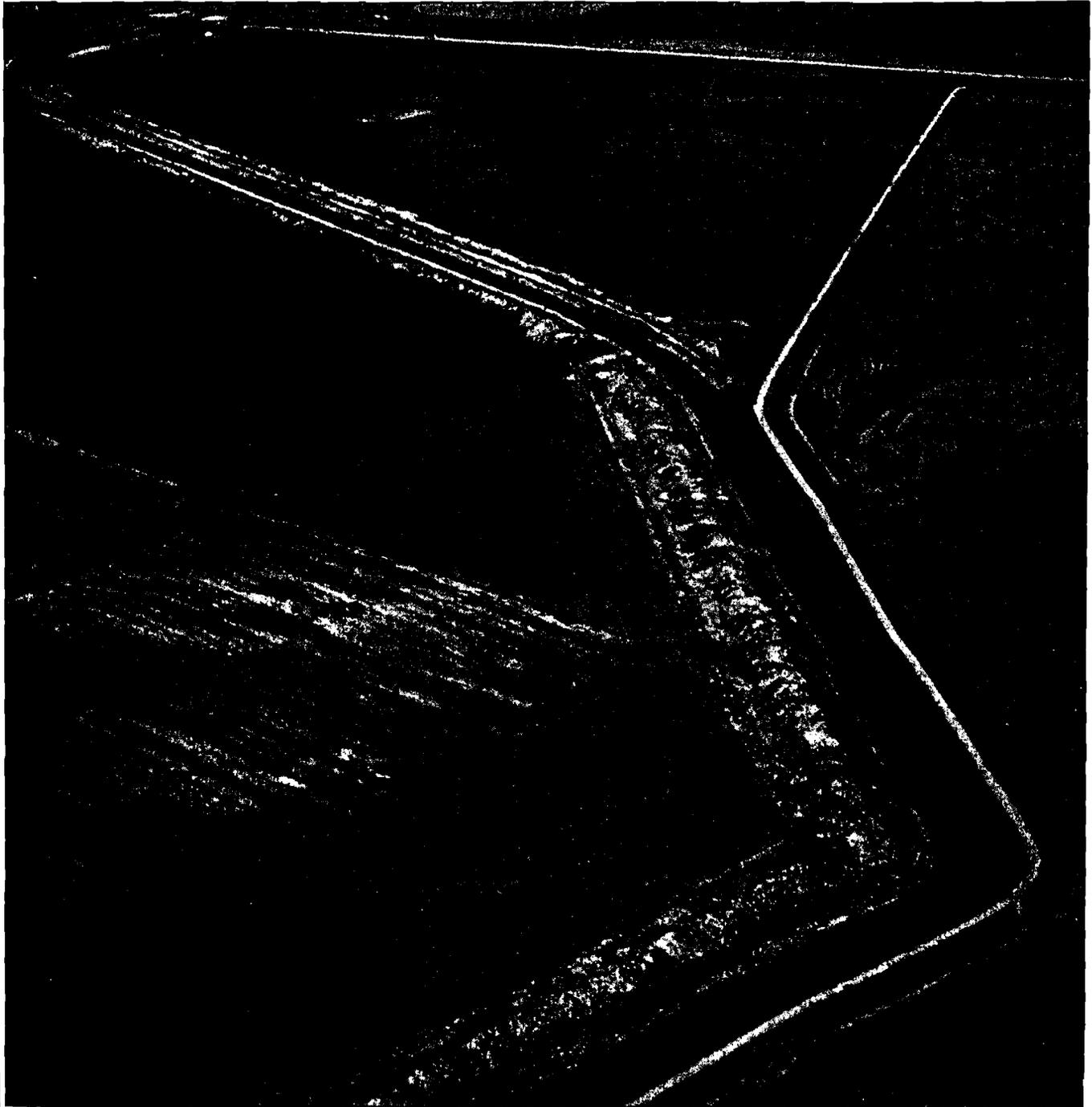


Straight-Line Streams

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THE STORY of the Missouri Bootheel began in 1803 with the Louisiana Purchase. President Thomas Jefferson probably had some second thoughts about his acquisition when he learned of all the wasteland he'd bought—from the Badlands of the Dakotas to the swamps

of the Mississippi River Delta country. It was wilderness. The Mississippi Delta was rich in a diversity of resident wildlife and provided essential habitat for millions of migratory waterfowl. But the pioneer spirit has never looked kindly on wasteland.

Draining the Bootheel swampland led to dramatic change in land use



Missouri's swamps were once viewed as obstacles.

W Diefenbach

To rid itself of the unwanted swamps, the federal government passed the Swamp Act in 1850, giving swampland to the states to sell. Money from the sales was to be used to reclaim and develop the swamps. Missouri received title to about 3.5 million acres of swampland, about 2.4 million acres of it in southeast Missouri. In a typical passing-the-buck move, the Missouri Legislature passed a bill in 1852 that transferred nearly all of the swampland to the counties. Then, in 1855, the Missouri Legislature clarified its intent by permitting the counties to sell that land so they might "disencumber themselves of the burden these lands have proven to be." In 1868, 18 years after the Swamp Act, the Missouri Legislature enacted the Swamp Bill to further assist in shedding its responsibility for swamplands. It emphasized that swampland is "the absolute property of such county for the purpose herein designated."

It's certainly understandable that residents and political leaders alike viewed the swamps of southeast Missouri as an enemy. A swamp can be a formidable foe.

Think of spending the night in the Mississippi or Missouri river bottoms with only a piece of canvas and a kerosene lantern. The public estimation of the value of swamps is exemplified by the sale of 80,000 acres of swampland in Stoddard County for \$668.95 at public auction in 1868. Such rock-bottom prices prompted the Missouri Legislature to enact legislation prohibiting counties from selling swampland for less than \$1.25 an acre. Not much land sold for many years following that act.

Change in the Missouri Bootheel, from a productive natural ecosystem once dominated by flooded cypress, water tupelo and ash—with sweetgum, red maple and oaks on the higher ridges—to an area of intensive agriculture, took about 100 years and is dramatic. The changes in Missouri's 2.4 million acres of lowland forests are paralleled by those which occurred over the entire Mississippi River lowlands. Today, the story is one of conversion of 25 million acres of swamp to about 20 million acres of cropland and a little over five million acres of lowland forest.

The Swamp Act of 1850 was one of the first steps toward conversion of lowland forests to cropland in the Bootheel. Without funds from that Act, levee systems would not have been constructed for years. The funds from land sales made possible the first levee in the St. Francis Basin, a small three-foot-high levee during the period from 1851 to 1853. Although not much by today's standards, the levees formed an intermittent line on the west side of the river from the Commerce Hills to near the river's mouth in Arkansas. The levees were short-lived, being destroyed by the 1859 flood and not maintained during the Civil War. It was not until nearly a decade later that efforts to drain and clear the swamps were renewed. The first census of agricultural land use was completed in 1870. It showed that 300,000 acres—about 12 percent of the forest of southeast Missouri—had been cleared for agriculture and lumber. Cleared areas, for the most part, were on high ground such as Sikeston Ridge.

Recognizing the importance of the Mississippi River and its swamps, Congress in 1870 authorized the President to create a commission to study "reclamation and redemption" of lands in the alluvial basin of the Mississippi Valley." The Mississippi River Commission (MRC) became a permanent force in the development of the Mississippi River Delta, and in 1879 Congress gave it broad authority. The seven members include three from the U.S. Army Corps of Engineers, one from the U.S. Coast Guard and Geodetic Survey and three civilians. A Corps of Engineers member presides.

One early act of the MRC was a survey of the St. Francis River Valley from the New Madrid Hills to its mouth. The report noted that some of the old levee system built in the 1850s remained, and it estimated that \$500,000 would be needed to complete an adequate levee system.

The importance of the Mississippi River Commission to the swamps of the Mississippi River Delta cannot be overemphasized. While the MRC was working at the bureaucratic levels and providing a focal point for planned action, lumber companies were harvesting the vast forests. Communities sprung up around the sawmills, providing a favorable access to the swamps for more development. Lumber companies, the railroads and other promoters sold and leased the cutover lands to settlers. Throughout the late 1800s and early 1900s, settlers lived off the products of the swamps—fish, birds and other wildlife—while they gradually converted the land to productive farms. The work with mule and oxen and human muscle must have been painfully slow, with periodic floods wiping out years of effort in a short span of time. During two decades—1870 through 1890—lumbering and railroad development led to the clearing of 257,000 acres of lowland forest. The total lowland forest cleared through 1890 was 557,000 acres.

From 1890 to 1900, agricultural drainage funded by long-term bonds and lumbering led to the clearing of 162,000 acres of lowland forest. The total lowland forest cleared through 1900 was 719,000 acres.

Woodlot



Most of Missouri's flooded forests have been cleared to make way for crop land

Lumber companies cleared tracts like this, then sold the land to settlers



A. J. [unclear]

In the early 1900s, drainage became mechanized with the invention of the dipper dredge—a device that could move 2,000 cubic yards of material per day. The larger ditches necessary for more effective drainage were then possible. The dredge and the formation of the Little River Drainage District in 1907 had an important impact on the Bootheel. Soon after its establishment, the Drainage District set out to drain 500,000 acres of lowland near Morehouse. Two elements in the plan stood out: (1) cutting off the Castor, Little and Whitewater rivers and Hubble, Crooked and Ramsey creeks, making a straight-line ditch carrying water from the hills east to the Mississippi River near Cape Girardeau, and (2) a system of ditches and straight-line streams through the entire length of the district, north to south, discharging accumulated surface water into Big Lake in Arkansas. The plan called for more than 700 miles of straight-line streams to drain the 500,000 acres. Work began in 1914, and the project was completed in 1920. In only 20 years—1900 to 1920—an additional 595,000 acres of lowland forests were cleared. Total lowland forest cleared through 1920 was 1,314,000 acres.

With World War I behind, the economy in high gear and federal money helping to improve the levee system, cotton began its rise to supremacy in the Bootheel. King Cotton's climb in the 1920s is evident in the fact that in 1921 seven counties in the Bootheel devoted 104,228 acres to cotton production. With favorable prices, that acreage increased to 442,933 acres in those seven counties by 1924.

The 1927 flood proved that a levee system alone could not control major Mississippi River floods and spawned a plan credited to General Edgar Jadwin. The General's contentions were that the cost of building levees to hold back a flood like that of 1927 would be prohibitive and that larger levees would only lead to the possibility of greater disasters if they failed. Two parts of the four-part plan called for use of diversions or floodways to protect Cairo, Illinois, and use of reservoirs to store floodwaters. That plan eventually led to construction of the Birds Point-New Madrid Floodway and flood-control reservoirs such as Wappapello Reservoir.

The late 1920s saw continuing debate of the Jadwin plan while the levees were repaired and improved. With cotton production increasing and the Flood Control Act of 1928 initiating General Jadwin's plan, the lowland forest shrunk another 209,000 acres. Total lowland forest cleared through 1930 was 1,523,000 acres.

The Depression of the 1930s was a boon for flood control in the form of various federal assistance programs. In January 1930, the St. Francis River broke through levees at St. Francis, Arkansas, and at Kennett, Missouri. That flood added to the interest in Jadwin's flood control plan and led to the Flood Control Act of 1936 that authorized construction of Wappapello Reservoir. A year later, the Corps of Engineers reported that it had "won its first battle with the Mississippi River during a major flood." The January 1937 flood was one that tested men and proved the wisdom of providing a place for the river to flow. The Birds Point-New Madrid Floodway was dynamited on January 25 and 26 to reduce the pressure on the Cairo, Illinois, levees. With the floodway opened, the river stage at Cairo was immediately reduced by 3.5 feet. The early flood in January and February enabled the floodway

to be closed before the usual spring rise. A crew of more than 4,000 men with earthmoving equipment and sand bags closed the emergency ring levee before the spring floods.

With the Depression, floods and limits on cotton production, landowners had little incentive to convert forests to cropland. The 1930s saw the least amount, 133,000 acres, cleared. The total lowland forest cleared through 1940 was 1,656,000 acres.

With the 1940s came World War II. Then President Roosevelt vetoed a River and Harbor Bill and urged the War Department to devote its energies to military preparedness rather than nonmilitary activities. Wappapello Reservoir in 1941 was ready for flood protection on the St. Francis River in Missouri and Arkansas. Even before the project was completed, the reservoir was tested by floods. Then, in 1945, floodwaters cascaded three to six feet deep over the spillway, flooding about 20,000 acres in the St. Francis River Valley. In spite of the 1945 flood, government assistance for drainage and agricultural subsidies helped bring stability and prosperity to the area. Cotton continued as the main crop, but soybeans began to make inroads into the southeast Missouri lowlands, especially in the northern part where the growing season with late spring and early fall frosts made cotton a risky venture.

Even before World War II ended, the Corps of Engineers stepped up civil works activities. The 1946 Flood Control Act listed 110 new projects—including improvements in the St. Johns Bayou near New Madrid.

The combination of events during the 1940s led to the clearing of an additional 216,000 acres. The total lowland forest cleared through 1950 was 1,872,000 acres.

The decade of the 1950s was ushered in by the 1950 Flood Control Act, authorizing channelization and levee work in the Little River Basin for protection of 200,000 acres. The Korean conflict demanded the nation's financial attention, relegating flood-control works to lower priority. In 1952, the Bootheel suffered through the first of a three-year drought which would cut deeply into farm profits and reduce money available for private land-clearing. Cotton, too, came on hard times, seriously threatened by introduction of synthetic fibers that lowered demand and resulted in lower prices. The combined economic and drought conditions between 1951 and 1960 resulted in only 61,000 acres of lowland forests being converted to agricultural production. While the 61,000 acres would have been three percent of the lowland forest acreage of 1870, it represented nearly 11 percent of the remaining lowland forest in 1950. The total lowland forest cleared through 1960 was 1,933,000 acres.

Soybeans, larger farm equipment, bigger farms and more commercial fertilizer and pesticides were the stories of the '60s. The short growing season, coupled with an increase in demand for synthetic fibers, led to reduced cotton production. The demand for protein-rich livestock and poultry feed, the switch from animal fat to vegetable oil in cooking and a rapid growth in the plastics industry all helped build strong demands and high prices for soybeans.

With those conditions increasing demand, the remaining lowland forest was reduced by 237,000 acres; 43 percent of what was left was cleared between 1961 and 1970.

The total lowland forest cleared through 1970 topped the two million-acre mark at 2,170,000 acres.

While the final chapters of the lowland forest in the Bootheel are still being written, changes through 1975 indicate the conversion of 2,302,000 acres of lowland forests. Pressure to convert the remaining 98,000 acres (4.1 percent of the original acreage) remains.

From the waterfowl and biological standpoint, those 98,000 acres now provide habitat for the last of some vanishing Missouri species such as river otter and swamp rabbits.

Alteration of natural streams in the St. Francis River Basin downstream from Wappapello Reservoir in Missouri and Arkansas has been dramatic. According to the U.S. Department of Agriculture's Economic Research Service, of the 3,333 miles of channels below Wappapello, only 118 miles of stream are in a natural state.

Total lowland forest converted from 1970 to 1975 was about 132,000 acres. Of the remaining 98,000 acres, 27,000 acres—a mere 1.1 percent of the original 2,400,000 acres—are in blocks of 1,000 acres or larger. Over half of these 27,000 forested acres are in state or federal ownership, with 14,500 acres in Duck Creek Wildlife Area and

Mingo National Wildlife Refuge. Addition of Otter Slough, Coon Island and Hornersville Swamp Wildlife Areas, Warbler Woods and Wilhelmina State Forest to state ownership under the Design for Conservation Program raises the percentage of the forested lowlands in public ownership in the Missouri Bootheel. This story is of change and progress and the reshaping of a lowland region. The chapters in conversion of forest to open land have been mostly written. Is it possible that in another 131 years some writer will report the reforestation of thousands of acres of the Bootheel?

If your interest in the history of these close-to-home land use changes is not satisfied, some good reading can be had in the following: *Loss of Missouri's Lowland Hardwood Ecosystem* by Paul A. Korte and Leigh H. Fredrickson, Forty-Second National Wildlife Conference; "A Century on the Missouri," *A History of the Memphis District, U.S. Army Corps of Engineers 1876-1976* by Flood M. Clay, 1976; *Disappearing Wetlands of Eastern Arkansas*, Trusten H. Holder, Arkansas Planning Commission, 1970 and *Missouri's Swamp and Overflowed Lands and Their Reclamation, December 1912*, a report to the Forty-Seventh General Assembly by John H. Nolen. □

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D. Wooldridge

