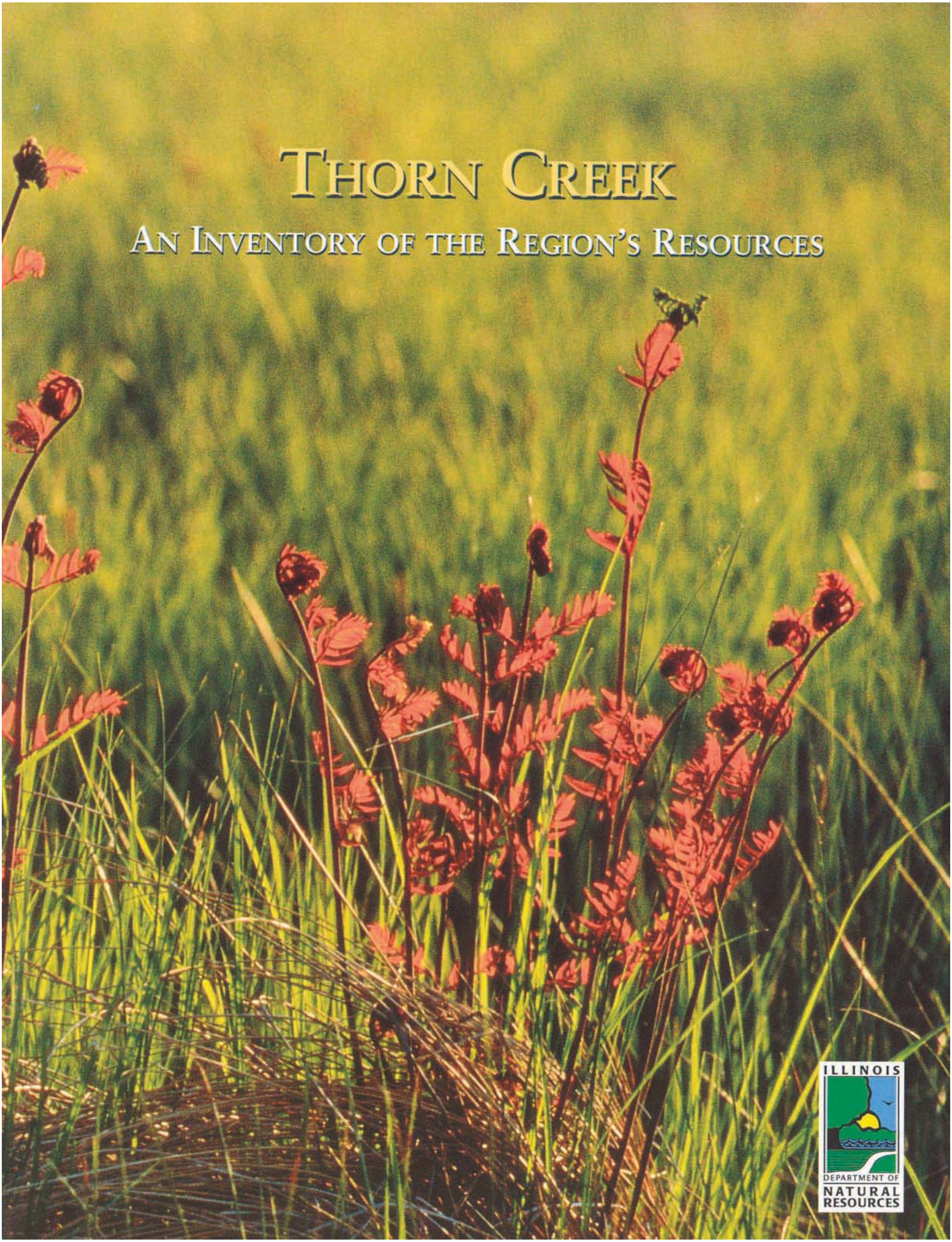

Thorn Creek

An Inventory of the Region's Resources

ILLINOIS
DEPARTMENT OF
NATURAL
RESOURCES

About This Report

Thorn Creek: 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. 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

Thorn Creek

An Inventory of the Region's Resources

2000

George H. Ryan, Governor
State of Illinois

✦

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Illinois Department of Natural Resources

✦

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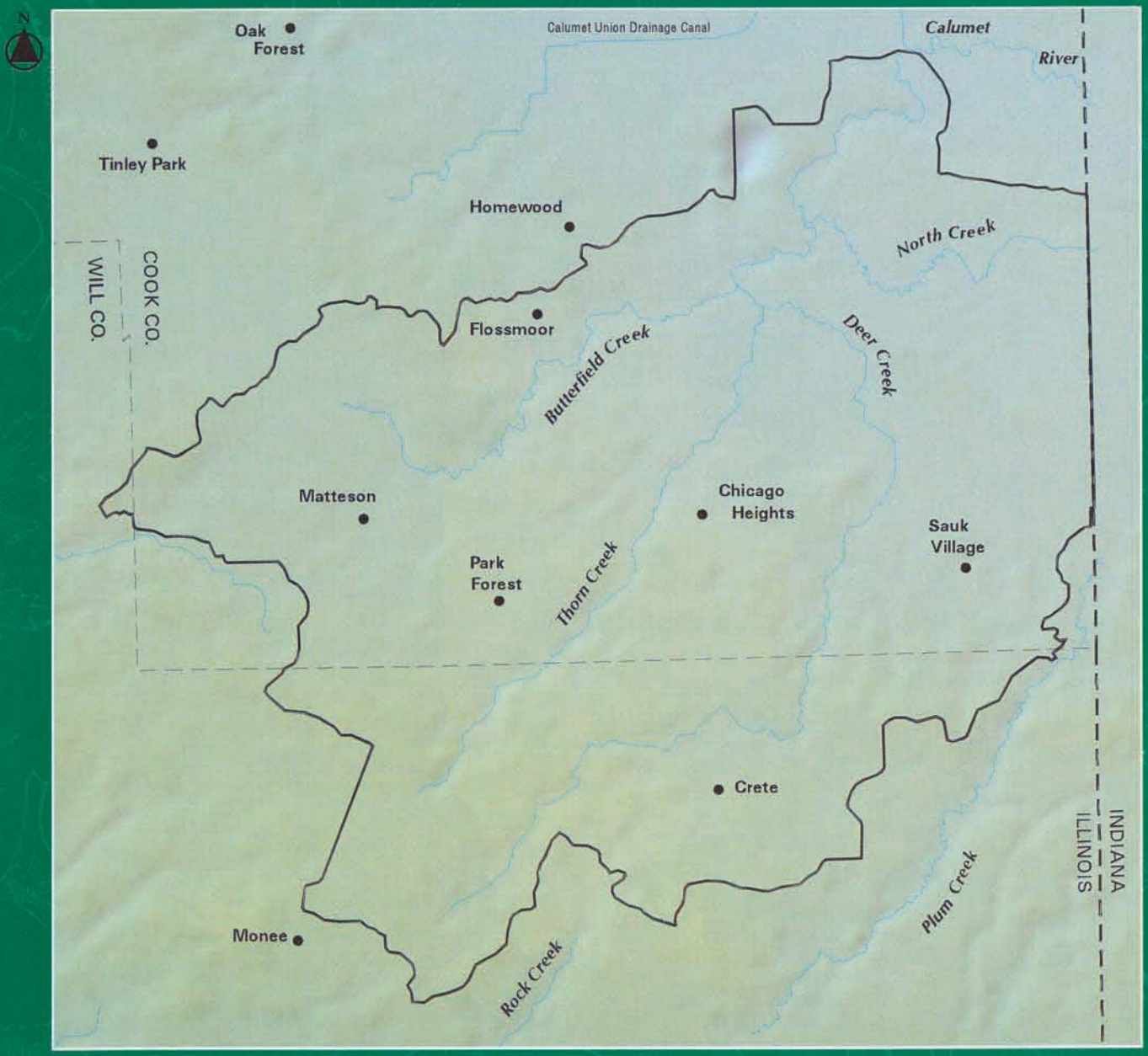
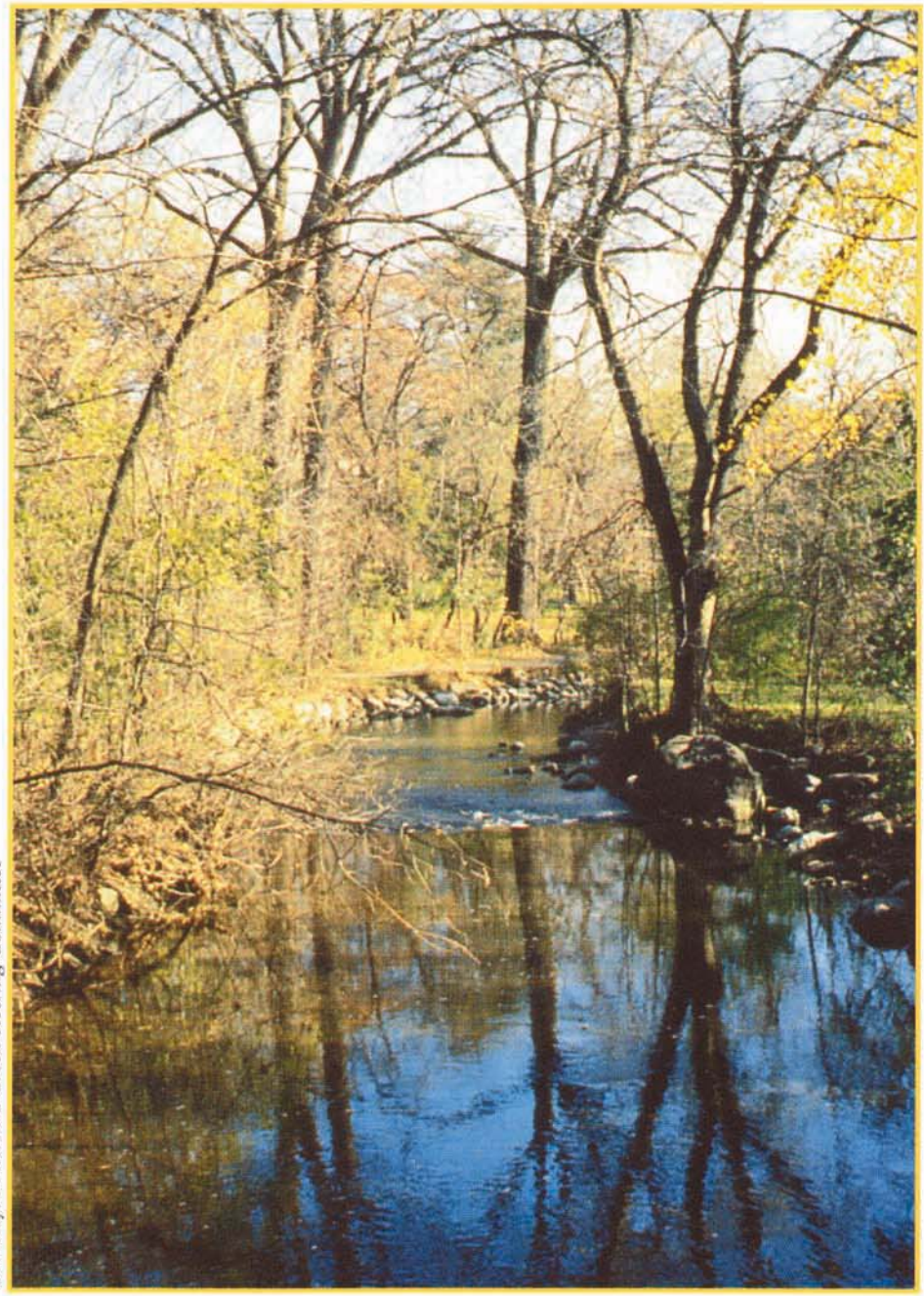
Thorn Creek Landforms



Lisa Smith and Chris Goldsmith • Illinois State Geological Survey

Thorn Creek

An Inventory of the Region's Resources



Courtesy: Butterfield Creek Steering Committee

Butterfield Creek is 16 miles in length and drains 26 square miles. It has a moderate channel slope of 5-8 feet per mile and, like Thorn and Deer creeks, it has a small but well-defined valley. It is rated a "C" stream by the Biological Stream Characterization, meaning it is a moderate aquatic resource.

Nature has always made life appealing along Thorn Creek in northeastern Illinois — first to itinerant hunters and fur traders, later to farmers, all of whom found riches as well as beauty in its streams and woods and soils. Most recently, homebuyers have been drawn to Thorn Creek's green views and open space. While still bucolic in character, however, the area is no longer rural and the challenge is how to preserve the country that has survived within the city.

Thorn Creek, with sister streams Deer, Butterfield, and North creeks, drains parts of southern Cook and northeastern Will counties. In geological terms the landscape is brand new, and looks today pretty much as it did 13,000 years ago after the last ice sheets retreated. The terrain left behind is very flat in the northeastern third of the area. Here relief takes the form of ridges of sand that mark the former shorelines of Lake Chicago, a continental-scale puddle of backed-up glacial meltwater that was the precursor to today's Lake Michigan.

To the southwest, the land rises in a series of end moraines. These ridges were formed when the glacier's advance was stalled because the ice melted as fast as new ice pushed down from the north. For years rock debris carried in and on the ice was dropped at stalled glacier edges, gradually accumulating in ridges along the ice front. In today's Thorn Creek area these end moraines generally parallel the southwest shore of nearby Lake Michigan, and are conspicuous enough to stand out as

landmarks. Several cross the Thorn Creek area — the Westmont (farthest from the lake), the Clarendon, and the Tinley, the last providing the heights of Chicago Heights. The Westmont and Clarendon moraines divide this region the way the Rocky Mountains divide the continent: streams east of them drain toward Lake Michigan and those west of them drain towards the Mississippi River.

Using old vegetation maps and other data, ecologists estimate that when Euro-American settlers began arriving in the early 1820s the local land cover was about 70% prairie and 24% forest and savanna. The rest of the land surface was probably covered by standing water. This presettlement landscape was itself changed from the post-glacial world. To clear the ground for hunting, among other reasons, Native Americans set fires that burned off competing tree seedlings, thereby expanding the areas of prairie and savanna.

Today, town sites may be described as "nestled amidst rolling prairie land" but the prairie itself, except for scattered remnants, is long gone. Even the remnants are not typical of what used to grow here. In the 1800s, the most common type of prairie took root in silt-loam soils; very little was sand prairie growing on old dunes. The silt-loam soils were attractive to farmers and were heavily plowed; the sandy soils were not and more of the sand prairies were left unplowed. As a result,

Janice Hiley

Trail users enjoy the fall colors of prairie grasses at Dewey Helmich Nature Preserve, Old Plank Road Trail.

sand prairie, once the rarest type of prairie around Thorn Creek, constitutes about three-fourths of the 20 acres or so of high-quality prairie left in the area.

Forest fared better than prairie. Thanks to purchases by the forest preserve districts of Cook and Will counties, a much higher proportion of the landscape is forested today (17%) than in the state as a whole (11%). In the presettlement era, about 16,000 acres of Thorn Creek are thought to have been forested; today more than 13,000 acres are still wooded.

Savanna, once widespread in northeastern Illinois, is the mixed forest-prairie ecosystem typified by scattered large trees (usually oaks) that dominate an open landscape of prairie grasses and forbs. Remnants of savanna still exist, although they've been damaged by plowing or grazing. Several grace the South Course of the Olympia Fields Country Club, much of which was built on savanna. Red-headed woodpeckers prefer savanna-like habitat and are a common presence at Olympia Fields.

Scientists estimate that wetlands of all kinds covered 47% of the area's pre-1820 surface. Approximately 9% of the original wetland acreage survives (about 2,800 acres), proportionately higher than in the state as a whole. As is generally true in Illinois, more than half of these wetland acres are bottomland forest. Compared to other places in Illinois, however, the ill-drained glacial terrain sprouted many shallow marshes and wet meadows. About a third of the local wetlands acreage is still marsh, most of it near where Butterfield, Thorn, and North creeks merge. This is an unusually high percentage for Illinois, where most marshes were drained for use as farmland.

The Modern Landscape

In today's Thorn Creek, almost one-half of the land cover is categorized as urban and almost one-fifth is agricultural. Other forms of land cover are relatively minor in extent. For example, grasslands make up only 12% of this former prairie area, even when hayfields and pastures are counted. Here, as in most of Illinois, nature persists in its most pristine state in preserves or in unused corners of the landscape, such as railroad rights-of-way or unplowable ravines. The 2.5-acre Dewey Helmick Nature Preserve is one of the highest quality "railroad prairies" in the state of Illinois, containing more than 200 species of native plants. It flanks the Old Plank Road trail in Matteson, just west of the smaller but similarly undegraded Old Plank Road Prairie.

Local natural communities, while reduced in extent, are only slightly diminished in variety. Four varieties of forest are found in the Thorn Creek area, along with lakes and ponds, five types of wetland, three types of prairie, and two types of savanna. Within each of these very broad categories are subcategories determined largely by the amount of soil moisture. In all, 29 different terrestrial natural communities have been found in the area.

A survey in the 1970s by the Illinois Natural Areas Inventory (INAI) found 12 remnants of presettlement natural communities in the Thorn Creek area. About 26 acres of local wetland are ranked as high-quality, undegraded natural community. While a much higher percentage of original prairie survives locally in high-quality condition than in Illinois as a whole — four times higher in fact — this amounts to scarcely 20 acres, or about 0.04% of the area once mostly covered by the

The Area at a Glance

Δ The landscape looks today pretty much as it did 13,000 years ago after the last ice sheets retreated. The terrain is flat in the northeastern third of the area; to the southwest, the land rises in a series of end moraines that generally parallel the southwest shore of nearby Lake Michigan.

Δ The Westmont and Clarendon moraines divide this region the way the Rocky Mountains divide the continent: streams east of them drain toward Lake Michigan and those west of them drain towards the Mississippi River.

Δ Ecologists estimate that when Euro-American settlers began arriving in the early 1820s the local land cover was about 70% prairie and 24% forest and savanna. The rest of the land surface was probably covered by standing water.

Michael Jeffords

James P. Rowan

The rose pogonia (left), grass pink orchid (below), and leatherleaf (lower right) are just a few of the numerous T&E species associated with shrub bog habitat.

tall grass. Fifty-four acres of forested habitat survive in an undegraded condition, making the loss of high-quality forest proportionally about the same as statewide.

Among the remnants are high-quality examples of nine natural community types, including sand prairies, sedge meadows, and sand flatwoods (the 21 acres are the only high-quality sand flatwoods left in Illinois). In addition, three-fourths of the state's high-quality sand seeps occur at the Wampum Lake Seepage Area.

In all, the best of the local INAI sites make up about 67 acres, or 0.1% of the area. This is a tiny fraction, but still proportionately more than exists in Illinois as a whole. Five of the area's INAI sites, totaling some 990 acres, have been designated Illinois Nature Preserves — the Jurgensen Woods, Thornton-Lansing Road, Thorn Creek Woods, Old Plank Road Prairie, and Dewey Helmick preserves. At the 331-acre Thornton-Lansing Road Nature Preserve and adjacent 125-acre Jurgensen Woods Nature Preserve are found some of the last remnants of the natural vegetation occurring on the sandy plains of glacial Lake Chicago, as well as numerous threatened and endangered species.

Flora and Fauna

One index of a region's biological capacity is the variety of plant life it sustains. To date 772 plant taxa (that is, species, subspecies, and varieties) have been identified in the area. Of these, 645 are native. This is a modest part of the roughly 2,200 taxa known to be native to Illinois, but the Thorn Creek area is very small. A better way to judge species richness locally is to consider that nearly 30% of Illinois' native vascular plant species are found in an area that makes up less than

2% of the state.

A number of plant species occur so sporadically in Illinois that their survival in the state is officially considered threatened or endangered. Only a few places in Illinois have greater concentrations of these "T&E" plant species than the undegraded parts of the Chicago Lake Plain. They struggle here at the edges of their natural ranges, or they occupy environmental niches, such as boggy sand, that have always been rare in Illinois.

Several of the bog-like communities evidently owe their existence to past sand mining in old dune ridges on the Chicago Lake Plain. Sand was mined (primarily for use in railroad beds) until about 1883, and the pits that were dug below the water table became wet much of the year. Bog communities were established in these new settings 80 to 90 years after mining ceased, with plants invading the new niche from seeds blown or carried in from other sites. Numerous T&E plant species are associated with this habitat — grass pink orchid, leatherleaf, spotted wintergreen, and rose pogonia, to name a few.

Although the number of plant species in the area has declined only modestly since settlement, the number of plants of many species is much lower than it used to be. Habitat loss is the usual culprit in local species decline, but predation by pets and by people also takes a toll. For example, ginseng and goldenseal, both sold as medicinal herbs, are harvested wild in such quantities that they have become uncommon in the Chicago area.

Forty-five species of mammal are thought to be present at least part of each year in the Thorn Creek area. Some, such as certain bats, are present only when they migrate through, or while they feed and breed here in the warmer months. The gray fox, which has become less common in Illinois, requires extensive forest cover. Because there are more than 11,000 acres of forest here, including sizable preserves,

Michael Jeffords

The Area at a Glance

Δ Scarcely 20 acres of original prairie survive in high-quality condition. About three-fourths of it is sand prairie, once the rarest type of prairie around Thorn Creek, but now just about the only prairie left unplowed.

Δ In the presettlement era, about 16,000 acres of Thorn Creek are thought to have been forested; today more than 13,000 acres are still wooded, about 17% of the area.

Δ Remnants of savanna still exist, although they've been damaged by plowing or grazing. Several grace the South Course of the Olympia Fields Country Club, much of which was built on savanna.

Δ Scientists estimate that wetlands of all kinds covered 47% of the area's pre-1820 surface. Approximately 9% of the original wetland acreage survives (about 2,800 acres), proportionately higher than in the state as a whole.

Flood Control

Courtesy: Butterfield Creek Steering Committee

Flooding on Butterfield Creek

As one would expect, an old lake bed tends to collect water, and the landscape of the Thorn Creek area is too young to have developed a mature stream system to carry it away. Once local streams encounter the smooth lake plain of the old Lake Chicago they drop a mere three feet per mile. Slow-moving North Creek has not been able to carve a valley for itself as other local streams have done.

As a result, precipitation tends to stay close to where it falls, and, because the underlying sediments are as fine-grained as flour, it takes a while to sink in. Soggy soils have been a headache for home builders, road engineers, and farmers for more than a century, especially in the spring and summer when thunderstorms and associated heavy showers are common. In many years the ground is already saturated by snowmelt. Water moves so lethargically across parts of the area that artificial "streams" such as the Lansing Drainage Ditch have been built to speed its removal. Storm sewers and field drains also were built to impose an unnatural efficiency to the movement of water through the landscape.

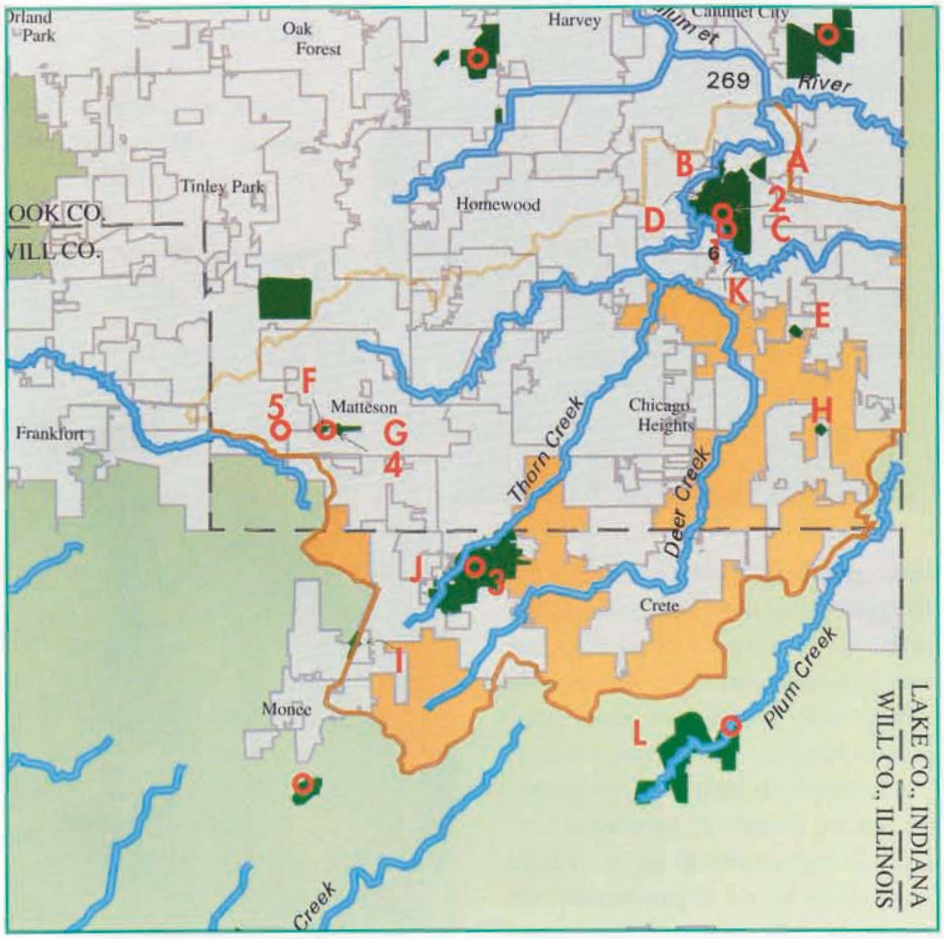
Because artificial drainage systems concentrate runoff, heavy rains can produce a flood "pulse" that packs a punch. Even moderate rains produce flows with enough energy to chew up stream banks. While stormwater collects in Butterfield Creek's upper reaches, for example, it is the banks in its lower reaches that have been most severely worn away (especially where current slams into a kink in the channel near Riegel Road). Occasionally the area's engineered stormwater system delivers water more quickly than the streams can carry it away. In these cases the water overflows streambanks, resulting in brief, but often widespread, floods like those that drenched the area in the 1990s, especially in 1996.

To prevent these types of floods, public agencies at all levels across the southern suburbs are investing billions of dollars to catch and hold storm water in underground tunnels and surface reservoirs. Public flood control measures are augmented by increasingly stringent requirements for private development. Builders in towns like South Holland and Richton Park must provide areas to detain stormwater, slowing its movement into local streams. These engineered remedies mimic (but never quite replace) the floodplains that used to do the same thing.

It is now broadly recognized that the long-term solution to flooding is to enhance natural water retention. After the 1981 flood, the towns of Richton Park, Matteson, Olympia Fields, Chicago Heights, Flossmoor, Homewood, and Glenwood, along with Cook County, set up a cooperative Butterfield Creek Steering Committee. The committee seeks to control flooding by integrating natural and engineered approaches. For example, undeveloped land along the upper creek includes many remnant or converted wetlands. Their protection would not only preserve flood storage capacity but also provide opportunities for wetland restoration that would have other benefits as well, from water quality enhancement to wildlife habitat and recreation.

Local flooding could be worse. Several undeveloped areas adjacent to upper Butterfield Creek, for example, provide important overflow storage for floodwaters. About 40% of the land in the Thorn Creek area is covered with vegetation that slows the movement of water into streams. This includes low- to medium-density development in which as much as half the land is grassy or wooded, and urban open space such as parks and lawns.

Natural Areas, Nature Preserves, and Biologically Significant Stream Segments



Nature Preserves within the boundary
1. Jurgensen Woods
2. Thornton-Lansing Road
3. Thorn Creek Woods
4. Old Plank Road Prairie
5. Dewey Helmick

Natural Areas Inventory Sites
A. Volbrecht Road Woods
B. Wampum Lake Seepage Area
C. Jurgensen Woods Nature Preserve
D. Thornton-Lansing Road
E. Glenwood Geological Area
F. Plank Road Trail Prairie - A
G. Plank Road Trail Prairie - B
H. Sauk Village Railroad Prairie
I. Monee Railroad Prairie
J. Thorn Creek Woods
K. Jurgensen Teaberry Site
L. Goodenow Grove

= Nature Preserve
= Natural Area
= Biologically Significant Stream

Scale 1:601920

The Area at a Glance

Δ More than half of the wetland acres are bottomland forest and about a third is marsh, most of it near where Butterfield, Thorn, and North creeks merge. This is an unusually high percentage for Illinois, where most marshes were drained for use as farmland.

Δ Almost one-half of the land cover is categorized as urban and almost one-fifth is agricultural.

Δ The 2.5-acre Dewey Helmick Nature Preserve is one of the highest quality "railroad prairies" in the state of Illinois, containing more than 200 species of native plants.

Δ Four varieties of forest are found here, along with lakes and ponds, five types of wetland, three types of prairie, and two types of savanna. In all, 29 different terrestrial natural communities have been found in the area.

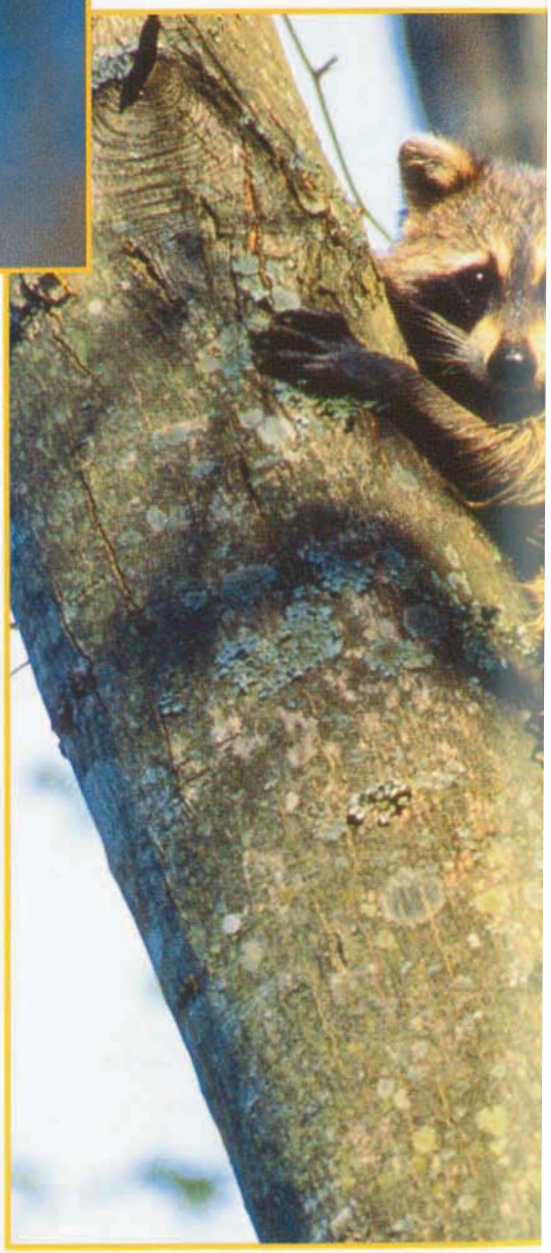
Δ The Illinois Natural Areas Inventory found 12 remnants of presettlement natural communities in the Thorn Creek area.

Δ Fifty-four acres of forested habitat survive in an undegraded condition, making the loss of high-quality forest proportionally about the same as statewide.

James P. Rowan

Left, while the number of gray squirrels have declined in the state as a whole, they are common here.

Below, raccoons are one of the mammal species that have adapted well to the suburban cultural habitat.



Michael Jeffords

the gray fox is considered likely to occur here. Another mammal requiring extensive tracts of mature forest with a dense understory is the gray squirrel. While the number of gray squirrels have declined in the state as a whole, they are common here.

At least 260 of the 308 bird species that regularly occur in Illinois can be found in the area as well. Grasslands such as the Bartel Grasslands near Vollmer Road sustain relatively vigorous populations of such grassland birds as the bobolink and grasshopper sparrow, species whose Illinois populations declined precipitously following the conversion of prairies to farm fields. Wetlands near Matteson's Vollmer Road, the Richton Park marshes, and sites near Monee, Flossmoor, and Chicago Heights are important avian habitats. Among the birds found here are several species considered threatened or endangered in Illinois, including some species of grebes, hawks, rails, bitterns, and herons. On the other hand, 34 species that used to breed locally either are no longer seen at all or are rare during the breeding season, providing subtle evidence of how much habitat has been lost or degraded.

Eleven amphibian and 16 reptile species are thought to be present. Local living conditions for such creatures are only fair, in part because the wet prairie and streamside vegetation favored by so many of Illinois' native amphibians and reptiles has been destroyed. Among the local T&E reptile species are Kirtland's snake and the massasauga, both denizens of the now-rare wet prairies. (The rare four-toed salamander is known to occur just south of the Thorn Creek area, and may be present here too.)

Because of poor surface water quality, only 13 species of fish, three of mussel, and four of large crustaceans are found in the basin. This contrasts unflatteringly with other rivers in northern Illinois, some of

which support 78 species of native freshwater fish, 33 of native mussel, and 10 of native crustacean. The Illinois Environmental Protection Agency has rated river and stream water quality in this watershed as "good" or "fair." About three-fourths of the 72 local stream-miles cannot support all the general uses considered appropriate to those streams; in 1998 nearly 20 stream-miles in the Thorn Creek area were considered unfit for swimming.

Still, many plants and animals have adapted surprisingly well to the human presence. Communities of birds can be found in suburban lawns and backyard gardens. The plains garter snake is quite at home in mowed roadsides; the American toad, western chorus frog, and bullfrog can thrive in cattail marshes smaller than an acre, even those surrounded by shopping centers or houses. Mammals in particular are generalist species able to exploit a variety of habitats. Ground squirrels, voles, and shrews are common inhabitants of cemeteries and roadsides, and any homeowner whose trash cans have been burgled by raccoons can attest to how well that species has adapted to suburban areas such as Thorn Creek.

Human Use of the Land

Archeological evidence makes clear that this part of northeast Illinois has been home to humans of various cultures for 12,000 years. The number of sites discovered (174) is small, but the area is small and only about 10% of it has been surveyed for archeological remains. The density of sites, however — one every two square kilometers — is high.

The Native American occupation did not end until well into the 19th century. The Sauk, Fox, Potawatomi, Chippewa, and Ottawa hunted here, and the area was criss-crossed with trails such as Sauk Trail, which connected Fort

The Area at a Glance

Δ Among the undegraded remnants are nine natural community types, including sand prairies, sedge meadows, and sand flatwoods (the 21 acres are the only high-quality sand flatwoods left in Illinois). In addition, three-fourths of the state's high-quality sand seeps occur at the Wampum Lake Seepage Area.

Δ Some 990 acres have been designated Illinois Nature Preserves — the Jurgensen Woods, Thornton-Lansing Road, Thorn Creek Woods, Old Plank Road Prairie, and Dewey Helmick preserves.

Δ Of the 772 plant taxa that have been identified in the area, 645 are native. Nearly 30% of Illinois' native vascular plant species are found in an area that makes up less than 2% of the state.

Δ Numerous T&E plant species are found in the area's bog communities, including grass pink orchid, leatherleaf, spotted wintergreen, and rose pogonia.

Detroit to the Mississippi River. Many of these trails were later appropriated by Euro-Americans for roads.

The area offered people of different cultures different rewards. Although it was an excellent hunting ground, this part of Illinois was not destined to be an agricultural center. While local soils were derived from the same base of glacial debris, the best Illinois soils were formed in loess, the powdery wind-blown silts that were lain atop that debris. Loess was fairly thin here (less than two feet) and much of it had already been eroded from sloping ground by the time Euro-American farmers arrived.

One advantage the area offered permanent settlers is groundwater that is ample and of good quality — a gift considering that the terrain offers few sites for surface reservoirs. Groundwater provides approximately 35% of the total water used in the Thorn Creek area. (The rest comes from Lake Michigan.) Groundwater is drawn from more than 1,500 private wells and 26 public water supplies. Most is taken from bedrock lying relatively near the surface, in whose crevices and fissures water has accumulated. The cities of Chicago Heights, Flossmoor, Crete, Matteson, Park Forest, and Sauk Village have drawn upon this resource, as has virtually every commercial and industrial facility that provides its own water. Because these rocks are blanketed by thick surface soils, there is relatively little potential for their contamination from the surface.

The prosperity of the area owes more to its location just south of Chicago than to any natural resource. Only during the first decades of the Euro-American era was the economy based on local resources exploited for local markets. In the 1850s the rise of the railroads tied farms in the hinterland to Chicago markets, and through them to markets as distant as the East Coast.

While tied to Chicago economically, the towns of the Thorn Creek area remained largely independent socially and physically for some time. But the railroads that carried goods to and from the city also began carrying people. At the turn of the century, thousands of people at a time traveled from Chicago to visit Elliott's Amusement Park, which stood where Olympia Way now meets Lincoln Highway. In the 1930s a rustic resort operated just west of Western Avenue between Sauk Trail and Monee Road. The Thorn Creek area was especially suited to golf, having both hilly terrain and lots of potential players, and the game has been a spur both to tourism and to residential development (see *Golf Sanctuaries* sidebar).

Stream courses and Indian trails used to determine where roads and towns were built, but since the mid-1800s settlement followed first the railroads and then interstate highways. Spots where one railroad intersected with another were natural town sites (for example, the town of Matteson was built where the Illinois Central intersected a branch of the Michigan Central). Today highways are the arteries of local commerce and are reshaping settlement patterns. Interstates 57 and 94, along with the Tri-State Tollway, link Thorn Creek not only to Chicago but also to the burgeoning south suburbs.

Convenient access made the area first a supplier to the big city, later an alternative to it. Chicago Heights was developed in the 1890s as a steel-making center that for a time outproduced Chicago's already aging plants. But while many local towns date to the 1830s, urbanization on a large scale is a fairly recent trend. As recently as 1925 more than two-fifths of the area was still being farmed; Park Forest was cornfields as recently as 1949, when it was converted into a new town for house-hungry war veterans.

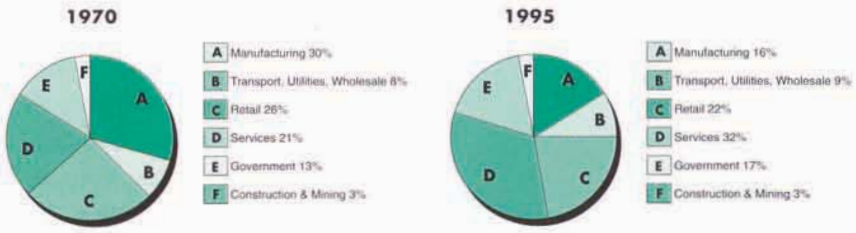
Today the Thorn Creek area is widely urbanized, with 98% of its population living in what is defined as urban settings. (Population numbers are based on 164 census block groups which have more than one-half of their population within the Thorn Creek assessment area.) As of 1995 only about 18% of the area's land was still being farmed, with most of that located on the still-developing periphery to the south and west. By comparison, about 78% of Illinois' surface is devoted to some kind of agriculture.

In recent years the pressure to develop land for housing is not a result of a booming population. Growth has been patchy in most area towns in the past 30 years. Some, like Matteson, are essentially static. Aging factory towns such as Chicago Heights and Ford Heights are losing people as they lose jobs; smaller household size is one reason towns such as Park Forest have fewer people. It is the newer towns to the south — Steger, University Park, Crete, Richton Park — that are growing. Crete was estimated to be half again as populous in 1998 as it was in 1980, for example.

Nonetheless, the area largely retains its bucolic character. As in the days of

Changes in Employment Distribution

(Bloom and Rich townships in Cook County and Crete and Monee townships in Will County)



Elliott's Amusement Park, the Thorn Creek area remains a refuge from the city. The major outdoor recreations are picnicking and hiking. Hunting, while a popular pastime in Illinois' rural areas, is precluded for safety reasons in heavily populated areas such as the Thorn Creek watershed. (Cook County, for example, bans firearm hunting of deer, although local hunters are allowed a very limited take of pheasant, rabbit, and woodcock.) Apart from the 35-acre Wampum Lake in the Lansing Woods Forest Preserve, the area offers little to tempt anglers and has Illinois' lowest ratio of registered boat owners to population.

The local forest preserves are both the symbol and the source of outdoor life locally. The preserves function as much like parks as wild places, but these islands of green are significant for their aesthetic benefits as well as recreation. For such a very small watershed, the area features relatively large amounts of protected open space in healthy, if not pristine, condition. The South Metropolitan regional Open Space Alliance, an umbrella group, has noted the role that the natural vistas play in local civic identity. "We have begun the process," the group has stated, "of defining ourselves as a region concerned with the environment and quality of life."

Because quality of life matters, it is a crucial economic issue in today's suburbs, whose principal resources are house sites, parks, and schools attractive to the home-buying middle class. The county forest preserve districts bought land years in advance of development, when open space was not a pressing local issue. Farms fulfilled the aesthetic function of protected green space, even if they were only occasionally available for recreation use. But with pressure on the supply of land — Will County's population is expected to double in the next 20 years, for example — nature is another infrastructure that must be provided for, like schools or roads.

Problem Areas

Habitat needn't be destroyed outright to render it inhospitable to the plants and animals that depend on it. Pollution can have that effect. So can construction that fragments once-connected habitats, or competition from introduced species. Animal grazing compromises habitats too, as does suppressing fires in areas that used to burn regularly.

Pollution Like most populated areas, the Thorn Creek area is pockmarked by old landfills (31), surface

The Area at a Glance

Δ At least 260 of the 308 bird species that regularly occur in Illinois can be found in the area. Among the birds are several species considered threatened or endangered in Illinois, including some species of grebes, hawks, rails, bitterns, and herons.

Δ Grasslands such as the Bartel Grasslands near Vollmer Road sustain relatively vigorous populations of grassland birds such as the bobolink and grasshopper sparrow. Wetlands near Matteson's Vollmer Road, the Richton Park marshes, and sites near Monee, Flossmoor, and Chicago Heights are important avian habitats.

Δ Eleven amphibian and 16 reptile species are thought to be present. Local living conditions for such creatures are only fair, in part because the wet prairie and streamside vegetation favored by so many of Illinois' native amphibians and reptiles has been destroyed.

Δ Because of poor surface water quality, only 13 species of fish, three of mussel, and four of large crustaceans are found in the basin.

James P. Rowan

Left, the acadian hairstreak, Satyrium acadica, is one of the butterflies found in the area. It feeds on nectar from flowers such as butterflyweed, meadowsweet, milkweeds, and thistles.

Right, the red-tailed hawk is one of the bird species found in the area. It has been spotted at two golf courses that are certified Audubon Cooperative Sanctuaries.

waste impoundments, and contaminated abandoned factory sites (most of the latter in and around the industrial center of Chicago Heights). Fifteen of these sites are polluted enough that environmental agencies have included them on their list of Superfund sites, although none poses enough risk that it has been placed on the National Priority List for speedy cleanup.

Today's factories pollute less than in the past, a result of new industrial processes and tougher environmental controls. Also, there are fewer factories. The manufacturing base of the local economy shrank in the 1970s and '80s, as it did nearly everywhere in Illinois. In 1980 manufacturing accounted for 30% of the jobs in the four townships that take in most of the Thorn Creek area; in 1995 it accounted for only 16%. The combined result is that factory discharges no longer are the principal sources of the area's remaining water pollution. Instead, sewage and "urban runoff" made up of pesticides, oil and gasoline residues, road salt, and the like are the most common water quality problems.

Thorn, Deer, and Butterfield creeks were all used in the past to carry away and dilute treated sewage from small municipal sanitary works. Construction of newer, larger plants that began in the 1970s left the region with a single large water treatment facility, operated by the Thorn Creek Basin Sanitary District. This plant discharges into Thorn Creek, and during times of normal stream flow almost half the water in the creek at the plant site consists of effluent. When the water runs low, typically in late summer, virtually all of the water in the creek is treated sewage. During a recent drought

Reading History in Trees

The forest preserves of northeast Illinois are the area's green crown jewels. The woods they protect are not, as they are sometimes misapprehended, survivors of Chicagoland's forest primeval. They share a history with humans, and that history can be read in the trees.

The Thorn Creek Woods is a 760-acre natural area at the southern end of the nearly 5,700-acre Thorn Creek Preserve. Red oak, white oak, sugar maple, black maple, and basswood are the predominant tree species. Jon Mendelson, a forestry expert at nearby Governors State University, has found that the oldest trees now found in the woods took root between roughly 1830 and 1880. In that time period human disturbance unwittingly enhanced growing conditions for new trees. In addition to crop fields, most farmers kept small 10- to 20-acre woodlots to provide wood, habitat for game, and forage for grazing livestock. They logged such woods selectively, never taking more than a few trees at a time. This opened gaps in the forest's original leafy canopy, exposing the forest floor to light that fed seedlings. Because the owners suppressed fires in the woods, seedlings of fire-vulnerable trees species flourished.

Mendelson found another cluster of much younger trees that had taken root between the 1920s and today. By the 1920s most local farmers had either gone out of business or shifted to raising row crops such as corn and beans. The old woodlots were bought up and gathered into larger parcels that usually stood unlogged and ungrazed for years. Conditions were again favorable for new trees. The demise of grazing meant that seedlings that once would have been nibbled had opportunities to survive. Abandoned farm fields reseeded naturally, reverting to forest as their owners awaited a profitable future sale to developers.

Mendelson found that trees of intermediate age, the trees that sprouted roughly between 1880 and the 1920s, are uncommon in Thorn Creek Woods. (There are trees of intermediate size in the preserves, but their size belies their age; most are stunted older trees or especially fast-growing younger trees.) The forest was not able to reproduce itself during these decades because farming, and more specifically grazing in the woods, was at its most intense.

The Area at a Glance

Δ Many plants and animals have adapted to the human presence, such as the plains garter snake, the American toad, ground squirrels, and raccoons.

Δ This part of northeast Illinois has been home to humans of various cultures for 12,000 years. About 10% of this small area has been surveyed for archeological remains; 174 sites have been found.

Δ Groundwater provides approximately 35% of the total water used in the Thorn Creek area. Most is taken from bedrock lying relatively near the surface, in whose crevices and fissures water has accumulated.

Δ While many local towns date to the 1830s, urbanization on a large scale is a fairly recent trend. Today the area is widely urbanized, with 98% of its population living in urban settings.

Golf Sanctuaries

Nature is the best golf course architect. Next to a dune-covered seacoast, a post-glacial landscape like that of northeast Illinois is perhaps the ideal foundation for a course. The terrain in the Thorn Creek watershed was a natural spot for the game. Not only was the land right for golf, it was cheap and easy to get to and from Chicago by train.

Most new Illinois towns after the Civil War coalesced around a rail depot or a factory, but in the Thorn Creek area some grew up around golf courses and resorts. The Village of Olympia Fields is essentially an incorporated country club. Founded in 1913 (it was incorporated 13 years later) it was envisioned as a community for individuals interested in nature and sports. While the site harbored native oak/hickory woodlands (several savanna remnants still are evident on the South Course), much of the site near Vollmer Road and Western Avenue was former prairie that had long been farmed. Its designers had to scramble over barbed wire as they inspected the site, and the first club house was what one historian called a "tumbledown farmhouse" on the property.

Today the Thorn Creek area boasts seventeen 18-hole courses, five in Crete alone, a town of perhaps 8,000 people. The statistic does not necessarily reflect local passion for the game. Golf courses are popular with non-golfers too, mainly as a form of green space. More non-golfers buy houses in golf-centered projects than do golfers.

Photos courtesy of Olympia Fields Country Club

Recognizing that golf courses are often the closest thing to a natural area left in congested urban areas, Audubon International, with the sponsorship of the United States Golf Association, created the Audubon Cooperative Sanctuary Program for Golf Courses. Among other goals, the ACSP seeks to enhance wildlife habitat on existing golf courses through ecologically sound course management.

Several Thorn Creek area courses are in the program. Two of them — Olympia Fields Country Club and Flossmoor Country Club — have been designated as Certified Audubon Cooperative Sanctuaries. At the former, out-of-play areas and hillsides have been planted with native trees and woody understory plants grown from locally collected seed. Invasive non-native plant species are being removed, and prairie and savanna vegetation is being re-established on a 1.75-acre demonstration plot.

In the long run, improvements off-site are expected too, especially in local water quality. Olympia Fields has planted native plants such as cord and slough grasses and wild iris along Butterfield Creek to curb erosion and prevent fertilizers and other chemicals from leaching into the water.

Club officials say fewer chemicals are used on the 36 holes of their courses than are used on many 18-hole facilities using conventional groundskeeping techniques.

Certainly such changes appear to have enhanced golf courses as habitat for more than duffers. Members of the Thorn Creek Audubon Society recently walked the two 18-hole golf courses and in two hours counted nearly half of the 100 bird species that nest in or pass through the property. Species spotted included ovenbirds, eastern phoebes, palm warblers, indigo buntings, great crested flycatcher, kingfishers, acadian flycatchers, red-tailed hawks, Baltimore orioles, and rose-breasted grosbeaks. Such sightings enhance the experience for players as well, and may become par for the course at golf clubs across the area.

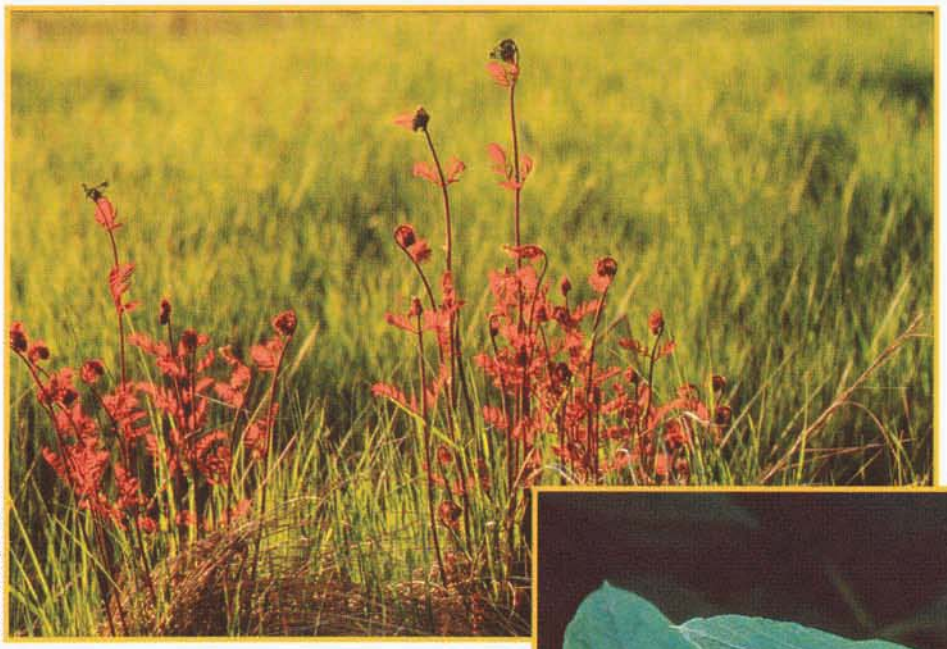
The Area at a Glance

Δ As recently as 1925 more than two-fifths of the area was still being farmed. As of 1995 only about 18% of the area's land was still being farmed (compared to 78% statewide), with most of that located on the still-developing periphery to the south and west.

Δ The area is pockmarked by old landfills (31), surface waste impoundments, and contaminated abandoned factory sites. Fifteen of these sites are polluted enough that environmental agencies have included them on their list of Superfund sites.

Δ In 1980 manufacturing accounted for 30% of the jobs in the four townships that take in most of the Thorn Creek area; in 1995 it accounted for only 16%.

Δ Factory discharges no longer are the principal sources of the area's remaining water pollution. Instead, sewage and "urban runoff" made up of pesticides, oil and gasoline residues, road salt, and the like are the most common water quality problems.



Michael Jeffords

Surface depressions left by chunks of buried ice remained wet much of each year, and the rotting of the plants that flourished in them created acidic conditions typical of peat bogs; such places are populated by rare species such as black huckleberry and royal fern (left).

James P. Rowan

Burdock (right) is one of many introduced plant species that have become pernicious pests in the Thorn Creek area.

it was found that flow in Thorn Creek was 15 cubic feet per second, while in Deer and Butterfield creeks, which no longer receive effluent, flows measured less than 1 cubic foot per second.

Fragmentation Building roads, fields, and houses in forests, wetlands, or prairies divides them into small habitat "islands." Many kinds of animals (especially reptiles and amphibians) need different habitats for breeding and hibernating, and fragmentation makes it hazardous, even impossible, for them to migrate between habitats. Fragmentation can reduce the entire population of some plant and animal species within such islands to only a few individuals. (This is true especially of the T&E species in the bog-like habitats of the Thorn Creek area.) Such isolated populations are especially vulnerable to disease and genetic stress from in-breeding. Small patches of surviving high-quality prairie are vulnerable to even small mishaps such as accidental herbicide sprays. And while slicing a road through woods uses only a tiny part of the land, the cut exposes once-hidden forest interiors to light and drying winds, and makes it easy for predators and parasites to enter.

As is typical in urbanized districts, natural communities in the Thorn Creek area are highly fragmented. The 20 acres of surviving high-quality prairie are scattered among seven different local sites. One forested wetland tract (in the Thorn Creek Forest Preserve, near Glenwood) is a fairly sizable 433 acres, but the area's other forested wetlands are divided into

140 separate parcels with an average size of about 10 acres. Marshes and other emergent wetlands are even more splintered — 341 sites averaging 2.5 acres.

Exotic species Humans have added to the diversity of local plant life by importing non-native plants. These include new food crops, favorite garden flowers, and special-purpose plants used for everything from medicine to erosion control. Many species have also been brought into the area accidentally. Northeast Illinois in general is home to more of these introduced plant species than any other region of the state.

Without natural diseases or predators to keep them in check, some introduced plant species become pernicious pests. In just one tiny corner of Olympia Field Country Club, approximately 200 man-hours per year are expended to control buckthorn, non-native honeysuckle, burdock, and garlic mustard. Local floodplain forests are bedeviled by at least 11 species of introduced plants; the list includes the nearly ubiquitous garlic mustard and European highbush cranberry as well as moneywort, bittersweet nightshade, and creeping Charlie. A creeping herb known as lesser celandine has established itself in floodplain habitat in the lower reaches of Thorn Creek just north of Interstate 80. In the surviving prairies of the Thorn Creek area, prairie white clover, Kentucky bluegrass, and wild parsnip are common, along with the usual invading woody plants, including the gray dogwood that makes a home in wetter areas. On some old lake dunes, non-native yarrow and both Canada and Kentucky blue grass have become the dominant ground cover. Native plants in local marshes are being crowded out by reed canary grass and purple loosestrife.

Grazing For a half century beginning about 1875, livestock were left to graze in nearby woods, with hogs feeding on fallen fruit and nuts and cattle on plant shoots. In more recent decades, nibbling white-tailed deer devastate delectable plants in the local forest preserves, including wildflowers like the bellflower. By now scarcely a woods in the Thorn Creek area does not show the characteristic signs of past grazing. Grazing animals leave untouched bad-tasting exotics with thorns or bristly fruits in favor of tastier native ferns, orchids, and trilliums. Grazers thus act as agents of natural selection, encouraging the spread of introduced species. Grazing spoils grassland habitat too; for obvious reasons, a ground-nesting bird will not use a pasture that is regularly trampled by grazing cows.

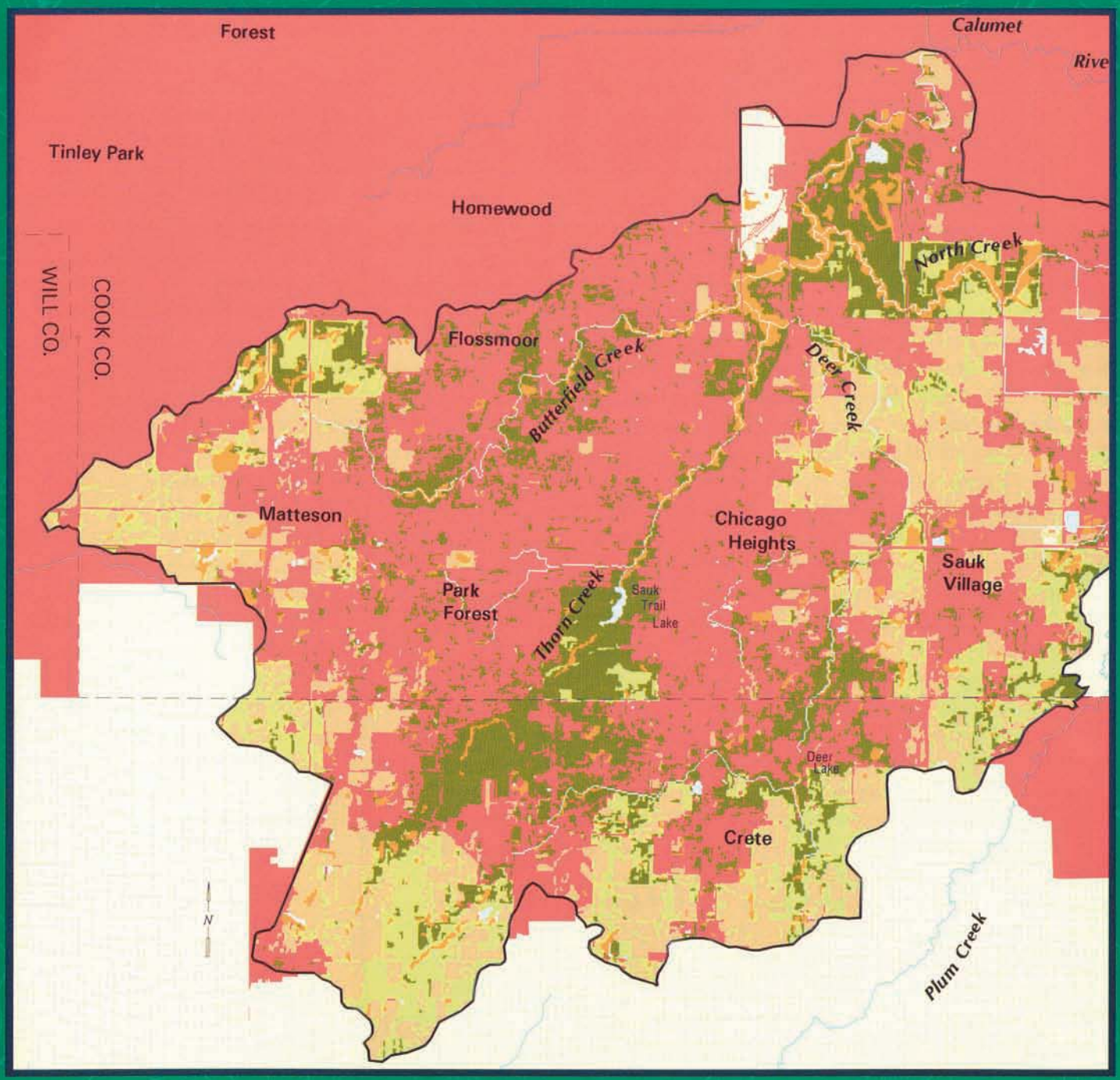
Fire suppression The groundcover of northeast Illinois used to burn regularly. Native American hunters started fires, as did lightning (especially in late fall when the surface was blanketed by easy-to-ignite dead grasses). Fire, like grazing animals, acts selectively on plant communities. Over time the life cycles of many plant species — and indirectly the insects and other life that feed and breed on them — became adapted, indeed dependent on fire. Fire-tolerant species such as bur oak tend to dominate savannas on moist soils that other species of trees and woody plants would find congenial habitat were it not for fires. Euro-American settlers stopped fires to protect buildings, fences, and crops. Once burning stopped, these savannas were so rapidly taken over by trees that today savannas are among the rarest communities in Illinois. Not one acre of

The Area at a Glance

Δ The region has a single large water treatment facility, operated by the Thorn Creek Basin Sanitary District, that discharges into Thorn Creek. When the water runs low, typically in late summer, virtually all of the water in the creek is treated sewage. During a recent drought the flow in Thorn Creek was 15 cubic feet per second, while in Deer and Butterfield creeks, which no longer receive effluent, flows measured less than one cubic foot per second.

Δ Natural communities in the Thorn Creek area are highly fragmented. The 20 acres of surviving high-quality prairie are scattered among seven different local sites. One forested wetland tract is a fairly sizable 433 acres, but the area's other forested wetlands are divided into 140 separate parcels with a mean size of about 10 acres. Marshes and other emergent wetlands are even more splintered — 341 sites with a mean size of 2.5 acres.

Land Cover



Lisa Smith and Chris Goldsmith
Illinois State Geological Survey

1 2 3 4 5
Miles

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

undegraded savanna exists in the Thorn Creek area, even though savanna was, with prairie, the area's most widespread land cover.

Potential for Restoration

The Thorn Creek Ecosystem Partnership is committed to acquiring unprotected open space in the watershed. The group envisions "large amounts of protected open space, in healthy if not pristine condition, ... with the potential to play an even larger role in defining the region as an environmentally friendly place to live."

Whether acquired or protected by private landowners, disturbed tracts can be restored to ecological vigor; for example, degraded prairies can be restored by resuming a cycle of regular burning. Among other effects, the fires kill off competing non-native plants and allow long-dormant seeds to sprout. Savanna benefits from fire too; over time, such restoration would increase the supply of oaks that are a preferred food for birds that migrate through the area in the spring.

Restoration is not quick or easy. Restoring some natural communities requires intensive management by humans who must mimic those natural processes, such as flood cycles or fires, that have been interrupted.

However, even what cannot be preserved or restored can still be improved. The Butterfield Creek Steering Committee has identified a number of ways in which surface waters in that neighborhood might be improved: stabilize eroding streambanks with native vegetation and materials; restore streams' original meandering channels; and protect or restore buffer strips of native vegetation along stream channels, lakes, and wetlands. The tangle of plants that grow along a stream cools the water and catches sediments that otherwise would be washed into it. Many local stream banks, particularly in parks and golf courses, are mowed to the water's edge.

The most intensively used cultural habitats can be made more habitable for animals when their needs as well as humans' are taken into account. For example, if mowing roadsides and hayfields is delayed until July, young ground-nesting birds are given a chance to grow big enough to flee the machines and survive. If emergent vegetation is allowed to sprout along the shores of the more than one hundred ponds and small lakes in Thorn Creek, it would create oases for the amphibians and reptiles that are being crowded out of the landscape.

Finding ways to accommodate nature in a humanized landscape poses challenges to planners, land managers, property owners, and public officials. To preserve what officials describe as its "uncrowded, country-living ambiance," the Village of Crete recently annexed approximately 300 acres so that new housing will adhere to its relatively low density requirements. But even low-density housing fragments old habitats if developed without awareness of species needs.

Ecological restoration is controversial as both a science and as public policy. Critics ask if natural processes redirected by people are still natural. There also remains much to learn about local natural systems. There is no local in-stream data on soil erosion, and no studies have been done on the rates at which local lakes may be filling with sediments. Kirtland's snake and the massasauga have been collected here in the past, but whether or how frequently these snakes occur

The Area at a Glance

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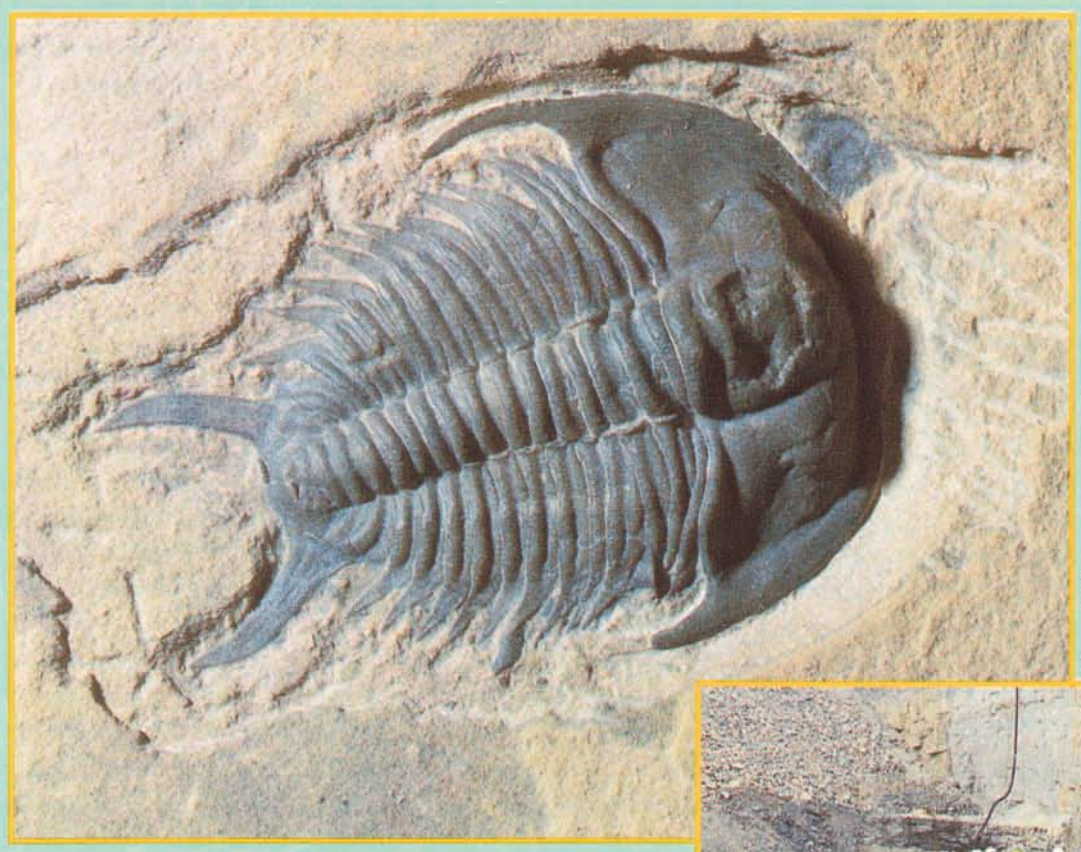
Δ Local floodplain forests are bedeviled by at least 11 species of introduced plants; the list includes the nearly ubiquitous garlic mustard and European highbush cranberry as well as moneywort, bittersweet nightshade, and creeping Charlie.

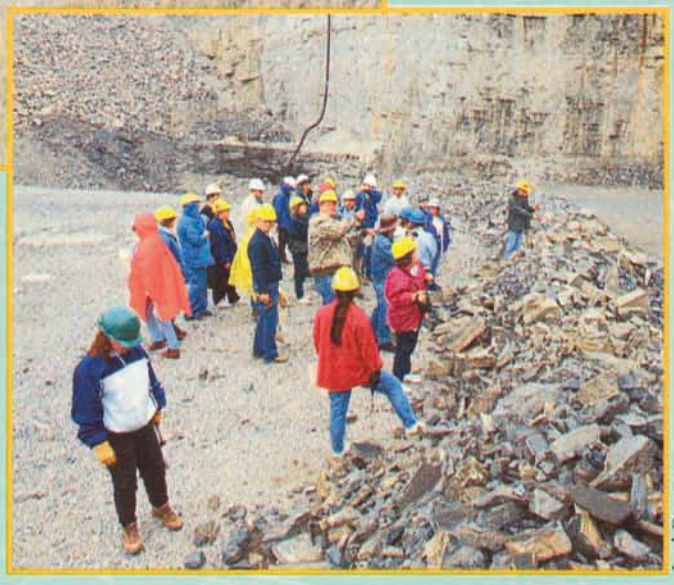
Δ Forty-five species of mammal are thought to be present at least part of each year. Because there are more than 11,000 acres of forest, the gray fox is considered likely to occur here. And while the number of gray squirrels have declined in the state as a whole, they are common here.

Excavating Ancient Reefs



James P. Rowan

Trilobite fossil



Joel Dexter

Tour group at Thornton Quarry

Material Service Corporation calls their operation at Thornton the largest commercial quarry in the world. In some years more than nine million tons of stone have been removed for use as concrete aggregate, road ballast, and agricultural limestone. Mining, since the 1830s, has left gaping holes in the ground, the deepest of which reaches 260 feet below the surface.

The rock being mined is Racine dolomite. It was created during the Silurian era that began 430 million years ago. For the next 35 million years what is now Illinois lay south of the equator, languishing at the bottom of a shallow warm sea similar to that which nourishes Australia's Great Barrier Reef. Such waters are congenial to corals and other reef-building creatures. Coral polyps, for example, have limestone skeletons, which they build by taking calcium out of seawater and depositing calcium carbonate around the lower half of the polyp. New polyps attach

themselves to the remains of dead ones, with the result that the limestone formation becomes larger and larger.

Lime-secreting sponges were also among the many creatures that found homes on that reef. Indeed, some of the most fascinating creatures that ever lived in Illinois are found here in the form of fossilized trilobites, brachiopods, and crinoids that used to inhabit the reef. (Material Service Corporation allows limited access to the quarry during field trips conducted by the Chicago Academy of Sciences.) Their lives and deaths over eons created debris that accumulated around the reef in flanking beds that formed a large part of the rock formations being excavated today.

The stone that is being dug at Thornton is part of a complex of ancient reefs that ring the Great Lakes, including much of northeast Illinois. The reef here was about a mile wide at the base originally, and was perhaps 600 feet thick before erosion began chewing away at it. Bits of this ancient sea bottom survive in skyscraper foundations, expressways, and basements across greater Chicago. As Raymond Wiggers put it in *Geology Underfoot in Illinois*, the reef proves that "Chicago is by no means the first great collection of construction-crazy creatures to rise in these parts."

Joel Dexter

The Area at a Glance

Δ Native plants in local marshes are being crowded out by reed canary grass and purple loosestrife.

Δ Scarcely a woods in the Thorn Creek area does not show the characteristic signs of past grazing. Grazing animals leave untouched bad-tasting exotics with thorns or bristly fruits in favor of tastier native ferns, orchids, and trilliums.

Δ Disturbed tracts can be restored to ecological vigor; for example, degraded prairies can be restored by resuming a cycle of regular burning. What cannot be preserved or restored can still be improved.

James Rowan

Bill White

The Butterfield Creek Steering Committee is working to stabilize eroding streambanks with native vegetation such as the wild iris, above.

in the area today is not known. The latest mussel information dates from 1949, and while the Thorn Creek watershed is thought likely to support a moderately diverse population of smaller aquatic macroinvertebrates, no studies have been done to confirm this.

The possibilities of restoration outweigh the problems however. Restored prairies might not yet match their models for ecological complexity, but improvements have been encouraging enough to spark a remarkable tallgrass restoration movement in the Chicago area. One part of the North Course at Olympia Fields Country Club had been mowed for over 70 years, but when groundskeepers stopped mowing it and conducted regular burns, prairie vegetation began to re-establish itself. Such reawakening provides a metaphor for nature's resilience and for the potential of human ingenuity to make a place for nature in a crowded metropolis.

(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.

Thorn Creek: An Inventory of the Region's Resources is based on one of these assessments, the *Thorn Creek 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 *Thorn Creek 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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