

Kaskaskia to Thebes Ecoregion 2: Middle Mississippi River

Overview

The Kaskaskia to Thebes Ecoregion 2 consists of Reaches 3 and 4 of the Middle Mississippi River corridor area from river mile 40 to 117, or from roughly Thebes Gap to the mouth of the Kaskaskia River north of Chester, Illinois. This ecoregion represents 40% of the total land area of the corridor and contains 219,502 acres. It has the highest acreage and percentage of agricultural land with 129,494 acres representing 59% of the reach. Forest land represents 19% of the reach and covers 41,818 acres.

The entire Ecoregion is mostly protected from flooding by a levee and drainage canal system. The northern portion of the ecoregion is dominated by agriculture. While the southern portion also has large amounts of agriculture, there are some relatively large expanses of forest on the Illinois side. This forested area lies primarily within the Shawnee National Forest. The National Forest helps make this ecoregion the greatest concentration of public lands in the MMR. Another prominent feature of the ecoregion is Fountain Bluff, an outlier of the Mississippi River bluff on the Illinois side that was cut off during the Pleistocene. Portions of Randolph and Jackson Counties, Illinois and Perry County, Missouri are in Reach 3. Reach 4 contains portions of Cape Girardeau County, Missouri and Jackson, Union, and Alexander Counties, Illinois.

Historically, the ecoregion's habitats were primarily floodplain and riverfront forests. A small area of prairie was present on Kaskaskia Island and a large area of bottomland hardwood forest was present in Reach 4. Much of this bottomland hardwood still exists within the Shawnee National Forest. The width of the ecoregion varies between 2-3 miles throughout most of its extent. The elevation of the floodplain at the river varies from 376 feet above amsl in the northern portion to about 333 feet amsl in the southern portion. Major tributaries influencing the region include the Kaskaskia and Big Muddy Rivers.

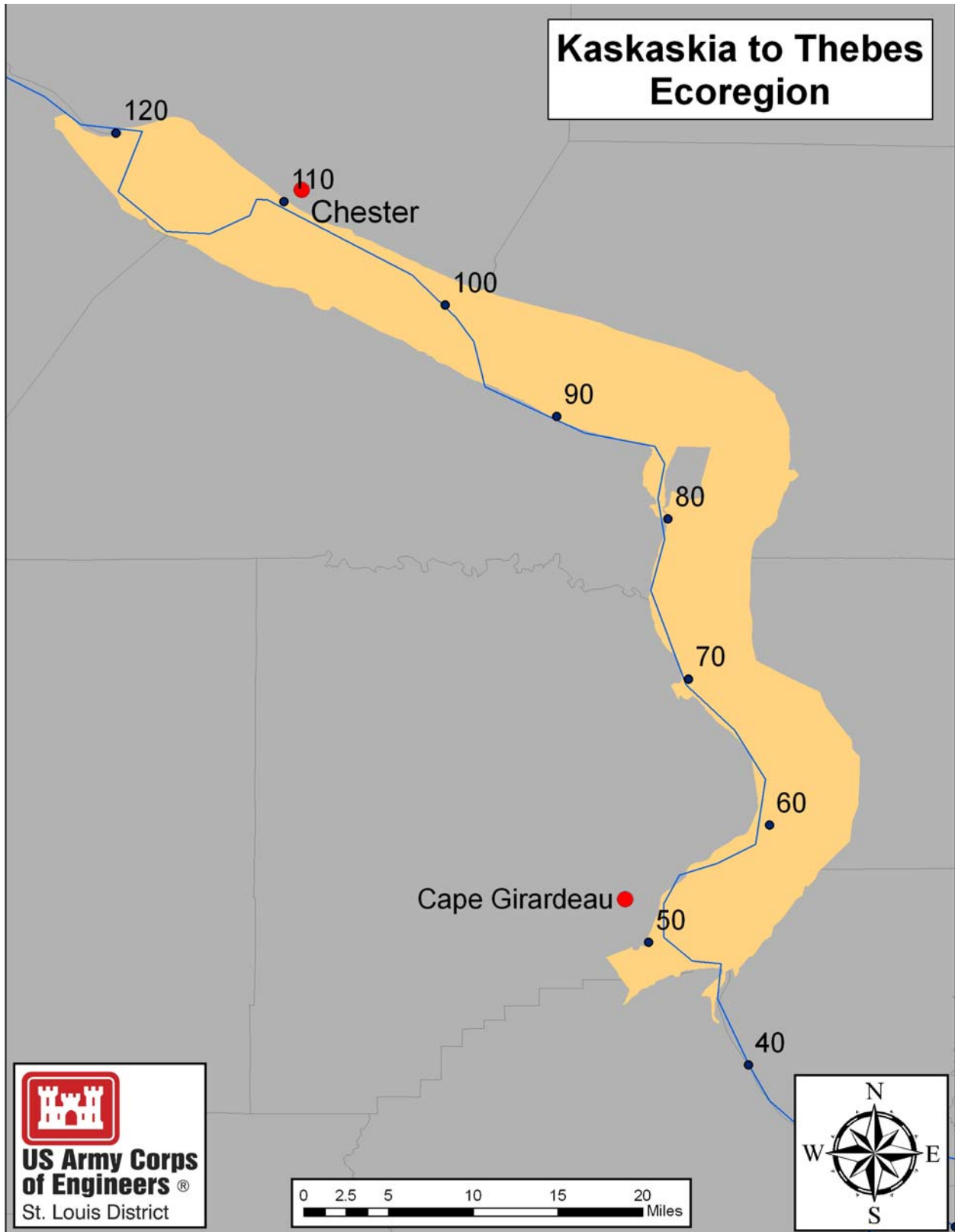


Figure ER2-1: Location of Kaskaskia to Thebes Ecoregion

Presettlement Land Use in the Early 1800s

A Hydrogeomorphic (HGM) analysis (Heitmeyer, May 2008) was used to more specifically and scientifically identify pre-European settlement vegetation types in the corridor. This approach uses information on hydrology, geomorphology, soils, and topography to identify types of vegetation that would have been present in the corridor in the early 1800s. This data provides information that can be used to determine land use trends and future restoration potential. The following was the presettlement vegetation present in this ecoregion:

Table ER2-1: Presettlement Vegetation in Kaskaskia to Thebes Ecoregion

Presettlement Vegetation	Acres	Percent
Bottomland Hardwood	15,067.54	6.84%
Bottomland Hardwood Ridge	2,368.78	1.08%
Bottomland Lake	16,023.68	7.27%
Bottomland Prairie Ridge	3,936.21	1.79%
Bottomland Prairie Swale	515.64	0.23%
Bottomland Prairie Urban	0.00	0.00%
Floodplain Forest Ridge	31,419.00	14.26%
Floodplain Forest Swale	73,099.58	33.18%
Floodplain Forest Urban	0.00	0.00%
Other	18,088.70	8.21%
Riverfront Forest	46,354.08	21.04%
Slope Forest	4,929.48	2.24%
Slope Savanna	0.00	0.00%
Terrace Forest	0.00	0.00%
Terrace Prairie	0.00	0.00%
Water	8,498.48	3.86%
Total	220,301.17	100.00%

Forests originally comprised 173,239 acres in the region or 79% of the area. Prairies originally comprised 4,452 acres in the region or 2% of the area. Water and lakes were present on 24,522 acres or 11% of the area. This ecoregion contained the majority, 51%, of all the original native forests in the corridor. Most of the original forest in this ecoregion (173,239 acres) has been converted to agricultural or other land uses and only 41,818 acres of forest land remains today.

Table ER2-2: Changes in Land Use from the Early 1800s to the Year 2000 in Kaskaskia to Thebes Ecoregion

Land Cover	Land Use Early 1800s (Acres) ¹	Land Cover 1989 (Acres)	Land Cover 2000 (Acres)	Net Land Cover Change (Acres)	
				1800 to 1989 (Acres) ¹	1989 to 2000 (Acres)
Agriculture	0.00	150,621.34	129,404.32	+150,621.34	-22,217.02
Grasses/Forbs	3,936.21	5,238.43	6,020.24	+1,302.22	+781.81
Forest	173,238.46	35,997.94	41,818.42	-137,240.52	+5,820.48
Wetlands/Marsh ²	515.64	794.56	9,910.25	+278.92	+9,115.69
Sand/Mud ³	-	987.18	2,705.60	+987.18	+1,718.42
Water	24,522.16	23,617.49	23,830.82	-904.67	+213.33
Developed	0.00	1,316.80	3,709.68	+1,316.80	+2,392.88
Unknown ⁴	18,088.70	1,727.42	2,012.7	-	-
Total⁵	220,301.17	220,301.27	219,502.03	-	-

¹ Land use 1800 categories do not match 1989 and 2000 land cover categories exactly so some estimations were made.

² Land use 1800 categories did not have wetlands/marsh. It was assumed bottomland prairie swale fit this description and was used instead.

³ Sand/Mud category does not exist in 1800 land cover categories. It is most likely represented by open water in 1800 categories.

⁴ Unknown category is much higher for 1800 because the analysis did not cover as much area as the other two land cover data sets.

⁵ Land cover 2000 total acres is lower from GIS calculation errors.

Remnant Habitat

Some areas of presettlement vegetation still exist today in the corridor. The HGM report (Heitmeyer, May 2008) outlined maps of the current locations and extent of remnant presettlement vegetation using the same factors as listed above along with comparison to existing vegetation. The following table lists the extent of remnant presettlement vegetation that still existed in 2008. Most predominant is the 23,456 acres of riverfront forest still remaining of the original 46,354 acres.

Table ER2-3: Remnant Vegetation in Kaskaskia to Thebes Ecoregion

Remnant Vegetation	Acres	Percent
Bottomland Hardwood	10,629.95	16.32%
Bottomland Hardwood Ridge	330.23	0.51%
Bottomland Lake	3,497.40	5.37%
Bottomland Prairie Ridge	66.55	0.10%
Bottomland Prairie Swale	79.25	0.12%
Bottomland Prairie Urban	0	0.00%
Floodplain Forest Ridge	8,112.38	12.45%
Floodplain Forest Swale	16,342.54	25.09%
Floodplain Forest Urban	0	0.00%
Other	959.97	1.47%
Riverfront Forest	23,455.81	36.00%
Slope Forest	1,673.86	2.57%
Slope Savanna	0	0.00%
Terrace Forest	0	0.00%
Terrace Mesic Prairie	0	0.00%
Total	65,147.94	100.00%

The following table outlines the land uses in the ecoregion in 1989:

Table ER2-4: 1989 Land Use in the Kaskaskia to Thebes Ecoregion

Class	Acres	Percent
Agriculture	150,621.34	68.37%
Developed	1,316.80	0.60%
Forest	35,997.94	16.34%
Grass/Forbs	5,238.43	2.38%
Marsh	794.56	0.36%
Open Water	23,617.49	10.72%
Sand/Mud	987.18	0.45%
Unknown	1,727.42	0.78%
Total	220,301.17	100.00%

Agricultural land increased significantly from presettlement until 1989 due to conversions of forests to farming and agricultural uses. Forest land went from 70% of the ecoregion in the early 1800s to 16% of the region in 1989; a loss of over 137,000 acres.

The following represents the land use in the region in the year 2000:

Table ER2-5: 2000 Land Cover in the Kaskaskia to Thebes Ecoregion

Class	Acres	Percent
Agriculture	129,494.32	58.99%
Developed	3,709.68	1.69%
Forest	41,818.42	19.05%
Grass/Forbs	6,020.24	2.74%
Marsh	9,910.25	4.51%
Open Water	23,830.82	10.86%
Sand/Mud	2,705.60	1.23%
Unknown	2,012.70	0.92%
Total	219,502.03	100.00%

Over half of this ecoregion has been converted to agricultural use. Acreages of forest and marsh land increased from 1989 to 2000. Agricultural land decreased by about 20,000 acres from 1989 to 2000. Other land use acreages have stayed about the same from 1989 to 2000. This ecoregion contains 44% of all the agricultural land currently present in the entire corridor.

Table ER2-6: Farmland Types in the Kaskaskia to Thebes Ecoregion

Type	Acres	Percent
All areas are prime farmland	53,249.00	24.20%
Farmland of statewide importance	23,847.60	10.84%
Not prime farmland	49,074.61	22.30%
Prime farmland if drained	56,928.98	25.87%
Prime farmland if protected	12,001.55	5.45%
Water	24,931.74	11.33%
Total	220,033.48	100.00%

Approximately 77,000 acres in the region are considered prime farmland or farmland of statewide importance or about 35% of the region. About 118,000 acres are considered non-prime or conditionally prime based on drainage or flooding frequency, or 54% of the region.

Table ER2-7: Land Use and Flooding Frequency in the Kaskaskia to Thebes Ecoregion

Land Use and Flooding Frequency	Acres	Percent
Agriculture, Frequent	25,818.63	11.74%
Agriculture, Not Frequent	103,448.20	47.03%
Non-Agriculture, Frequent	34,714.61	15.78%
Non-Agriculture, Not Frequent	27,458.70	12.48%
Unknown, Frequent	669.11	0.30%
Unknown, Not Frequent	1,342.00	0.61%
Water	26,499.08	12.05%
Total	219,950.33	100.00%

Agriculture

Agriculture is the dominant land use in the region with 129,494 acres in the year 2000 covering almost 59% of the area. Agricultural lands decreased from 1989 to 2000 by almost 21,000 acres. Much of these areas were converted to forests and/or wetlands.

Forest

This region had 173,239 acres of forest in the early 1800s covering about 79% of the area. Forest vegetation declined a little over 137,000 acres from the early 1800s to the year 1989; a decrease from 79% of the region to 19% of the region. Forests have increased by almost 5,000 acres from 1989 to 2000.

Grass/Forbs

Prairie vegetation originally comprised 4,452 acres in the region or 2% of the area. This was the lowest acreage and percentage of the three ecoregions in the corridor. The acreage increased slightly by 1989 and again in by 2000 and is now closer to 3% of the ecoregion.

Water and Wetlands

Based on the 1989 land cover data this ecoregion contained 24,412 acres of water and wetlands (marsh). By 2000 the land use data indicated 33,740 acres of water and wetlands or an increase of over 9,000 acres in eleven years. Based on the 2000 land cover data this ecoregion contained about 40% of all the wetlands and water in the MMR corridor.

Urban Lands

Of the 55,675 acres of developed land in the corridor, 3,710 acres (or 7%) is located in this ecoregion. Developed land increased in the region by about 2,400 acres from 1989 to 2000. In 2000 less than 2% of the land in the region was considered urban developed land.

Public Lands

The Thebes to Kaskaskia ecoregion contains 32,959 acres of public land or 53% of all public land in the Middle Mississippi River corridor. Public land represents about 15% of the total land area in the ecoregion. The Shawnee National Forest and the Middle Mississippi River Wildlife Refuge are both located in this ecoregion contributing to the higher percentage and amount of public land. The majority of the land in the region is in private ownership.