Louisiana in the future: Louisianans are, on the average, getting older; economic recession and high unemployment will force people to use recreation facilities that are close to home and inexpensive; interest in fitness is continuing and traditional public recreation facilities need to consider the demand for fitness-related activities; and recreation such as hunting, fishing, camping, and hiking continue to be popular, but the state's natural resources that support these activities are diminishing.

NATIONAL PARKS AND MONUMENTS

In 1972 Congress designated the 52-mile-long Lower Saint Croix River in Wisconsin as a component of the national park system. The National Park Service administers the Lower Saint Croix between Taylors Falls and Stillwater; the states of Wisconsin and Minnesota administer the portion between Stillwater and Prescott. The upper 10.3 miles of the river (between Taylors Falls and the Chisago-Washington County line) is classified as a scenic river; the rest of the Lower Saint Croix is classified as a recreational river.

Effigy Mounds National Monument was established in 1949 near McGregor, Iowa. Much of the park's 1,244 acres contain prehistoric Indian mounds. Although only minimal facilities are provided for water-related activities,

the park attracts many people to the area. A southern extension of Effigy Mounds National Monument at Sny McGill Creek is undeveloped but offers river access through Sny McGill Landing (operated by the Iowa Natural Resources Commission).

The Jefferson National Expansion Memorial in Saint Louis, which was established in 1935, commemorates the westward growth of the United States between 1803 and 1890. It is a monument to Thomas Jefferson and the Louisiana Purchase and to the countless pioneers who settled the West. The monument itself, a soaring arch 630 feet high, was designed by Eero Saarinen in 1947. It was completed in 1965. A 100-acre addition in East Saint Louis, Illinois, across the river, has been authorized by Congress, but the land for the addition has not been purchased.

In Louisiana, Jean Lafitte National Historical Park and Preserve was named after a near-legendary local resident. The park was established to interpret and preserve the cultural diversity, heritage, and history associated with the Mississippi Delta region of Louisiana. In addition to celebrating the rich ethnic blends in the region, the park also functions as a study center for the area history and the wetlands environment.

The Vicksburg National Military Park in Vicksburg, Mississippi, was the site of a pivotal Civil War siege that resulted in reopening the Mississippi to the Union and severing the Confederacy.

The Mississippi National River and Recreation Area in Minnesota was created by Congress in 1988 for the purpose of preserving, protecting, and enhancing the significant values of the Mississippi River. The 22-member Mississippi River Coordinating Commission was established to assist federal, state, and local authorities in the development and implementation of a plan for the river and its environs.

The Arkansas Post National Memorial in Gillett, Arkansas, was established by Henri de Tonti. This was the first successful French settlement in the Lower Mississippi valley.

The Natchez Trace Parkway is one of the nation's great scenic parkways. Established in 1934, it traverses long stretches of scenic and historic rural landscape between Nashville, Tennessee, and Natchez, Mississippi. The parkway follows the early 19th century route that connected the old Southwest to the rest of the country.

Natchez National Historical Park in is in Natchez, Mississippi, where one of the best preserved concentrations of significant antebellum properties can be found. European settlement of Natchez began with a French trading post in 1714. Natchez was a commercial, cultural, and social center of the South's "cotton belt" before the Civil War. Within the park is Melrose, an excellent example of a planter's home, along with the home of William Johnson, a prominent free black who lived in Natchez during the antebellum area.

Ulysses S. Grant National Historic Site, near Saint Louis, was established in June 1990 to "preserve and interpret for all Americans a key property associated with the life of . . . President Grant and the life of Julia Dent Grant." The property, known as White Haven, is 10 acres of what was a 1,000-acre farm that belonged to Julia's family and later to General Grant. The historic site contains a plantation house, a barn, and other outbuildings. The buildings are being preserved and stabilized. When funds permit, they will be restored to their appearance during Grant's time. The site is open to the public and guided tours are available.

INTERPRETATION

All the states along the river offer interpretive opportunities for visitors, as described in the previous pages (see map of Visitor Centers, Museums, and Interpretive Centers). Table 6 is a general, representative listing of where the 12 primary interpretive themes are being presented to the public. The 12 primary inter-

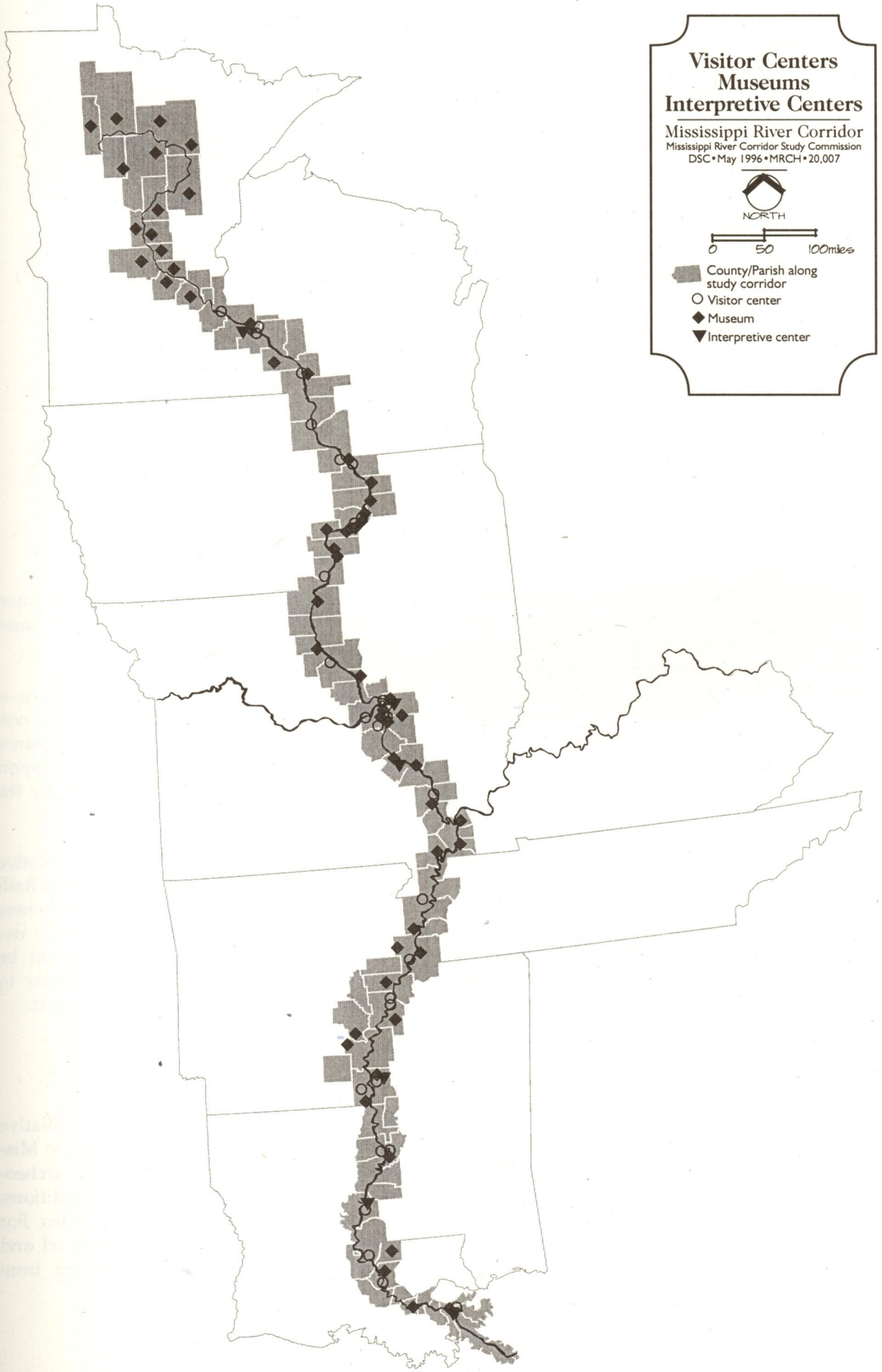

Visitor Centers
Museums
Interpretive Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,007
NORTH
0
50
100miles
County/Parish along study corridor
Visitor center
Museum
Interpretive center

TABLE 6: INTERPRETIVE THEMES PRESENTED IN MISSISSIPPI RIVER CORRIDOR

	Number of Sites Where Presented	
Theme Number and Topic	Federal and State Parks, Federal Refuges	Federal, State, or Private Museums/Visitor Centers/ Interpretation Centers
1. Ecology	30	4
2. Biodiversity	9	2
3. Resource problems	5	0
4. Culture	11	18
5. Literature/Art/Music	2	9
6. History/Prehistory	23	48
7. Architecture	1	1
8. Recreation/Scenery	34	32
9. Transportation	2	4
10. Navigation	0	2
11. Urban Development	1	3
12. Industry	1	2

pretive themes of the river are presented in a variety of visitor centers, museums, and interpretive displays and programs and are represented by a number of cultural and natural resources (see group of maps showing where themes are represented). But interpretation generally suffers from a lack of context and connection to the river.

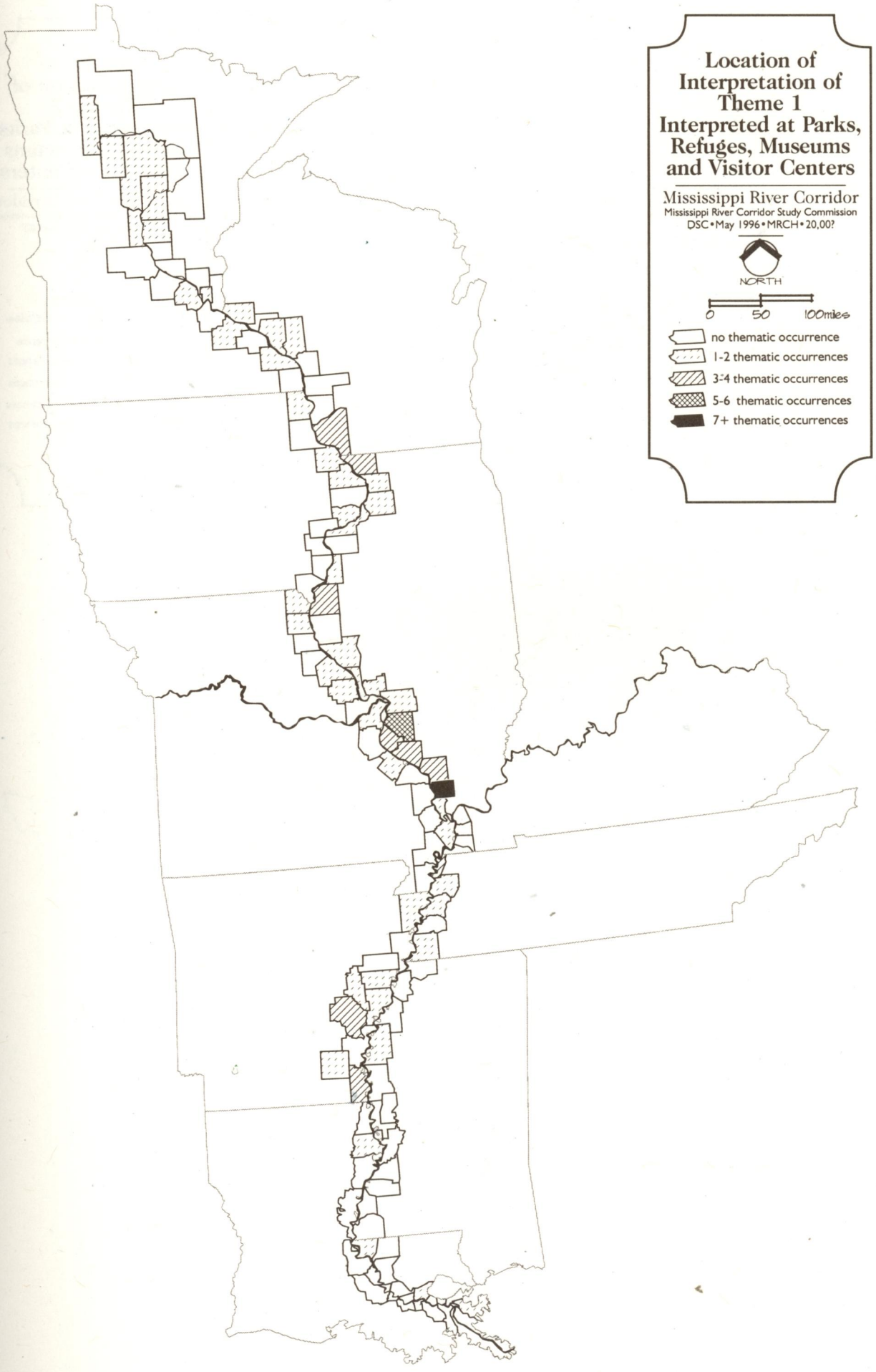
Local or regional museums provide excellent interpretive programming on limited topics, but often they do not have the staff or funding to focus on the river as a whole. And there is no single source of comprehensive information about Mississippi River interpretive and educational opportunities. This is not meant to detract from the many outstanding opportunities for interpretation that exist within the corridor. The quality of interpretation offered throughout the corridor is high. This is highlighted by such sites as Itasca State Park, the Dubuque River Museum, historic Hannibal, Cahokia Mounds, the Waterways Experiment Station, and the Delta Cultural Center. Outstanding festivals like the King Biscuit Blues Festival and Mardi Gras allow visitors to experience Mississippi River culture first hand. Federal areas, including national park areas, federal wildlife refuges, and Corps of Engineers sites, provide interpretation about many of the river's most important themes.

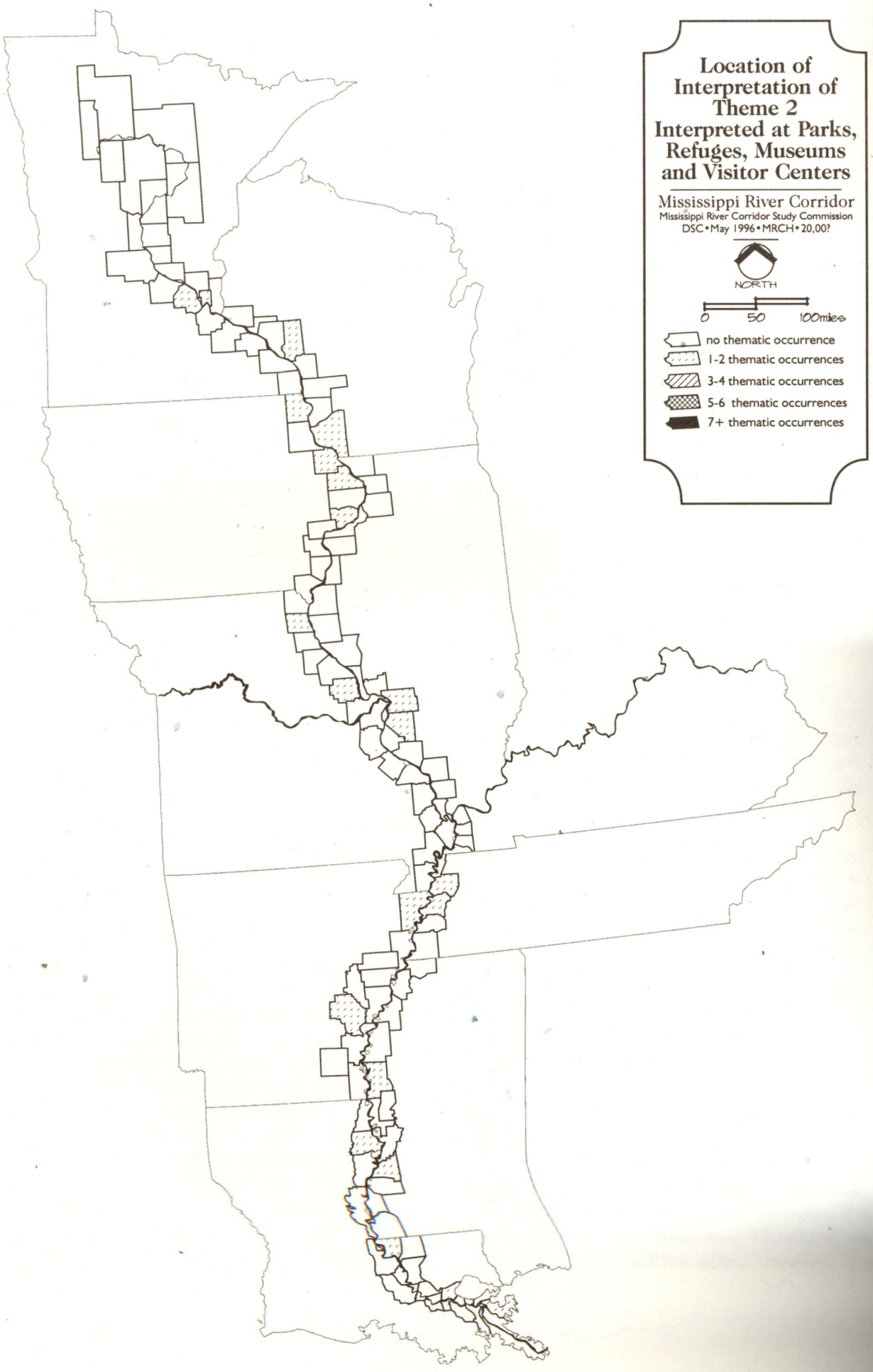
However, a review of the nature and scope of interpretation in the corridor points to a notable lack of interpretation of natural features, architecture, and river industry and transportation. History, culture, and recreation are the themes most frequently presented.

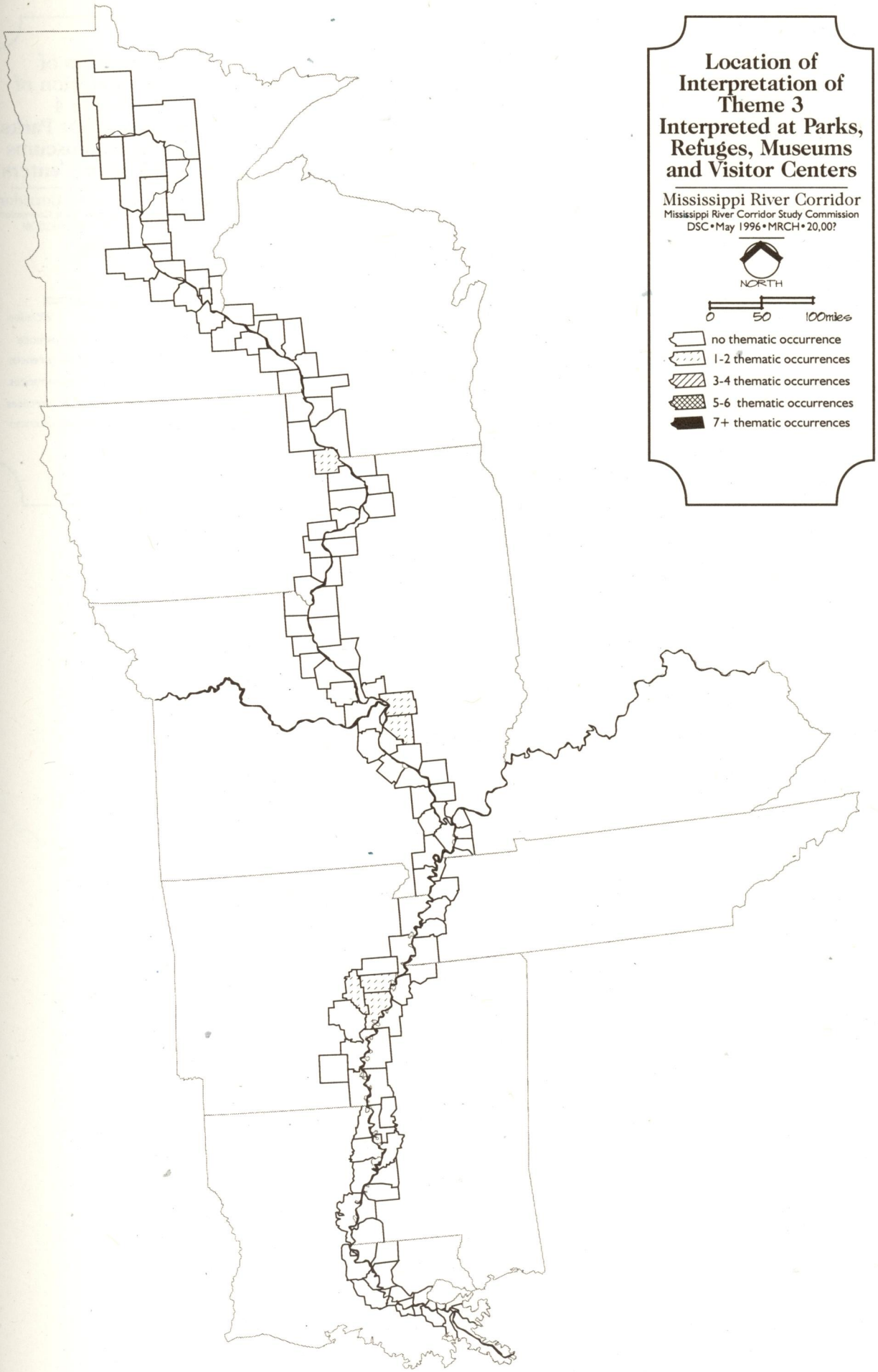
The three topics discussed below (Native American heritage, the Underground Railroad, and the blues) exemplify areas where cohesive interpretive programs could be developed. Programs such as these could be fostered by a national heritage corridor to present the themes in a river-long context.

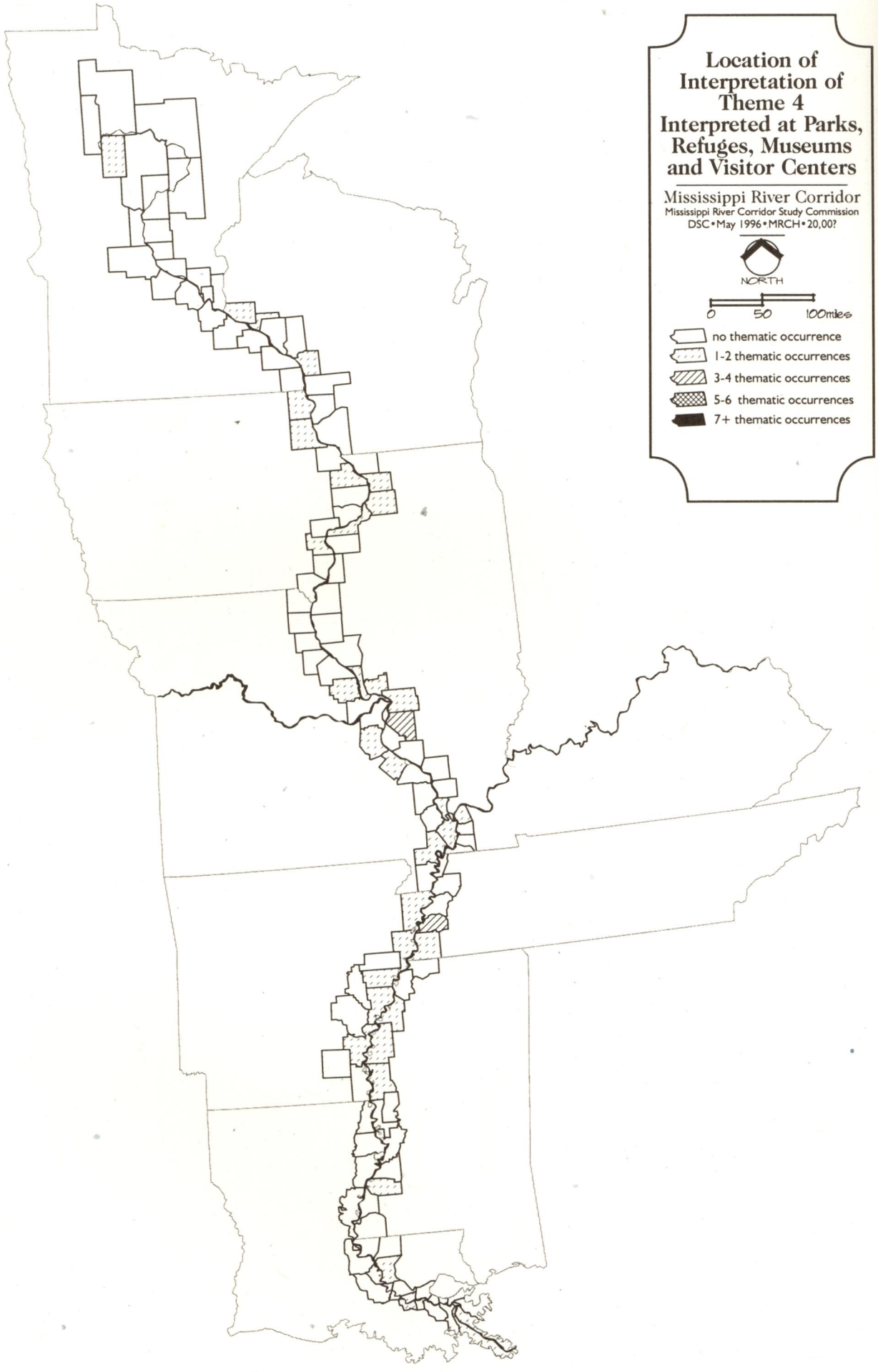
Native American Heritage

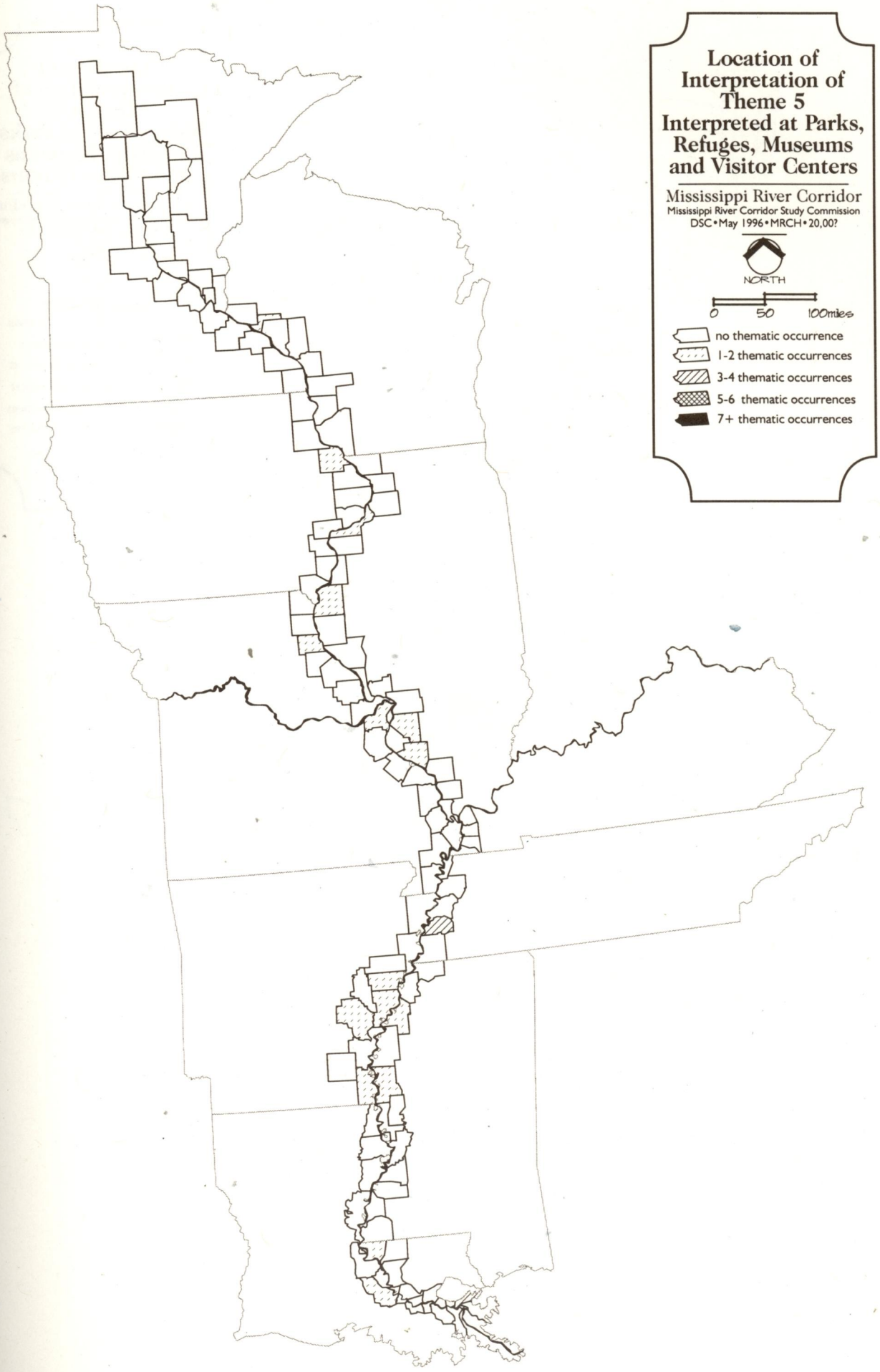
There are various sites related to Native American cultures and history along the Mississippi River. Prehistoric and historic archeological sites of different periods, traditions, and cultures are present in all 10 states. For example, there are numerous Woodland and Mississippian tradition sites, ranging from

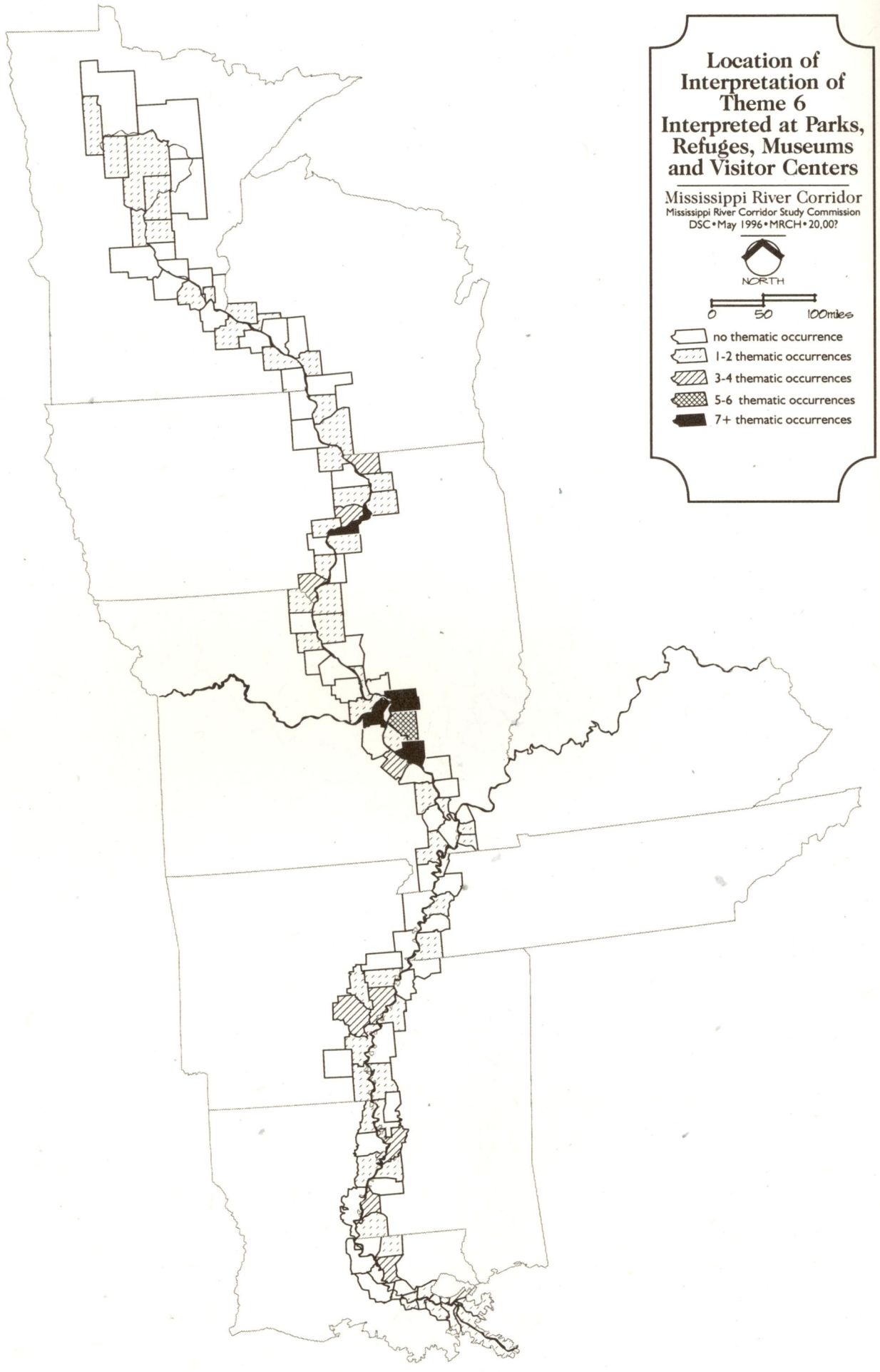

Location of Interpretation of Theme 1 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
0 50 100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences

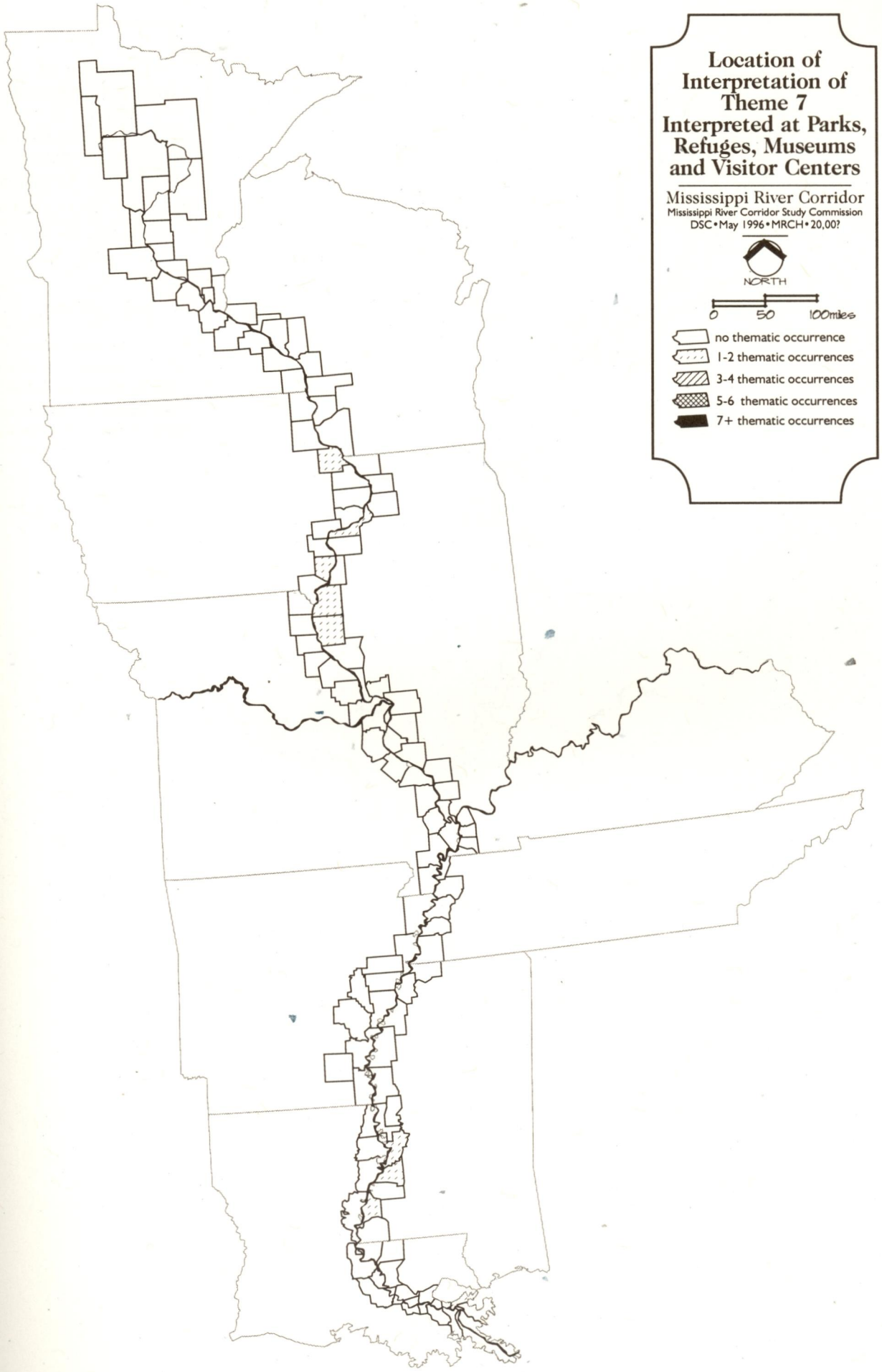

Location of Interpretation of Theme 2 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
0 50 100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences

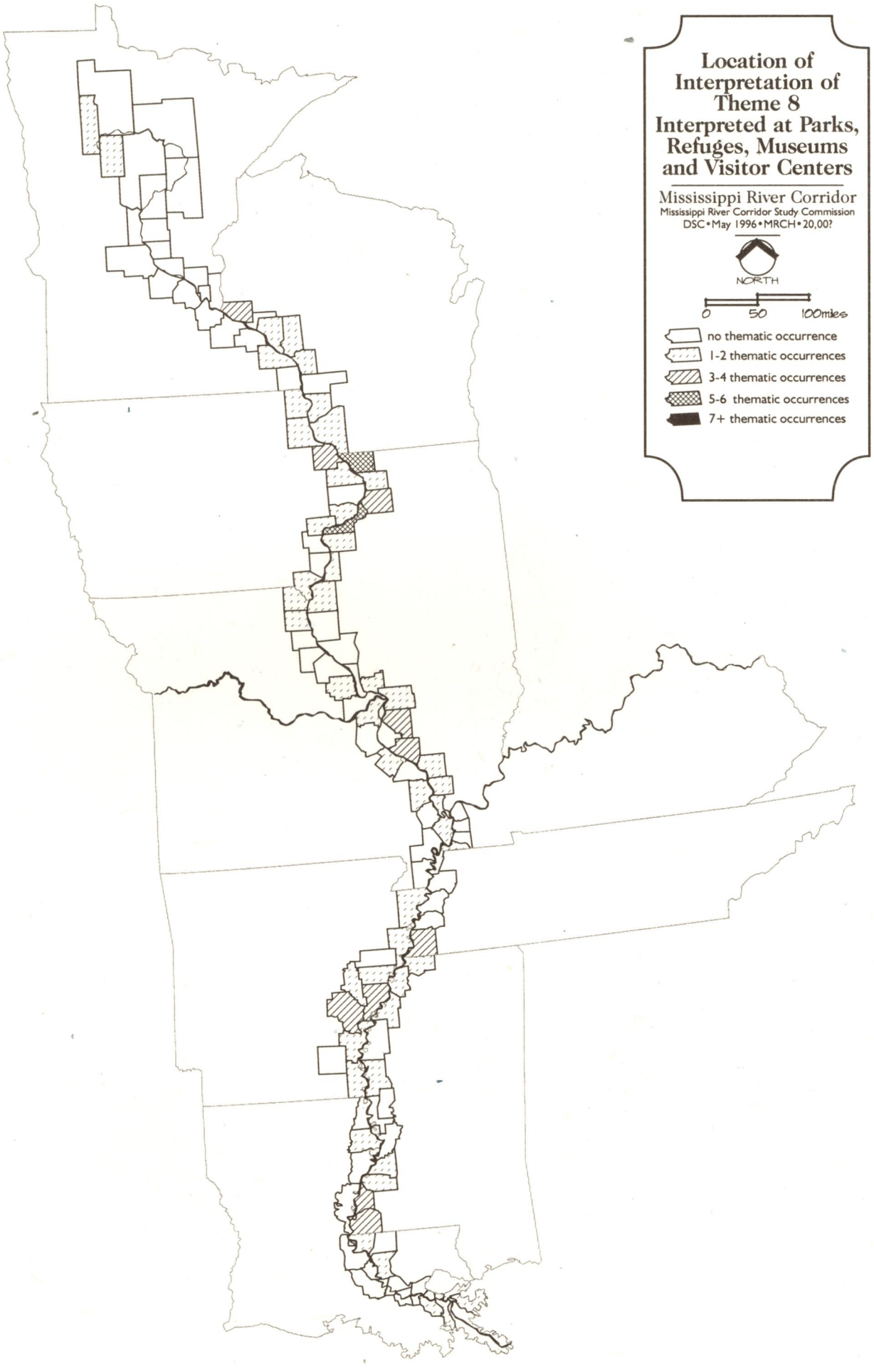

Location of Interpretation of Theme 3 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
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100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences

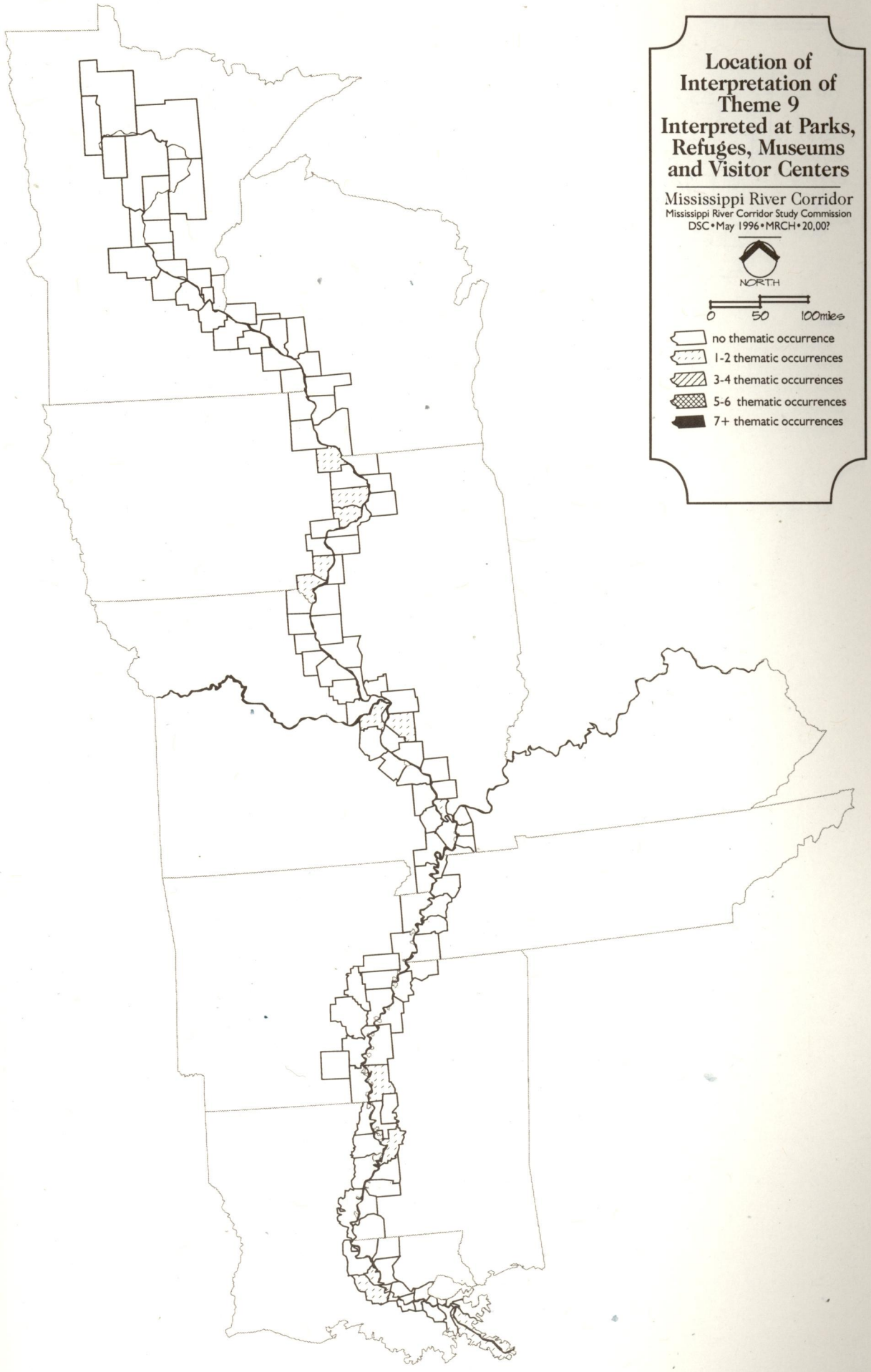

Location of Interpretation of Theme 4 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
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100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences


Location of Interpretation of Theme 5 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
0 50 100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences

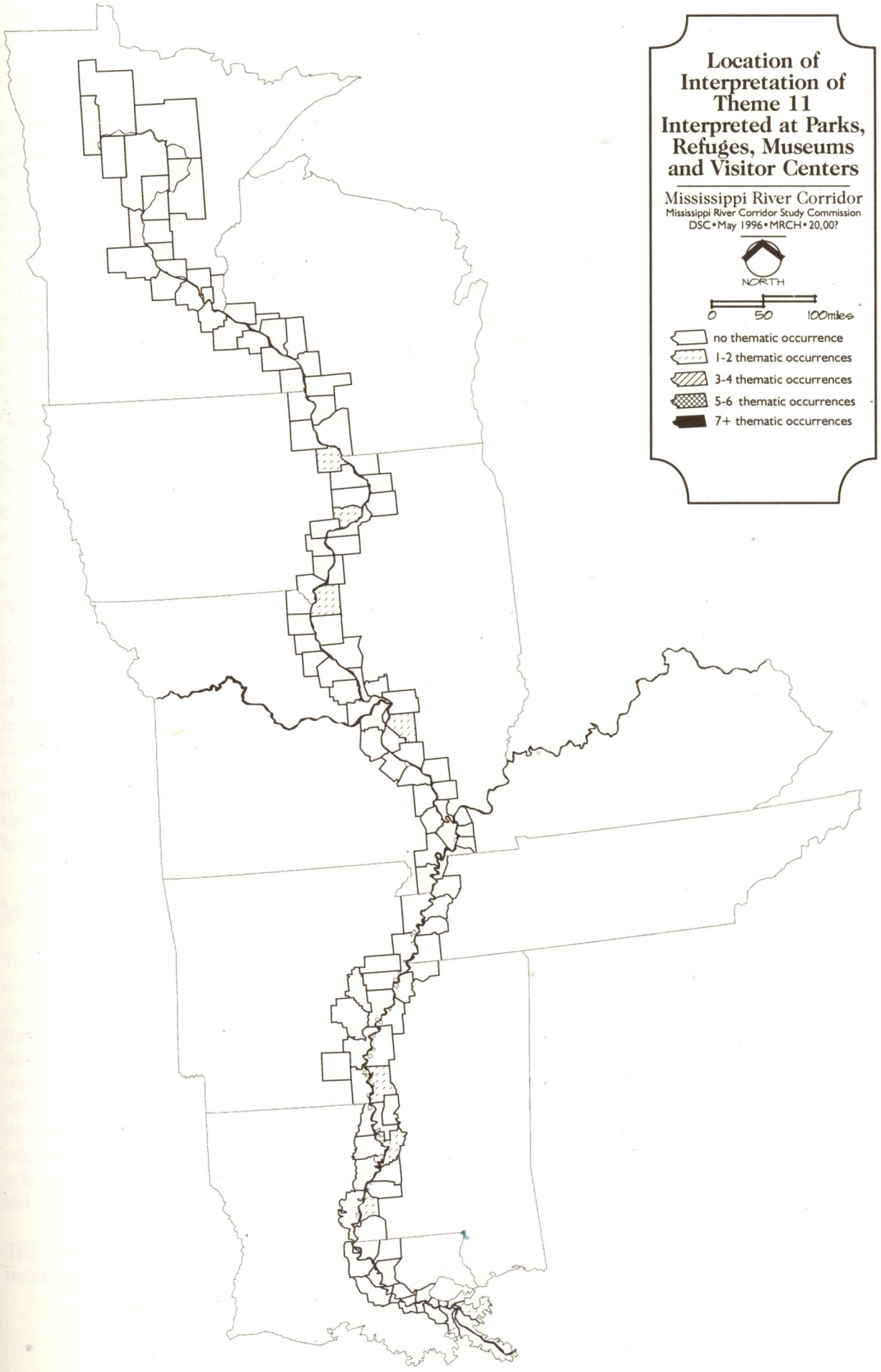

Location of Interpretation of Theme 6 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
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100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences

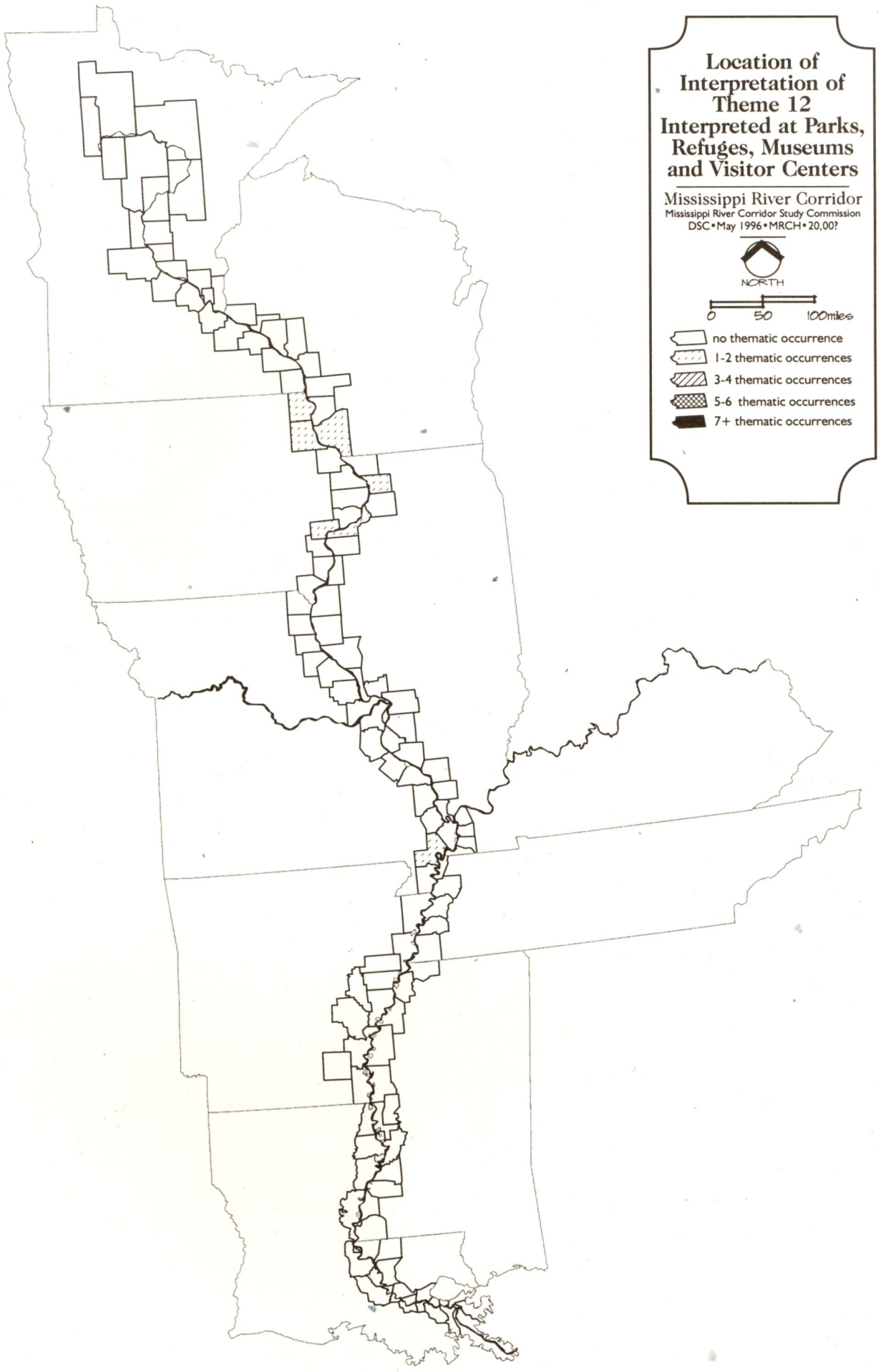

Location of Interpretation of Theme 7 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
0 50 100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences


Location of Interpretation of Theme 8 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
0
50
100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences


Location of Interpretation of Theme 9 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
0
50
100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences


Location of Interpretation of Theme 10 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
0
50
100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences


Location of Interpretation of Theme 11 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,00?
NORTH
0 50 100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences


Location of Interpretation of Theme 12 Interpreted at Parks, Refuges, Museums and Visitor Centers
Mississippi River Corridor
Mississippi River Corridor Study Commission
DSC • May 1996 • MRCH • 20,007
NORTH
0 50 100miles
no thematic occurrence
1-2 thematic occurrences
3-4 thematic occurrences
5-6 thematic occurrences
7+ thematic occurrences

Poverty Point in Louisiana to the Grand Village and Emerald Mound of the Natchez in Mississippi, to the Cahokia Mound in Illinois, to the Effigy Mounds of Iowa. There are sites associated with the historic dislocation of tribes, including the Trail of Tears. Some of these sites have interpretation and education facilities and programs open to visitors.

There also are other ways for visitors to learn about the Mississippi River's Native American heritage. Various historical societies and museums along the river have collections of Native American artifacts, display artistic renderings of tribal life, or interpret the histories of local tribes. However, it is difficult for visitors to find these sites, to sense what tribal life was like in historic times, to comprehend the evolution of Native American cultures and traditions, to trace the myriad government policies concerning the different tribes, or to appreciate the vast contributions that Native Americans made to modern society.

Interpretation of the Native American heritage in the Mississippi River valley could be strengthened in many ways. A variety of resources are available to highlight this aspect of river history. A Mississippi River National Heritage Corridor help coordinate the work of various museums, state and federal agencies, and historical societies to provide a broad view over geography and time.

The Underground Railroad

The Underground Railroad was a protest action against slavery. The clandestine operation, beginning in the colonial period, reached its peak between 1830 and 1865, when large numbers of enslaved people received assistance in reaching freedom in the northern states, Canada, and the Caribbean. The Underground Railroad, which lacked a formal organization and operation, relied upon the efforts of interracial groups and individuals to aid in escapes from slavery.

The Mississippi and Ohio Rivers played a major role in the mythology and reality of slave escapes. A successful crossing of the Ohio meant a fugitive had reached freedom. The Mississippi could be a route to disaster or to freedom. Being "sold down the river" to work in the Deep South made life and escape much more difficult. But river craft worked their way south to the Caribbean as well as north on the river, offering a stowaway a trip to freedom in either direction.

There are various sites along the Mississippi River that illustrate the Underground Railroad story and its historical context. The Melrose Plantation outside Natchitoches, Mississippi; the Oak Alley Plantation in Vacherie, Louisiana; the San Francisco Plantation in Reserve, Louisiana; and the Melrose Estate in Natchez, Mississippi, are nationally significant historic landmarks from the antebellum period. Natchez contains a nationally known collection of antebellum estates, as well as the home of William Johnson, a member of the free black community before the Civil War. There are many other plantation sites in the counties and parishes of Mississippi and Louisiana as well. Time spent at these sites would help visitors learn about the social, legal, political, and human aspects of the slavery system.

As visitors travel north, they can follow documented escape routes both on and alongside the river. They can visit communities through which escape routes passed and learn more about African-American history. In Saint Louis, for example, people can visit the Old Courthouse where Dred Scott first tried to acquire his freedom. Routes lead to Chicago and on into Ontario; there are sites and other resources along the way. The same holds true for people traveling south along the river. As they travel into New Orleans, people can learn of the slave market and the free black community there, both the largest in the United States before the war.

It is possible to interpret the Underground Railroad story along the Mississippi River using a variety of resources. These include nationally significant landmarks, national register properties, National Park Service

areas, landscape features, and extant communities, in addition to libraries, museums, archives, exhibits, and publications. A Mississippi River Heritage Corridor could help coordinate various state and federal agencies and individual owners to give meaning to one of the greatest protest movements ever undertaken.

The Blues

The blues were born somewhere in the Mississippi Delta. Maybe it was along Route 61 in Mississippi somewhere between Memphis and Baton Rouge. Maybe it was at a crossroads, or in a cotton field, or on the banks of the Mississippi. The parents of the blues were African and European musical practices — a mixing of ballads, field hollers, work songs, spirituals, harmonies, rhythms, and vocal techniques coming together as an expression of African American culture in the United States in the late 1800s. The blues were started by rural black people who were born after slavery but who were living with slavery's legacy; thus, blues music, through its evolution and spread throughout the nation, commemorates the history of African Americans in the United States.

Travelers along the Great River Road through the Mississippi Delta cannot help being affected by the physical beauty of the birthplace of the blues. Billowy clouds and blue sky, green fields and muddy water, open views and flat landscape all contribute to the history, the meaning, the feeling, the culture of the blues. Visitors and natives alike can use all their senses when learning about this unique musical tradition in its past and present forms.

The Delta Blues Museum in Clarksdale, Mississippi, provides an introduction and an orientation to the music and its history. From here, visitors can learn of the past through the recordings of Blind Lemon Jefferson, Bessie Smith, John Lee Hooker, Leadbelly, Muddy Waters, Alberta Hunter, Big Jack Johnson, Willie Dixon, Bo Diddley, Howling Wolf, Sonny Boy Williamson, Ma Rainey, Son House, Elmore James, and Ethel Waters. Visitors can then move on to hear the present at the Mississippi Delta Blues Festival in Greenville, Mississippi, or by spending an evening at a juke joint.

By following the Mississippi River and its tributaries up and out of the Mississippi Delta, visitors can follow the historic migration of the blues out of the deep south and into other areas where it was transformed, and where it would transform popular American music: East Texas with its prison work songs, the Piedmont with its folk traditions, the dance bands of New Orleans, the piano and guitar players of Decatur Street in Atlanta, the jug bands of Memphis, ragtime and piano traditions in Saint Louis, the blues-jazz fusion in Kansas City, and race records in Chicago. One can even follow the blues across the Atlantic into Europe and Great Britain, as well as across the Pacific into Japan.

It is also possible to trace the blues influence through the generations, from the older black working classes to a white middle-class generation weaned on Elvis Presley, the Beatles, the Rolling Stones, Johnny Winter, Eric Clapton, John Mayall, Eric Burdon, Bonnie Raitt, and other musicians who paid homage through their interpretations of the blues and blues-influenced rock and roll.

> I went to the crossroad, fell down on my knee,
> Went to the crossroad, fell down on my knee,
> Asked the Lord above to have mercy,
> save poor Bob if you please.
>
> — Robert Johnson, "Crossroad Blues"
> (quoted in Barlow, *"Looking Up at Down,"* 49)

Interpretation of blues music can follow many different avenues, including historical, cultural, generational, experiential, participatory, and sensory. Considering the profound influence of this music, there is a surprising lack of available knowledge and information about its origins, its history, and its power to cross class, race, generation, and gender lines.

Interpretation of blues music in the Mississippi Delta and beyond could be strengthened in many ways. Travel and interpretive guides to blues history, evolution, and present-day performances and recordings would highlight this aspect of Mississippi River history. A Mississippi River Heritage Corridor could work cooperatively with various museums, blues music venues and festivals, musicians, and historical societies to provide a blues experience that would touch the soul and the spirit, as well as the mind.

EXISTING RIVER MANAGEMENT ENTITIES

Hundreds of organizations and government entities are concerned with issues in the Mississippi River corridor. Many of them offer services to preserve and enhance its resources and the quality of life of its inhabitants. It is not the purpose of a national heritage corridor to replace these organizations, to manage land and resources, or to regulate activities. What is needed, as is indicated by this discussion, is a means for facilitation, communication, and coordination between existing entities so that they can share insights and visions and seek information that will help them do their jobs better.

Despite the Mississippi River's significance, coordination of issues along the corridor has been difficult to achieve. The river's geography is the source of its problems. Since it flows through or forms the boundaries of 10 states, the river is often ignored, or responsibility for it is ill-defined. Its many uses often compete, as do federal and state programs and efforts. In addition to government agencies and programs, there is a plethora of quasi-governmental commissions, associations, and city and county governments.

The existing management authorities affecting the river consist of federal agencies, interstate compacts, and state, regional, and local entities (cities and counties). The most geographically extensive efforts are those of the Corps of Engineers, the U.S. Fish and Wildlife Service, the Mississippi River Parkway Commission, the Upper Mississippi River Basin Association, the Upper Mississippi River Conservation Committee, and the newly formed Lower Mississippi Conservation Committee. There are also interstate or large regional efforts such as the Lower Mississippi Delta Commission, the Minnesota-Wisconsin Boundary Commission, and the Mississippi Headwaters Board. There are state management efforts throughout the corridor; however, only Wisconsin and Minnesota engage in efforts specifically directed toward the natural resources of the river corridor. Some of the most effective activity is occurring through regional, local, or voluntary efforts. Some examples of local activities are the Alton Lake Heritage Parkway Commission, the Mississippi Headwaters Board, and the municipal riverfront redevelopment efforts in Saint Louis, Quincy, Davenport, New Orleans, Saint Paul, Minneapolis, and Vicksburg.

The flood of 1993 brought into focus many of the scattered, uncoordinated, and conflicting efforts, and considerable discussion of the issue has taken place in the press, in scientific journals, at various levels of government, and among the public. As a result of numerous issues regarding the river, there has been an increase in attempts to coordinate efforts and programs at all levels. The most recent example is *Sharing the Challenge: Floodplain Management into the 21st Century* (Interagency Floodplain Mgmt. Rvw. Comm. 1994). In its report the Interagency Floodplain Management Review Committee found in the upper Mississippi River Basin a unique pattern of individually authorized federal flood control projects and levees built by local groups and individuals.

The committee proposes a plan to identify and evaluate needs in the basin, ensure integrity in flood damage reduction projects, and restore natural floodplain functions where appropriate. This would be done within a larger national approach to floodplain management. A new national floodplain management program is proposed that would have principal responsibility and accountability at the state level. The committee also proposes revitalization of the federal Water Resources Council to coordinate federal activities, limited restoration of some basin commissions for basinwide planning, and requirements through executive order for federal agencies to follow floodplain management principles in execution of their programs.

In a recent report, *Restoring the Big River: A Clean Water Act: Blueprint for the Mississippi,*

published by the Izaak Walton League and the Natural Resources Defense Council, special designation under the Clean Water Act is proposed for the Mississippi River to facilitate a more coordinated watershed approach to protection and restoration of the river (Robinson and Marks 1994).

In "Facing the Threat: An Ecosystem Management Strategy for the Upper Mississippi River System," the Upper Mississippi River Conservation Committee said, "While many government agencies and organizations are responsible for some aspect of Mississippi management, no organization has either the authority or the responsibility to save this degrading ecosystem. A resource as complex as the Mississippi River cannot be successfully managed in bits and pieces" (Upper Miss. River Cons. Comm. 1993). To address this fragmented approach, the report proposes coordinated federal policies in tune with an adopted comprehensive ecosystem management approach, along with management strategies for watershed management, floodplain management, and the protection, enhancement, and restoration of wildlife habitat. The report proposes a "river council" to manage the ecosystem.

In 1990 the Lower Mississippi Delta Development Commission submitted to the president a report entitled *The Delta Initiatives: Realizing the Dream, Fulfilling the Potential*. The commission was formed to address sweeping social and economic conditions of the depressed Delta states. In addition to recommendations on health, education, and general economic development, the commission recommended enhancement of tourism that would take advantage of the significant cultural and natural resources of the Delta. Many of the commission's recommendations would be addressed through heritage corridor designation.

FEDERAL AGENCIES AND COMMISSIONS

The five principal federal entities that affect the river are the U.S. Army Corps of Engineers; the U.S. Fish and Wildlife Service, the U.S. Department of the Interior; the U.S. Environmental Protection Agency; the U.S. Coast Guard, the U.S. Department of Transportation; and the U.S. Department of Agriculture. The various federal agencies often have conflicting mandates and management objectives. For example, the Corps of Engineers' mission to facilitate commercial navigation is often cited as being in conflict with the mission of the U.S. Fish and Wildlife Service, which is to manage refuges and to protect and restore habitat. Department of Agriculture subsidies may have the indirect effect of encouraging the destruction of wetlands, wildlife habitat, or bottomland forests. However, significant cooperation between the agencies exists through such programs as environmental management projects.

Among the many federal laws that affect the river are the Upper Mississippi River Wildlife and Fish Refuge Act of 1924, the Rivers and Harbors Act of 1930, the Fish and Wildlife Coordination of 1958, the Federal Water Pollution Control Act Amendments of 1972, the Water Resources Development Act of 1986, the Clean Water Act, the Safe Drinking Water Act, and the Flood Control Act of 1928. From these laws and others, planning, regulation, and management involve at least 20 agencies, from federal to local, with jurisdiction over 33 different functional areas of activity on the river. In addition, there are perhaps hundreds of federal programs that directly or indirectly affect the river. Often these programs have conflicting aims. Earlier attempts at comprehensive planning for the Mississippi River were the Great River Environmental Action Team (GREAT) studies in the 1970s and the subsequent establishment of interagency forums to address selected river resource issues (Up. Miss. Riv. Cons. Comm. 1993).

U.S. Army Corps of Engineers

The Corps of Engineers is a major command of the United States Army. It is composed of about 40,000 civilian and 600 military team members, including some 14,000 engineers

and scientists. As part of the Army, the Corps directly supports the Army during deployment and conflict. The Corps' capabilities are an essential part of the Army's ability to deter and respond to hostilities as well as to promote peace. Civil works is the other side of the Corps profile. In addition to its role in defending the nation, it has also been a nation builder — especially in the arena of water resource development.

The Corps has a long history that began in 1775 when George Washington appointed Col. Richard Gridley to be the first chief engineer. Gridley oversaw the construction of fortifications near Boston at Bunker Hill. The United States Military Academy at West Point, founded in 1802, was the nation's first engineering school.

The Corps' vast civil works program includes 12,000 miles of commercial waterways that carry 600 million tons of commerce annually, some 200 locks and dams, 541 reservoirs, and thousands of miles of levees, channels, floodways, and floodwalls. The Corps also has built 4,300 recreation areas at 463 projects that annually attract 400 million visitors, and it is responsible for one-third of the nation's hydropower generation.

The Corps conducts an extensive regulatory program that helps preserve the nation's waters and wetlands, and it is a key player in responding to natural disasters and other emergencies. It also does work for other agencies such as supervising the construction of wastewater treatment plants, cleaning up hazardous and toxic wastes, and designing and building space launch facilities. In addition, the Corps conducts a fast-growing environmental restoration program at current and former Army and Air Force installations.

United States Fish and Wildlife Service

The U.S. Fish and Wildlife Service was established in 1871 as the Bureau of Fisheries under the Department of Commerce. It was later combined with Department of Agriculture's Bureau of Biological Survey. In 1939 it was transferred to the Department of the Interior. The service's objectives are to assist in the development and application of an environmental stewardship ethic for our society that is based on ecological principles, scientific knowledge, and a sense of moral responsibility; to guide the conservation, development, and management of the nation's fish and wildlife resources; and to administer a national program to provide opportunities for the public to understand, appreciate, and wisely use fish and wildlife resources. These objectives support the service's mission of conserving, enhancing, and protecting fish and wildlife and their habitats for the continuing benefit of people (see "Wildlife Refuges" in the "Natural Resources" chapter).

National Park Service

The National Park Service was established by the National Park Service organic act of August 26, 1916, to administer and maintain areas included in the national park system. The purpose and mandate of the Park Service was stated in the enabling legislation:

> The service . . . shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations . . . by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

Since establishment of the National Park Service, several acts, executive orders, and proclamations have added areas to the system and expanded activities of the service. As of 1993 the system consisted of 367 national parks, monuments, memorials, parkways, seashores, and recreation areas, and some 19,000 employees were stationed throughout the country.

The National Park Service is organized on a decentralized basis, with a headquarters office

in Washington, D.C., ten regional offices, two professional support centers, and satellite offices. The Mississippi River lies within three regions; the Midwest, Southeast and Southwest. The parks are under the supervision of superintendents, who report to the regional directors, who, in turn, report to the director of the National Park Service. The two professional support centers — the Denver Service Center and the Harpers Ferry Center — are under the supervision of assistant directors. Considerable autonomy is granted, by delegation of authority, to the major elements of the field organization. National parks and monuments in the corridor are listed on page 87.

United States Coast Guard

The U.S. Coast Guard, part of the U.S. Department of Transportation, maintains a strong presence and exercises wide-ranging jurisdiction over the navigable portions of the inland river system, including the Mississippi River and its tributaries. The Coast Guard and its predecessor agencies have provided navigation, safety, and law enforcement services on the rivers for more than 150 years. Primarily, the Coast Guard regulates and supports commercial navigation and environmental protection activities. Coast Guard buoy tenders mark the constantly shifting navigation channels while other units maintain 42 VHF-FM radio transmission sites to facilitate communication with commercial and recreational vessel operators.

Coast Guard personnel inspect and certify passenger vessels, tank barges, and marine transportation related facilities to enforce safety and pollution prevention requirements. The Coast Guard investigates marine accidents and equipment casualties and, in conjunction with the U.S. Environmental Protection Agency and the states, responds to and investigates marine oil spills and hazardous material incidents. Other areas of Coast Guard responsibility are national security, recreational boating safety, disaster response, and regulation of bridges over navigable waterways. The Coast Guard also is the principal federal law enforcement agency on the rivers and plays a major role in coordinating preparedness planning activities with other federal, state, and local emergency response agencies.

National Biological Service

The National Biological Service (NBS), a bureau of the Department of the Interior, became operational on November 11, 1993. Its mission is "to work with others to provide the scientific understanding and technologies necessary to manage the Nation's biological resources."

The National Biological Service is working cooperatively with federal and state agencies to share information necessary to develop a comprehensive picture of the nation's biological resources. NBS field units are the primary vehicle for implementing NBS programs and projects. Most field units engage in a mix of activities in research, inventory and monitoring and the transfer of information and technology.

The National Biological Service is establishing a national biological information infrastructure that will be a network of distributed databases and information sources on biological resources. This information will be used by federal and state agencies, researchers, universities and museums, planning and environmental consultants, private companies, landowners, and the public.

United States Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is the lead federal environmental protection and response agency in the nation's inland zone. The EPA regulates all nonmarine transportation facilities that handle or store oil, petroleum products, or hazardous materials. The agency is the predesignated federal on-scene coordinator for all oil and chemical pollution incidents in the inland zone;

through interagency memorandums of agreement, the Coast Guard provides these services for incidents involving marine facilities and commercial vessels. The EPA is also the lead agency in planning for preparedness for pollution response, as required by the Clean Water Act and the Oil Pollution Act of 1990.

The Mississippi River is a major dividing line between regions. Recommended points of contact for the Mississippi River corridor are the EPA regional administrators in Chicago (Region V, UMR-east side), Kansas City, Missouri (Region VII, UMR-west side), Atlanta, (Region IV, LMR-east side), and Dallas (Region VI, LMR-west side).

United States Department of Agriculture

The U.S. Department of Agriculture's commodity and natural resource protection programs have a major impact on water quality, wetlands, floodplains and loss of riparian vegetation in the Mississippi basin.

Coast Guard Auxiliary

The U.S. Coast Guard Auxiliary is a civilian volunteer organization that helps the Coast Guard carry out its many civil functions. Established in 1939, the auxiliary promotes safety and efficiency in boat operation, fosters a knowledge of and compliance with boating safety laws and regulations, and helps the Coast Guard in effecting rescues on and over the high seas and navigable waters. Coast Guard Auxiliarists use their personal boats and aircraft, their extensive contacts in the waterway user community, and their detailed knowledge of local waterways areas to support and facilitate the Coast Guard's missions.

United States Geological Survey

The U.S. Geological Survey, U.S. Department of the Interior, (USGS) is charged with providing reliable survey data, including topography, contaminants, and sediment loads.

Maritime Administration

Under the U.S. Department of Transportation, the Maritime Administration (MARAD) administers federal laws and programs designed to promote and maintain a U.S. Merchant Marine capable of meeting the nation's shipping needs for domestic and foreign commerce and national security. MARAD provides financial assistance to the maritime industry and promotes technological research and development activities, port and intermodal system development, and a wide range of training services. In addition, MARAD is an active partner in marine environmental protection and waterways management activities throughout the inland waterways network. Recommended points of contact are the MARAD regional directors in Chicago for the Great Lakes Region and in New Orleans for the Central Region.

FEDERAL PROGRAMS AFFECTING RIVER RESOURCES

Intermodal Surface Transportation Efficiency Act of 1991

The purposes of the Intermodal Surface Transportation Efficiency Act, which was signed into law in December 1991, are to maintain and expand the nation's transportation system, foster a sound financial base for transportation, keep the transportation industry strong and competitive, promote safety, protect the environment, and improve the quality of life. The act provides $155 billion for highways, highway safety, and mass transportation over the six-year life of the law. Under the act, states are given more flexibility in determining transportation solutions, whether transit or highways.

New technologies (for example, intelligent vehicle-highway systems and prototype magnetic levitation systems) are funded under the act. The private sector is tapped as a source of transportation improvement funds. Funds are available for activities that enhance the environment (such as wetland banking), miti-

gate damage to natural and cultural resources, contribute to meeting air quality standards, establish bicycle and pedestrian projects, and beautify highways. The act includes grant authorizations under the scenic byways program for the planning, design, and development of state scenic byways programs and for the implementation of specific state scenic byways projects.

The national recreational trails funding program funds the planning and development of recreational trails for motorized and nonmotorized uses. The program is administered in consultation with the National Park Service. The act also created the Office of Intermodalism within the U.S. Department of Transportation. The office serves as the focal point for the coordination of transportation policy, which brings together departmental intermodal perspectives and advocates intermodal interests. It provides leadership and visibility on issues involving or affecting more than one of the agencies of the Department of Transportation. The office maintains and disseminates intermodal transportation data and coordinates federal research on intermodal transportation.

U.S. Department of Agriculture Programs

The U.S Department of Agriculture administers a number of programs that affect the Mississippi River corridor. The intent of the *Conservation Reserve Program* is to take marginal and highly erodible cropland out of agricultural production to maintain soil and water resources. The wetland restoration practices have been moved to the *Wetland Reserve Program,* which will offer cost-sharing to farmers willing to implement conservation practices and will pay annual rentals for conservation easements. A total of 49,373 wetland acres were enrolled in the Mississippi Alluvial Plain during 1989.

The *Agricultural Conservation Program* provides for a 75% cost-share for practices designed to reduce sedimentation and pollution and/or provide wildlife habitat on land in agricultural production. Wildlife conservation groups can contribute toward the landowner's share of the cost-share.

The primary purpose of the *Forestry Incentives Program* is to increase the future wood supply on private forestland. Cost-sharing is allowed for landowners who own less than 1,000 acres; this covers activities such as tree planting, site preparation for natural regeneration, and timber stand improvement to a maximum of $10,000 per year. The *Forest Stewardship Program* and the *Stewardship Initiative Program* assist private forest landowners in maintaining land productivity, actively managing forestlands, and increasing the economic and environmental benefits of their land.

The *Water Bank Program* is designed to protect waterfowl habitat by restoring wetland habitat on private lands. The *Wetlands Reserve Program* was established in 1990 to help landowners restore and protect designated wetlands. Eligible lands may include farmed and converted wetlands. Landowners must grant permanent easements to the U.S. Department of Agriculture for program payments. Cost-sharing is available for 75% of restoration activities. The *Environmental Easement Program* provides for permanent easements from willing owners to protect environmentally sensitive lands.

The *Rural Clean Water Program* is intended to achieve improved water quality in the most cost-effective manner possible in keeping with provision of adequate supplies of food, fiber, and a quality environment. The program also develops test programs for control of agricultural nonpoint pollution. The program for *Private Lands Initiatives* identifies management practices that are beneficial for waterfowl and works with landowners through extension education. Wetlands are protected, restored, and enhanced through technical and financial assistance to landowners.

Partners for Wildlife

The U.S. Fish and Wildlife Service initiated the Partners for Wildlife program in 1987. This national program was designed to restore, improve, and protect important fish and wildlife habitats on private lands. The foundation of the program is partnerships — alliances between local, state, and federal agencies and private landowners — to conserve fish and wildlife. Some notable partners are state conservation agencies, soil and water conservation districts, and several conservation organizations. Partners for Wildlife consists of three major components: technical assistance, habitat restoration, and habitat improvement activities.

The U.S. Fish and Wildlife Service has provided technical assistance on several initiatives with the U.S. Department of Agriculture, including the Conservation Reserve Program, the Wetland Reserve Program, the Emergency Wetland Reserve Program, Waterbank, and Swampbuster. The partnership of the two agencies has been instrumental in restoring and protecting a variety of habitats throughout the Mississippi River Basin, including wetlands, riparian areas, floodplains, and grasslands. It is estimated that the Department of Agriculture will expend $100 million in 1994 and 1995 to restore and protect wetlands, floodplains, and associated habitat on private lands. Similar work to a lesser degree will also be completed in tributaries and floodplains of the lower Mississippi River.

Under the habitat restoration component of Partners for Wildlife, since 1987 the U.S. Fish and Wildlife Service, in cooperation with others, has restored nearly 12,500 wetlands in the Midwest totaling nearly 50,000 acres. Almost 5,000 landowners cooperated voluntarily in these projects, which help to reduce soil erosion, water pollution, and downstream flooding. Most of the wetlands provide choice habitat for migratory and resident wildlife.

National Park Service Programs

The National Park Service is committed to preserving a sustainable network of protected areas at the federal, state and local level. Through its *Rivers, Trails and Conservation Assistance Program* it offers support to partnerships of citizens and government that provide outdoor recreation and preserve natural and cultural resources. These partnerships contribute to broader ecosystem and cultural landscape protection and help improve health and quality of life for all Americans.

The program works to advocate and assist community-based conservation efforts to protect large landscapes and providing recreation, primarily by providing planning assistance. Grants are not available. Plans are developed in partnership with a variety of governmental levels and agencies, nonprofit organizations, and other interests. Eligible projects include statewide river assessments, greenway plans, multi-objective river management plans, and large landscape conservation plans.

The National Park Service is also committed to supporting local initiatives to preserve community cultural resources. Through the *Historic Preservation Technical Assistance program,* communities and owners of eligible historic properties are helped to design and implement restoration projects. Services can include architectural and engineering services and construction supervision.

The National Park Service administers the National Register of Historic Places, which coordinates and supports public and private efforts to identify, evaluate, and protect historic and archeological resources (see "National Register of Historic Places," page 59). In addition, the agency administers federal matching grants. Since they were first authorized, these grants have totaled $650 million and have produced $1.3 billion in preservation investment. The National Park Service also provides information about federal tax incentives that are available. Tax incentives have

spurred the revitalization of 25,000 buildings and a total private investment of $16 billion. The Historic American Buildings Survey and Historic American Engineering Record provide services to accurately record and document historic structures. The National Park Service has provided this service for 25,000 structures since the program began.

Flood Control, Watershed Protection, and Navigation Projects

Programs to reduce flood damage by means of small projects are initiated by state or local governments. Navigation projects are also carried out through a program to provide the most practicable and economic means of fulfilling the needs of general navigation, through projects not specifically authorized by Congress.

The *Watershed Protection and Flood Prevention Program* (U.S. Department of Agriculture) is intended to provide technical and financial assistance for planning and carrying out projects to protect, develop, and use the land and water resources in small watersheds.

INTERAGENCY COORDINATION

River Resource Forum and River Resources Coordinating Team

The Great River Environmental Action Team (GREAT) was formed in the middle 1970s to improve resource management on the upper Mississippi. GREAT contributed to the Upper Mississippi River Basin Commission's final report to Congress in 1982. Since the completion of the GREAT studies, two interagency task forces have been established to continue the interagency coordination of resource management activities on the upper Mississippi: the River Resource Forum (formerly Channel Maintenance Forum) in the Corps of Engineers' Saint Paul District and the River Resources Coordinating Team in the Rock Island District. The Minnesota/Wisconsin Boundary Area Commission, which disseminates public information, is an active participant in the River Resources Forum.

Corps/USFWS/NBS Programs

The Upper Mississippi River System Environmental Management Program and the Long Term Resource Monitoring Program are programs of the U.S. Army Corps of Engineers, the National Biological Service (NBS), and the U.S. Fish and Wildlife Service, which is responsible for coordination between agencies on research and monitoring issues. The mission of the Long Term Resource Monitoring Program is to provide decision-makers with the information needed to maintain the upper Mississippi River system as a viable large river ecosystem, recognizing its multiple use character. The program was authorized under the Water Resources Development Act of 1986 (PL-99-662) as an element of the Environmental Management Program.

Appropriations for the Environmental Management Program are made to the Corps of Engineers. Oversight is provided by the Environmental Management Program Coordinating Committee, which includes the Corps, the USFWS, and the five upper river states. One component of the Environmental Management Program is the habitat rehabilitation and enhancement program, which is administered by the Corps and provides for habitat improvement projects. That program takes about two-thirds of the $19 million annual appropriations. The other third passes through the Corps to the National Biological Service for operation of the Long Term Resource Monitoring Program.

PRIVATE OWNERSHIPS

Private holdings and private landowners are a major part of corridor management. Individual landowners' decisions, however small their holdings, affect the corridor's condition. Many owners are keenly aware of their stewardship responsibility for corridor resources. There are several associations of landowners

or businesses that coordinate efforts to promote access to the river's resources or to promote and advocate the wise use of corridor resources. These include farm bureaus, trade associations such as the Upper Mississippi Waterways Association, and advocacy groups such as Citizens for Responsible Zoning and Land Regulation. A partial list of such groups appears in Appendix C.

Individual businesses have become deeply involved in corridor stewardship efforts. Anderson-Tulley Company, which has substantial land holdings and levees, is proud of its timber management program. The company, which provides habitat for many species, has been actively involved in cooperative efforts such as the interagency Black Bear recovery project. Anderson-Tulley's professional skills and research capabilities could benefit other river management entities if there was an effective means of communication along the river.

INTERSTATE AND REGIONAL COMMISSIONS AND AUTHORITIES

Mississippi River Parkway Commission

The Great River Road was originally conceived in 1938 as a parkway along the Mississippi from the source near Lake Itasca to the Gulf of Mexico. It is the third major recreational and scenic highway to have been developed in the country, following the Natchez Trace Parkway in the South and the Blue Ridge Parkway in the East. The Great River Road, which is intended to provide a scenic, recreational, and historic roadway along the Mississippi, is managed by the 10-state Mississippi River Parkway Commission. The parkway commission is a cooperative effort involving 10 individually established state parkway commissions. Together the national commission provides overall guidance to the states in their management of the Great River Road and serves as the promotional and marketing body both nationally and internationally. The goals of the parkway commission are as follows:

to encourage, support, and sponsor the development of highways and amenities along both the federal and state route of the Great River Road

to assist state agencies and local units of government in all efforts to create a unified development of the Great River Road

to promote, stimulate, and encourage domestic and international travel within the 10 Mississippi River states and the northwestern province of Ontario

to increase awareness of the Great River Road and the unique aesthetic, historical, cultural, and recreational features along the route as a potential vacation destination

to assist state and local agencies and the private sector in all efforts to coordinate tourism promotion for the Mississippi River and the Great River Road

to encourage the restoration, enhancement, and preservation of park and other areas of scenic, historic, archaeological and recreational value and significance in the Great River Road corridor

to encourage and assist in the establishment, where appropriate, of secondary, tertiary, and other alternative routes generally paralleling the primary Great River Road route

Through its standing committees (transportation, promotion, economic development, environmental, and historical) the commission provides many of the functions (marketing, technical assistance, coordination, cooperative decision making and advocacy) that would be needed for a national heritage corridor.

Mississippi River Coordinating Commission

The 22-member Mississippi River Coordinating Commission was appointed by the secre-

tary of the interior to help federal, state, and local authorities develop and implement an integrated plan for the Mississippi National River and Recreation Area. Members of the commission represent local governments, state and federal agencies, commercial navigation, and the general public (representing a variety of interests).

The commission, as an advisory and coordinating organization, was directed by Congress to assist the secretary, the state of Minnesota, and local units of government in developing policies and programs for the Mississippi National River and Recreation Area regarding (a) the preservation and enhancement of environmental values, (b) enhanced public outdoor recreation opportunities, (c) the conservation and protection of scenic, historical, cultural, natural, and scientific values, and (d) the commercial use of the area and its related natural resources, consistent with the protection of the values for which the area was established.

After the publication and approval of the final management plan, the National Park Service and the commission will coordinate with others to prepare more detailed strategies and work to implement the plan for the corridor. A broad spectrum of partners will be included, among them state and regional agencies, local governments, interested organizations, and the private sector.

Upper Mississippi River Basin Association

The Upper Mississippi River Basin Association is a forum for the five member states (Minnesota, Wisconsin, Iowa, Illinois, and Missouri) to address common concerns regarding the environment and water resource management. Members are appointed by the governors. The association provides advice, issue analysis, technical assistance, coordination, and advocacy on river activities. It also develops regional positions on river resource issues and serves as an advocate of the basin states' collective interests before the Congress and federal agencies.

The Upper Mississippi River Basin Association, which replaced the Upper Mississippi River Basin Commission (eliminated by executive order after completion of its master plan for the river in 1982), is a partner with the U.S. Fish and Wildlife Service and the Corps of Engineers on the Upper Mississippi River System Environmental Management Program. The association prepared the 1989 Upper Mississippi River Basin Charter, which primarily addressed interbasin water diversions but also established a set of cooperative principles for the management of the basin.

The association also has a number of nonvoting federal participants, including the EPA, the U.S. Army Corps of Engineers, and the departments of Agriculture, Interior, and Transportation. The purposes of the association are as follows:

> to serve as a regional interstate forum for the discussion, study, and evaluation of river-related issues of common concern to the states of the Upper Mississippi River Basin
>
> to facilitate and foster cooperative planning and coordinated management of the region's water and related land resources
>
> to create opportunities and means for the states and federal agencies responsible for the management of water resources in the Upper Mississippi River Basin to exchange information

The Upper Mississippi River Basin Association is responsible for a number of publications on river topics, which are issued on an ad hoc basis.

Lower Mississippi Delta Development Center

The Lower Mississippi Delta Development Center is the organization that emerged from the work of the Lower Mississippi Delta Development Commission. The Lower Mississippi Delta Center is an effort to bring together

the seven states of the lower river (from southern Illinois to Louisiana) to promote and implement the recommendations of the commission, which had been established by Congress in 1988. The mission of the commission was to study and make recommendations regarding economic needs, problems, and opportunities in the Lower Mississippi Delta region and to develop a 10-year economic development plan. Mike Espy, at that time a congressman and later secretary of the U.S. Department of Agriculture, was the original sponsor of the legislation that supported the study. At that time the commission was chaired by Arkansas Governor Bill Clinton. The commission established wide-ranging goals addressing social and economic challenges of the Delta. Areas addressed were health, education, housing, community and economic development, agriculture, natural resources, and tourism.

The commission's focus was on economic development, but the importance of the natural and physical aspects of the Delta Region were emphasized for their role in enhancing the quality of life for Delta citizens. Its recommendations included this statement: "Proper development and wise management of existing resources are essential elements in the Delta's economic future. Unwise exploitation of these resources would lead to further economic and environmental decline." Wetlands protection, soil conservation, and prevention of degradation of surface water and groundwater from nonpoint pollution have been named as priority concerns for the Lower Mississippi Delta Development Center (Lower Miss. Delta Dev. Comm. 1990).

Minnesota-Wisconsin Boundary Area Commission

The Minnesota-Wisconsin Boundary Area Commission was created through an interstate compact in 1965 to facilitate communication between Minnesota and Wisconsin regarding the use of the resources of the Upper Mississippi and the Lower Saint Croix Rivers. The commission assists the two states in cooperative efforts by conducting studies and making recommendations on plans, policies, development proposals, public management, uniform laws, conservation efforts, and the use of waters and lands in the corridor. It helps the states and their local subdivisions in coordination of programs, plans, and projects and in their participation in the many federal programs on the Saint Croix and Mississippi Rivers. Under a special federal-state cooperative agreement, the Minnesota-Wisconsin Boundary Area Commission also provides technical and administrative support to the Lower Saint Croix National Riverway.

Upper Mississippi River Conservation Committee

The Upper Mississippi River Conservation Committee was organized in 1943 by Minnesota, Wisconsin, Illinois, Iowa, and Missouri to promote responsible use of natural and recreational resources of the Upper Mississippi River. The committee was formed to foster cooperation among the states in studies of the river's natural resources and to exchange information about the river and its problems. It also promotes cooperation in resource management of interstate waters, including the development of more uniform laws and regulations affecting use of the river's natural resources. The committee makes referrals, advises on technical aspects of water quality, fish, and wildlife, and advocates conservation policies at state and federal levels.

The Upper Mississippi River Conservation Committee works closely with the U.S. Fish and Wildlife Service, the Corps of Engineers, and the U.S. Public Health Service. Its membership includes almost all wildlife, fisheries, recreation, and enforcement managers working on the Upper Mississippi River system. The committee has been instrumental in bringing resource managers and the federal government together to discuss common problems and coordinate solutions in an effort to protect and manage Mississippi River fish, wildlife, and recreational resources. It maintains a reference library at Rock Island,

Illinois. Region 3 of the U.S. Fish and Wildlife Service provides a coordinator for the Upper Mississippi River Conservation Committee.

Lower Mississippi River Conservation Committee

The Lower Mississippi River Conservation Committee is a regional coordinating body for the lower Mississippi River. It was modeled after the upper Mississippi River group. The purpose of the organization is similar to that of the Upper Mississippi River Conservation Committee. Its activities include the development of a coordinated database on endangered species, analysis of contaminants, and an inventory of the floodplain ecosystem. That effort is facilitated by the U.S. Fish and Wildlife Service's region 4 fisheries staff. The committee is composed of state fish, wildlife, and environmental agencies. Priorities include working toward implementing the goals of the Mississippi Interstate Cooperative Resource Agreement and promoting ecological restoration in the lower portion of the basin (Missouri, Kentucky, Tennessee, Arkansas, Mississippi, and Louisiana).

Mississippi Headwaters Board

The Mississippi Headwaters Board was organized in 1980 as an alternative to federal control of the first 400 miles of the river. Under a joint powers agreement, the eight-county board is responsible for preserving and protecting shoreland resources and seven headwaters lakes through zoning ordinances, land use plans, and recreation management plans. The board is made up of one county commissioner from each county and is advised by a committee of 24 citizen members and a technical committee composed of zoning officers, land commissioners, and resource management professionals.

Following the five-year plan to improve information on water quality of the river, the board established the Mississippi Headwaters River Watch, a community-based river monitoring and protection program funded by a $472,000 grant from the Charles K. Blandin Foundation.

Alton Lake Heritage Corridor Commission

In 1991 the Illinois general assembly established the Alton Lake Heritage Corridor Commission to "preserve or enhance the quality of the Alton Lakes Heritage Parkway" between the Alton Lakes city limit and the Pere Marquette State Park. The Commission has submitted a land management plan to the general assembly and is awaiting action. The 10-member commission is made up of appointed representatives from the communities, townships, and counties adjacent to the parkway. To develop the plan, the commission sought the cooperation and assistance of state, federal, regional, county, and local agencies and individuals to research and collect data and create a grass-roots strategy for protecting the corridor.

Lower Saint Croix Management Commission

The Lower Saint Croix Management Commission guides the management of the lower Saint Croix National Scenic Riverway from Saint Croix Falls, Wisconsin, to the confluence of the Saint Croix and Mississippi Rivers. The commission is a cooperative effort between the Minnesota and Wisconsin Departments of Natural Resources, the Minnesota-Wisconsin Boundary Area Commission, and the National Park Service.

Lower Mississippi Valley Flood Control Association

The Lower Mississippi Valley Flood Control Association is an association of congressional interests, levee boards, drainage districts, and other local entities in the seven lower valley states. Its officers are members of the United States Congress. The association's purpose is to coordinate with the Corps of Engineers to promote navigation, flood control, and other

water resource development through implementation of the Corps' Mississippi River and Tributaries project.

Upper Mississippi River Flood Control Association

The Upper Mississippi River Flood Control Association is an association of drainage districts along the river in Illinois, Iowa, and Missouri that extend from Rock Island, Illinois, to south of Hannibal, Missouri. Formed in 1953, the district coordinates maintenance of levees that protect agricultural land.

Mississippi River Interstate Cooperative Resource Agreement

The Mississippi River Interstate Cooperative Resource Agreement is a multistate organization of fishery resource management agencies of the 28 states in the Mississippi River Basin. The U.S. Fish and Wildlife Service provides staff for the organization and works closely with the group to manage and preserve the fishery resources in the basin more effectively. The goals of the group will be accomplished by individual states working through regional coordinating bodies.

STATE PROGRAMS

All states along the river have natural resource management, tourism, and parks and recreation agencies with programs and authorities that apply to the river. The Mississippi River is not often singled out as a region of special concern in the states, but programs, which vary from state to state, still apply. Examples of the authorities and programs that exist are discussed below. Only Wisconsin and Minnesota have programs directly related to the river.

Departments of Conservation/Agriculture and Forestry/Fish and Wildlife

State departments of conservation, agriculture and forestry, or fish and wildlife manage department lands and waters to meet the needs of the state's fish, forest, and wildlife resources. Each conservation department cooperates with the private sector and government agencies to manage lands and waters for fish, forests, and wildlife and provides guidance to interested landowners for the same purpose. These departments also provide areas for public use for outdoor activities, as well as offering opportunities for conservation education.

Departments of Economic Development/Divisions of Tourism

Tourism is a major industry in many states, and outdoor recreation is a vital part of the attractions made available to the travelers. Divisions of tourism promote these activities through active marketing, support to visitor centers, and the publication of various brochures, maps, and pamphlets.

Departments of Highways or Transportation

Departments of highways or transportation provide and maintain highways in a manner that will enhance outdoor recreation opportunities. This includes providing opportunities for driving for pleasure and ensuring access to outdoor recreation areas. These departments also plan, develop, and maintain highways, bicycle trails, rest areas, and overlooks for scenic purposes.

Departments of Labor or Industrial Relations

Departments of labor or industrial relations advise on the needs of people with disabilities, including assistance with the design of facilities and recommendations for special activities.

Departments of Natural Resources

State departments of natural resources have considerable involvement in Mississippi River-related resources. They are responsible for environmental regulatory activities, energy conservation, water supplies, water quality, dam safety, hazardous materials regulation, and many other activities. These departments provide, maintain, and plan for outdoor recreational opportunities for all state residents, including areas such as parks, recreation areas, and historic sites. These departments educate visitors about the use and preservation of these areas, act as legislative advocates for outdoor recreation, and promote the use of recreational areas throughout the state.

State Historic Preservation Offices

The states offer a variety of historic preservation services and programs. Although these vary from state to state, generally the states maintain inventories of historic properties (which are entered into the National Register of Historic Places), provide extensive public education services, administer tax incentives and matching grants, offer technical assistance, and assist certified local governments in developing local preservation programs. Programs affect historic structures and places, archeological resources (including underwater sites such as shipwrecks), and burial sites.

Specific State Programs

Minnesota Shoreland Program. In Minnesota, the Shoreland Management Act of 1969 established a program to guide shoreland development in order to preserve and enhance the quality of surface waters, to preserve the economic and natural environmental values of shorelands, and to provide for the wise use of water and related land resources. Shoreland is defined as "land within 1,000 feet from the ordinary high water mark of a lake, pond, or flowage; and land within 300 feet of a river or stream or the landward side of a floodplain delineated by ordinance on such a river or stream, whichever is greater." Regulations developed under this program specify building setback requirements, minimum lot sizes per structure, building elevation above high water, designation of types of land uses, and sewage system design criteria. All counties and municipalities must adopt shoreland management ordinances approved by the Department of Natural Resources.

Minnesota Canoe and Boating Route Program. The Commissioner of Natural Resources is authorized to mark canoe and boating routes and to provide recreational facilities on certain rivers, including the Minnesota, Root, Zumbro, Cannon, and Mississippi. River management activities for the canoe and boating route program focus on recreational development and land acquisition. During 1980 and 1981, the state studied Upper Mississippi backwater areas from Anoka to the Iowa border for possible designation into the canoe and boating route program. The study completed the canoe route map of the river and identified new canoe routes in the backwater areas. These maps include campsites, rest areas, and access sites.

Minnesota Wild and Scenic Rivers Program. Minnesota's Wild and Scenic Rivers Act, passed in 1973, directs the Department of Natural Resources to protect and maintain the natural characteristics of rivers or river reaches possessing outstanding scenic, scientific, historical, or recreational value. This act is not meant to restore river areas to wilderness, but it is meant to protect exceptional rivers from degradation caused by uncontrolled development and recreation overuse. Management activities in the wild and scenic rivers program include land use management, water surface use management, recreational development, and land acquisition. All land use management practices must be compatible with the regulations of the shoreland and floodplain program.

Minnesota Scientific and Natural Areas Program. Part of Minnesota's outdoor recreation system, the scientific and natural areas program of Minnesota aims to preserve and

perpetuate the ecological diversity of the state's natural heritage (landforms, fossil remains, plant and animal communities, rare and endangered species, or other biotic features and geological formations) for scientific study and public education as components of a healthy environment.

Minnesota Critical Areas Act. The Critical Areas Act of 1973 was passed to help identify areas possessing important historical, cultural, aesthetic, or natural values. The Mississippi River in the Twin Cities metropolitan area is a designated critical area. The purpose of critical area designation in this segment of the river is to protect and preserve a unique and valuable state and regional resource for the citizens of the region, the state, and the nation. The critical area on the Mississippi River will be incorporated into the management structure selected for the Mississippi National River and Recreation Area.

Wisconsin Shoreland Management Program. In Wisconsin, the Shoreland Zoning Act required counties to adopt subdivision and zoning regulations for all unincorporated areas by January 1, 1968. The Wisconsin Department of Natural Resources is authorized to adopt shoreland ordinances for counties that do not adopt acceptable ordinances. This act also requires the Department of Natural Resources to establish standards and criteria for navigable water protection regulations and their administration.

Wisconsin Wild Resources Program. The Wisconsin Natural Resources Board periodically evaluates DNR lands for designation into the Wisconsin wild resources program. The Department of Natural Resources also cooperates with other public agencies and interested private landowners to determine how other lands might become a part of this system. The system identifies eight categories: wilderness areas, wild areas, public use natural areas, scientific areas, federal wild, scenic, and recreational rivers; Wisconsin wild rivers, wild lakes, and wilderness lakes.

Iowa Floodplain Management Program. The Iowa Natural Resources Council establishes and enforces regulations for orderly development and the wise use of the floodplain of any river or stream within that state. The council is directed to establish encroachment limits, protection methods, and minimum protection levels appropriate to the flooding characteristics and to the use of the floodplain. Development that would obstruct the flow is not allowed in floodways. Local floodplain ordinances or regulations must be approved by the Iowa Natural Resources Council before adoption.

Iowa Scenic River Program. Iowa's Scenic Rivers Act of 1970 gives the Iowa Conservation Commission authority to designate, as part of a scenic rivers system, rivers and adjacent land areas with outstanding water conservation, scenic, fish, wildlife, historical, or recreational values. To assist in scenic rivers management, counties and cities must zone lands adjacent to the river or establish other controls.

Iowa Protected Water Areas Program. The Protected Water Areas Program is a system for designating portions of selected lakes, rivers, streams, and marshes for the preservation, protection, and enhancement of outstanding natural and cultural resources of water and associated land areas. The program gives the state legislature, the Iowa Natural Resources Commission, and other interested agencies the necessary guidelines to protect the natural and cultural resources in the state's scenic lakeshores, river corridors, and marshes. Fee title land acquisition, conservation easements, leases, dedication of state preserves, and tax incentives, in addition to local zoning ordinances, are recommended methods of protecting designated areas. "Protected Water Areas" replaced "Scenic Rivers," since this plan protects lakeshores and marshes as well as rivers and streams.

Iowa State Preserves Program. The Iowa State Preserves Act created a state preserves system and the State Preserves Advisory Board. A state preserve is an area of land or

water designated for maintenance in a condition as close as possible to its natural one. Areas with unusual floral, faunal, geological, archeological, visual, or historic features of scientific or educational value are eligible for designation as state preserves. The advisory board was established to recommend appropriate state-owned lands for dedication as preserves. The State Preserves Act effectively prohibits environmental alterations in designated areas. State preserve designation provides the greatest protection for such significant land areas.

Missouri Stream Team Program. The Missouri Stream Team program is an opportunity for interests involved in the state's 56,000 miles of flowing waters to improve their effectiveness. The program supports public education about stream and river systems, hands-on stewardship projects, and advocation of solutions to river and stream problems.

Missouri Outstanding Natural Resource Waters Program. High-quality waters are recognized by the Missouri Outstanding Natural Resource Waters program. The program also sets stringent standards for water quality management to ensure that water quality will not be degraded.

Missouri Natural Areas Program. Biological communities and geological sites are recognized and protected in a natural or nearly undisturbed state by the Missouri Natural Areas program. The Department of Natural Resources will not authorize any use that is incompatible with the management objectives of each natural area.

REGIONAL PLANNING COMMISSIONS

Identifying all regional and local planning commissions or land use authorities is beyond the scope of this report. However, these entities are intensively involved mechanisms for managing growth and change at the local level. One function of a national heritage corridor would be to act as an information clearinghouse and foster information-sharing among these organizations to enhance the replication of successful strategies within the corridor. There are several interesting examples of efforts directed toward the river that give an idea of the range of activities of these organizations.

Port Authorities

Port authorities promote the economic development and the commercial interests of port communities on a local or regional basis. Generally, active port authorities exist in large coastal ports where competition with other ports for coastal and international marine trade is significant. Port authorities normally do not exist in the smaller inland river port areas. River ports are generally at historical trade locations or the at the nexus of river, rail, and highway transportation services.

Outbound commodities such as grain and coal typically are shipped out of ports that provide the most direct access to barge services, while inbound commodities typically are destined for specific facilities or individual markets. As a result, promotion of port facilities generally is a function of local municipal governments and community resource organizations. However, this situation could change in the near future: with the advent of container shipping into Memphis and growing emphasis on intermodal transportation, more inland river ports might begin pursuing direct import-export services and competition with coastal ports and each other.

Upper Explorerland Regional Planning Commission (Iowa)

Local governments in northeast Iowa have joined together in the Upper Explorerland Regional Planning Commission. Allamakee and Clayton counties are members of this planning commission. This advisory commission prepares comprehensive studies and plans for the development of the area. Such plans may be adopted wholly or in part by member cities and counties.

Purchase Area Development District (Kentucky)

Representing the seven counties in western Kentucky, the Purchase Area Development District is focused on economic development along Kentucky's stretch of the river. The district is instrumental in coordinating county and local governments to provide among other services, business development, transportation development, and natural resource enhancement services.

Twin Cities Metropolitan Council

The Twin Cities Metropolitan Council was created to coordinate planning and development within the Twin Cities metropolitan area. A primary function of the council is to develop a long-range policy plan for recreational open space. The council is also responsible for administering the state's critical area program along the Mississippi River.

Southwest Illinois Development Authority

The Southwest Illinois Development Authority is a two-county economic development authority with the authorization to issue bonds, acquire lands, and condemn lands with the goals of retaining business and increasing jobs. Activities include constructing a foreign trade zone warehouse center along the river under a cooperative agreement with the Tri-city Regional Port District and leasing land acquired for the Jefferson National Expansion Monument Addition to a gambling casino (as an interim use until the addition is secured). The authority is also involved in construction of the Olympic Festival Track and Field Stadium and the Metro-link mass transit system, which will lead to the river.

Mississippi River Regional Planning Commission (Wisconsin)

The commission affecting the largest part of the study area is the Mississippi River Regional Planning Commission in Wisconsin. The commission includes Pierce, Pepin, Buffalo, Trempealeau, La Crosse, Vernon, Monroe, and Crawford counties. Eight Corps of Engineers locks and dams are in this region. The commission's comprehensive planning document was adopted in 1972. To implement this plan, the commission conducts a variety of local assistance programs. In addition, the Mississippi River Regional Planning Commission has helped prepare land use plans, policy plans, and development policies for each of its member counties. Although most of the commission's activities are directed at local governments, it also reviews Corps of Engineers river projects, including review of recommended actions.

The Delta Council

The Delta Council concentrates on economic development of the Delta area of the river in Mississippi.

VOLUNTEER ORGANIZATIONS AND ACTIVITIES

The primary purpose for gathering information about volunteer organizations in the corridor is to identify the number and types of organizations and the scope of their river-related activities, as well as to determine whether and how a potential heritage corridor could help the organizations. If a heritage corridor was established, among other things it would establish a communications network among organizations in the corridor and augment networks that already exist. Another activity would be to facilitate the sharing of information among the organizations and offer technical assistance.

The information in this section is in no way intended to be a complete listing of volunteer organizations; rather, it should be considered a sample. The size of the corridor and the lack of a communication network makes locating organizations difficult. Many more

organizations undoubtedly exist and will continue to be found.

Only organizations focused on the river or on river issues are included in this section. Business groups advocating for a given industry, such as a farm bureau, are not included; neither are environmental groups that have a general approach, although business, farm, and environmental groups would be part of the corridor coalition and are participating in this study. However, business groups representing an industry dependent on the river, such as the American Waterways Association, are included. Using the criterion of focus on the river resulted in more conservation groups being listed than other types of organizations. However, groups with a broader view would be involved in a heritage corridor should such an entity be formed.

Despite the importance of the river and the media attention it has received recently, there are relatively few volunteer groups that are concerned primarily with the river. Only one group deals with the river as a whole — the Mississippi River Basin Alliance, a coalition of national and local environmental groups.

Several levels of organizations exist. Some national organizations focus on the river or river issues nationwide; some state chapters of national organizations are primarily interested in the river; some organizations concentrate only on the river, and there are regional and local river-related organizations. Most of the national groups have programs targeting the river, or they specialize in river issues nationwide. In addition, there are a number of coalitions. One example of volunteer coalitions is the Quad Cities Conservation Alliance, a coalition of 20 volunteer conservation groups in Iowa and Illinois; another is the Kentucky Resource Council, an alliance of local environmental groups along the tributaries of the Mississippi.

Range of Activities

The activities of the organizations mentioned range from river protection and environmental advocacy by such groups as River Network to private property advocation by groups such as Citizens for Responsible Zoning and Landowner Rights. A number of groups are involved in environmental education, and two offer training in the scientific monitoring of river environments. Two of the more unusual are the McKnight Foundation, which will concentrate its grantmaking on the river for the next four years and has funded a number of the activities discussed here, and the Mississippi River Basin Alliance, a new coalition of national, state and local environmental groups working to restore the river and prevent further environmental degradation of the river. The latter group covers the entire corridor.

Several national groups deal only with rivers and have a wide range of river-related activities. Some activities of corridor organizations are river cleanup activities, monitoring pollution, trail development, and acquiring land for open space and wildlife preserves. Corridor organizations also promote tourism and scenic byways, protect private property rights, and encourage economic development.

Activities and Geographic Areas Not Covered

Other than the Mississippi River Parkway Commission, no river-related organization has the function of coordinating and networking activities for the entire river. Activity on the lower river appears to very limited. Relatively few conservation groups of any type or scope exist in the lower river corridor, and no private property rights groups have been identified in that area. However, some notable groups exist; for example, the Louisiana Environmental Action Network and the Nature Conservancy.

State and local volunteer groups abound in the upper river corridor, but there are few in

the south. One reason for this may be the lack of access to the river in the south because of the physical barriers to travel in the Delta and the lack of public land.

Examples of Volunteer Groups Focused on the River

In addition to the larger organizations, a number of state and local organizations in the corridor are active at the grassroots level. Many of these organizations are very effective; for example, the Louisiana Environmental Action Network, which is primarily interested in remedying industrial pollution and combating environmental racism; and the Citizens for a Better Environment, a grassroots organization in Minnesota that offers technical and organizational support to communities with toxic issues. The latter group has been a successful plaintiff in a lawsuit of a national toxic polluter.

Another successful group is the Mississippi River Revival, which works for a clean river in Minnesota and Wisconsin through education and hands-on activism. The Mississippi River Basin Alliance is a coalition of national, state, and local environmental groups working for the restoration and prevention of further degradation of the ecological integrity of the river. Among the member groups are the Sierra Club, the Iowa Heritage Foundation, the Gulfcoast Project, American Rivers, the Louisiana Environmental Action Network, and Greenpeace. Structure and focus are now being determined.

Relationship to the Management Objectives

This analysis suggests areas in which a heritage corridor could provide services to volunteer organizations. Benefits would include coordination, networking (particularly between upper river and lower river organizations), and technical assistance. The difficulty experienced in identifying groups that are active along the river points up the potential for a networking or clearinghouse function for the corridor.

It would not be surprising if efforts were being duplicated by several groups. It is also probable that several organizations would be able to share expertise and experience with similar organizations in the corridor if a communications network existed. An additional benefit would be to link volunteer organizations with government entities that might be able to provide technical assistance or other services.

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Chairman: H. Dan Derbes, Louisiana
Don Ammons, Tennessee
George R. Arnold, Illinois
Frank Davis, Mississippi
Gene Hollenstein, Minnesota
Claude W. Jenkins, Arkansas
George Koenigsaecker, Iowa
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Evan Zantow, Wisconsin

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William F. Hartwig, U.S. Fish and Wildlife Service
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Wilbur Hawkins, U.S. Department of Commerce
Al Hutchings, National Park Service
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APPENDIX A: NATURAL ZONES OF THE MISSISSIPPI RIVER VALLEY

The physical and biological elements of an area that encompasses parts of ten states present a difficult challenge for a natural resource description. The Mississippi River corridor is more than 2,400 miles long, and both the diversity and enormousness of natural components prohibit any narrative other than a generalized assessment. Further barriers for a resource description exist in that natural resource themes do not align with recognizable state and county boundaries.

To provide an understandable description of natural resources, the Mississippi River corridor (from the river's headwaters at Lake Itasca, Minnesota, to the river's mouth into the Gulf of Mexico in Louisiana) has been divided into four natural regions that closely conform to the biological and geographical distribution of natural resources. These natural zones are segmented into traditional ecosystem representations and geographically correspond with Fenneman's Physiographic Divisions (1928) and the Natural Regions classification outlined in *Natural History in the National Park System and on the National Registry of Natural Landmarks* (NPS 1990).

CENTRAL LOWLANDS

The natural region known as the Central Lowlands surrounds the corridor in the states of Minnesota, Wisconsin, Iowa, Illinois, and Northern Missouri.

Climate

The area is warm-temperate, characterized by long hot summers and very cool to cold winters. Average summer temperatures range from the mid 70s to the mid 90s; winter temperatures are in the 30s. Precipitation in the region varies from about 27 inches a year to as much as 42 inches. Much of the region is subject to winds, localized severe thunderstorms, and tornadoes.

Topography, Geology, and Soils

The topography in the central lowlands region is largely the result of glacial drift that filled low places. The topography is flat with a slight downward gradient towards the Mississippi River. East of the Mississippi, the elevation varies from less than 600 feet at Lake Michigan to a low of about 400 feet at the Mississippi River near Saint Louis.

Vegetation

Various subdivisions of the eastern deciduous forest (beech-maple, maple-basswood, northern hardwoods, oak-hickory) occupy much of the region, with some remote areas of tall-grass and mixed grass prairies.

Ecoregions

The ecoregions in the Central Lowlands region are as follows: northern Minnesota wetlands, northern lakes and forest, north central hardwood forests, driftless area, western corn belt plains, and portions of central irregular plains and interior river lowland.

Wildlife

Animal species are diverse and widely distributed. Representative mammals are red and gray fox, mink, raccoon, muskrat, opossum, white-tailed deer, mule deer, and skunk. Resident and migrant bird species, such as bobwhite quail, American woodcock, meadowlark, thrushes, mourning dove, ducks, and geese are found within the region. Black and white bass, bullhead, channel catfish, crappie, carp, and sunfish are found in the river, along with turtles, frogs, and snakes in moist habitat.

Threatened or Endangered Species

An inventory has been made of all identified plant and animal species in the Mississippi River corridor that are protected under the Endangered Species Act of 1977, as amended.

Air Quality

The majority of the Mississippi River corridor in this natural region is classified as in attainment for National Ambient Air Quality Standards (NAAQS). The metropolitan area of Minneapolis/Saint Paul, Minnesota, is considered in nonattainment for NAAQS criteria for pollutants PM_{10} (particulate matter less than 10 microns). The Saint Louis, Missouri, metropolitan area is considered non-attainment for the NAAQS criteria for pollutants of ozone (moderate classification) and PM_{10}.

INTERIOR HIGHLANDS

The Interior Highlands region type encompasses most of the Mississippi River corridor in the southern part of Missouri.

Climate

The interior highlands region is generally hot in summer, with an average temperature of approximately 75°F. Precipitation is fairly heavy and well distributed throughout the year; the average annual precipitation is approximately 40 inches. Winters are moderately cool, with a common temperature of about 35°F. Snow falls nearly every winter, but it usually melts within a few days.

Topography, Geology, and Soils

Several large plateaus dominate the area. Caverns and springs are common in Missouri's limestone plateaus. Because of plateau topography, elevation relief is minor, varying approximately 600 feet. Assorted silt loams comprise the vast majority of soil types in this region; cherty silt loam on slopes from 0 to 35 degrees is representative of the largest percentage.

Vegetation

Oak-hickory forest is the dominant vegetation throughout this region.

Ecoregions

The ecoregions in the interior highlands region are the ozark highlands and portions of central irregular plains and interior river lowlands.

Wildlife

Animal species are diverse in the interior highlands. Representative mammals are red fox, fox squirrel, muskrat, opossum, skunk, white-tailed deer, mule deer, and raccoon. Resident and migrant bird species include bobwhite quail, northern cardinal, mourning dove, ducks, and geese. Bullhead, crappie, carp, and sunfish are found in the river, along with turtles and frogs.

Threatened or Endangered Species

An inventory has been made of all identified plant and animal species in the Mississippi River corridor that are protected under the Endangered Species Act of 1977, as amended.

Air Quality

The Mississippi River corridor in the interior highlands is classified as in attainment for NAAQS criteria for pollutants.

INTERIOR LOW PLATEAUS

The region type known as the interior low plateaus includes the portion of the Mississippi River corridor in southern Illinois and western Kentucky.

Climate

The interior low plateaus region is generally hot in summer, with an average temperature of approximately 77°F. Precipitation is fairly heavy

and well distributed throughout the year; the average annual precipitation is approximately 47 inches. Winters are moderately cool, with a common temperature of about 39°F. Snow falls nearly every winter, but it usually melts within a few days.

Topography, Geology, and Soils

Topography in this region consists of a series of plateaus separated by prominent escarpments. Sinkholes and caverns are abundant in the extensive karst topography.

Vegetation

Oak/hickory and oak/hickory/pine forest are the dominant vegetation types throughout this region.

Ecoregions

The ecoregion in the interior low plateaus region is part of the interior river lowland.

Wildlife

Animal species are diverse and widely distributed. Representative mammals are red and gray fox, mink, raccoon, muskrat, opossum, white-tailed deer, and skunk. Resident and migrant bird species found in the region include bob-white quail, American woodcock, meadowlark, thrushes, mourning dove, ducks, and geese. Black and white bass, bullhead, channel catfish, crappie, carp, and sunfish are found in the river, along with turtles, frogs, and snakes in moist habitat.

Threatened or Endangered Species

An inventory has been made of all identified plant and animal species in the Mississippi River corridor that are protected under the Endangered Species Act of 1977, as amended.

Air Quality

The Mississippi River corridor in the interior low plateaus region is classified as in attainment for NAAQS criteria for pollutants.

GULF COASTAL PLAIN

The gulf coastal plain natural region encompasses the lower Mississippi River corridor and includes southeastern Missouri, western Tennessee, eastern Arkansas, western Mississippi and Louisiana.

Climate

The gulf coastal plain region is generally hot in summer, with an average temperature of approximately 80°F. Precipitation is fairly heavy and well distributed throughout the year; the average annual precipitation is approximately 52 inches. Winters are moderately cool, with a common temperature of about 45°F. Snow falls nearly every winter, but it usually melts within a few days.

Topography, Geology, and Soils

Several large plateaus dominate the area. Caverns and springs are common in the limestone plateaus of Missouri. Because of the plateau topography, elevation relief is minor; elevations vary by approximately 600 feet. Assorted silt loams are the vast majority of soil types in the gulf coastal plain, and cherty silt loam on slopes from 0 to 35 degrees is representative of the largest percentage.

Vegetation

The dominant vegetation throughout this region is southern floodplain forest consisting of oaks, tupelo, and baldcypress.

Ecoregions

Ecoregions in the Gulf Costal Plain are the Mississippi alluvial plain and the Mississippi Valley loess plain.

Wildlife

Animal species are diverse and widely distributed. Representative mammals are red and gray fox, mink, raccoon, muskrat, opossum, armadillo, white-tailed deer, and skunk. Resident and migrant bird species found in the gulf coastal plain include bobwhite quail, American woodcock, meadowlark, thrushes, mourning dove, ducks, and geese. Black and white bass, bullhead, channel catfish, crappie, carp, and sunfish are found in the river, as are turtles, frogs, and snakes in moist habitat.

Threatened or Endangered Species

An inventory has been made of all identified plant and animal species in the Mississippi River corridor that are protected under the Endangered Species Act of 1977, as amended.

Air Quality

Most of the air in this natural region is classified as in attainment for NAAQS criteria. The metropolitan area of Memphis, Tennessee, is considered in nonattainment for NAAQS criteria pollutants ozone, carbon dioxide, and lead. The area along the river south of Baton Rouge, Louisiana, to the mouth of the river is considered in nonattainment for NAAQS criteria for the pollutant lead.

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APPENDIX C: ORGANIZATIONS AND ASSOCIATIONS ADDRESSING MISSISSIPPI RIVER ISSUES

NATIONAL GROUPS

Adopt-a Stream — Provides training to school and community group audiences on how to adopt a stream; conducts technical workshops dealing with inventories and monitoring. Publishes newsletter and several guidebooks.

American Canoe Association — Sponsors national trail and river cleanup.

American Farmlands Trust — Nonprofit organization with a goal of preserving farmland and promoting sustainable agriculture, which is a river issue.

American Rivers — National activist group working on hydroelectric issues. Named the Mississippi to the top ten endangered rivers list.

Great River Road Association — A coalition of travel and tourism businesses along the Great River Road, the association acts to market and advocate the interests of the business community along the river.

Greenpeace — Environmental activist organization, conducted a water quality sampling project on the Mississippi in 1989.

Institute for Conservation Leadership — A relatively new organization dedicated to environmental education nationwide. Offers training in leadership, organizational methods, facilitation, networking, and strategic planning to conservation groups.

Izaak Walton League — Conservation activist organization with local chapters scattered along the river. Can assist local groups with campaign strategies. Nationally, sponsors the Save Our Streams program, which offers videos and water quality monitoring kits.

McKnight Foundation — A private, nonprofit organization based in Minneapolis, this foundation committed $4.25 million dollars in grants over the next five years to activities to help nonprofit organizations, community groups, and local governments to work together to protect the Mississippi River from the headwaters to the Quad Cities. The demonstration is one component of the foundation's new initiative to encourage environmental restoration and protection of the Mississippi River basin.

Natural Resources Defense Council — Promoting strengthened Clean Waters Act, improvement of storm water runoff, and restoration of degraded watersheds.

Nature Conservancy — International nonprofit organization whose mission is to preserve the diversity of plants, animals, and the natural communities. Involved in land banking activities. Working in both the upper river and the lower river.

River Network — National nonprofit organization devoted to empowering grassroots river protection advocates. Services: providing information and referrals to local river conservation groups.

River Watch Network — Community organizing and water quality monitoring. Brings people together to monitor, restore, and protect their rivers.

REGIONAL VOLUNTEER ORGANIZATIONS

American Waterways Association — National organization of users of inland waterways.

Black Bear Conservation Committee — A coalition of government agencies, nonprofit organizations, and businesses dedicated to enhancement and restoration of black bear habitat.

Foundation for the Mid-South — The goals of this group include quality economic development and education in the mid-south. Its focus is on long-term community-based change. Grants are available for three kinds of activities: community planning, program implementation, and organizational development. It is intended that these grants lead to the foundation's goals

by building the capacity of organizations at the community level and supporting projects that community planning groups develop to make their communities places that fulfill their visions. Mini-grants are available for special short-term opportunities such training, leadership development, and conference scholarships.

Gulfcoast Tenants' Organization — A new organization based in Louisiana with the purpose of combating industrial pollution and environmental racism.

MARC 2000 — The Midwest Area River Coalition 2000 is a private sector industry coalition concerned with the future of the upper Mississippi River and Illinois Waterway as a cost-effective form of transportation and as an important natural resource. Although MARC 2000's focus is on the Upper Mississippi River, the organization's members are marine transportation companies whose interests encompass the entire inland waterways system.

Upper Mississippi Waterway Association — Furthers navigation interests in the upper corridor.

STATE LEVEL ORGANIZATIONS

Minnesota

Alliance for the Protection of Lake Pepin — Group is working on the Mississippi Valley pump storage project at Lake City.

Citizens for a Better Environment — Grassroots organization offers technical and organizational support for communities concerned with toxic and other environmental issues. Has been a party to successful lawsuits of toxic polluters.

Clean Up Our River Environment — Organization focuses public awareness on the upper Minnesota River to restore water quality, biological integrity, and natural beauty.

Clean Water Action Alliance — Coalition of more than 20 grassroots organizations favoring environmental protection and social justice.

Freshwater Foundation — Nonprofit organization dedicated to the preservation and management of freshwater resources. Convenes affected parties to facilitate action, encourages research, and provides educational programs.

Friends of the Minnesota Valley — This group successfully advocated for the Minnesota Valley Wildlife Refuge and continues to lobby for land acquisition for the refuge and other conservation activities.

Land Stewardship Project — Organization promotes and assists with implementation of sustainable agriculture practices in several watersheds as a pollution prevention strategy.

The Minnesota Project — Received grant from the McKnight foundation to survey attitudes toward the river and to publish a resource guide for the upper Mississippi.

Mississippi River Revival — Organization working for a clean river through education and hands-on activism.

Mississippi Valley Partners — A coalition of 12 villages in Minnesota and Wisconsin that promote the beauty of their states, their quality of life, and association with the river to the traveling public.

Red Wing Mississippi River Coalition — River cleanup, stewardship, river watch, active in local issues.

Southeastern Minnesota Historic Bluff Country, Inc. — A coalition of communities in the Minnesota bluff country promoting the area's beauty and historic integrity to the traveling public.

Wisconsin

Citizens for a Better Environment — Group is working on toxic pollution and other environmental issues in the corridor; offers organizational support to other activists.

Citizens for Responsible Zoning and Landowner Rights — A group that promotes landowner rights and acts as a watchdog over plans and regulations that affect private landowner inter-

ests in the bluffs country of Minnesota and Wisconsin.

Kinnikinnic Valley Landowners Association — Works to establish land trusts and conservation easements.

Mississippi River Revival — See Minnesota

Mississippi Valley Partners — See Minnesota

Wisconsin Rural Development Center — Organization promotes a network for sustainable agricultural practices.

Iowa

Iowa Natural Heritage Foundation — Nonprofit privately supported organization dedicated to the protection and enhancement of Iowa's natural resources.

Quad Cities Conservation Alliance — Alliance of about 20 volunteer conservation groups from Keokuk to Dubuque in Iowa and Illinois.

Illinois

Committee for River and Stream Protection — Statewide organization that advocates protection and restoration of Illinois rivers and streams.

Illinois Environmental Council — Statewide coalition of organizations and individuals that provides advocacy for environmental law and policy at the state level.

Missouri

Earthways — Group's activities include organizing Earth Days and promoting water conservation, public education, small cleanups, and tree planting.

Missouri Coalition for the Environment — A nonprofit citizens' group dedicated to protecting rivers and groundwater from contamination and preserving floodplains in their natural state.

Kentucky

Coalition for Health Concerns — Organization opposed to raw timber being shipped to Japan and concerned about effects on bottomland hardwoods, a uranium facility in Paducah, and a chemical complex.

Kentucky Resource Council — An alliance of local environmental groups along the tributaries of the Mississippi. The council, which offers legal and technical assistance to other groups, is concerned with waste, mining, land, and water issues. It defeated a landfill along the river.

Arkansas

Delta Cultural Center — An organization that fosters, preserves, and interprets Delta culture and promotes cultural tourism in the Delta.

Mississippi

Mississippi Action for Community Education — A nonprofit organization dealing with education, housing, leadership training, and environmental racism. Some current issues are water pollution, pesticide control, and hazardous waste sites in minority or poor communities.

Louisiana

Louisiana Environmental Action Network — A grassroots organization in "Cancer Alley" focused on toxic waste issues.

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☆U.S. GOVERNMENT PRINTING OFFICE: 1996—842-453

This document was prepared for the Mississippi River Corridor Study Commission by the Denver Service Center, National Park Service, United States Department of the Interior.

NPS D-2A, volume 2 of 2, May 1996

United States Department of the Interior • National Park Service