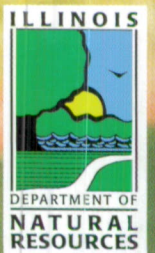


THE LOWER ROCK RIVER BASIN

AN INVENTORY OF THE REGION'S RESOURCES



ABOUT THIS REPORT

The Lower Rock River Basin: 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 six-year State of Illinois initiative to enhance nature protection and outdoor recreation by reversing the decline of the state's ecosystems.

Conservation 2000 is the culmination of recommendations from CTAP, the Illinois Conservation Congress, and Governor Edgar's Water Resources and Land Use Priorities Task Force. The CTAP recommendations came out of its 1994 report on the state of the Illinois environment. CTAP investigators inventoried and analyzed existing environmental, ecological, and economic data to establish baseline conditions from which future changes in ecological conditions 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 Governor Edgar's 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. And Conservation 2000, designed to achieve that reversal, has implemented a number of their recommendations, drawing on \$100 million to fund nine programs in three state agencies.

One of these programs 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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1998



Jim Edgar, Governor of
State of Illinois



Brent Manning, Director
Illinois Department of Natural Resources



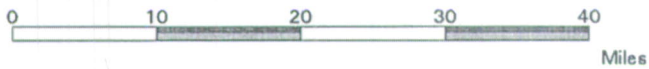
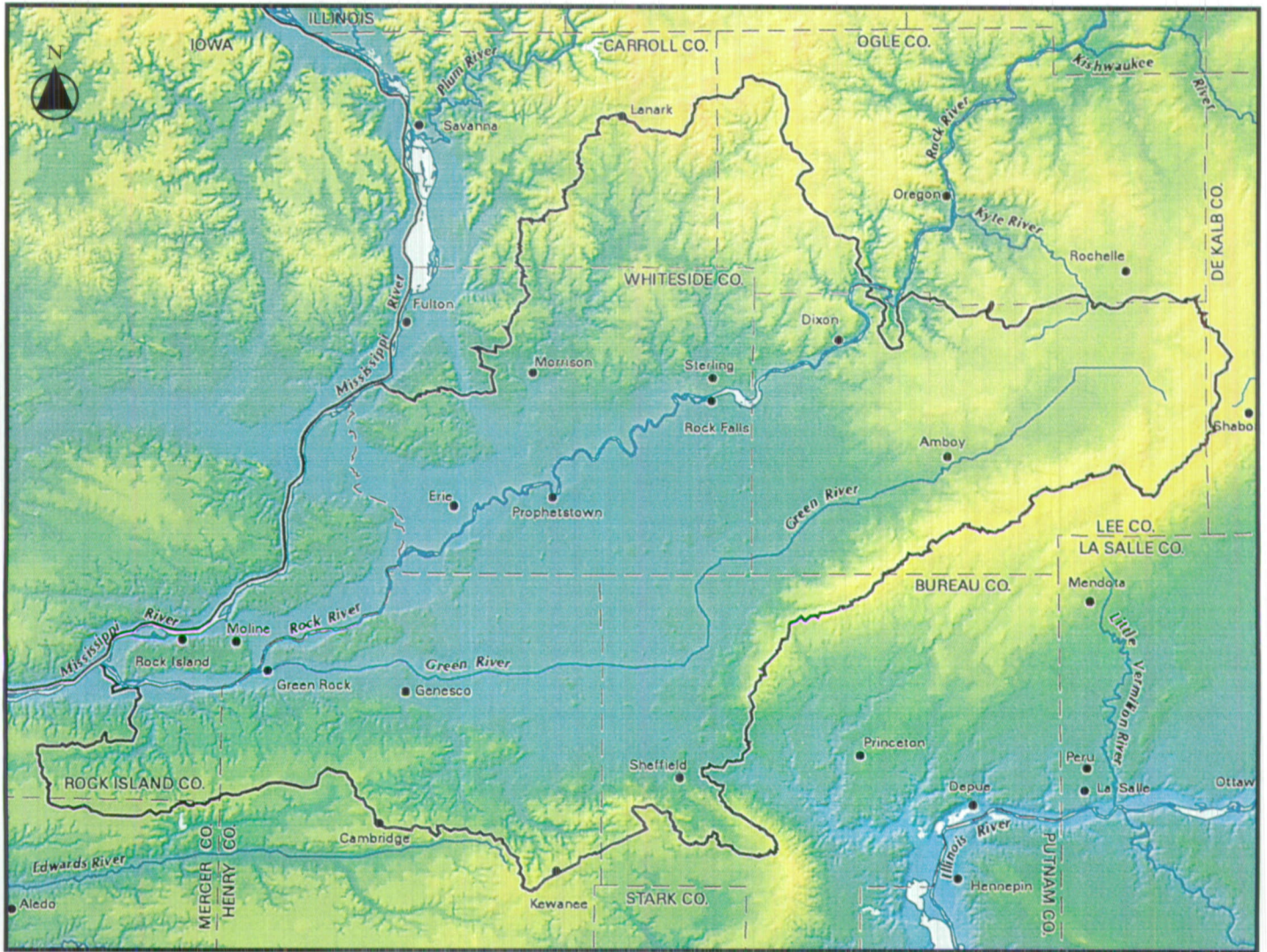
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LOWER ROCK RIVER BASIN LANDFORMS



J. HESTER AND LISA SMITH,
ILLINOIS STATE GEOLOGICAL SURVEY

Elevations in feet above mean sea level



THE LOWER ROCK RIVER BASIN

AN INVENTORY OF THE REGION'S RESOURCES



Joel Dexter

When the most recent of the glaciers to visit Illinois crept in from the northeast, it stopped at the eastern edge of what became the watersheds of the Lower Rock River and the Green River, the Rock's largest tributary. Later, as the ice wall melted, water gushed out from the glacier edge into the remnants of an ancient river valley. This meltwater had enough energy to sweep away the silts and clays that clouded the water, but not enough to carry off the heavier sands and gravels. These stayed put, burying tens of thousands of acres of the older landscape beneath an outwash plain flat as a tabletop.

About half the watershed of the Lower Rock consists of this outwash plain, known as the Green River Lowlands. Here the lowest spot of the landscape is a mere 30 feet lower than the highest part. Unaided by gravity, water on such flat surfaces has to find its own way, usually taking its time. Thus the lowland became the site of the region's most important ecological feature — a complex of swamps that sprawled over four counties. A cornucopia to Native Americans and later sportsmen, a “waste of water” to farmers and travelers, the swamps are now gone but the lowland remains. It is the most distinct geological feature along the Lower Rock, despite the fact that visitors who believe that “interesting” means “obvious” see nothing there at all.

The “Lower Rock” is a 98-mile stretch of the Rock River that flows between Grand Detour and the city of Rock Island, where it joins the Mississippi River. The Lower Rock and Green rivers drain a little more than 2,500 square miles in parts of nine counties in northwest Illinois — Whiteside, Lee, Henry, Bureau, Carroll, Ogle, Rock Island, DeKalb and Mercer.

At the spot where Elkhorn Creek begins to collect, in north Carroll County, the surface is more than 800 feet above sea level; where the Rock empties into the Mississippi, it is 500 feet lower. Water coursing from uplands into the lowlands has sliced into the yielding glacial debris as much as 100 feet in places. This ongoing dissection of the landscape has created the bluffs that have delighted tourists (and frustrated farmers) since the Lower Rock was discovered by Euro-Americans. Add in the region's river bottoms and outwash plains and

nature has the ingredients for a rich stew of habitats.

In 1825 the region was still being described by Euro-American travelers as an “unbroken wilderness.” Before Euro-Americans began to arrive in numbers, about 25% of the land area is thought to have been covered with forest or oak savanna, with most of the rest covered by the grasses and flowering plants that made up the tall-grass prairie. Some of these forests and prairies were wet much or most of the year, as were backwater lakes, clumpy sedge meadows, seeps, and marshes. Wetlands leave distinctive soils, and judging from their extent today, it is estimated that 13% of the Lower Rock was wetlands.

These simple percentages mask what was and remains a complex mosaic of habitats. The roughly three-fourths of the basin that was grasslands consisted of at least three major types of prairie. The wooded 25% of the Lower Rock consisted of several different types of forests, including savanna — a not-quite-forest, not-quite-prairie ecosystem in which scattered large trees (usually oaks) dominate an open landscape of prairie grasses and forbs.

THE POST-SETTLEMENT LANDSCAPE

Native Americans shaped the local landscape profoundly. By their deliberate burning of the prairies, they perpetuated, even expanded, the range of grass-based ecosystems at the expense of forest. Most large mammals, including the American bison, had been hunted out long before the Euro-Americans arrived. With their arrival, the pace of ecological change accelerated. Dixon was the site of an important fur station and the French fur

trade stimulated Native Americans to hunt pelt-bearing animals, dramatically reducing populations of certain animals. Later, market hunters who prowled the Green River lowland had the same effect on game birds that flocked there.

But it was the plow, not the gun or the trap, that really altered the Lower Rock. With nearly 90% of the land area in some kind of agricultural use, only 0.002% of the region's 1820-era prairie remains. While 20% of the region is grasslands of all types, these are not the kinds of grasslands that astonished the first travelers from the East. Apart from a few remnant prairies, today's grasslands are pastures (usually planted with cool-season grasses not native to Illinois), roadsides, and abandoned fields. It is likely that savanna at one time or another covered much of the Lower Rock, but savannas are among the rarest habitats today. No savanna is known to exist in anything resembling its presettlement condition, although overgrown or otherwise altered savannas no doubt persist here and there, unrecognized.

When nature poet William Cullen Bryant visited Illinois in the 1830s, he found the Rock River to be “one of the most beautiful of our western streams.” He thus made himself useful to three generations of tourism promoters in the Lower Rock, who have repaid Bryant's compliment by being almost the only people outside of a classroom who still quote him.

Were Bryant to return he would find that the Rock's “pellucid waters [that] glide over a bottom of sand and pebbles” is often clouded by silt. Once-diverse stands of floodplain trees are now dominated

The Area At A Glance

- △ The Lower Rock River flows 98 miles between the town of Grand Detour and the city of Rock Island, where it joins the Mississippi River.
- △ The Lower Rock and Green rivers drain a little more than 2,500 square miles in northwest Illinois.
- △ About half the watershed of the Lower Rock consists of the outwash plain known as the Green River Lowlands, where the lowest spot of the landscape is a mere 30 feet lower than the highest part.



Michael Jeffords

The plains leopard frog, striped chorus frog, and American toad (above) can breed in even tiny cattail marshes and manage to move from wetland to wetland across terrain such as farm fields and vacant lots that are inhospitable to most amphibians.

by silver maple, a species that is tolerant of siltation and flooding, common occurrences in watersheds covered by tilled and plowed farmland. Channel dams have turned the Rock River into a series of lakes, which has raised water temperature, slowed current, fragmented habitat and isolated populations of fish and mussels to the extent that they cannot repopulate parts of the river where local populations have crashed. Backwater sloughs have been drained along the Rock and pollution compromises its water quality below Sterling and Rock Falls — two big reasons why reptile and amphibian populations have declined along that river.

Fewer of the region's pre-settlement natural communities survive intact than in Illinois as a whole. But while a

century and a half of intense cultivation has diminished natural diversity in the area, diversity has not been destroyed. A survey in the 1970s by the Illinois Natural Areas Inventory (INAI) found 43 top-quality remnants of a dozen presettlement natural community types that included two kinds of forest, marshes, seeps, and no fewer than eight kinds of prairies (the last differentiated mainly by soil moisture levels.)

An estimated 1,180 species of plants (native and introduced) are known in the Lower Rock basin, and a more thorough field survey probably would turn up more. Woodland and prairie wildflowers such as the bluebells, Dutchman's breeches, trillium, and prairie anemone appear in season at such places as Johnson-Sauk Trail State Park.





Michael Jeffords

Woodland and prairie wildflowers such as the bluebells, (left) Dutchman's breeches, prairie anemone, and trillium (below), appear in season at such places as Johnson-Sauk Trail State Park.



Susan Post

The mammals that dwell in the basin have not been systematically studied, but 45 species are thought to occur here, including two of Illinois' rarer ones, the bobcat and the river otter. Few other places in Illinois have recorded more sightings of the river otter than the 26 made here since 1983. Bobcats likely abide in the forested bluffs along the Mississippi near Albany, where one of the cats was found road-killed in 1993.

Early settlers were not naturalists, and reports of their encounters with the region's wildlife are prone to error, if not outright exaggeration. Old-timers insisted that five-foot-long blue racers flushed from the grass coiled around the ankles of plowmen turning over prairie. No systematic study of amphibians and reptiles in the Lower Rock has been done, but 27 reptile and 15 amphibian species are known or thought to occur here. These include the mud turtle and western hognose

snake, both of which are rare enough that their continued survival in Illinois is uncertain.

The bird species that once bred here but no longer exist in the basin would make a fascinating aviary — passenger pigeon, Carolina parakeet, greater prairie chicken, sharp-tailed grouse, peregrine falcon, Bewick's wren, whooping crane, and possibly the trumpeter swan and ruffed grouse. Approximately 277 bird species regularly occur in the Lower Rock, of which 145 breed or formerly bred here. The large number of species can be misleading, as the numbers of individual birds of many formerly common species are much smaller than a century ago.

Approximately 3,660 miles of rivers and streams flow through the Lower Rock River area. The water chemistry, substrate, temperature, flood pulse, and vegetation of most streams differ from presettlement days. In spite

of these changes, surface waters in the Lower Rock remain viable habitat for 97 species of fish, 48 species of freshwater mussel, and 12 species of larger crustaceans such as crayfish. (Unrecorded populations of rare species of mussel and fish may exist in the smaller streams of the region.) Biologists rank six area stream and river segments (total length of 44 miles) as Biologically Significant Streams because of the diverse life they support — Fairfield Ditch #1 and Fairfield Union Special Ditch in Bureau County; the Rock River from Lyndon to Indian Island, Coon Creek and County Ditch #1 in Whiteside County; and the Mississippi River, miles 501 to 509, in Rock Island County.

While the diversity of natural habitats is high, the actual acreage of each type is very low. All the INAI sites combined cover not quite 9,300 acres, which is 0.56% of the region's land area. High-quality natural communities that meet the INAI's most exacting standards add up to only 154 acres — 0.0095% of the region's land area, much below the statewide average of 0.07%.

Today a much smaller proportion of presettlement natural communities is intact in the Lower Rock region compared to Illinois as a whole. Only one-fifth as much prairie survives, proportionately, as in Illinois as a whole. The roughly 16% of the Lower Rock covered by trees is about a fifth of the 1820 forest cover — again, less than Illinois as a whole. The ecologically high-quality forest is smaller still.

Some types of wetlands, however, have survived in relative abundance — the basin contains the fourth highest non-forested wetland acreage in the state. Even so, total wetland acreage, including forested wetlands, comprises only 1.5% of the region, a much lower proportion than the 3.5% statewide.

Fortunately, nature often crams a great deal of diversity into very small spaces. The Franklin Creek Nature Preserve offers upland and ravine forests, sandstone cliffs, seeps and springs, and a glacial drift hill prairie within a modest 96 acres. Remnants of much larger communities survive in country cemeteries (like the Munson Township Cemetery or the Greenlee Cemetery, both in Henry County) or riverine forests. The Elton E. Fawks Bald Eagle Refuge on the Lower Rock River is a 164-acre winter roosting site for bald eagles, and the Black

Hawk forest in Rock Island is one of the few remaining narrow, forested bluffs that once framed much of the middle Mississippi valley. In its 1,569 acres, the Nachusa Grassland Natural Area in Lee County encompasses marsh and seeps, forest cliffs and grassland communities of several types, including sand prairies.

At least 88 species of plants and animals considered threatened or endangered occur in the region, including six species that are rare in the U.S. as a whole. Of those 88, 34 are birds and 29 are plants. Another 12 “T&E” species are mussels, including the federally endangered fat pocketbook, Higgins eye, and winged mapleleaf mussels. Six fish species are on the official lists, including the pallid shiner, a denizen of shallow sandy and rocky pools that are also on the verge of extinction in Illinois. The pallid shiner is found in Illinois only in the Lower Rock, in a small stretch of the Kankakee River, and in the Mississippi River near Cordova. The weed shiner is one of the rarest fishes in Illinois, and among its homes are three streams in the Lower Rock basin — Fairfield Ditch No. 1, Fairfield Union Special Ditch, and Coon Creek.

Several rare plants also are found only in this area. The natural ranges of many North American plants intersect in mid-continent, and the region, like much of Illinois, has plants such as the prairie dandelion that are rare here even though they are quite common in states to the east, north and west. Other T&E plants no doubt persist unidentified within the region.

Some area species are adapted to quite specific types of

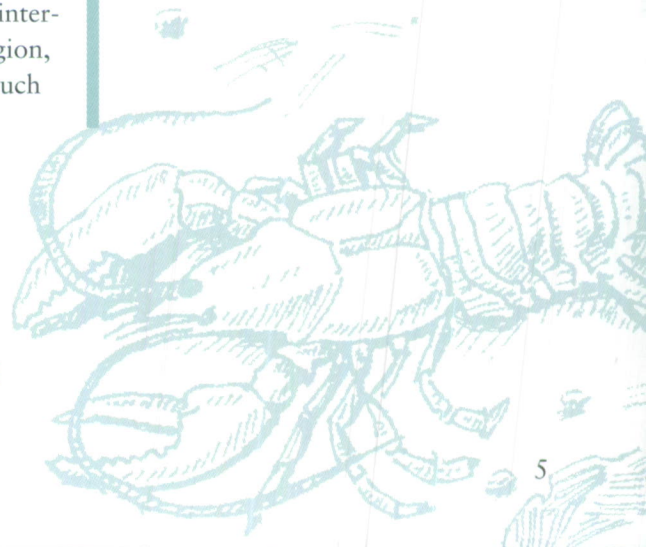
The Area At A Glance

△ Before Euro-Americans arrived in numbers, about 25% of the land area is thought to have been covered with forest or oak savanna, with most of the rest covered by the grasses and flowering plants of the tallgrass prairie.

△ It is estimated that 13% of the presettlement-era Lower Rock was wetlands. Some of the region's presettlement forests and prairies were wet much or most of the year, as were backwater lakes, clumpy sedge meadows, seeps, and marshes.

△ Nearly 90% of the land area is in some kind of agricultural use, and only 0.002% of the region's pre-1820 prairie remains.

△ Savanna likely covered much of the Lower Rock, but today no savanna is known to exist in anything resembling its presettlement condition. Overgrown or otherwise altered savannas probably persist, unrecognized.



Water Mills



Reconstructed grist mill at Franklin Creek

Falling water has great force, enough to turn saws to make lumber or millstones to grind flour. In the past, every village had a mill. Indeed, considering how crucial a mill was to the economy of the early Lower Rock, it might be more accurate to say that every mill had its village. A water-powered saw mill built on Elkhorn Creek bottom in 1834 gave the town that sprouted nearby its name — “Mill-edge-ville.”

The abiding weakness of water as an industrial power source is that the energy available varies with the flow of the stream, which is usually too fast in flood and too slow in drought. By building a dam across the stream, the mill owner pooled the water and the energy in it so its release could be controlled by him rather than by nature.

The dam built in 1845 on the Rock River at Dixon created a cheap energy source that sparked an economic boom. Nine stone factories were built there in the 1850s and '60s — a flax mill, flour mill, machine shop, sash and blind factory, feed mill, foundry, plow factory, file factory, and wool and knitting factory (this last used a new high-tech innovation — the Jacquard loom — to manufacture wool coverlets for export).

Here and there in the Lower Rock nature built its own dams. In Lee County, a mill stood at the foot of Inlet Swamp, at the point where a natural barrier of rock backed up water over some 15,000 acres. Despairing of finding any more productive use for it, local leaders at one point proposed that Lee County give the land to mill owners as a perpetual mill pond.

The problem with driving a saw or a grinding wheel directly with water energy is that the mill must be built where the water is. However, using hydropower to turn the turbine of an electric generator allows one to put the factory anywhere, delivering the water's energy to it by wire. At one point in the 1930s, eight “low-head” hydroelectric dams had been built on the Rock.

The old mills are long gone, victims of fires or age. Symbols of the economic future when new, water mills quickly came to symbolize a quaint technological past. The Franklin Creek Preservation Area Committee has reconstructed a grist mill that once stood on that Lee County stream. It will be equipped with a learning center and computerized slide programs to explain to no doubt disbelieving youngsters how a pond used to be high-tech.

habitat. The amphipod *Gammarus pseudolimnaeus* is adapted to cool water that flows from the earth via springs and spring-fed streams. The Laurentian fragile fern, known in Illinois only in this area, prefers limestone cliffs and kindred habitats. As its name implies, the gravel chub is a fish that prefers water that flows fast over beds of clean gravel, the kind that has been covered by silts in most Illinois streams.

When populations of such finely adapted creatures decline, it usually is because their habitats have changed. Torrey bulrush, which prefers acid sand ponds, was collected near Amboy in Lee County in the 1950s, but no extant populations of this plant are known anywhere in the state today. The state-endangered water-pennywort has become rare because it grows on the shores of marshes, of which only one half of one percent survive.

THE REGIONAL ECONOMY

The geology and climate of a place shapes human society as certainly as its habitat shapes any natural community. The glacial ice that covered the region a few thousand years ago left behind vast quantities of sand and gravel that today are quarried for

construction materials. (There are 11 pits from which sand and gravel are commercially dug.) Coal lies nearly everywhere beneath the region, usually no more than a couple of hundred feet deep. Although commercial coal mining ended in the Lower Rock in 1965, the region's mining heritage lingers in place names like Coal Valley and Coal Creek, and in the dozens of abandoned small mines that dot the area. Mautino State Fish and Wildlife Area near Sheffield consists of 871 acres of mostly unclaimed strip-mined land, and 15 old pits are now lakes stocked for fishing.

Today the most precious treasure yielded from below the earth is water. Total groundwater withdrawals in 1995 were nearly 38 million gallons per day. Over eons, water accumulated in the cracks of deep-lying bedrock in sufficient quantity that it can supply moderate-to-large towns such as Rock Falls, Amboy, Dixon, Sterling, and Morrison. Shallow formations of dolomite bear water in quantity too; several towns in Henry County draw water from these strata. Locally, 59% of the water used by public water systems comes from such bedrock wells.

Beneath today's Green River Lowlands is a buried river valley now filled with sand and gravel. Saturated

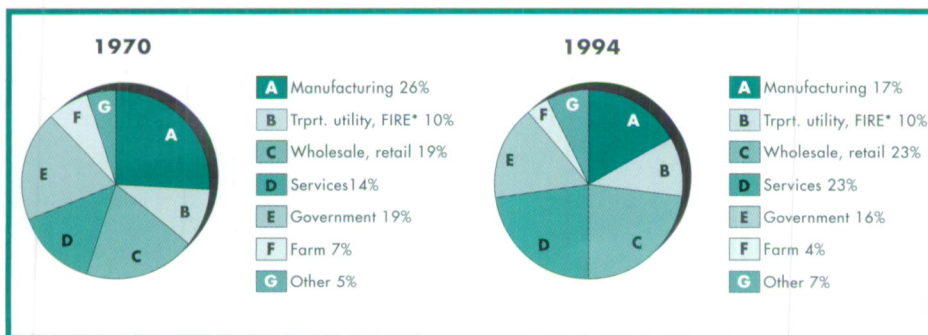
The Area At A Glance

△ Fewer of the region's presettlement natural communities survive intact, proportionately, as in Illinois as a whole. Some types of wetlands are relatively abundant — the watershed contains the fourth highest non-forested wetland acreage in the state — although the 1.5% of the region that is wetland is a much lower proportion than statewide.

△ The Illinois Natural Areas Inventory in the 1970s found 43 top-quality remnants of a dozen presettlement natural community types covering not quite 9,300 acres. High-quality natural communities add up to only 154 acres — 0.0095% of the region's land area, much below the statewide average of 0.07%.

△ An estimated 1,180 species of plants (native and introduced) are known in the Lower Rock basin, and a more thorough field survey probably would turn up more.

△ Forty-five species of mammals are thought to occur here. Few other places in Illinois have recorded more sightings of the river otter than the 26 made here since 1983.



Changes in Lower Rock River Area Employment Distribution

*Finance, Insurance, and Real Estate

"Other" in the charts includes construction, mining, and agricultural and forestry services

So rich are local soils that “farm trade” from the first included trade in the land itself. An 1857 guide for immigrants noted that an aptly-named Mr. Cropsey of Dixon bought a large tract of land for \$8 per acre and sold it three years later for \$25 an acre.



Joel Dexter

with water, these deposits are a major aquifer capable of yielding several thousand gallons per minute to a large well — enough to feed the giant spider-like irrigation rigs that plod across many farm fields in the region.

Loess, dust-like silt left behind by glaciers, is a rich parent material for area soils. Picked up by easterly winds and blown across the Lower Rock landscape, loess gradually accumulated in beds that exceed 50 feet south and east of Geneseo and thin to less than five feet in the eastern-most parts of the region.

Nearly 90% of the Lower Rock is in some kind of agricultural use, compared to about 78% statewide. (Farmland values are higher than the Illinois average.) More than 65% of that acreage is used for farming row crops, with some sub-basins having more than 80% of their land in row crops. Corn and soybeans are the top crops — Bureau, Henry, and Lee counties are among Illinois’ top ten producers of corn. Hogs and cattle are also big business — Henry

County is one of the several self-proclaimed “Hog Capitals of the World” in Illinois.

The Lower Rock, like much of Illinois, remains rural but is no longer exclusively agricultural. The number of farms in the region decreased by 26% between 1978 and 1992 as the typical farm expanded to absorb its neighbors. (Total acreage in farms declined only 5%). Farming in 1994 employed only about 4% of the workforce in the Lower Rock’s five main counties, although it is more important in Bureau, Henry, and Lee. Receipts from the sale of crops and livestock declined by close to half between 1980 and 1994 .

Low farm employment figures give a misleading picture of the economy. Many residents still make a living from farming indirectly, through jobs in banking, food processing, farm implement manufacturing, the sale of farm chemicals, and so on. Major employers include AgriPro and Sieben Hybrids (both seed companies), and farm equipment makers

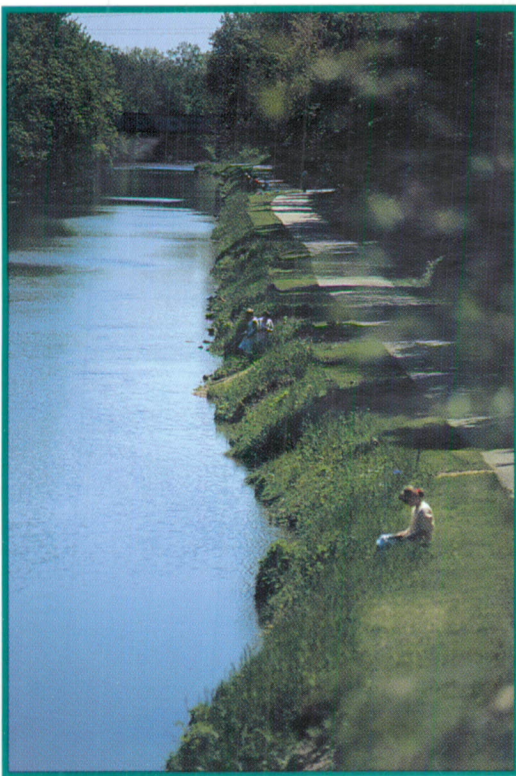
like Deere & Co. and Case-IH, which together employ thousands of local people making equipment that in earlier generations they would have used on their own farms.

Since 1980 the five counties that make up most of the region have lost population, due mainly to a drop in the number of manufacturing jobs available in the Quad Cities. Rock Island County, which has about half the employment of the whole area, lost 15,000 such jobs from 1981 to 1986 alone.

The recent loss of jobs on the farms and in the factories (losses only partially made up by increases in the service economy) is not the first time there has been significant change in the economic landscape of the region. The early Lower Rock economy was simple, based largely on the extraction of natural resources. The first Euro-American travelers to the Lower Rock came in search of game. The French fur traders, trappers, and hunters were later replaced by market hunters supplying meat to the

The Rock River is usually 6-15 feet deep and 500-1,000 feet wide, although a channel dam at Sterling-Rock Falls creates a wider pool there. Right, netting fish on the Rock River at Sterling.

Hennepin Canal Parkway State Park (below) is a 104.5-mile linear park which spans five counties. It attracted more than 800,000 visitors in 1996.



Joel Dexter

tables of Chicago and other cities. (Wild game was so easy to take that duck, deer, and goose appeared on local tables more often in spring and fall than did chicken or bacon.) Cattle grazed in numbers on prairie grasses, and hogs rooted in woods. The lumber and mining industries supported keel, flatboat, and limited

steamboat traffic on the Rock River. The pattern of settlement was determined by access to natural resources. Place names attest to these links — Hooppole in Henry County is so named because it was in a grove of trees from which local coopers cut the hickory bands used to secure barrels.

Today the streams, woods, and meadows of the region still have economic value, but the basis of their value to local people has changed. What used to be essential to sustenance now is valued as scenery, as touchstones to local history, or

as opportunities for outdoor recreation. The State of Illinois maintains six major parks and fish and wildlife areas in the Lower Rock region. Hennepin Canal Parkway State Park, a 104.5-mile linear park which spans five counties (Rock Island, Bureau, Henry, Lee and Whiteside), is most popular, attracting more than 800,000 visits in

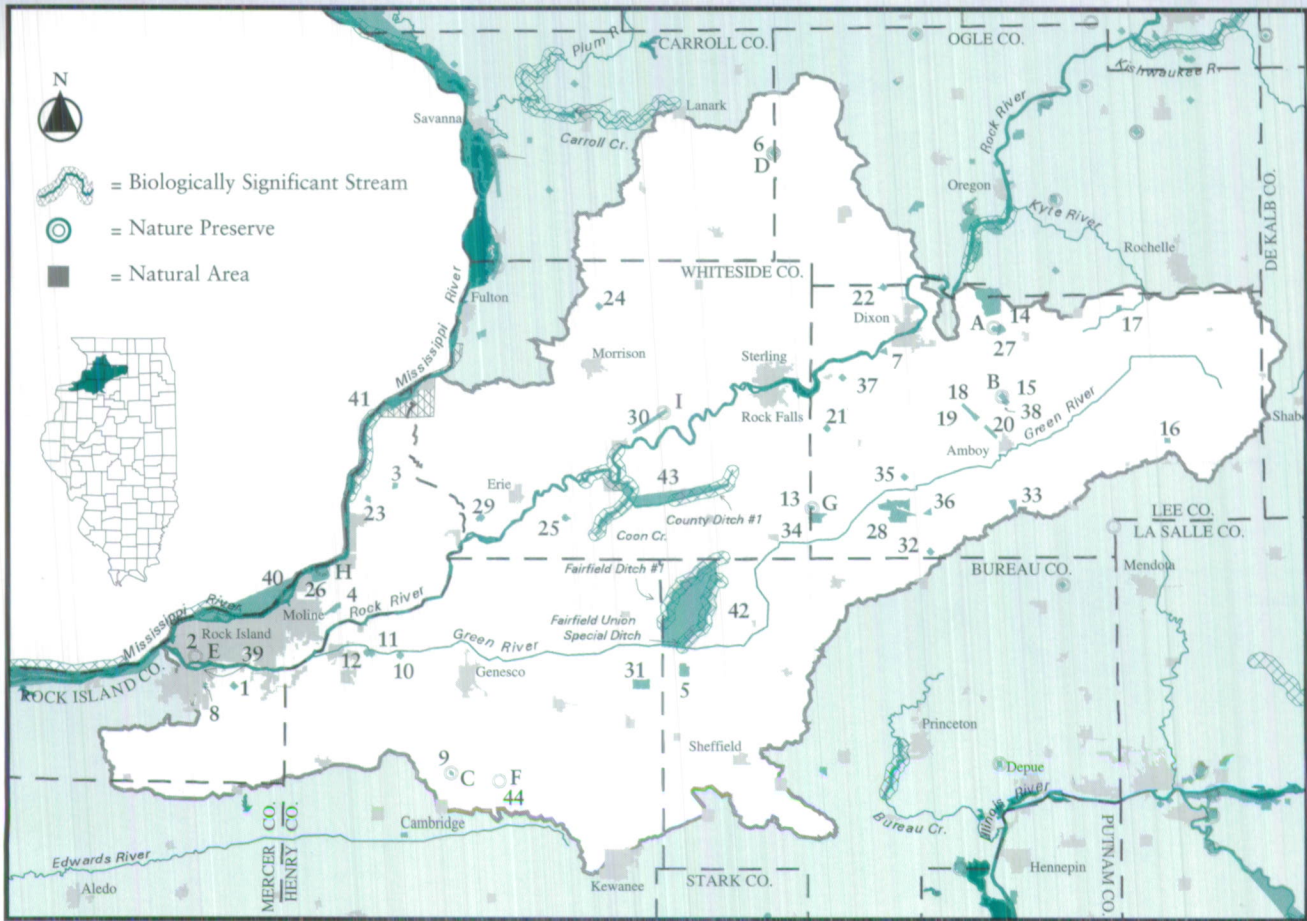
The Area At A Glance

△ Twenty-seven reptile and 15 amphibian species are known or thought to occur here, including the rare mud turtle and western hognose snake.

△ Approximately 277 bird species regularly occur in the Lower Rock and Green rivers watersheds; 145 breed or formerly bred here. However, the numbers of individual birds of many formerly common species are much smaller than a century ago.

△ Surface waters sustain 97 species of fish, 48 species of freshwater mussel, and 12 species of larger crustaceans such as crayfish.

△ Six area stream and river segments (total length of 44 miles) are ranked as Biologically Significant Streams because of the diverse life they support — Fairfield Ditch #1 and Fairfield Union Special Ditch in Bureau County; the Rock River from Lyndon to Indian Island, Coon Creek, and County Ditch #1 in Whiteside County; and the Mississippi River (miles 501 to 509) in Rock Island County.



Illinois Natural Areas Inventory Sites,

Illinois Nature Preserves, and Biologically Significant Streams

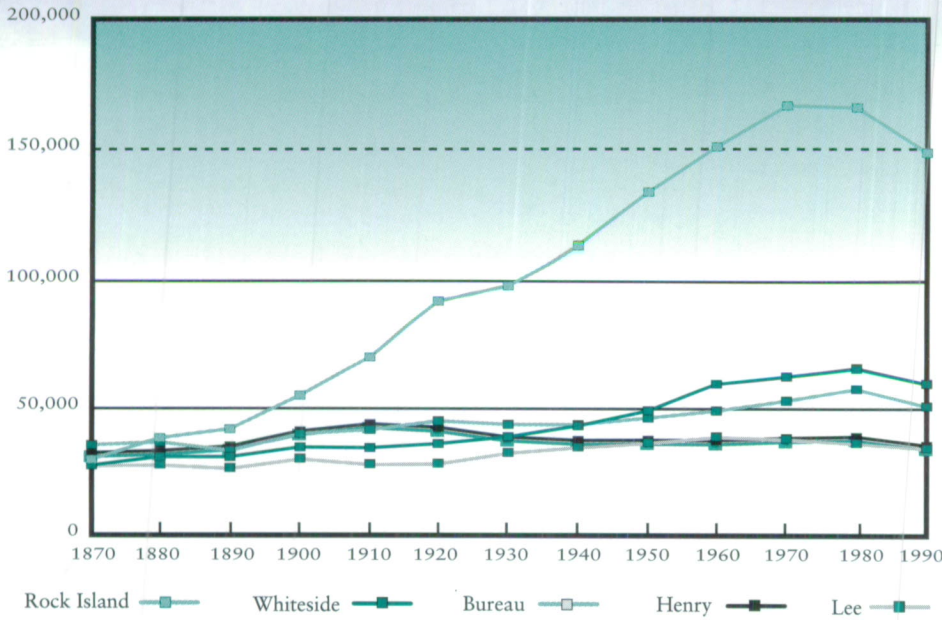
Illinois Natural Areas Inventory Sites

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|---|--|
| <ol style="list-style-type: none"> 1. Indian Bluff Hill Prairie 2. Black Hawk Forest 3. Pearsall Sand Prairie 4. McNeal Marsh 5. McCune Sand Prairie Cons. Area 6. Brookville Lutheran Cemetery Prairie 7. Dixon Southwest Geological Area 8. Milan South Geological Area 9. Munson Township Cemetery Prairie 10. Edford Railroad Prairie 11. Green River East Railroad Prairie 12. Green River West Railroad Prairie 13. Foley Sand Prairie 14. Nachusa Grasslands 15. Temperance Hill Cemetery Prairie 16. Compton Geological Area 17. Ashton East Geological Area 18. Amboy North Railroad Prairie 19. Amboy Central Railroad Prairie | <ol style="list-style-type: none"> 20. Amboy South Railroad Prairie 21. Walnut Railroad Prairie 22. L & M Prairie 23. Port Byron Geological Area 24. Clyde Cemetery Prairie 25. Sandy Town Cemetery Prairie 26. Elton Fawks Eagle Refuge/Illiniwek Forest 27. Franklin Creek 28. Green River Conservation Area 29. Wheelock Railroad Prairie 30. Lyndon - Agnew Railroad Prairie 31. Mineral Marsh 32. East Grove 33. Sandy Hill Slough 34. Kaecker Farm Site 35. Marion Township Site 36. Swickheim Site 37. Longanecker Farm 38. Amboy Site 39. Rock River - Carr Island |
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| <ol style="list-style-type: none"> 40. Mississippi River - Moline 41. Mississippi River - Cordova 42. Fairfield Ditch 43. Coon Creek 44. Greenlee Cemetery Prairie |
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Illinois Nature Preserves

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| <ol style="list-style-type: none"> A. Franklin Creek B. Temperance Hill Cemetery Prairie C. Munson Township Cemetery Prairie D. Brookville Lutheran Cemetery Prairie E. Black Hawk Forest F. Greenlee Cemetery Prairie G. Foley Sand Prairie H. Elton E. Fawks Bald Eagle Refuge I. Lyndon Prairie |
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Lower Rock River Area Population Trends

The Area At A Glance

△ At least 88 species of plants and animals considered threatened or endangered occur in the region, including six species that are rare in the U.S. as a whole. The weed shiner, one of the rarest fishes in Illinois, is found in Fairfield Ditch No. 1, Fairfield Union Special Ditch, and Coon Creek.

△ Today the most precious treasure yielded from below the earth is water. Locally, 59% of the water used by public water systems comes from bedrock wells.

△ Nearly 90% of the Lower Rock is in some kind of agricultural use, compared to about 78% statewide. Some sub-basins have more than 80% of their land in row crops. Bureau, Henry, and Lee counties are among Illinois' top ten producers of corn.

△ The State of Illinois maintains six major parks and fish and wildlife areas in the Lower Rock region. Hennepin Canal Parkway State Park is most popular, attracting more than 800,000 visits in 1996.

1996. Built in 1907, the canal runs east from Moline to the Illinois River. It carried barges until 1951, but railroads had rendered it outmoded before it even opened. What proved an embarrassment to engineers has been a boon to outdoors lovers. As early as the 1930s the old canal was used mainly by pleasure boaters. Today the canal is a venue for canoeing and is stocked for fishing. A 155-mile tow path, originally intended for towing boats, is used for hiking and biking. The path also provides the longest (78 miles) snowmobile trail in the state.

Shooting was an early form of ecotourism, as hunters came here from the East to shoot prairie chickens on the wing. A local historian lamented the failure to set aside some farmland as a game preserve in the 1880s. "We are too practical," he wrote, "and would turn everything to profit, regardless of pleasure and other considerations." Today, of course, pleasure is a source of profit in an era in which leisure time and disposable

income have never been higher. The region offers diversion to hunters of all types of game. Deer is the most sought-after game, measured by the 135,000 hunter-days spent in 1993 trying to get one by long gun or bow and arrow. The area accounts for 40% of the state's gray partridge hunting as well.

Because of easy access to the Rock and the Mississippi rivers, boating is convenient and, as measured by boat registrations per thousand residents, more popular than in the state as a whole.

The Rock River is a favorite spot of many fishermen. The Steel Dam, the 11th Street bridges between Rock Island and Milan, and Lake Potter in Rock Island's Sunset Park are among the more popular fishing spots. Chicagoans come regularly to Sylvan Slough on weekends to fish its waters for catfish.

Measured by the estimated \$16.5 million in total economic output generated by visitors to the six major sites in the region in 1996, outdoor

Restoration Ecology



Photo Courtesy of Richardson Wildlife Foundation

a largely volunteer effort to restore the somewhat tattered ecological remnants at the 1,020-acre Nachusa Grassland in the Franklin Creek watershed in northern Lee County. There, biologists have successfully introduced the gorgone checkerspot butterfly from other prairies. The Conservancy also hopes to eventually bring back to Nachusa the white-tailed jackrabbit, the greater prairie chicken (almost extinct in Illinois), and the American bison.

Because ecological damage is not always self-correcting, nature has little chance of recovering its presettlement state without active management by humans. For example, if grazing is stopped in forests, the spread of invasive plants slows down. To completely restore presettlement forest plant communities, however, takes years of active intervention, usually including regular fires to kill off fire-intolerant species like maples and exotics.

The most ambitious land management projects seek to replicate whole natural systems by healing damaged ones where possible and rebuilding others from scratch. Restoring natural systems on this scale is an evolving art. Newly-restored prairies usually are dominated by a few warm-season grasses, and remain species-poor for years. And while repeated burning fends off invading plants, it may pose risks to other life forms. Anecdotal evidence suggests that frequently burning remnant prairies can devastate some insect populations. When a prairie is burned may matter as much as how often; a study at a 40-acre native prairie at Richardson Wildlife Foundation in Lee County found that the insects of a prairie in June are very different from the insects of that same site in July, August, or September.

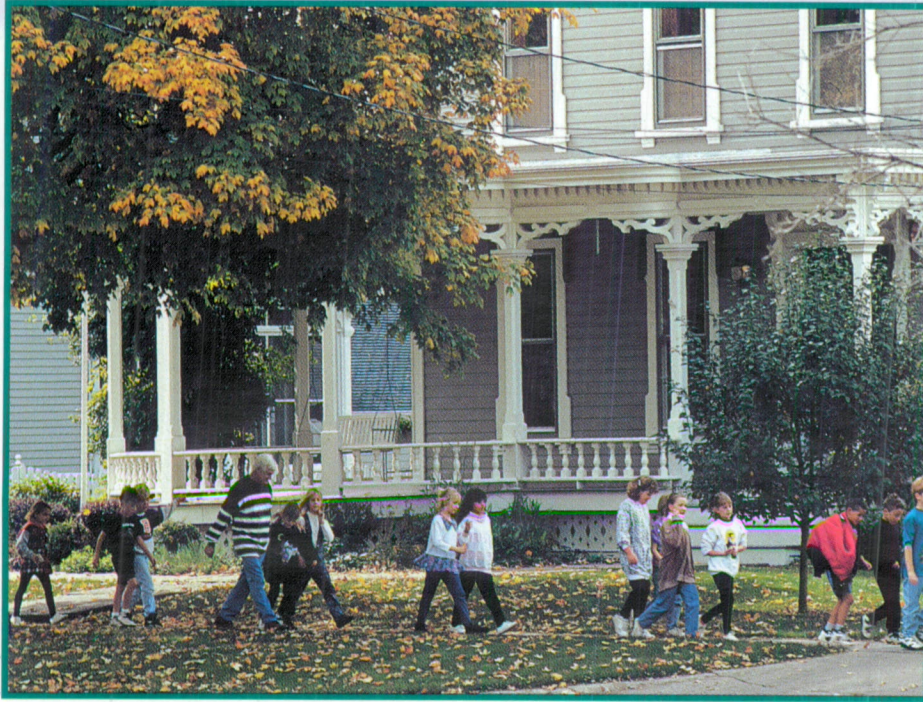
Suburn is not the only thing that the farmer shares with the weekend prairie volunteer. Each uses what he or she knows about natural processes to redirect nature. In the mid-1980s The Nature Conservancy began

recreation would seem a modest part of the Lower Rock economy. However, the value of the region's outdoor amenity in its broader sense, for example as scenery and open space, cannot be fully expressed in dollars. Small towns founded on farming have found new life as suburban havens. Typical of these is

Geneseo in Henry County. Local lore has it that the Indians called the site of Geneseo "Pleasant Valley." Today, restored Victorian homes and shops offer what the local Chamber of Commerce calls "lifestyle opportunities" within a 20-minute drive to the Quad-Cities, the major job center of the region. The settler's dependence

on nature has long since turned nostalgic, which only enhances its appeal; visitors to the local ball park are urged to take in "the atmosphere of the lights from the diamond, the setting sun and the bugs."

Development pressure on the Quad-Cities' hinterland is relatively modest compared to other places in



Jerry Hahn

Small towns founded on farming have found new life as suburban havens. In Geneseo, restored Victorian homes and shops offer what the local Chamber of Commerce calls “lifestyle opportunities” within a 20-minute drive to the Quad-Cities.

Illinois. (Area employment grew 0.4% from 1970 to 1994, which is only a little more than a third the rate of job growth in Illinois as a whole.) It remains heavily rural, with less built-up land compared to the state as a whole. A rise in “vehicle miles traveled” (VMT) is typical in the first phases of urban sprawl, as people make longer drives to and from ever-more remote suburban houses. VMT has climbed only moderately in the Lower Rock region — 29% since 1973. This is a substantial increase, but still less than statewide.

Even so, sprawl in the form of dispersed housing development is occurring. Conversion to housing caused much of Henry County’s 9% drop in farm acreage between 1978 and 1992, the biggest such drop in the region. As is the case elsewhere in Illinois, cen-

tral cities like Rock Island are expected to lose people over the next twenty years, as are remote rural areas like Bureau County. But counties within easy commuting distance of urban job centers, such as Henry County, are expected to see real, if modest, population increases.

Such change may be less an increase in population than a redistribution of it. The amount of land devoted to urban uses increased in Lee and Whiteside counties while populations there were actually declining — a sure sign of more spread-out patterns of development. Geneseo proper has about 6,000 people, for example, but another 6,000 live in several dozen housing developments within a few miles of town. This trend is aggravated by the fact that fewer people live in each house-

The Area At A Glance

△ The region offers diversion to hunters of all types of game. Deer is the most sought-after game, measured by the 135,000 hunter-days spent in 1993. The area accounts for 40% of the state’s gray partridge hunting as well.

△ Because of easy access to the Rock and the Mississippi rivers, boating is convenient and hence more popular than in the state as a whole, as measured by boat registrations per thousand residents.

△ The Lower Rock region remains heavily rural, with less built-up land compared to the state as a whole. Development pressure on the Quad-Cities’ hinterland is relatively modest compared to other places in Illinois.

△ Between 1970 to 1994, area employment grew at a little more than a third the rate as Illinois as a whole.

hold; the number of households rose by 12% between 1970 and 1990, even as total population declined by 8%.

ECOLOGICAL IMPACTS

The wholesale landscape changes that characterized the first century of the Euro-American era in the Lower Rock, like the draining of the great swamps and the plowing of the prairies, are finished. After climate and geology, the people of the Lower Rock remain the principle agents of ecological change, good and bad. No creature is unaffected by the human presence. Backyard bird feeders increase the winter survival rate and thus relative population of house finches, a non-native bird. Having driven natural predators from the region, humans have taken their place. For example, hunting and trapping have kept raccoon numbers in check, although in recent years low pelt prices have reduced the incentive to trap raccoons, and that resourceful animal's numbers are increasing.

As across Illinois, human interference still threatens the land's ability to sustain a diverse array of living things over the long term. The main agents of landscape change in addition to urbanization are habitat degradation due to drainage, grazing, and soil erosion, pollution, habitat fragmentation, the suppression of natural fires, and exotic species introductions.

Hydrology Apart from the clearing of the prairies, no change made to the presettlement landscape of the Lower Rock has had more profound ecological effect than attempts to alter



Local historians report that at certain seasons of the year the five-foot-tall sandhill cranes used to assemble in large flocks outside Dixon at "Sandhill Grove" to perform their mating dance.

the flow of water through it. The ebb and flow of rivers is inconvenient to humans who have built things beside them. In the mid-1800s the Rock ran low enough during most of the year that wagons and coaches could be forded across its shallower stretches. (During high water, ferries at spots like Hillsdale carried stagecoaches and wagon teams.) In the past 25 years average flow in area streams has increased significantly, to almost 11 inches from the historic average of nine inches. Much of the region's precipitation comes in the form of brief but intense rainstorms. After one of these heavy rains, flows in the Rock River's tributary streams can be 20 or 30 times higher than normal. Early thaws, combined with ice jams, have

always made early spring a time of damaging floods. For example, until the city erected the Truesdell Iron Bridge in late 1868, nine wooden bridges at Dixon were damaged or destroyed after being battered by the swollen Rock.

If the Rock sometimes runs too fast, the Green River used to run too slowly. Mud Creek and Mineral Creek often poured more water into the Green River than it could carry off. To reduce flooding, all but 27 miles of the Green River has been dredged and straightened to increase its water-carrying capacity. The remodeling of the Green River watershed has not eliminated floods, although it seems to have altered them. Stream gauge records show that floods on the



Michael Jeffords

Green, like the Rock, happen more often and rise noticeably higher since the late 1960s. This period coincided with a wetter climate minicycle. However, artificially draining farm fields speeds the flow of water into nearby streams, which then rise to flood stage faster, crest higher, and run faster (and thus do more damage to streambanks downstream).

Grazing Allowing livestock to feed in forests is a way to squeeze value out of unplowable sloping ground. But grazing disturbs delicate forest ecosystems. Grazing kills off many treasured species of native plants, including ferns and wildflowers like orchids, trilliums, and bell-flowers. Also, grazing creates openings for aggressive exotic species such as

multiflora rose and bush honeysuckle, whose extent in any given woods appears to be proportional to the grazing it has received. The only way a forest can revert to its pre-grazing state is through management (mainly controlled fires) to burn off competing plants.

Erosion Loess soils are especially vulnerable to the erosive power of wind and water. The picturesque landscape that greeted early settlers was in fact the result of streams carving ravines into the exposed flanks of glacial debris. Humans have accelerated the process by stripping soils of their vegetation to plant crops. Beginning in the 1920s, many farmers along the Rock and Green rivers, like their colleagues across Illinois, quit raising small grains like oats and wheat and

The Area At A Glance

△ To reduce flooding, all but 27 miles of the Green River has been dredged and straightened to increase its water-carrying capacity.

△ Erosion has been much reduced since the 1980s. Row crop acreage has declined, most of the region's hilliest, most erodible land has been taken out of production, and more farmers use soil-saving tillage methods. Today three-fourths of the farmland loses soil no faster than it is created.



Between the Revolution and 1840, most of the Euro-American settlements in the Lower Rock were associated with the fur trade.

Michael Jeffords

replaced them with crops such as corn and soybeans that are grown in open rows, leaving soil surfaces exposed to the eroding force of water. In 1925 about 460,000 acres in the region were planted in oats, wheat, and hay, compared to fewer than 70,000 acres in 1995.

Much of the soil carried off from these fields ends up in streams, lakes, and ponds. (Of the nearly 37 inches of precipitation that fall in the area every year, nine ends up in streams.) This soil movement from fields into streams can become so marked that soil becomes a major pollutant. In the early 1980s, peak

sediment loads on the Rock River near Joslin reached an estimated 48,000 tons per day. In 1982 — when corn production reached record highs in the region's nine counties — the river carried close to 1.6 million tons of sediment.

Fortunately, erosion has been much reduced since the 1980s. Row crop acreage has declined, with most of the region's hilliest, most erodible land taken out of production through the U.S. Department of Agriculture's Conservation Reserve Program. More farmers also use soil-saving tillage methods. Today three-fourths of the farmland loses soil no faster than it

can be replaced by natural soil building processes.

Pollution Water pollution in the Lower Rock River basin has followed a trend familiar all over Illinois: misuse followed by crisis followed by gradual improvement. The demise of the local ice industry illustrates this phenomenon. During winters the Rock River froze to depths up to 16 inches. Sawn into chunks, the ice was insulated with sawdust and hay and stored in one of several commercial ice houses located along the banks of the river, where it stayed frozen for months. In 1905 the Chicago Board

Sand

Sand is easily pushed around by wind, and the sandy outwash that makes up the Green River Lowland has been blown into dunes that in places stand 100 feet above the surrounding terrain. Long since stabilized by the roots of plants growing on them, these itinerant land forms are today settled citizens of the landscape, their origins unrecognized except where a stream or road cuts through them and exposes the interior.

Sand has unique chemical qualities, but its distinguishing trait as a soil is its inability to hold water. Droughty and unstable, sand is a tough place for a plant, and sandy areas are usually dominated by plants specifically adapted to them. In Illinois, these plants are as unusual as the sand on which they depend. A majority of the plant species considered rare in the Lower Rock are found in sand prairies. (The bog clubmoss, a denizen of wet sand prairies, is typical.) The same is largely true of animals; the rare mud turtle is found only in ponds with sandy bottoms that are adjacent to sand dunes or sand "blowouts."

Sand prairies occur in several

places in the region of the Lower Rock — along the Green River in Whiteside County, northeast of Dixon in Ogle County, and between the Rock and Mississippi rivers between Moline and Fulton. Some have been turned into laboratories. Augustana College acquired a sand prairie roughly 10 miles south of Rock Island and turned it into an outdoor classroom. The Richardson Wildlife Foundation in Lee County owns a large tract of native and reconstructed sand pond, sand prairie, and sand dune habitat that is the site of many ongoing wildlife studies. The 37-acre Thomson-Fulton Sand Prairie Nature Preserve near Fulton contains sand prairie that is recovering from past grazing. Among the plants here is the big flowered penstemon. Sand prairies at the Nachusa Grassland are home to lichens and other rare plants such as the fame flower. Nachusa's sand prairies are distinct from those in the rest of state because they took root not in glacial outwash, but in the weathered remains of outcrops of St. Peter's sandstone, which nature is turning back into the sand from which it was originally composed.

The Area At A Glance

△ The volume of pollutants entering the region's rivers from factory discharge pipes and city sewer systems has been reduced. Most remaining pollution consists of excess nutrients from partially treated sewage and runoff from farm fields.

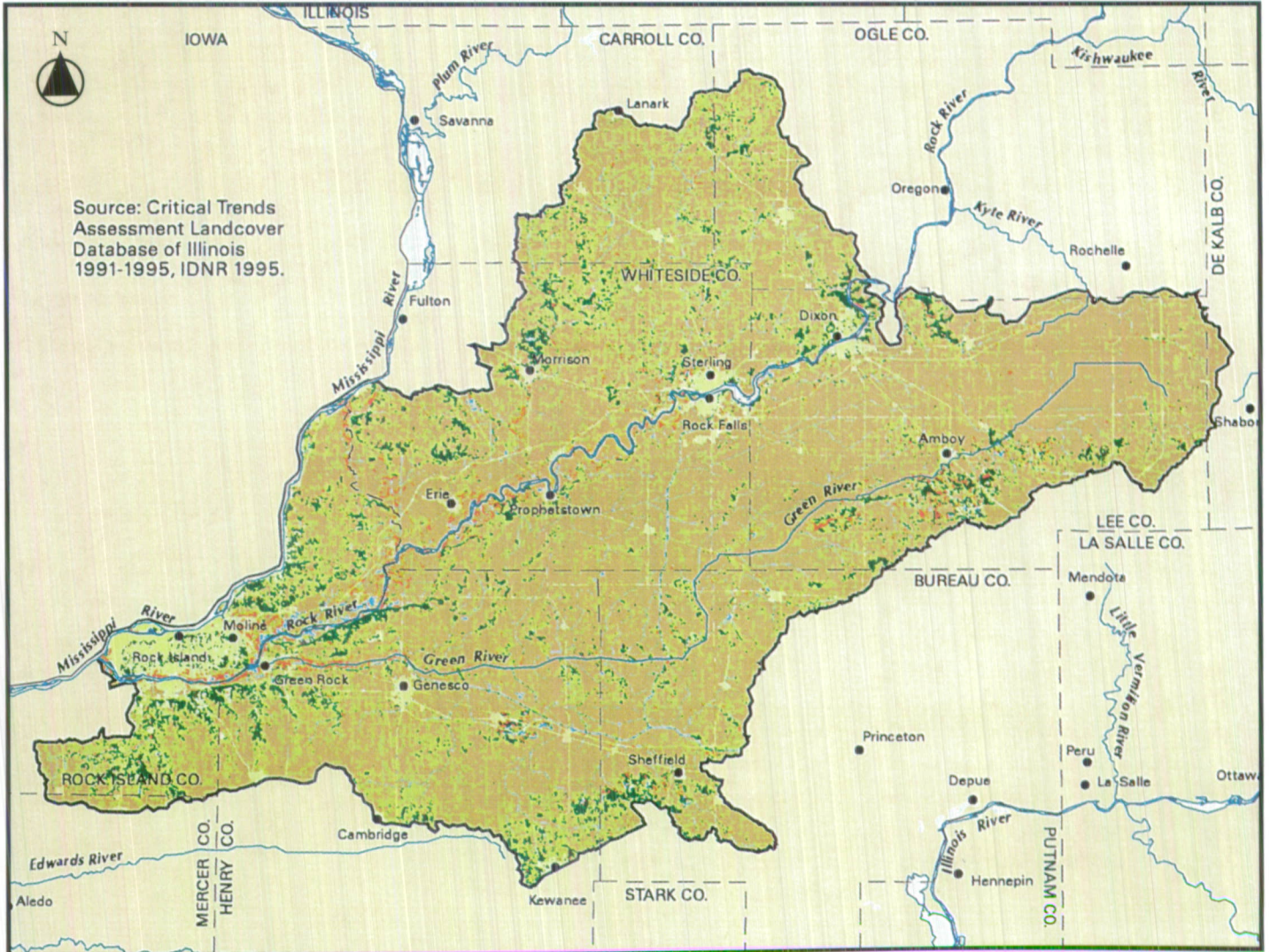
△ Two-thirds of the main stem of the Rock River is clean enough for the uses to which it is put, according to EPA standards, as is half the Green River.

of Health pronounced the local ice safe for human consumption. By 1922 the river water had become polluted enough that the State of Illinois' public health department deemed the ice fit only for general refrigeration.

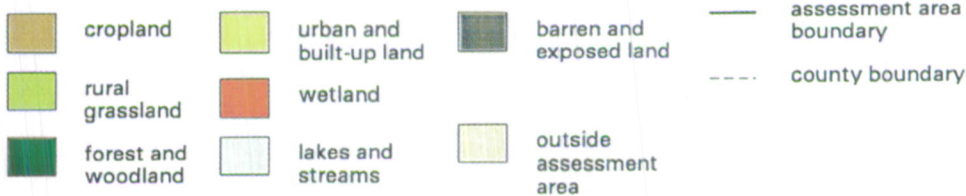
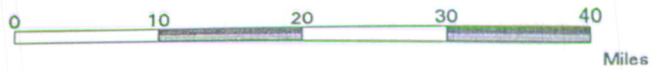
The volume of pollutants that enter the river from industrial "point

sources" such as factory discharge pipes and city sewer systems has been reduced. Two-thirds of the main stem of the Rock River is clean enough for the uses to which it is put, according to EPA standards, as is half the Green River. Most of the pollution that remains consists of excess nutrients

LAND COVER IN THE LOWER ROCK RIVER BASIN



Source: Critical Trends Assessment Landcover Database of Illinois 1991-1995, IDNR 1995.



from partially treated sewage and runoff from farm fields, both of which encourage the growth of bacteria that deplete water of oxygen.

In places, local aquifers are considered at least moderately sensitive to pesticide contamination from farm fields. About 58% of the area has been so identified, usually where water-bearing sandy deposits or bedrock are covered by only thin layers of loess. However, such pollution is usually local.

Recent positive trends in the quality of the air mirror those of the state as a whole. Environmental agencies sample air for the presence of "criteria pollutants" such as ozone or small particulates that pose threats to human health. In the Quad Cities, data from the early 1990s show that concentrations of these pollutants did not exceed federal standards.

Fragmentation Construction of roads, fields, and houses divides once-extensive wetlands, forests, and prairies into small habitat "islands." The Lower Rock's forested wetlands, for example, consist of 1,113 parcels whose mean size is 8.2 acres. (Only eight are larger than 100 acres.) In such splintered tracts the entire local populations of some plant and animal species may include only a few individuals. Such small populations are vulnerable to disease and genetic weaknesses that result from in-breeding. Fragmentation not only shrinks habitats, it also changes them; for example, once-sheltered forest interiors are thus exposed to drying sun and wind.

While some relatively small prairie remnants in the region still harbor breeding populations of birds such as the short-eared owl and upland sandpiper, grassland birds should have

breeding grounds of at least 125 acres and preferably more than 250 acres. The minimum size of breeding habitat needed for many forest songbirds is thought to be 500 acres. Few habitats of either type survive in sufficient size in the Lower Rock/Green watershed. Populations of unusual birds, such as veeries in the Franklin Creek Natural Area and American redstarts in the bottomland forests along the Mississippi, seem to be stable but they are probably being replenished by birds that are born outside the region and migrate into it.

Fire Fires on prairie helped keep it treeless — unlike trees, prairie grasses sprout from an inch or more below the surface, safe from flames. Occasional fires also were essential for the region's presettlement oak-hickory forests because they created openings in which sun-loving oak seedlings could flourish. When farmers stopped fires to protect their fields and buildings, shrubs and eventually trees invaded prairies. In unburned forests, understories become too shady for oaks, which gradually are replaced by shade-tolerant maples.

Restoring fire to these ecosystems helps restore them. By regularly burning "weeds" off the Brookville Lutheran Cemetery in Carroll County, caretakers inadvertently helped maintain the floristic integrity of the prairie remnant in which the graves were dug. Small habitats typically support only small numbers of species; this 3/4-acre prairie remnant — now protected as a State of Illinois nature preserve — contains more than 40 species of native prairie plants. Also, because few exotics are adapted to fire, burning is an excellent way to control the spread of many non-native plants. Local county soil and water

The Area At A Glance

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△ Populations of unusual birds, such as veeries in the Franklin Creek Natural Area, are probably being replenished by birds that are born outside the region and migrate into it.

△ The prairie chicken once was so numerous that four hunters could take 250 birds in a day. Local populations were decimated, and in 1940 the state purchased the Green River Conservation Area as Illinois' first prairie chicken sanctuary. Local populations dwindled anyway, and the last bird was seen in 1959.

Swamps

In the 1830s, local legend has it, the swamps that sprawled across the Green River Lowland were rendezvous spots for outlaws known as the Banditti. Cattle thieves, stagecoach robbers, counterfeiter and worse hid out in the tall grasses (as tall as 10-12 feet) of these "gloomy, tangled, and unknown swamps."

The cattle rustlers and robbers are long gone, cleaned out by vigilantes. The swamps are gone too, and with them the tall grass. In their place are orderly rows of corn and beans — scarcely a place for a weed to hide, much less a bandit.

In the 1820s the Inlet Swamp spread upstream from where the main branch of Willow Creek joins the Green River at the Great Inlet in eastern Lee County. A natural outcrop of limestone called Dewey's Dam backed up the creek water for some 15 miles. Downriver (roughly where Henry and Bureau counties meet north of Kewanee) similar low areas were known as the Great Winnebago Swamp, the Great Willow Swamp, and the Green River Swamp.

These swamplands were misnamed. Ecologists would recognize them as marshes dominated by grassy plants rather than the trees typical of true swamps. By either name these lands were covered each spring by water that lingered until early summer. As late as the mid-1850s, travel across southwest Lee County was via old trails that wound around these sloughs. Old settlers remembered being called out to pull drivers "out of a muss" when coaches and their four-horse teams got stuck in sloughs and creeks on the stage line that ran from Rock Island to Dixon.

An immense commons extended throughout the entire eastern part of the Inlet Swamp, where thousands of free-roaming cattle and horses were tended by herders who charged \$1 for each head of cattle and \$2 for each horse. Farmers in the area of the Inlet Swamp paid \$1.50 an acre for standing "pond hay" or "swamp hay" that grew on the fringes of the swamp. They cut it in the dry season and loaded it loose on hay racks to haul back to their farms.

The wetter parts of the swamps nourished great crops of rushes, slough grass, Indian rice, cattail, and other "worthless vegetation" adapted to the annual wet and

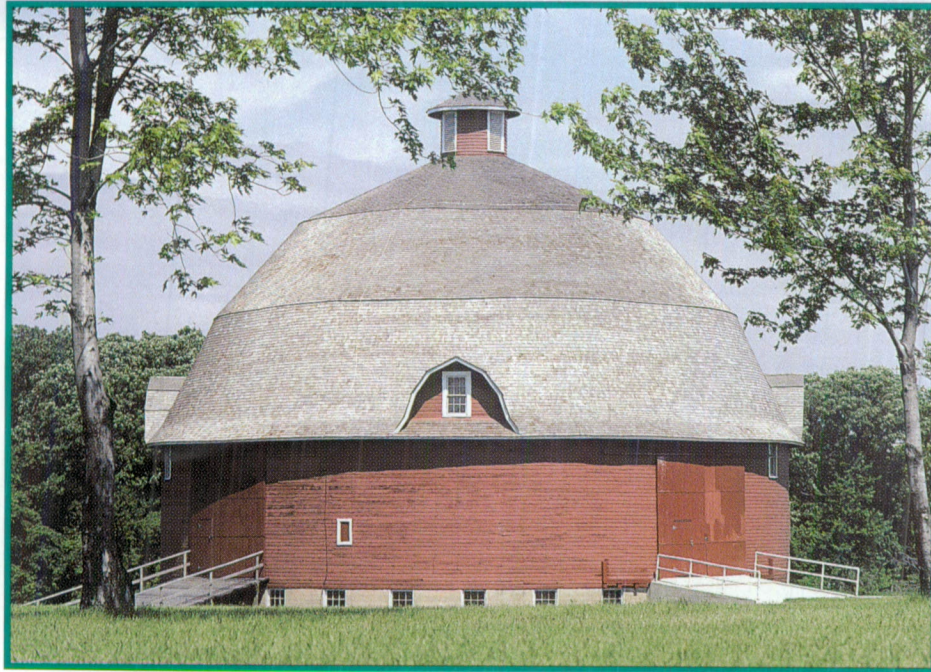
dry cycle. Such vegetation does not appeal to the palates of livestock, but it sustained millions of birds and other game. As one historian recalled about the Inlet, flocks of geese, ducks, swan, brant, pheasant, grouse, sand-hill cranes, wild turkey and others "literally spotted the sky like flying clouds and filled the air with a noisy quack and cackle."

The birds also attracted predators that fed on them, like wolves and, later, humans. Native American hunters made regular stops here, and trapping was a mainstay of the early Euro-American economy. Locals shot to supplement their tables, and, later, gentlemen of leisure traveled here to shoot for sport.

It was the market hunters of the 19th century, however, who organized killing on a commercial scale. In the 1850s local hunters bagged 100 geese in a day, enough to fill a farm wagon. Ducks were taken in quantity too, as many as 65 in one sitting. One resident recalled that the local soil became heavy to plow "because it's full of buck-shot from the duck hunters."

In the mid-1880s, a drainage district was organized to finance construction of a system of ditches to dry out roughly 30,000 acres in and around the Inlet Swamp. The drainage plan was controversial — residents valued the swamp as a grazing and recreational amenity. To preserve a portion of the swamp, a local group proposed to purchase and develop seven square miles of the Inlet as a private hunting park. Even though this plan enticed well-off sportsmen from as far away as New York to subscribe to it, the park idea failed.

The ditching and blasting to build a lower, artificial drainage system took 13 years. As measured in property prices, the economic value of the project was quickly proved, as the value of drained land rose an average of 40%. The ecological costs, then as now, are hard to measure in dollars. The Green River State Conservation Area, located about six miles northwest of the Bureau County town of Ohio, suggests something of that presettlement landscape — nearly a third of its 2,330 acres is swampy sloughs — and something of what was lost.



Located within Johnson-Sauk Trail State Park, Ryan's Round Barn is listed on the National Register of Historic Places. The Barn was constructed in 1910 and is significant as the largest and most well-preserved round barn in the state.

The Area At A Glance

Δ Double-crested cormorants, once seemingly doomed to vanish from Illinois, now are a common sight along the Mississippi, Rock, and Green rivers in breeding season, thanks to cleaner water and bans on hunting.

Δ While pristine examples of original habitats either do not exist or are quite small in the Lower Rock River basin, many acres of degraded natural communities persist that provide opportunities to invite nature back into the local landscape.

conservation districts have added prescribed burns to their arsenal of techniques to control exotic vegetation.

Exotic Species Introducing species of plants and animals to places in which they are not native can have unwelcome effects. The ring-necked pheasant was introduced locally as a game bird around 1890. This well-meant project pushed the native prairie chicken farther down the road to local extirpation, as the pheasant parasitizes prairie chicken nests. The large spectaclecase mussel is rare nationally and is in danger of extirpation because of competition from the non-native zebra mussel. Zebra mussels have been collected in the area only from the Mississippi River, but the mussel probably also inhabits the lower reaches of the Rock. Rusty crayfish are sold as fish bait and were

first found in the region in 1994; those that survived are outcompeting native (and ecologically similar) clear-water and virile crayfish. The invasive garlic mustard is rampant in parts of the region. Such plants pose grave threats to natural communities. Also, domestic cats are numerous enough that their hunting has a serious impact on populations of ground-nesting birds and small mammals.

PRESERVATION AND RESTORATION

Preservation used to be the sole remedy for natural systems under stress. However, putting fences, legal and otherwise, around species or even whole natural areas has proven paltry protection in a landscape where natural processes have been upset. This lesson was brought home with unhappy





A Franklin Grove boy scout and DNR fisheries biologist Ken Clodfelter place a bass spawning bed in the mill pond at Franklin Creek State Natural Area.

force in the Lower Rock region. The prairie chicken once flourished here. The bird was so numerous that one quartet of hunters from the East could take as many as 250 birds in a day. Some hunters even shot from their carriages as they bounced over the prairie. Local populations were decimated, and in 1940 the state purchased the Green River Conservation Area as Illinois' first prairie chicken sanctuary. Local populations dwindled anyway, and the last bird was seen in 1959.

More recent attempts to preserve local populations of birds have had better luck. For example, double-crested cormorants, once seemingly doomed to vanish from Illinois, now are a common sight along the Mississippi, Rock, and Green rivers in breeding season, thanks to cleaner water and bans on hunting.

A land management how-to aimed at increasing local biodiversity would include the following tips:

- ✘ Restore grassy and sedge-dominated wetlands to attract threatened and endangered species such as the least

and American bitterns, green heron, king rail, and marsh wrens. The Green River Conservation Area in particular would be a likely area for trumpeter swans to begin nesting again in Illinois. While there is a paucity of public sites large enough to attract breeding birds, the smaller areas could be managed as stopover sites to attract migrating species such as warblers and vireos.

- ✘ Leave dead trees standing in woods to offer nesting or roosting places for bats and flying squirrels.
- ✘ Leave unmowed strips around ponds to provide refuge for reptiles and amphibians and nesting sites for birds.
- ✘ Delay mowing hayfields in which bobolinks nest to spare young birds, since mowing kills as many as 94% of nestlings.
- ✘ Reestablish streamside grasses, shrubs, and trees to restore the ecological richness of streams. For example, in spite of being surrounded by farmland, Fairfield Ditch #1 has

clear water because its banks are protected by a sediment-catching buffer of small trees and grasses some ten feet wide.

- ✘ Improve spawning habitat. For example, the Franklin Grove Boy Scouts, working under the direction of Illinois Department of Natural Resources fish biologists, are placing artificial rock spawning beds in selected spots within the mill pond at Franklin Creek State Natural Area to improve habitat for small mouth bass.

- ✘ Create forested corridors to enhance habitat for wide-ranging mammalian predators such as the gray fox or bobcat. Habitat connectedness is especially important for reptiles that forage in lowlands but retreat to uplands to hibernate. Amphibians like the American toad travel long distances between lower, wetter places where they breed and drier upland prairies or forests where they spend the rest of their lives.

Locking nature away in an otherwise degraded landscape is impossible here; land for ecosystem-scale preserves is too scarce or too expensive. More opportunities exist to invite nature back into the humanized landscape. While pristine examples of original habitats either do not exist or are quite small in the Lower Rock River basin, many acres of degraded natural communities persist. These remnants need to be identified, in particular those restorable bits of floodplain forest, mesic (moist) prairie, and savanna of which few or no high-quality examples remain. If they were restored, they could prove crucial to maintaining the biodiversity of a region, making it a healthier place for plants, animals, and people.

(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*; detailed regional assessments are being completed for resource-rich areas in which a public-private partnership is formed.

The Lower Rock River Basin: An Inventory of the Region's Resources is based on one of these assessments, the *Lower Rock 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, the Illinois Natural History, State Geological, and State Water Surveys of IDNR's Office of Research and Scientific Analysis.

The *Lower Rock River Area Assessment* and all other CTAP and Ecosystems Program documents are available from the IDNR Clearinghouse at (217)782-7498 or TDD (217)782-9175. Many are also available on the EcoForum Bulletin Board at (800)528-5486 or (217)782-8447. Documents also are available on the World Wide Web at:

<http://dnr.state.il.us/ctap/ctaphome.htm> and
<http://dnr.state.il.us/c2000/manage/partner.htm>.

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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