

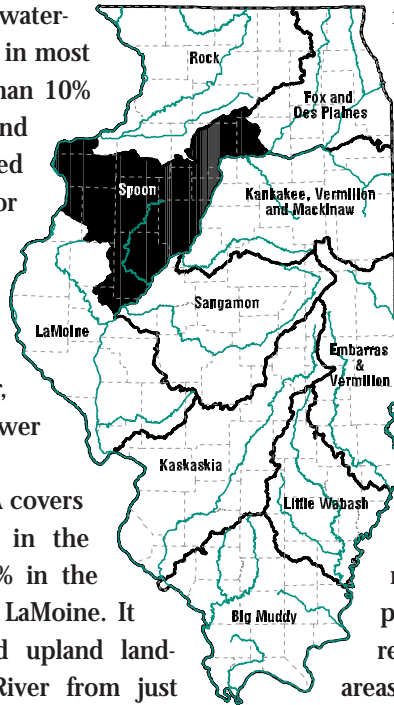
C H A P T E R S E V E N

Spoon River Watershed

The seventh largest of the 10 watersheds, the Spoon is fairly average in most respects. It accounts for more than 10% of the statewide acreage of upland forest, grassland and non-forested wetlands. (See page 106 for a color map of the watershed's land cover.)

Portions of three Resource Rich areas lie within this watershed — the Middle Illinois River, Peoria Wilds and Mississippi-Lower Rock.

- The Middle Illinois River RRA covers 899 square miles — 24% in the Spoon River watershed, 41% in the Sangamon and 35% in the LaMoine. It incorporates floodplain and upland landscapes along the Illinois River from just below Peoria to Florence. The third largest RRA, the site includes sand prairies, which have a mix of native tallgrass and plants more commonly associated with the western U.S., such as the prickly pear cactus.
- The Peoria Wilds RRA is 434 square miles — 42% in the Spoon River watershed and 59% in the Kankakee — that encompass the



floodplain of the Illinois River, deeply dissected bluffs and hills bordering the floodplain, and relatively flat agricultural areas away from the river. A large tract of forest runs along the bluff to the west of the river, and non-forested wetlands are concentrated along the river. One of the largest remaining oak woodland areas in Illinois is found here.

- The Mississippi-Lower Rock River RRA encompasses 715 square miles — 81% in the Rock River watershed and 19% in the Spoon River watershed. It includes major rivers, bottomlands, upland forests, prairies and river bluffs. The area has a relatively high total acreage of natural areas because of the Mississippi River sites.



One of the largest remaining oak woodland areas in Illinois is found here.

ECOSYSTEM MONITORING

Based on the eight CTAP sites that were assessed, the Spoon watershed had the best average HBI scores of all ISIS basins and above average EPT richness. Conversely, native fish richness and habitat quality were below average. Most streams

Table 26. Watershed Land Cover

Land Cover	Acres	Percent of Watershed	Statewide Percentage*
Upland forest	449,073	12.9% (3)	10.9% (4)
Grassland	668,468	19.1% (3)	10.4% (5)
Non-forested wetland	38,883	1.1% (3)	11.0% (4)
Bottomland forest	53,777	1.5% (7)	6.1% (6)
Water	47,706	1.4% (6)	9.5% (5)
Urban/built-up	91,772	2.6% (5)	4.9% (6)
Cropland	2,146,345	61.4% (5)	10.0% (7)
Total acreage	3,496,028	100.0%	10.0% (7)

* The watershed's percentage of the land cover type statewide, e.g. 10.9% of the state's upland forests are located in this watershed. Note: the watershed's rank (1st-10th) is shown in parentheses.

sampled had severe erosion and sand deposition. Only one monitored stream had good habitat quality, David's Creek near Monmouth in Warren County. While the Edwards River had great EPT richness, the stream suffered from sand deposition to the extent that pools were relegated to narrow areas along banks.

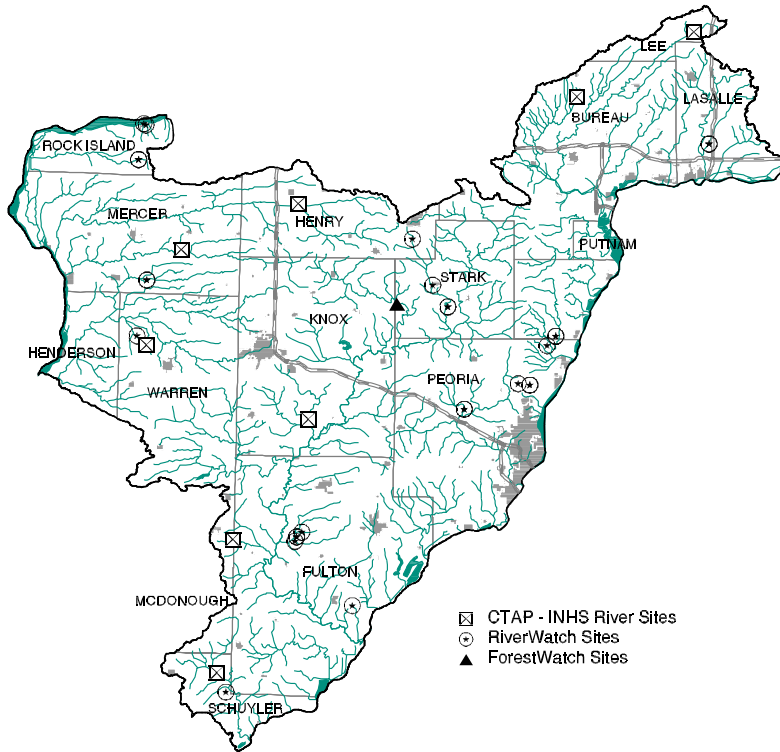


Figure 44. Monitoring sites

RiverWatch volunteers collected 74 samples at 34 sites on 29 streams. RiverWatch indicators suggest that the watershed's streams are among the best in the state. However, it should be noted that most of the sites monitored were located on streams that flow into the Mississippi or Illinois rivers rather than into the Spoon River itself.

The watershed ranked either first or second among the ten watersheds in all four indicators. Overall, the values reflect high macroinvertebrate biodiversity and only modest organic pollution. The average MBI value has decreased over the five-year period, indicating an improvement in stream quality. However, the changes are not statistically significant.

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Table 27. Watershed Indicator Scorecard

Indicator	Watershed Value	Statewide Value	Watershed Ranking
<i>Macroinvertebrates</i>			
HBI	4.4	5.2	1
MBI	5.3	5.7	2
EPT richness	9.7	7.1	2
EPT taxa (RW)	3.4	2.6	1
Taxa richness	9.5	8.9	2
Taxa dominance	77.5%	80.4%	2
<i>Fish</i>			
Native fish	10.8	13.6	9
Darter richness	1.8	1.9	5
Exotic species	0.0	0.2	1
<i>Habitat</i>			
Habitat score	83.8	88.6	7

Table 28. MBI Values

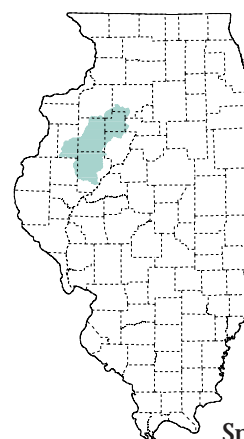
Statistic	1995	1996	1997	1998	1999	Overall
Average	5.92	5.25	5.38	5.15	4.97	5.29
Standard deviation	1.36	0.81	0.98	0.63	0.82	0.93
Minimum	4.71	2.69	3.41	4.38	3.18	2.69
Maximum	9.03	5.93	7.28	6.37	6.61	9.03
Number of sites	9	14	16	13	16	68

* Only samples with at least 25 organisms were included in the analysis.

REGIONAL ASSESSMENTS

Two regional assessments have been conducted in this watershed — for the Spoon River basin and the Illinois River Bluffs.

Spoon River Basin



The Spoon River rises in west-central Illinois near the small town of Neponset in southwestern Bureau County. For approximately the first 100 miles of its course, the Spoon parallels the Illinois River, then abruptly turns southwestward in Fulton County. Within approximately 25 miles, the Spoon joins the Illinois River opposite the town of Havana.

The river basin encompasses a surface area of approximately 1,845 square miles and includes portions of nine counties. Most of the land is used for agricultural purposes, ranging from 97% in the upper reaches of the watershed to 55% in the lower Spoon.

Prior to European settlement approximately 67% of the Spoon River area was prairie and the remaining 33% was timber. Only 112 acres of prairie, 0.01%, remain in an undegraded, high-quality ecological condition. The 2.4 acres of high quality dry-mesic prairie found in the area accounts for 16.7% of such prairie remaining in Illinois. The basin's wet-mesic upland forest accounts for 18% of the total remaining in the state. While the original savanna acreage for the area is unknown, the area has a notable small remnant (0.7 acre) that accounts for 7.6% of all the high quality savanna in Illinois. It is the only remnant of a Grade A savanna in the state. Other significant features:

- underground the region is literally a “coal mine” and 7.5% of the area contains contiguous areas of surface-mined land;
- only 21 stream-miles of the Spoon have been channelized, making it one of the least channelized watersheds in Illinois;
- the area is rich in archaeological resources, with more than 2,600 sites recorded; a major archaeological museum, Dickson Mounds State Museum, presents the world of native Americans through 12,000 years in the Illinois River Valley.

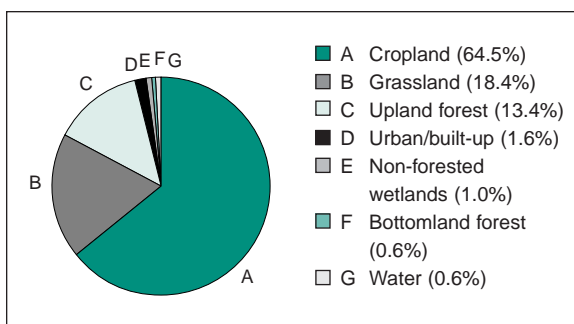


Figure 45. Spoon River basin land cover

Plant and animal species

Twenty-eight percent of the state's plants grow in the Spoon River basin, including the state-threatened bunch-flower, a lily found in wet to mesic prairies that occurs in Massasauga Prairie Nature Preserve.

Illinois endangered bird species that live in the area include the black-crowned night heron, northern harrier, upland sandpiper and Henslow's sparrow. Threatened species include the red shouldered hawk, brown creeper, least bittern, and loggerhead shrike. While several bird species have disappeared from the area, the wild turkey has been re-established.

Basin acreage - 1,180,951 acres
State land* - 2,399 acres
Federal land - 1,671 acres
Total natural areas - 217.5 acres
High-quality natural areas - 111.3 acres
Nature preserves - 84 acres
<i>* Does not include natural areas or nature preserves that may be state owned.</i>

More than three-fourths of Illinois' mammal species are known or likely to occur in the Spoon river area. The river otter, once locally extinct, was reintroduced in 1996. One endangered reptile, the massasauga rattlesnake, is known to exist in the basin, but the state-threatened timber rattlesnake has been extirpated.

Local economy and outdoor recreation

Except for Peoria County, the area is mostly rural. Between 1870 and 1990 the combined populations of Peoria, Fulton, Knox, Stark and Warren counties grew only 90%, compared to statewide growth of 350%. Not surprisingly, urbanized Peoria County had the greatest population increase, up 285%.

Since the early 1970s, the area economy has changed steadily from a manufacturing base to a more service-related economy. In 1970, the service sector accounted for 19% of the area's jobs; by 1994, it accounted for more than one-third. Although manufacturing employment fell to 12% of area employment, it still accounts for more than 20% of all income, and Caterpillar in Peoria remains the largest employer.

The area has one state-owned outdoor recreation site, Snakeden Hollow State Fish and Wildlife Area. Restored from a Midland Coal Company surface mine, the site encompasses 2,500 acres near Victoria in Knox County. Emiquon National Wildlife Refuge is a federally-owned site with 1,671 acres near the confluence of the Spoon and Illinois



The area is rich in archaeological resources, with more than 2,600 sites recorded.

rivers in Fulton County. When land acquisition is complete, the refuge will encompass approximately 11,000 acres.

Threats

Habitat loss and fragmentation - Habitat losses for prairies and wetlands (only 1% of the land is in wetlands) have exceeded the rates for the state as a whole, while forest habitat loss has occurred at a lower rate. In addition to habitat loss through conversion to cropland, most remnant plant communities in the Spoon River basin have experienced changes because of fragmentation, the absence of fire, and exotic species introduction.

Tiling and flooding - Tiling agricultural land to improve drainage has a negative impact on streams. The rapid drainage increases the pulse of floods as well as the intensity and duration of low-flow once the water has moved downstream. Also, stream organisms are not adapted to these extreme water level fluctuations and whole populations can be extirpated.

Sedimentation - The Spoon River watershed is the largest contributor of siltation to the Illinois River. Because of this siltation, no parts of the Spoon are rated as high quality or as a Biologically Significant Stream.

Opportunities

To improve bird management in the area, large tracts of forest are needed to offset fragmentation. One candidate is the Emiquon National Wildlife Refuge in Fulton County. Restoring grassland tracts of more than 100 acres would also improve prospects for re-introducing Franklin's ground squirrels and provide additional habitat for badgers and red fox.

Restoring wet prairie, especially at the Massasauga Prairie Nature Preserve, would help birds as well as amphibians and reptiles. Restoring natural vegetation and maintaining riparian zones will improve water quality.

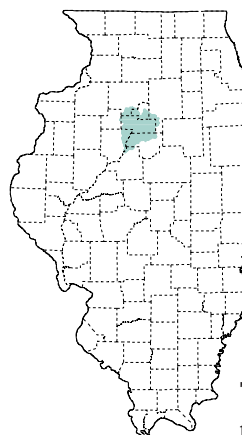
Other recommendations for the basin include:

- protect both upland and floodplain forested tracts and maintain dispersal corridors such as the forested riparian zone along the Spoon River to enhance the suitability of habitat for the gray fox, bobcat, river otter, and amphibians

and reptiles;

- manage developed areas, especially urban forests and parks, to improve bird habitat by encouraging oaks and leaving shrubby areas for migrants;
- in agricultural areas, provide increased cover for wildlife with shrub-lined drainage ditches and unmowed roadsides.

Illinois River Bluffs



Located in west-central Illinois, the Illinois River Bluffs begin near Hennepin, where the Illinois River makes its 'big bend' toward the south, and ends at the southern end of Peoria Lake at East Peoria, taking in nearly 561,000 acres. This part of Illinois marks the furthest reach of the massive glaciers that crept from the north and east during the most recent ice age.

As the ice walls melted, rock rubble piled up along their edges. The resulting moraines snake across today's landscape, running roughly north to south for dozens of miles. Streams sliced their way through these moraines on their way from the uplands to the Illinois River below, creating a picturesque terrain.

The mix of woodland, savanna, and prairie found in the bluffs along the Illinois River is one of the largest remnant forest ecosystems left in Illinois. The Illinois River Bluffs has more forest than most parts of the state — more than one-half of its presettlement forest area remains wooded today, compared to 31% statewide, and more of the forests retain their original ecological integrity, 0.2% compared to 0.08% statewide.

Other significant features include:

- the Illinois River was one of three river-floodplain ecosystems in the U.S. given priority for restoration by the National Academy of Science National Research Council;
- 277,847 acres have been designated a state Resource Rich Area;



Maintaining the forested riparian zone along the Spoon River will enhance the suitability of habitat for the gray fox, bobcat, river otter, and amphibians and reptiles.

- a number of natural communities that are rare or absent in the rest of the state occur here — more than half of the good-quality glacial drift hill prairie, almost half of the seeps, and all of the tall shrub fen.

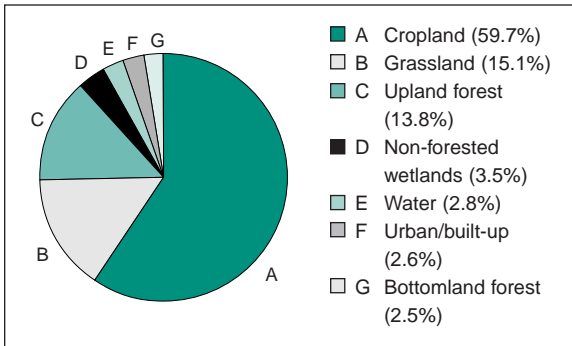


Figure 46. Illinois River Bluffs land cover

Plant and animal life

Overall, the area is not a haven for rare species. Only 1.3% of Illinois' officially endangered species and 10.5% of its threatened species are found here. However, the valley does harbor rare plant species such as the decurrent false aster, which exists only in the Illinois River Valley, and Schreber's aster, found in Illinois only in and around the river bluffs. A little more than a thousand species of vascular plants (four of five of them are native) are known in the area, but only 10 appear on the T&E list.

Basin acreage - 560,874 acres
 State land* - 9,475 acres
 Federal land - 1,622 acres
 Total natural areas - 2,459 acres
 High-quality natural areas - 501 acres
 Nature preserves - 1,300 acres
 * Does not include natural areas or nature preserves that may be state owned.

Some three dozen species of wetland birds are known to inhabit the region, including 16 species, such as the black-crowned night-heron and the king rail, whose survival in Illinois is recognized as threatened or endangered. The double-crested cormorant has begun to recolonize former breeding areas around the edges of some of the region's larger backwater lakes, and the wild turkey again roams area woods.

The valley serves as an essential corridor for transient species, including the federally-threatened

bald eagle, the bobcat, and many migratory bird species.

Local economy and outdoor recreation

Since 1870 the population in the Illinois River Bluffs has grown 174% and in 1990 the area was home to 2% of the state's population. Peoria County nearly quadrupled in population during that time period, while Woodford County grew only after World War II (by about 70%) as the suburbs of Peoria extended into this largely rural county. Marshall County has remained rural and actually lost one-fourth of its population.

In 1994, the area supported nearly 136,000 jobs and generated \$5.0 billion total personal income. Peoria County accounted for more than 80% of both. In 1970, manufacturing provided 21% of the region's jobs; by 1994 it provided only 12% while the service sector provided 37%. In rural Marshall County, the farm sector led the economy in 1970; by 1994 it was fourth in both employment and earnings.

Recreational opportunities abound in and around the backwater lakes of the Illinois River. The state owns two major recreation areas — Marshall State Fish and Wildlife Area and Woodford County Conservation Area — which together cover nearly 9,000 acres. Both sites offer ample opportunities for fishing, boating, hunting, hiking, camping, picnicking, and viewing wildlife. Together they generate an estimated \$1.3 million in total economic output for the area.

Threats

Habitat loss and fragmentation - Local wetlands and prairies disappeared here at about the same rate as in the rest of Illinois and of the estimated 107,000 acres of presettlement wetlands, about 33,000 acres are left. Forest and savanna, however, disappeared at rates faster than the statewide averages. The losses continue as once-remote farms have acquired new value as building sites. Urban development has already impacted some of the best remaining natural areas and threatens others as it sprawls north of Peoria.

The valley serves as an essential corridor for transient species, including the federally-threatened bald eagle, the bobcat, and many migratory bird species.

The area has more than 700 separate emergent wetlands, land covered with water shallow enough that plants rooted in the water grow mainly above it. The largest such wetland (in the Marshall County Conservation Area) is 74 acres, but the average wetland is 3.1 acres. Forested wetlands are split into more than 800 separate parcels with a mean size of 13.8 acres — considerably smaller than the 500 acres thought necessary to provide safe breeding habitat for many forest birds.

Pollution - A century ago Chicago decided to eliminate its water pollution problem by flushing it down the Illinois River. By 1922 the Illinois River at Chillicothe was ecologically dead. Improved sewage treatment upstream has restored that part of the river to life but not yet to health; the pondweeds, coontail, and wild celery that once sustained flocks of hungry waterfowl on Peoria Lake, for example, never came back.

Altered hydrology - Draining chronically wet soils makes them farmable, but it destroys some kinds of habitat and alters the way others function. While some amphibians adapt well to humanized environments — the bullfrog can use drainage ditches, flooded fields, even livestock watering troughs as breeding habitat — most species are not so opportunistic. The wet prairies preferred by the eastern massasauga snake have been dramatically reduced in extent since settlement, resulting in the snake's extirpation from the Illinois River Bluffs.

Sedimentation - Siltation, increased water temperatures, and desiccation all follow when riparian vegetation is removed and fields are tilled for agricultural production. Excessive siltation is among the most damaging forms of stream pollution. In general backwater lakes in the area have lost 70% of their capacity to sedimentation since settlement.

Opportunities

To enhance habitat for breeding birds, existing large forest sites should be conserved. The Peoria Wilds Resource Rich Area, combined with wetlands in Marshall County, could turn the Illinois River Bluffs into a breeding source for other parts of Illinois. Studies suggest that prescribed fires can benefit bird species such as the northern oriole, summer tanager, rose-breasted grosbeak, and great crested flycatcher. The red-headed woodpecker, whose presence in the Midwest has declined nearly

2% a year since 1966, has also shown higher reproductive success in burned woods.

The region could be made more welcoming to migrant birds that seek open woods by restoring degraded but still viable savanna. Small sites could be restored with native plant communities, keeping in mind the needs of migrant birds. Protecting both upland and floodplain forested tracts and maintaining dispersal corridors such as the forested riparian zone along the Illinois River could enhance the suitability of the area as habitat for gray fox and bobcats. Remaining forests could be managed to maintain large snags for forest-dwelling bats and den sites for other mammals such as the southern flying squirrel.



Existing wetlands should be preserved and they should be buffered by wooded and grassland strips. Wetlands or riparian forest restoration could attract river otters, and maintaining small wetlands would benefit almost all amphibian and reptile species. Also, maintaining small, temporary, fishless ponds in large forest tracts would benefit many of these species. For most amphibians, however, agricultural fields and vacant lots are barriers to dispersal. For these species to persist in the landscape, small wetlands must be connected to other wetlands by corridors of natural vegetation.

To provide valuable grassland habitat for birds, sites should be at least 100 acres, and be burned or mowed on a schedule that leaves some areas unmanaged for at least three years. Preserving native prairie and other grassland habitats would provide additional habitat for badger and red fox.

Siltation, desiccation, and higher than normal temperature would all be reduced to acceptable levels if streams were lined with native plants that shaded the stream, stabilized the banks, and filtered sediment and chemicals from runoff before they reached the stream.

In general backwater lakes in the area have lost 70% of their capacity to sedimentation since settlement.