

LOWER SANGAMON RIVER VALLEY

AN INVENTORY OF THE REGION'S RESOURCES



ABOUT THIS REPORT

Lower Sangamon River Valley: An Inventory of the Region's Resources is a product of the Critical Trends Assessment Program (CTAP) and the Ecosystems Program of the Illinois Department of Natural Resources (IDNR). Both are funded largely through Conservation 2000, a State of Illinois program to enhance nature protection and outdoor recreation by reversing the decline of the state's ecosystems.

Conservation 2000 grew out of recommendations from the 1994 CTAP report, *The Changing Illinois Environment*, the 1994 Illinois Conservation Congress, and the 1993 *Water Resources and Land Use Priorities Task Force Report*.

The Critical Trends report analyzed existing environmental, ecological, and economic data to establish baseline conditions from which future changes might be measured. The report concluded that:

- the emission and discharge of regulated pollutants over the past 20 years has declined in Illinois, in some cases dramatically;
- existing data suggest that the condition of natural systems in Illinois is rapidly declining as a result of fragmentation and continued stress;
- data designed to monitor compliance with environmental regulations or the status of individual species are not sufficient to assess ecological health statewide.

The Illinois Conservation Congress and the Water Resources and Land Use Priorities Task Force came to broadly similar conclusions. For example, the Conservation Congress concluded that better stewardship of the state's land and water resources could be achieved by managing them on an ecosystem basis. Traditional management and assessment practices focus primarily on the protection of relatively small tracts of land (usually under public ownership) and the cultivation of single species (usually game animals or rare and endangered plants and animals). However, ecosystems extend beyond the boundaries of the largest parks, nature preserves, and fish and wildlife areas. Unless landscapes are managed on this larger scale, it will prove impossible to preserve, protect, and perpetuate Illinois' richly diverse natural resource base.

Because more than 90% of the state's land area is privately owned, it is plainly impossible for Illinois governments to acquire resources on the ecosystem scale. Therefore, the Task Force and the Congress called for public agencies and private landowners to cooperate in a new approach to natural resource protection and enhancement. If landowners can protect, enhance, or restore precious natural resources through enlightened private management, the need for public acquisition can be reduced.

The Congress and the Task Force agreed that this new approach ought to be:

- organized on a regional scale;
- voluntary and based on incentives;
- guided by comprehensive and comprehensible ecosystem-based scientific information;
- initiated at the grassroots rather than in Springfield.

Finally, the Congress and the Task Force agreed that natural resource protection need not hamper local economic development but can enhance it through tourism and outdoor recreation.

CTAP described the reality of ecosystem decline in Illinois, while the Congress and the Task Force laid out principles for new approaches to reversing that decline. Conservation 2000, designed to achieve that reversal, has implemented a number of their recommendations by funding several programs, one of which is IDNR's Ecosystems Program. The program redirects existing department activities to support new resource protection initiatives such as Ecosystems Partnerships. These partnerships are coalitions of local and regional interests seeking to maintain and enhance ecological and economic conditions in local landscapes. A typical Ecosystem Partnership project merges natural resource stewardship (usually within a given watershed) with compatible economic and recreational development.

(continued on inside back cover)

A Project of the Critical Trends Assessment Program

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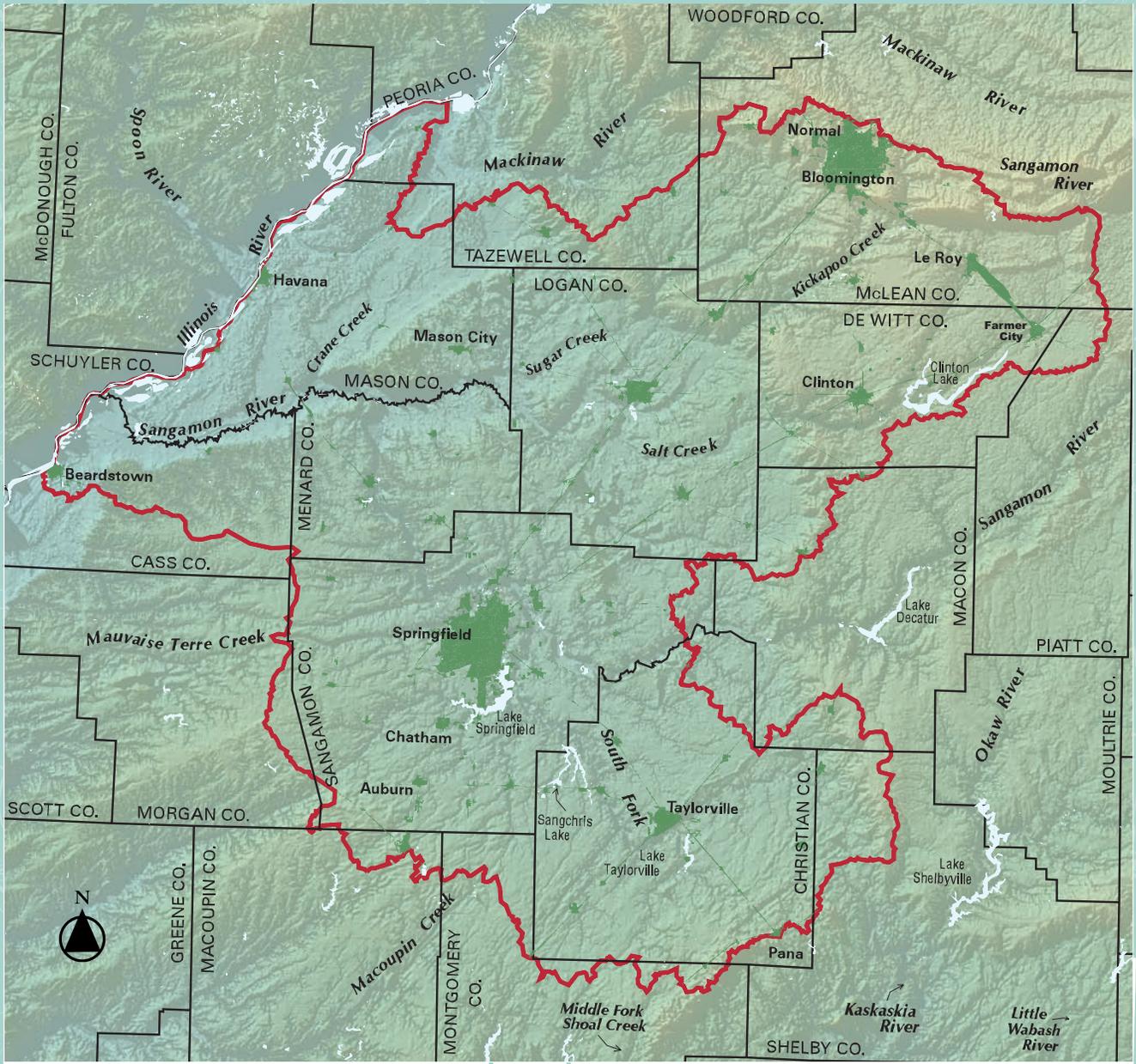
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Landforms in the Lower Sangamon River Valley



L. Smith, ISGS



Elevation in feet





Michael R. Jeffords

The Lower Sangamon River Valley is an important area for migrating birds, such as these American white pelicans.

LOWER SANGAMON RIVER VALLEY

AN INVENTORY OF THE REGION'S RESOURCES

Some people arrive with shotguns, others with telephoto lenses. They are looking for birds, and the Lower Sangamon River valley is one of the best places in the state to find them. Its central location on the Mississippi Flyway, its diverse habitats and largely rural landscape provide homes or rest areas for nearly every species of bird found in Illinois. Of the 300 species of birds found regularly in Illinois, all except one can be found here; more than half of them breed in the region. The bird species include 30 that are listed by the state as threatened or endangered (T&E species). Local economies are boosted by bird watch-

ers seeking migrant species and hunters seeking southbound ducks and geese. (Sanganois Conservation Area has the third highest annual average duck harvest in the state, with more than 3,600 ducks taken each hunting season.) While other fauna don't come anywhere near the occurrence of bird species, they are fairly well represented in the region. At least 29 reptiles (four T&E species) can be found here, almost half the reptiles found in Illinois. Sixteen amphibians (40 percent of the state total) are known or likely to occur here; only one, the Illinois chorus frog, is state-listed. Also recorded are 100 species of fish (four T&E), 44 species of mussels (nine T&E and

one non-native) and 18 large crustaceans. Of the 59 mammals found in Illinois, 47 of them are known or likely to occur in the Lower Sangamon region. The bobcat is found here, as are both of the state's listed mammals: the federally endangered Indiana bat, and the state threatened river otter. The river otter had been lost from the region, but was reintroduced into the Illinois River and has been accidentally trapped in Quiver Creek in Mason County. Some mammals, like the badger and the western harvest mouse, are seldom seen; others, like the white-tailed deer, are so abundant that they may be having an undesirable impact on the vegetation. As for the flora of

the Lower Sangamon, 1,476—almost half the plants recorded in the state—can be found here. Twenty-eight are T&E species and 337 are non-native species.

As described here, the Lower Sangamon River valley includes the lower 107 miles of the river (from its confluence with Mosquito Creek east of Springfield), the Sangamon's two major tributaries, Salt Creek and the South Fork, and several smaller tributaries. Together they collect water from almost 4,575 square miles of land and drain it into the Illinois River north of Beardstown. The valley also includes the east bank of the lower middle Illinois River, a 50-mile long reach between the Mackinaw River on the north, downstream to the Sangamon River on the south. Overall, the area stretches from Bloomington-Normal in the northeast to the northern edge of Montgomery County in the southeast. Although portions of five natural divisions occur within the valley, most of the area lies within the Grand Prairie Division.

THE SHAPE OF THE LAND

Over the past 1.8 million years, glaciers have covered Illinois over and over again. Not much is known about the first few glaciers, not even exactly how many there were, but central Illinois is a good place to find evidence of the two most recent ones. About 300,000 years ago the Illinoian glacier covered about 80 percent of Illinois. As this enormous blanket of ice spread across the land, it picked up soil, rocks, and boulders and moved them hundreds of miles. In many places it scraped so deep that it reached the top of the bedrock.

Near Lake Springfield there are very old dolomite rocks that have a pattern of parallel lines and gouges that point to the southwest and tell us the direction that the ice was moving when it scraped across Sangamon County.

As the Illinoian glacier melted it left behind an area called the Springfield Till Plain—a flat surface covered by a mixture of rocks, gravel, sand, silt, and clay. Sometimes the climate caused the glacier to melt back at the same speed it was flowing forward. When this happened, the glacier appeared to be standing still, but was still dropping debris as the front melted. This formed moraines, now seen as curving ridges that can be 100 or more feet high. Buffalo Hart moraine was left by the Illinoian glacier and now appears as a series of hills spread out in an arc that covers four counties. Near the town of Elkhart a remnant visible from Interstate 55 is still impressively high despite 125 millennia of erosion.

After the Illinoian glacier melted, a 50,000-year-long ice-free period occurred. Then, about 20,000 years

ago, the Wisconsin glacier slid into Illinois from the northeast and covered about one-third of the state. Compared to previous glaciers it was fairly short-lived and about 10,000 years ago the warm interglacial period in which we now live began. The Wisconsin glacier left moraines that arc across the northeast corner of the region. In Logan County, Interstate 55 crosses from the older Illinoian Till Plain to the younger Bloomington Ridged Plain. Driving north from Springfield through Bloomington, travelers may notice that every few miles the road rises before them, lifts them high enough for a view of the surrounding countryside, then swoops down to a level plain once more. One geologist refers to this trip as "moraine surfing," a sport that appeals to those who appreciate nature's more subtle creations. An excellent place to visit the Shelbyville moraine, which marks the southernmost reach of the Wisconsin glacier, is at Moraine View State Park in McLean County. While these gently rolling hills may not be very impressive compared



Glacial moraine

Michael R. Jeffords



Michael R. Jeffords

River otter

to the mountainous regions of other states, the forces that built them were very impressive, indeed.

RIVERS AND STREAMS

Rivers seem like such permanent parts of the landscape that it's hard to imagine that they come and go just as the glaciers did. In central Illinois there is a direct connection between the rivers we see today and the glaciers that scraped across the state. If we could time-travel back before the Great Ice Age began, we could visit ancient rivers that had been flowing across central Illinois for millions of years, draining the uplands and carrying water southward to the sea. The wide Mississippi River flowed from the north, then looped east into central Illinois; the even wider Mahomet-Teays River flowed west from the eastern part of the continent and met the Mississippi in what is now Mason County.

These rivers and their tributaries had carved out valleys in the bedrock and

were flowing between tall limestone bluffs. Permanent as they seemed, they would not last forever. During the ice age the glaciers covered them, and when the last ice melted the old rivers were gone. The valleys of the Mahomet-Teays and the Mississippi were filled with sand, gravel, silt, and clay. The Mahomet-Teays would never reappear but the ancestral Mississippi had not been completely obliterated. The Illinoian glacier covered much of the northern part of the Mississippi River but the southern part was open and continued to carry rainwater, glacial meltwater and sediment to the sea. Once that glacier had melted the river returned to its old channel flowing near what is now Peoria, Havana and Beardstown.

As the Illinoian glacier was melting, some of its water and sediment probably drained away along a new channel, the ancestral Sangamon River. In the warm ice-free period that followed the Illinoian Glacial Episode, the Sangamon could easily have meandered back and

The Area at a Glance

△ The Lower Sangamon River valley is one of the best places in the state to find birds. Of the 300 species of birds found regularly in Illinois, all except one can be found here.

△ Other species that are found, or likely to be found, are:

- 29 reptiles (four T&E species), almost 50 percent of the state total,
- 16 amphibians (one T&E), 40 percent of the state total,
- 100 species of fish (four T&E),
- 44 species of mussels (nine T&E and one non-native),
- 18 large crustaceans, and
- 47 mammals, 80 percent of the state total.

△ The bobcat is found here, as are both of the state's listed mammals: the federally endangered Indiana bat, and the state threatened river otter.

△ Almost half (1,476) of the plants recorded in the state can be found here. Twenty-eight are T&E species and 337 are non-native species.

△ The watershed includes the lower 107 miles of the Sangamon River, Salt Creek, the South Fork, several smaller tributaries, and a 50-mile long reach of the east bank of the lower middle Illinois River between the Mackinaw River on the north downstream to the Sangamon River on the south.

forth, cutting its valley wider and deeper in the loose sediments left by the glaciers. When the climate turned cold once again, and the Wisconsin glacier advanced across northeastern Illinois, the upper end of the ancestral Mississippi River was again buried beneath the ice, as was the upper end of the Sangamon. The meltwater that had been flowing down the upper part of the ancestral Mississippi was diverted southwestward through a low spot in the bedrock near present-day Rock Island. This time, when the glacier melted back, the Mississippi River stayed in its present-day course along the western border of the state.

While the Wisconsin glacier was melting, sediment-laden meltwater flowed down the open portions of the lower Illinois and Sangamon Rivers. Time-travelers standing at the junction of the two rivers on a hot summer day 15,000 years ago would have seen a muddy torrent rushing through a channel more than a mile wide.

Geologists refer to the Illinois as an underfit river because the old valley is

exceptionally wide for the size of the new river. After the last glacier retreated, the Illinois permanently shrank to a much smaller river, fed only by rainfall and seepage from underground aquifers. The pulse of the river changed. In years with average rainfall, backwater lakes rose and expanded, temporary ponds developed, and grasslands became marshes in late winter and early spring. The water then drained out slowly; by midsummer the river flowed only in the main channel and much of the floodplain was dry again. In years with an exceptional amount of rainfall, the floodplain again became a floodway.

Both rivers have since been extensively modified. The South Fork of the Sangamon has been dammed for water supply reservoirs. The lower reaches of the Sangamon as well as Salt Creek have been leveed and straightened, allowing agricultural use of the adjoining land. The Illinois River used to be a pulsing river with summer flows often so low that navigation was impossible. The LaGrange Lock and Dam, down-

stream from the confluence of the Illinois and Sangamon, maintains a nine-foot deep navigation channel to prevent the Illinois from dropping too low. This has a direct effect on low-lying areas upstream, especially at the mouth of the Sangamon, because with Illinois River water levels kept artificially high in summer, there are now permanent lakes in places that used to be seasonally dry.

The Illinois River is so slow flowing that it cannot carry away all of the sediment that is carried in by its tributaries. When the faster moving tributaries meet the slower moving Illinois, the heavier particles drop to the bottom. The Sanganois Conservation Area is located on an alluvial fan which formed when sediment carried by the Sangamon settled to the bottom of the slower moving Illinois; it is a maze of sloughs, backwaters, and oxbows. The Illinois and the Sangamon have always carried sediment, especially during floods when fast moving water could erode the loose glacial materials from the beds and banks. Neither river was easily navigated because of the shifting sand and gravel bars. Straightening streams, building, mining, draining the land, and baring the soil for farming greatly accelerated sedimentation processes, so that frequent dredging is required to keep the Illinois' navigation channel open.

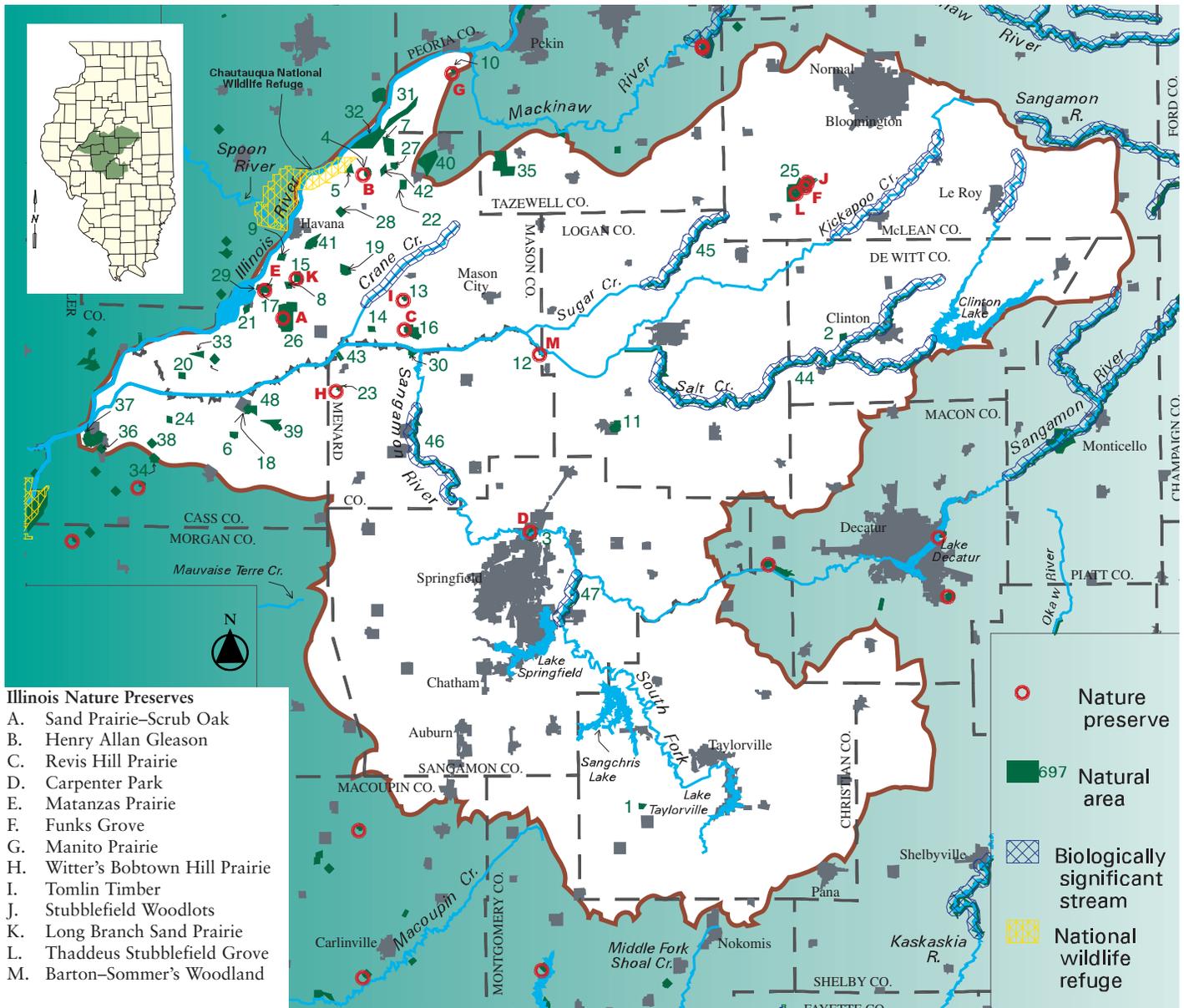
Despite the alterations, eight stream segments—two on the Sangamon River and six on tributary streams—totaling nearly 140 miles are classified as biologically significant streams because they contain threatened or endangered species or high mussel or fish diversity. These stream segments protect large numbers of native aquatic species.



Michael R. Jeffords

The Sangamon River north of Springfield meanders through farmland.

Natural Areas and Nature Preserves



Illinois Natural Areas Inventory Sites

- 1. Berry’s Woods
- 2. Mettler Woods
- 3. Carpenter Park
- 4. Henry Allan Gleason
- 5. Rountree Sand Forest
- 6. Panther Creek Hill Prairie
- 7. Quiver Prairies
- 8. Matanzas Sand Prairie
- 9. White Oak Creek Woods
- 10. Manito Prairie
- 11. Elkhart Hill
- 12. Barton–Sommer Woodland
- 13. Tomlin Timber
- 14. W. B. Wallace Woods
- 15. Long Branch Sand Prairie
- 16. Revis Hill Prairie

- 17. Matanzas Prairie
- 18. Chandlerville Cemetery Prairie
- 19. Knuppel Woods
- 20. Barkhausen Woods
- 21. Duck Soup Woods
- 22. Sand Ridge Savanna
- 23. Witter’s Bobtown Hill Prairie
- 24. Cottonwood Geological Area
- 25. Funks Grove
- 26. Sand Prairie—Scrub Oak
- 27. Sand Ridge State Forest Sand Pond Complex
- 28. Eckard Railroad Prairie
- 29. Bath Lake Springs
- 30. Lounsberry Hill Prairie
- 31. Spring Lake Seeps
- 32. Clear Lake Rookery

- 33. Snicarte Sand Area
- 34. Bluff Springs Sand Pond
- 35. Green Valley Site
- 36. Beardstown Railroad Prairie
- 37. Beardstown Marsh
- 38. Bluff Springs Hill Prairie
- 39. Cox Creek Hill Prairie
- 40. Sparks Ponds
- 41. Sand Lake
- 42. Burns Sand Prairie
- 43. Oakford Spiderwort Site
- 44. Salt Creek
- 45. Sugar Creek—Salt Creek Drainage
- 46. Sangamon River—Petersburg
- 47. South Fork Sangamon River
- 48. Chandlerville–Snyder Hill Prairie



Michael R. Jeffords

Thousands of migrating waterfowl use area wetlands.

NATURAL COMMUNITIES

Scientists estimate that 22 percent of both the state and the region was covered by wetlands before Euro-American settlement. Today only about 2.8 percent (less than 82,000 acres) of the Lower Sangamon valley is wetland, compared to 3.5 percent for the state as a whole. Well over one-half of the wetlands are bottomland forests that border rivers and streams, and about one-tenth are shallow marshes and wet meadows. The rest includes lakes, rivers, swamps, shrub-scrub lands, and deep marshes. These remnants are extremely important to the region because they contain some of the largest concentrations of waterfowl, herons, shorebirds, and swallows to be found anywhere in the Midwest and support populations of nearly all of the state's threatened or endangered birds. The Lower Sangamon valley has lost a greater percentage of wetlands than the state as a whole. Most of the prairie wetlands were drained for agriculture in the nineteenth century, resulting in the loss of considerable wildlife habitat. Of the 24,533 acres of nonforested wetland remaining in the area, only 28 acres are high quality. They can be found within two seep communities (also called forested fens)—eight acres at the White Oak Creek Woods

Natural Area and 20 acres in forested ravines at the Spring Lake Seeps Natural Area. While six plants that grow in this habitat have probably been extirpated, butternut trees, on the Illinois watch list, and forked asters and white lady's slippers, both state threatened, still grow near seeps.

Nonforested wetlands are important feeding and resting areas for migrating shorebirds and waterfowl, especially dabbling ducks. The large man-made lakes—Springfield, Clinton, Sangchris, and Taylorville—have small areas of wetlands around their borders, and many acres of deep open water that attract thousands of migrating loons, grebes, gulls, terns, and waterfowl, especially diving ducks. In Mason County, Matanzas Prairie Nature Preserve and Spring Lake provide the shallow and deep-water marshes needed by rare breeding species such as black rail, king rail, and common moorhen. And while the state and federally endangered piping plover does not nest here, it uses area wetlands during its long migration. Depending on the water regime, these wetlands can be dominated by prairie cordgrass, rushes, sedges, or cattail.

Low-lying floodplains, especially along the Salt Fork of the Sangamon and around backwater lakes and on

The Area at a Glance

△ Overall, the area stretches from Bloomington-Normal in the northeast to the northern edge of Montgomery County in the southeast. Most of the area lies within the Grand Prairie Natural Division.

△ About 20,000 years ago, the Wisconsin glacier slid into Illinois from the northeast and covered about one-third of the state, leaving moraines that arc across the northeast corner of the Lower Sangamon valley. An excellent place to visit the Shelbyville moraine, which marks the southernmost reach of the Wisconsin glacier, is at Moraine View State Park in McLean County.

△ Both the Sangamon and the Illinois rivers have been extensively modified. The South Fork of the Sangamon has been dammed for water supply reservoirs, and the lower reaches of the Sangamon as well as Salt Creek have been leveed and straightened to allow agricultural use of the adjoining land.

△ On the Illinois River the LaGrange Lock and Dam maintains a nine-foot deep navigation channel to prevent the Illinois from dropping too low, affecting low-lying areas upstream, where there are now permanent lakes in places that used to be seasonally dry.

Michael R. Jeffords



Catalpa trees

islands in the Illinois River, were once heavily forested. Today less than 2 percent of the valley is covered with bottomland forest, and of that only 104 acres are high quality. Most of this, 97 acres, is wet-mesic floodplain forest that can be found in Berry's Woods in Christian County and Carpenter Park in Sangamon County. Sycamores and cottonwoods grow very large in this community because they can tolerate annual flooding and have little competition. Herons, egrets, and state and federally threatened bald eagles—often seen at Chautauqua Wildlife Refuge—need these large trees for nesting and roosting. Several other state-threatened or endangered birds, among them red-shouldered hawks and brown creepers, can be found in wet forests near the Illinois and Sangamon Rivers.

The ground beneath these trees is bare after the annual flood recedes, but summer and fall annuals such as sedges, smartweeds, and asters soon sprout. On the sunny river margins, the brilliant red cardinal flower and the federal and Illinois-threatened decurrent false aster grow free from

competition on the newly exposed mud. Since there are relatively few flood tolerant plants, diversity is fairly low. At slightly higher elevations floods are less frequent and shorter lasting. Here there are many more tree species, including silver maple, hickory, hackberry, pin oak, and black

walnut as well as fruit-bearing shrubs and vines such as gooseberry, elderberry, and grape. Showy perennial and annual wildflowers such as bluebells, violets, phlox, golden-glow, and buttercups are common, but so are "weeds" such as giant ragweed and nettles.

At the time of Euro-American settlement roughly 77 percent of the area (2,254,499 acres) was prairie and 22 percent (644,143 acres) was forested. Today only 201.4 acres (0.009 percent of the original prairie area) of relatively undisturbed prairie remain. The few acres of remaining prairie are found in areas too dry or steep to farm—33 percent of the state's high quality hill prairies are found here. Only 6.8 percent (200,698 acres) remains forested. Upland forests are the most predominant, covering about 143,577 acres (less than 5 percent of the land), 977 acres of which are considered high quality.

Mesic upland forest is probably the most common forest type in the area, and is a major conservation resource—601 acres are considered high quality and represent 23.7 percent of the total high quality mesic upland forest remaining in Illinois. Large stands can be found at Elkhart Hill in Logan County (185 acres) and at Funk's Grove in McLean County (432 acres). These woods are filled with spring wildflowers like Jack-in-the-pulpit, spring beauty, and dutchman's britches, and the profusion of oaks, hickories, walnuts, and sugar maples has long been a source of food for animals and humans. Several species of threatened or endangered plants have already been lost from the area's upland forests. Still, two threatened species—false hellebore and forked aster—are known to occur, as are the rare yellow lady's slipper and butter-nut, both on the Illinois watch list.

High quality dry-mesic upland forest can also be found in the area—173 acres with most, 95 acres, in the Carpenter Park Nature Preserve. In the Lower Sangamon area dry-mesic upland forest is found on the upper slopes and ridges of dissected terrain bordering major streams and on well-



Decurrent false aster

Michael R. Jeffords

drained portions of moraines. In Carpenter Park, black and white oaks, with scattered black cherry and hickory, dominate this community. The steep slopes and ravines support red and white oak. In a recent tree core study of the preserve, it was found that the site has one of the best examples of old-growth forest in the state. The oldest white oak was found to be 425 years old and black oaks were 275 years old. (In the floodplain, bur oaks and sycamores in Carpenter Park were 300 years and older.)

When farm fields are no longer cultivated, they grow up in woody vegetation and become attractive to birds that prefer dense cover. Even though nonnative vines and shrubs dominate these areas, woodpeckers, warblers, wrens, and chickadees find them rich in protected nest sites and edible fruits. Upland game hunters prowl this habitat seeking bobwhite quail, mourning doves, and the introduced ring-necked pheasants. Called successional areas, these former fields slowly transform

from one kind of habitat to another. Humans often consider land in the early stages of succession brushy, weedy, and undesirable, but it harbors birds such as the prairie warbler, which is declining nationally, and the orchard oriole and Bell's vireo, which are found in few places outside Illinois. Jim Edgar Panther Creek State Fish and Wildlife Area and Sangchris State Park have significant amounts of this type of habitat and may be two of the best places in the state to provide nesting sites for shrubland species.

SAND AREA

The northwest sixth of the region, which lies within the Illinois River Section of the Illinois River and Mississippi River Sand Natural Division, is quite different from the rest of the region. A wide strip of land along the east side of the Illinois River (about 211,000 acres), called the Henry Formation, is covered by deep sands that were deposited when glacial

The Area at a Glance

△ Despite the alterations, eight stream segments—two on the Sangamon River and six on tributary streams—totaling nearly 140 miles are classified as biologically significant streams because they contain threatened or endangered species or high mussel or fish diversity. These stream segments protect large numbers of native aquatic species.

△ Scientists estimate that 22 percent of the region was covered by wetlands before Euro-American settlement. Today only about 2.8 percent (less than 82,000 acres) of the Lower Sangamon valley is wetland. These remnants contain some of the largest concentrations of waterfowl, herons, shorebirds, and swallows to be found anywhere in the Midwest and support populations of nearly all of the state's 34 threatened or endangered birds.

△ Of the 24,533 acres of nonforested wetland remaining in the area, only 28 acres are high quality. Bottomland forest covers 57,071 acres; only 104 acres of that is high quality.

△ Roughly 77 percent of the area (2,254,499 acres) used to be prairie; today only 201.4 acres of relatively undisturbed prairie remains. Thirty-three percent of the state's high quality hill prairies are found here.



Michael R. Jeffords

Old growth oak tree

Wood Ducks

The wood duck is one of the few ducks that spends the summer in Illinois. While most waterfowl are just passing through on their way to the grassy pot-hole regions of the northern United States and Canada, woodies are looking for nest sites in mature forests along rivers and streams. They are unlike other ducks in several other ways, the most startling of which is that they are frequently found in the top branches of tall trees. They have specially adapted feet with long dexterous toes and curved toenails, allowing them to grasp small branches. Their legs are located farther forward on their bodies than on other ducks, making it easier to balance when they find a suitable perch—often a shoreline tree with limbs that extend out over the water. These are adaptations to living in floodplain forests. If woodies nested on the ground like other ducks, they would lose their nests to annual spring floods. In the spring they investigate large old living trees or dead snags. A highly desirable piece of wood duck real estate will be close to water and as much as 30 feet off the ground so that snakes and raccoons will have a hard time finding it. It will have a fairly deep cavity, but a rather small entrance. If a hen finds an ideal site and successfully raises a brood of ducklings, she will often return to the same cavity the following year.

Once the hen is satisfied with the location she begins laying eggs, usually one per day for about 12 days. Neither parent brings nesting materials to the cavity, but after several eggs have been laid the hen plucks the down from her own breast and uses it to cover the eggs. During incubation she utters a soft call which may be a form of communication with the not-yet-hatched ducklings. This is a hazardous time—rat snakes are excellent tree climbers and can easily enter the nest to eat eggs or hatchlings. Raccoons have long arms and dexterous hands and if the cavity is not deep enough, they will soon empty it. If all goes well, the eggs hatch about a month later and the baby wood ducks face their first challenge—leaving the nest. When they are but a day old, their mother flies to a nearby vantage point and calls to them. One by one, using their claws and flapping their tiny wings, they scramble up to the entrance, spread their wings and tails, peep loudly, and jump. They are so light that the 30-foot drop causes them no harm.

Once on the ground they travel quickly to water. Wood ducks are wary birds and rather than spend time in the middle of large lakes and ponds the way other ducks do, they prefer the shallow edges of rivers and streams with dense vegetation where they can hide from overhead predators, such as hawks, owls, and great blue herons. It is harder to avoid danger from below. Largemouth bass and snapping turtles can easily capture prey on the surface. The dangers that wood duck babies face are so numerous that less than half of them will live long enough to learn to fly.

Learning to fly makes it easier for woodies to escape some dangers, but puts them at risk for others. Peregrine falcons have been known to snatch them out of the air, and in the fall, hunters take 20 to 25 percent of the population. In the past this beautiful duck has come frighteningly close to extinction. Protection from hunting, then small bag limits helped the population rebound. Loss of suitable habitat may be the most serious danger facing wood ducks in the future. Protection of streamside forests and wooded wetlands would help wood ducks, as well as many other plants and animals.



Michael R. Jeffords

Wood ducks

meltwater washed down the Illinois River valley. Much of it was sculpted into dunes that now contain distinct communities adapted to this dry, infertile soil. Dry sand forest occurs on the crests of the sand dunes where there is little humus or moisture. Oak and hickory trees are short and scrubby, and herbaceous vegetation is scarce. Within the region, 83 acres of high-quality dry sand forest can be found in scattered tracts. This is 69.1 percent of the total high-quality sand forest remaining in Illinois. A little farther down the slopes of the dunes, often on the eastern or northern sides, slightly richer, moister soil supports the greater plant diversity of dry-mesic sand forest. Oaks, hickories, cherry, and hawthorn grow here, as do a few more herbaceous plants than are found higher up. The last 16 acres of high quality dry-mesic sand forest in the entire state occur in Rountree Sand Forest Natural Area in Mason County.

On dunes where trees do not grow, sand prairies are found. Dry sand prairies are found on the dune tops and contain short grasses and drought toler-

ant herbaceous plants, including the winter-hardy prickly pear cactus and partridge pea. Seven state-threatened or endangered plants also grow here. A quarter of the state's remaining high quality dry sand prairie (107 acres) can be found at two sites in Mason County. Compared to dry sand prairies, dry-mesic sand prairies are slightly moister and more fertile. Many of the same plants occur, though in greater densities. Five state-endangered plants and one state threatened plant have been found in the region's dry-mesic sand prairies. Ten acres (3 percent of Illinois total) of high quality and 12 acres of good quality dry-mesic sand prairies occur at Matanzas Sand Prairie.

At the other end of the moisture regime are wet sand prairies. Surface water may remain for as much as one-third of the year. Ten percent of the state's high quality wet sand prairie can be found at Matanzas Prairie Nature Preserve in Mason County. Nine Illinois threatened or endangered plant species have been reported growing there. Also present are three of the five state threatened or endangered species of reptiles

The Area at a Glance

△ About 22 percent (644,143 acres) of the area was forested in the early 1800s. Today only 6.8 percent (200,698 acres) remains forested.

△ Mesic upland forest is probably the most common forest type in the area, and is a major conservation resource—601 acres are considered high quality and represent 23.7 percent of the total high quality forest of this type remaining in Illinois.

△ High quality dry-mesic upland forest can also be found in the area—173 acres with most, 95 acres, in the Carpenter Park Nature Preserve. A recent tree core study of the preserve found that the site has one of the best examples of old-growth forest in the state. The oldest white oak was found to be 425 years old.

△ The northwest sixth of the region is quite different from the rest of the region. It is covered by deep sands that were deposited when glacial meltwater washed down the Illinois River valley.

△ Almost 70 percent of the total high-quality dry sand forest remaining in Illinois is here, 83 acres in scattered tracts.

△ The last 16 acres of high quality dry-mesic sand forest in the entire state occur in Rountree Sand Forest Natural Area in Mason County.



Michael R. Jeffords

Prickly pear cactus

and amphibians. They include the Illinois chorus frog, which spends much of its life burrowed into sand; the Illinois mud turtle, which also lives in burrows and moves into sandy ponds for just a few weeks each year; and the Western hognose snake, which spends its time buried just below the surface of sand prairies.

HUMAN SETTLEMENT

Hints of former inhabitants are found nearly everywhere that archaeologists look for them. Artifacts at a few sites date back 12,000 years, indicating that Native Americans arrived in the valley soon after the last glacier left.

More than 700 sites have been found here that are between 5,000 and 10,000 years old. This time span, known as the Archaic Period, coincided with the warmer, drier interval that fostered the development of the prairies. Early in the period, people lived in the uplands and may have visited the lowlands when they were not in flood. When the climate warmed and dried, the Native Americans moved to places where there was a permanent water supply. As the climate became wetter again, they spread over the entire area,



Illinois mud turtle

Michael R. Jeffords

taking advantage of both upland and floodplain resources.

In DeWitt County the remains of a base camp suggest that the people who lived there were hunter-gatherers who fanned out over the countryside to collect fruits and nuts and to hunt small game and deer. As the Archaic period ended, these people were beginning to domesticate plants and cultivate them, to build burial mounds, and to develop complex social systems. Our knowledge is scanty because they had few possessions that could have survived being buried for thousands of years, and if they lived on the floodplains, the remnants of their lives still lie buried under modern sediments.

Three sites in Macon County date to the Woodland Period, which began about 3,000 years ago. It was at this time that Native Americans started using pottery for containers and for cooking. Because pottery does not decay, archaeologists have an easier time finding and dating sites where pottery is present. Although the development of pottery was an important change in technology, there was no abrupt change in the hunting and gathering lifestyle. People continued and expanded the life-ways that had begun earlier. For example, during this time burial practices became more elaborate, and grave goods included items such as marine shells that could only have been obtained through a well-developed, long distance trade network.

Agriculture became increasingly important: native plants such as maygrass, knotweed, sunflower, and goosefoot were selected for large seed size and



Carolyn P. Nixon

European trade beads

intensively cultivated, and a new crop, maize, was brought from the south. The bow and arrow were developed, making hunting and defense more efficient.

Lifestyles changed considerably when the Mississippian period began about 1,000 years ago. People lived in large towns with complex social and economic systems, and depended on cultivated crops. Their settlements were usually located near the floodplains of streams and rivers where there were two important resources—aquatic foods and fertile, easily cultivated land. Three archaeological sites from this period are listed on the National Register of Historic Places (NRHP). The Clear Lake site and the Rockwell Mound in Mason County are both located on high ground overlooking the Illinois River. The Noble-Weiting site in McLean County was a village inhabited by farmers and hunters about 800 years ago; it was located close to the junction of Kickapoo Creek and Little Kickapoo Creek.

Another McLean County NRHP site is the Warren Bane site, also known as the Grand Village of the Kickapoo. It dates from the late eighteenth to early

nineteenth century and contains European trade goods such as glass beads, metal, and gunflints, as well as chipped stone objects. Even though the Kickapoo traded with Europeans, they knew that the increasing numbers of settlers threatened their way of life. As Native American tribes to the north lost their lands, and settlers to the south rapidly increased in numbers, the Kickapoo villages along the Sangamon were the last barriers to European settlement of central Illinois. The Kickapoo chose to resist. Skirmishes and massacres were so frequent that one historian referred to pioneering as a paramilitary occupation. But by 1820 these tenacious people who had once boasted, "I drink the waters of the Wabash and the Mississippi," traded their vast Illinois holdings for land in Missouri and were gone.

Settlers arrived even before territorial disputes had been settled or the land had been surveyed. In the fall of 1817, Robert Pulliam and several companions drove a herd of cattle 100 miles north from American Bottom into Kickapoo territory looking for fresh pasture.

When they reached Sugar Creek, just south of the Sangamon River (and present day Springfield), they built a shelter and settled in for a winter of hunting and trapping. In the early spring they made maple sugar, then headed back south with furs, sugar, and fat cattle to trade. In the spring of 1819 Pulliam and his family joined some 200 other families to settle here permanently. A steady stream of settlers followed them, first from the American South, then the Northeast, and then the world.

One of the most historic early communities in the area is New Salem, now a state historic site, where Abraham Lincoln spent his early adulthood. The six years that Lincoln lived there closely tracks the town's brief history. The community was thriving when he moved there in 1831, but had stopped growing by the time he left for Springfield in 1837 to practice law. When nearby Petersburg became the county seat in 1839, population quickly began declining and the village was soon abandoned. In 1919 the village was acquired by the State of Illinois and slowly brought back to life as it was restored and adapted to the lifestyles of the 1830s. Twelve log houses, the Rutledge Tavern, ten workshops, stores, mills, and a school were reproduced and furnished as they might have

The Area at a Glance

△ A quarter of the state's remaining high quality dry sand prairie (107 acres) can be found at two sites in Mason County.

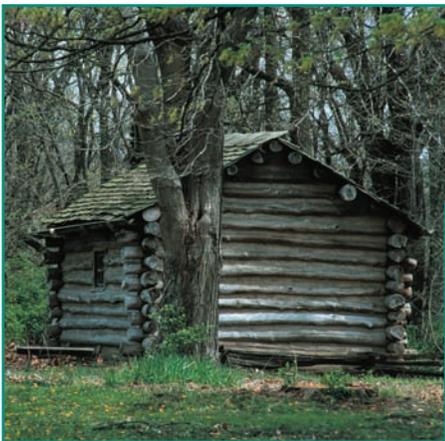
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△ One of the most historic early communities in the area is New Salem, now a state historic site, where Abraham Lincoln spent his early adulthood. In 1919 the village was restored and adapted to the lifestyles of the 1830s. More than 900 period articles were donated to the site, a number of which had belonged to New Salem residents.

Michael R. Jeffords

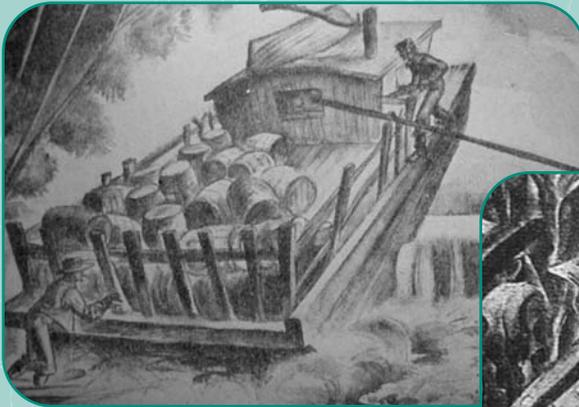


New Salem

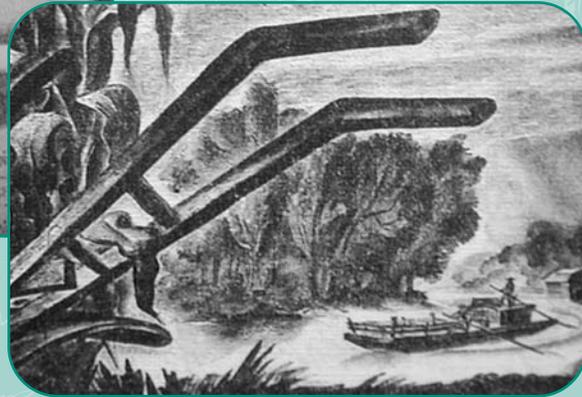


Michael R. Jeffords

*Navigating the Sangamo**



Charles E. Burgess



The early settlers in Sangamo Country soon began to feel their isolation. They looked to Beardstown on the Illinois and to St. Louis on the Mississippi and dreamed of developing a great port city of their own. The Sangamon, however, was shallow and winding. Flatboats—often little more than rafts—could be taken downstream in late winter and spring when the water was high, but were in danger of going aground on sand bars when water levels were low in summer and fall. Nevertheless, in January of 1832 the following notice was published in the Cincinnati Gazette:

For SANGAMO RIVER, ILLINOIS - The splendid upper-cabin steamer, TALISMAN, J.M. Pollock, Master, will leave for Portland, Springfield on the Sangamo River and all intermediate ports and landings - Beardstown, Naples, St. Louis, Louisville on Thursday, February 2. For freight or passage apply to Captain Vincent A. Bogue, at the Broadway Hotel, or to Allison Owen.

The notice created a sensation. At last towns along the Sangamon would have commercial ties to the rest of the country. Transportation to centers of sophistication like St. Louis would take days instead of weeks. Manufactured goods would be accessible to the settlers and surplus products from their farms would find a market. Rejoicing was widespread until reality set in. When the *Talisman* arrived in Beardstown, a dozen strong young men with axes boarded for the trip up the river. Chopping their way through snags and overarching trees, they slowly pushed upstream. By the time they reached Portland, on the south side of the Sangamon across from Springfield, the river had

fallen and narrowed. The Talisman was unable to turn around and was forced to back out the 90 miles to the Illinois River.

A few weeks later, 23-year-old Abraham Lincoln became a candidate for representative in the General Assembly and published a communication to the people of Sangamo County. There was talk of a railroad to Springfield, and though Lincoln considered the railroad a good idea, "there is always a heart appalling shock accompanying the account of its cost . . . the improvement of Sangamo River is an object much better suited to our infant resources." He went on to tell the voters that he had been studying water levels and had concluded that navigation by small vessels would be "practicable . . . for at least one half of all common years, and to vessels of much greater burthen a part of that time." He also admitted the difficulties. ". . .whatever its natural advantages, certain it is, that it never can be practically useful to any great extent, without being greatly improved by art." He knew first hand how much "drifted timber" the river held and he also knew that the river meandered so much that the distance by river from New Salem to Beardstown was twice the straight line distance.

Lincoln proposed solving both these problems by straightening the river. The project would require damming the old channel and removing a suitably wide strip of turf across the low-lying prairie, forcing the river to flow straight to the Illinois. ". . .it appears to me . . .," he wrote, ". . . the whole river in a short time would wash its way through, thereby curtailing the distance and increasing the velocity very considerably, while there would be no timber on the banks to obstruct its navigation in future; and being nearly straight, the timber which might float in at the head, would be apt to go clear through." Further shortening could be accomplished when dealing with zig zag reaches upstream by cutting through peninsulas instead of removing obstructions from the sharp river bends. He admitted that he was unable to say what the cost of the project would be. On August 6, though strongly supported by his New Salem neighbors, he lost the election. A few years later the railroad arrived, and, as a less optimistic historian later wrote, "Thus ended the dream of navigating the Sangamon, across which a man may walk almost dry shod for nearly half of every year."

* Nineteenth century spelling

The Area at a Glance

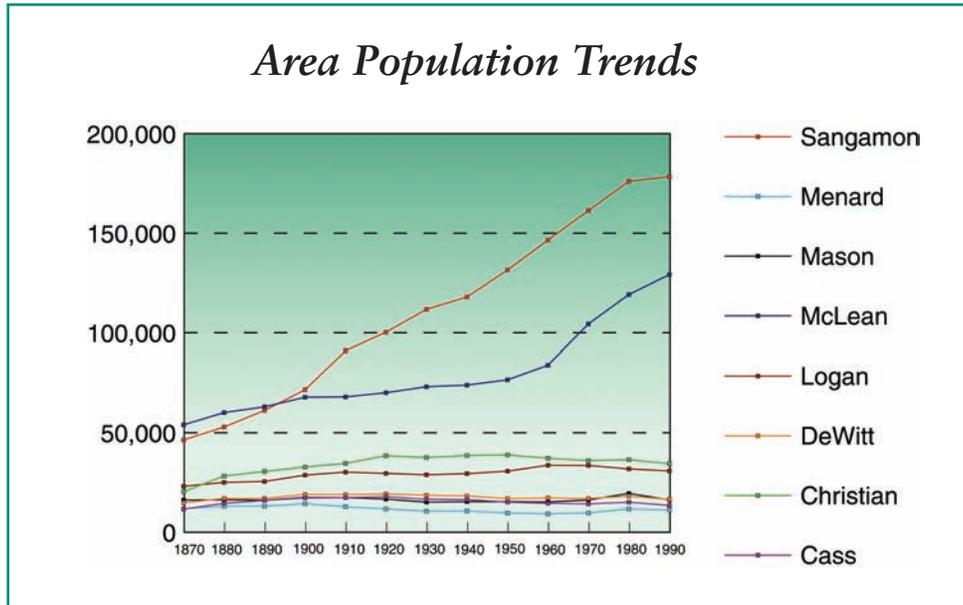
△ Today about a half million people live in the Lower Sangamon River valley; about 3.4 percent of the land is urban. About 280,000 people are employed, earning over \$10.8 billion. Between 1970 and 1997, employment grew at an annual average rate of 1.6 percent, better than statewide.

△ Population is concentrated in the counties with the most employment opportunities, primarily in Springfield and Bloomington-Normal. In Sangamon County, government is the largest employer, health care is second, and insurance is third. In McLean County the insurance industry is the largest employer, manufacturing is second, and education is third.

△ In rural areas the number of farms declined 32 percent between 1978 and 1997, slightly more than statewide.

△ The long and varied geological activity in the Lower Sangamon River valley has left it rich in resources—deposits of coal and limestone, sand and gravel, and 23 different types of soil.

△ Today more than 75 percent of the land is in cropland (2,214,648 acres), located primarily on former prairie, and another 13 percent is pastureland. Ninety-seven percent of the cropland is devoted to corn and soybeans that are valued at about \$921 million per year, or 14 percent of the state total.



been in the 1800s. More than 900 period articles were donated to the site, a number of which had belonged to New Salem residents. The collection included wheat cradles, candle molds, cord beds, flax hackles, wool cards, dough and cornmeal chests, and early American pewter.

Today about a half million people live in the Lower Sangamon River valley. Population is concentrated in the counties with the most employment opportunities, primarily in Springfield and Bloomington-Normal. Only 3.4 percent of the land is urban, less than the 5.8 percent of urbanized land statewide.

About 280,000 people are employed in the region, earning over \$10.8 billion. Between 1970 and 1997, employment in the region grew slightly faster than in Illinois as a whole—1.6 percent average growth compared to 1.2 percent statewide. In Sangamon County, government is the largest employer, medical facilities are the second largest, and insurance is third. In McLean

County the insurance industry is the largest employer, manufacturing is second, and educational institutions are third. Income has grown the fastest in these two counties. In rural areas the number of farms declined 32 percent between 1978 and 1997, slightly more than the 30 percent decline statewide. In 1997 farming employed about 3 percent of the people, but generated only 2 percent of the income.

HUMAN USE OF THE LAND

The long and varied geological activity in the Lower Sangamon River valley has left it rich in resources. Underneath the materials left by the glacier are deposits of coal and limestone. While two coal mines still operate in the area, most of the coal reserves are not currently being mined because of their high sulfur content. Even so, underground coal mining has undermined more than 136,000 acres in eight of the 15 area counties.

Near the surface are huge amounts

of sand and gravel that were moved here by the glacier and then sorted according to size by wind and water. There are 18 sand and gravel pits that produce fill sand, molding sand, and mason sand. Two other mines produce sand that is the raw material for glass foundries. Four quarries mine near-surface bedrock limestone and produce crushed stone construction materials. Farther below the surface, there are considerable reserves of limestone and dolomite too deep to be mined economically at this time.

Wind, water, plants, and animals have modified the glacial materials at the surface, producing 23 different types of soil here, an unusually high number. The richest soils are the dark soils that formed when the glacial material was covered with a layer of loess and then colonized by prairie plants. Generations of plants and animals lived and died, creating soil with more than 2 percent organic matter. In places where forests grew, lighter colored, more acid soils with less than 2 percent

organic matter formed from the decay of forest vegetation.

Native Americans had been planting maize in the bottomlands of the Sangamon and the Illinois for more than 1,000 years. When the first Euro-American settlers arrived in the Sangamon region in the nineteenth century they set about felling the forest and planting corn among the stumps. In the fall, the stalks were bundled into shocks and left in the fields over the winter. Ears of dry corn were gathered as needed to feed livestock or to make hominy and corn meal for the farm families.

This practice served the settlers well until 1830-31, the infamous winter of the big snow. That winter, snow arrived early and drifted deep. A short rain melted the top, which then refroze to a crust that was not thick enough to support much weight. Men and large animals broke through with each step. The corn shocks were buried and finding just a few ears required considerable effort. The toll on people, livestock, and wildlife was catastrophic.

As soon as a plow was invented that could break through the roots of prairie grasses, the prairie was quickly converted to agriculture. Today more than 75

percent of the land is in cropland (2,214,648 acres), located primarily on former prairie, and another 13 percent is pastureland, located where the land is too steep, too wet, or too dry for crops. Ninety-seven percent of the cropland is devoted to corn and soybeans that are valued at about \$921 million per year, or 14 percent of the state total. McLean County leads the region and the state in corn and soybean receipts, with Sangamon and Christian counties also in the top ten. Much of the corn and beans is used for livestock feed. Some \$150 million worth (6.8 percent) of the state's livestock is produced in the area, with McLean County leading in cattle production and Cass County leading the region and ranking in the top ten statewide in hogs.

In addition to corn and soybeans, the sand area of the region excels in specialty crops like green beans, sweet corn, pie pumpkins, strawberries, and incomparable melons, as well as an assortment of other crops ranging from gladiolus to Christmas trees.

Agricultural land is home to a few native species that have made the transition from native grassland to farmland. Horned larks and killdeer seem to

The Area at a Glance

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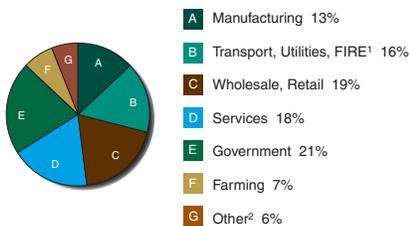
△ The sand area excels in specialty crops like green beans, sweet corn, pie pumpkins, strawberries, and melons, as well as an assortment of other crops ranging from gladiolus to Christmas trees.

△ The buried valleys of the ancient Mahomet-Teays River and its tributaries are filled with sand and gravel deposits that can be as much as 400 feet thick. Now called the Mahomet Aquifer, the buried valley stores enough water to supply homes, industries, and agriculture.

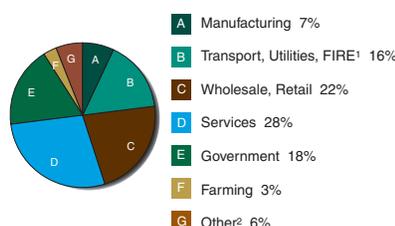
△ IEPA has assessed 1,834 of the area's stream miles, rating 46 percent as having good quality, 50 percent as having minor impairment, and 3 percent as having moderate impairment. Only 22 river miles (1.2 percent) were found to be severely impaired. Nutrients and siltation—coming primarily from agriculture and municipal outflows (including sewer overflows)—were the two major causes of impairment.

Employment Distribution

1970

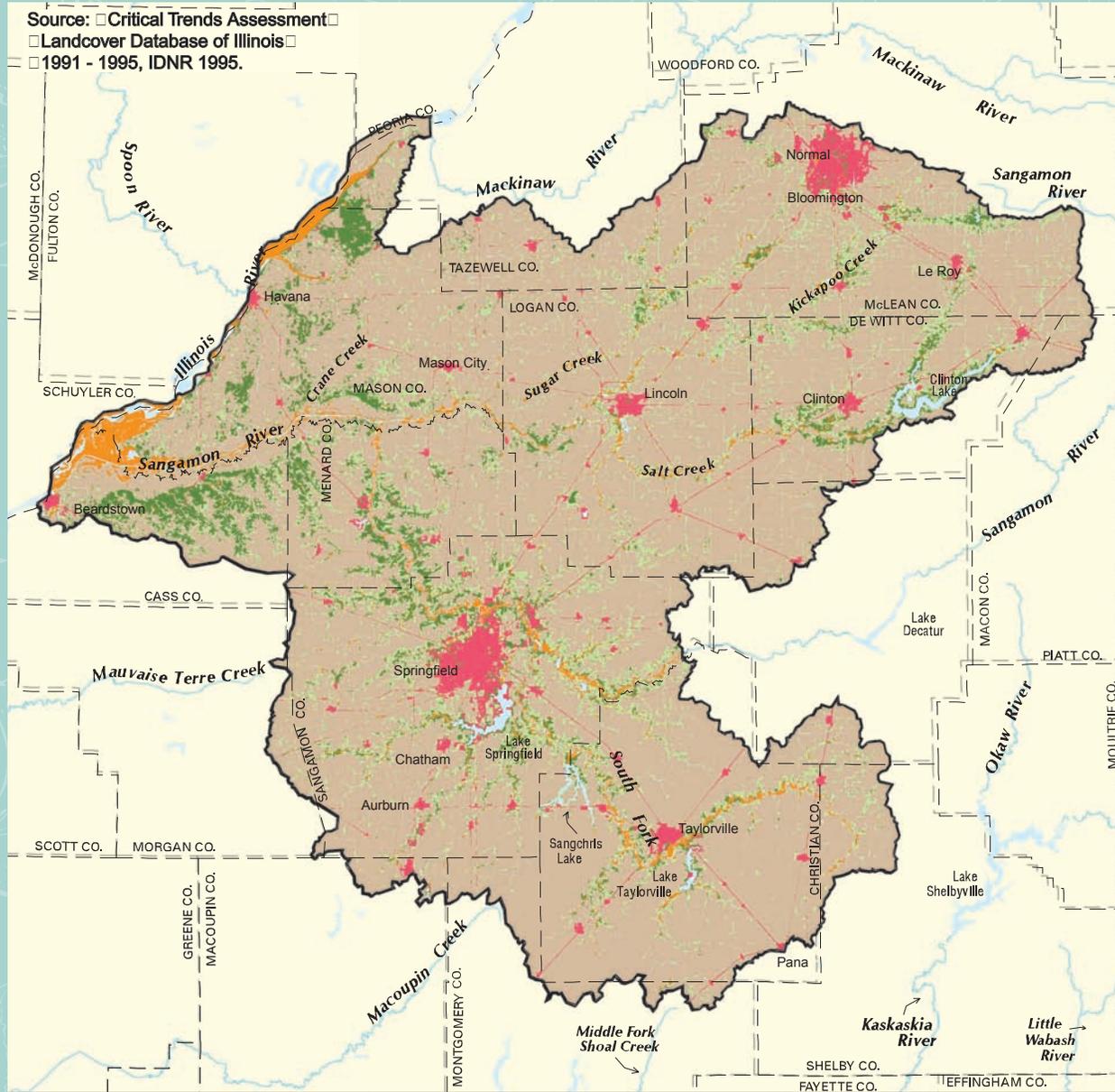


1997



¹ Finance, insurance, and real estate ² Construction, mining, and agricultural and forestry services

Land Cover



L. Smith, ISGS



- | | | | |
|---------------------|-------------------------|----------------------------|---------------------|
| cropland | urban and built-up land | barren and exposed land | assessment boundary |
| rural grassland | wetland | outside of assessment area | county boundary |
| forest and woodland | lakes | stream or river | |



be thriving in croplands, and phoebes and barn swallows have moved "indoors" to nest in farm buildings. Kestrels, red-tailed hawks, and state-endangered northern harriers are often seen hunting for snakes and rodents over fields. The state-endangered Henslow's sparrow is a rare breeder in these grasslands, and also inhabits them during migration. Others are not so adaptable, however. The state-threatened loggerhead shrike is a bird that prefers grasslands with scattered shrubs. It can now occasionally be found in the croplands of the region, but its numbers are declining.

Most mammals designated as grassland species are not restricted to native or undisturbed grasslands and have found suitable habitat in hay fields, pastures, fence rows, and old fields. These include the thirteen-lined ground squirrel, eastern mole, deer mouse, prairie and meadow voles, Virginia opossum, eastern cottontail, coyote, red fox, raccoon, and white-tailed deer.

WATER USE

Both ground and surface water are vital to the people of this region. The buried valleys of the ancient Mahomet-Teays River and its tributaries are filled with sand and gravel deposits that can be as much as 400 feet thick. Now called the Mahomet Aquifer, the buried valley stores enough water to supply homes, industries, and agriculture. Overall, there are more than 16,000 private wells and 77 municipal wells that supply water to nearly a quarter

million residents. An abundant supply of water in the aquifer made Mason County an ideal location for the Jake Wolf Fish Hatchery. The Hatchery uses millions of gallons of high quality water to produce fish for stocking the numerous lakes throughout the state.

The thickness of the glacial sand and gravel deposits is quite variable, however. Wherever the deposits are not thick enough to supply sufficient water, communities rely on surface water. Large reservoirs such as Lake Springfield, Sangchris Lake, and Lake Taylorville have been built to supply drinking water to much of the population in Sangamon and Christian counties. Lake Springfield and Sangchris Lake also supply cooling water for fossil fuel power generating stations, and Clinton Lake was built specifically to provide cooling water for the Clinton nuclear power station.

The quality of the region's surface water fluctuates due to excessive nutrients, siltation, suspended solids, and organic enrichment/dissolved oxygen. For 20 area lakes assessed recently by the Illinois Environmental Protection Agency, water quality impairment

The Area at a Glance

△ Both the aquatic and the terrestrial habitats in the region have been severely impacted over the course of the last two centuries. Clearing felled many trees in upland forests and grazing eliminated several native understory plants. Many acres of floodplain forest were permanently flooded and killed when a lock and dam was built on the Illinois River.

△ After the vast mesic and dry prairies were plowed, wet prairies were drained and plowed. In the sand area, even ponds have been tiled and planted in dry years. Remaining prairie patches are so small and isolated that they are susceptible to invasion from exotic species, and to local extinction.

△ Fire prevention has helped trees encroach onto prairies, thereby harming shade-intolerant grasses and forbs and ultimately destroying both prairies and savannas.



Thirteen-lined ground squirrel

Michael R. Jeffords



Michael R. Jeffords

Sugar

Long before Euro-Americans arrived in Illinois, Native Americans had been making maple syrup and sugar. Among the trade goods found in archaeological sites from the seventeenth century and later are brass and copper kettles which no doubt made boiling the sap easier. During the month of the "sap moon" in late winter, the sap began flowing in the dormant sugar maple trees, and the Kickapoo traveled to their traditional sugar camps in the upland forests to make maple sugar. So important was this activity,

that the right to make sugar was specifically granted to the Kickapoo by the 1795 treaty of Greenville. In 1816, more than 10,000 pounds of maple sugar packed in bark containers were purchased by Southwest Company traders in central Illinois and sent to St. Louis. When the Government Land Office surveyors measured the Sangamon area, they noted forested areas that contained very large sugar maple trees. Often their notes referred to them as sugar groves, and sometimes the name stuck. One such "Sugar Grove" was a 3,000-acre tract of very large white oak and sugar maple trees in McLean County. Much of it fell in the nineteenth century, but a thousand acres still exist. Now known as Funk's Grove, it is one of the largest tracts of virgin forest left in Illinois, with individual sugar maple trees three to four feet in diameter. Maple syrup is still made there.



Champaign County Forest Preserve District photo

ranged from minor to severe. IEPA has also assessed 1,834 of the area's stream miles, rating 46 percent as having good quality, 50 percent as having minor impairment, and 3 percent as having moderate impairment. Only 22 river miles (1.2 percent) were found to be severely impaired. Nutrients and silta-

tion—coming primarily from agriculture and municipal outflows (including sewer overflows)—were the two major causes of impairment.

Two major state recreation areas surround Clinton Lake and Sangchris Lake and well-developed water-based recreational facilities are available at

both sites. Fishing and hunting are popular, as are swimming, boating, and camping. Seven other publicly owned recreation sites range from rather small to one of the largest in the state. The smallest is the 425-acre Weldon Springs State Park, just south of Clinton Lake, which provides fishing, picnicking, and

camping. The largest site is Jim Edgar Panther Creek State Fish and Wildlife Area, a 15,600-acre tract that is managed for fishing and hunting. (Facilities for other kinds of outdoor recreation are being developed.) Since it opened, the number of fishing and hunting licenses sold in Cass County has increased dramatically, even while the number of licenses sold statewide has fallen.

In the nineteenth and twentieth centuries, fishing was a huge commercial enterprise along the Illinois River. Fish markets lined the riverbanks in Havana and Beardstown. The common carp had been introduced with great fanfare, and huge numbers were shipped alive in railroad tank cars to the East Coast. Native species were also marketed, including catfish, drum, buffalo fish, sunfish, and bass. Today 100 species of fishes can be found in the Lower Sangamon area; several are state-listed, including the threatened ironcolor shiner and the redspotted sunfish, both found in this region and a few other places in the state. Already extirpated from the region is the state endangered western sand darter.

Mussel collecting is another commercial enterprise that once thrived in the area. At the end of the nineteenth century, it was discovered that mussel shells could be cut into disks, polished and pierced to make buttons. For more than 50 years, native mussels were collected by the millions for the booming industry; they were only saved from extinction by the advent of plastic buttons. After a few years respite, mussels were again sought commercially, this time

for the cultured pearl industry. Mussel shells that are thick and pure white are cut into cubes, then rounded into spheres and inserted into the Japanese pearl oyster, which covers it with a thin but valuable veneer.

Forty-four species of mussels have been recorded from the area. Of these, nine are threatened or endangered. Unfortunately seven are probably gone, but the threatened spike and slipper-shell mussels may still be living in the region. Four of the area's biologically significant streams support a high diversity of mussels, and two others have populations of the formerly state-threatened creek heelsplitter. The fate of mussels is closely intertwined with the fate of fishes, because mussels begin life as parasitic glochidia attached to the gills of fishes. When fish are lost, the mussels they host are also lost. A serious threat to native mussels is the recently introduced zebra mussel, which attaches to the shells of native mussels in such numbers that the native mussel cannot open and close its shell, and often dies.



Illinois Natural History Survey photo

Fishing is popular in the lower Sangamon River valley.

The Area at a Glance

△ Aquatic systems are directly affected by impounding, straightening, and dredging streams, and indirectly affected by industrial, agricultural, and domestic pollutants, including hot water, chemicals of all kinds, and siltation from surrounding uplands.

△ About 1.6 percent of the land (45,656 acres) has been set aside by government agencies as parks, fish and wildlife areas, conservation areas, and forest preserves. In some cases these areas are the only refuge for certain endangered species or natural communities.

△ An additional 2,884 acres are protected in 13 Illinois Nature Preserves, as well as 9,245 acres in Illinois Natural Areas (1,331 acres are undegraded, high-quality natural areas).

△ Local groups, united by a common interest in the natural resources of their watershed, are working to solve problems such as siltation, habitat fragmentation, and unsustainable soil losses.

PROBLEMS AND SOLUTIONS

Both the aquatic and the terrestrial habitats in the region have been severely impacted over the course of the last two centuries. Upland forests were settled early on because they provided resources such as firewood, lumber, and nuts. Clearing felled many of their trees and grazing eliminated several native understory plants, except for thorn-bearing plants. Many acres of floodplain forest were permanently flooded and killed when a lock and dam was built on the Illinois River.

After the vast mesic and dry prairies were plowed, wet prairies were drained and plowed. In the sand area, even ponds have been tilled and planted in dry years, sometimes resulting in astonishing fields of corn and cattail. Remaining prairie patches are so small and isolated that they are susceptible to invasion from exotic species, and to local extinction. Fire prevention has helped trees encroach onto prairies, thereby harming shade-intolerant grass-

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Throughout the region, individuals and groups united by a common interest in the natural resources of their

watershed have formed the Lower Sangamon Valley Ecosystem Partnership. Among the problems the partnership is addressing are siltation, habitat fragmentation, and unsustainable soil losses. Grassy strips are being planted as buffer zones along stream banks to catch sediment before it runs into the stream, provide new wildlife habitat, and reconnect isolated patches of existing habitat.

Through the partnerships, people with varied backgrounds and interests—business owners, natural scientists, local policy makers, and landowners—can make decisions together about the best use of the land and how to preserve the region’s unique natural resources. 🍄

State endangered regal fritillary



Michael R. Jeffords

(continued from inside front cover)

In addition to coordinating IDNR programs with those of Ecosystem Partnerships, the Ecosystems Program:

- provides technical assistance to the partnerships, such as resource management plans for use by participating landowners;
- assesses resources in the area encompassed by each Ecosystem Partnership, collecting data that the local partners themselves may use to set project priorities and design projects, and supplying scientific support to ecosystem partners, including on-going monitoring of Ecosystem Partnership areas;
- funds site-specific ecosystem projects recommended by each partnership. Such projects may involve habitat protection and improvement, technical assistance, and research and education, including projects that seek to expand the relationships between natural resources, economic development, and recreation.

To provide focus for the program, IDNR developed and published the *Inventory of Ecologically Resource-Rich Areas in Illinois*, and is conducting regional assessments for areas in which a public-private partnership is formed.

Lower Sangamon River Valley: An Inventory of the Region's Resources is based on one of these assessments, the *Lower Sangamon River Area Assessment*. The assessment was compiled by staff of IDNR's Division of Energy and Environmental Assessment, Office of Realty and Environmental Planning; and the Illinois State Museum, the Illinois Waste Management and Research Center, and the Illinois Natural History, State Geological, and State Water Surveys of IDNR's Office of Research and Scientific Analysis.

The *Lower Sangamon River Area Assessment* and all other CTAP and Ecosystems Program documents are available from the IDNR Clearinghouse at (217)782-7498 or TTY (217)782-9175. Some are also available on the World Wide Web at:

<http://dnr.state.il.us/orep/inrin/ctap> and

<http://dnr.state.il.us/orep/c2000>

For more information about CTAP, call (217)524-0500 or e-mail at ctap2@dnrmail.state.il.us; for information on the Ecosystems Program, call (217)782-7940 or e-mail at ecoprg@dnrmail.state.il.us.

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Chuck Scott

Frank Bellrose

"Because people in North America are becoming increasingly aware of the multiple values of wild or at least untamed places, and because there seems to be growing public awareness that human impositions on the environment are no longer self-correcting, I am convinced that our own future generations will have greater sensitivity to and appreciation for the landscape and its wildlife. It may be wishful thinking, but I really believe that wood ducks and other valued wildlife have excellent prospect because society in general no longer takes for granted our continent's well-being and productivity." Frank Bellrose 1993

In the Illinois River town of Havana lives one of the foremost experts on ducks in the country. Now an octogenarian, Frank Bellrose has been studying birds since he was a boy. Early on he became interested in waterfowl, and was hired by the Illinois Natural History Survey to study them. When the Chautauqua National Wildlife Refuge was established, he began studying the wood ducks nesting there. His studies on lead poisoning in ducks that had inadvertently eaten spent shotgun pellets led to the adoption of steel shot by hunters. His studies on artificial wood duck nest boxes led to improved designs that bear his name. Two of his books have received the Wildlife Society's Book of the Year Award. He completely rewrote and expanded the classic work, *Ducks, Geese and Swans of North America*, thus keeping this classic work relevant to the current generation of waterfowl biologists. He and co-author Dan Holm literally wrote the book on wood ducks, *Ecology and Management of the Wood Duck*, published in 1994. If future generations do have greater sensitivity and appreciation for the landscape and its wildlife, as Frank predicts, it will happen in no small measure because of his work.



George Arthur



C. L. Scott