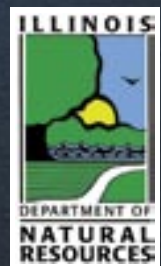
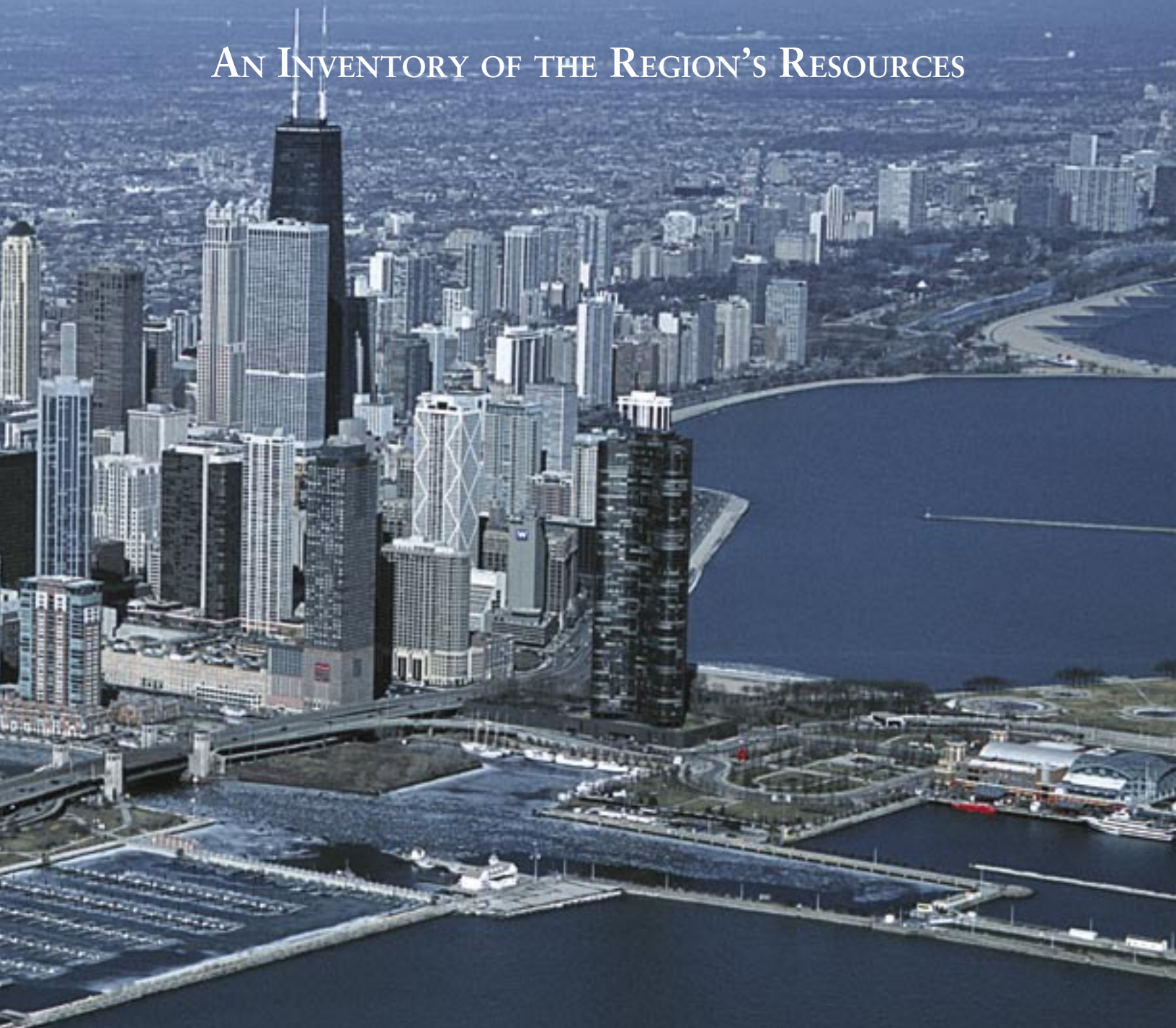


THE CHICAGO RIVER/LAKE SHORE

AN INVENTORY OF THE REGION'S RESOURCES



ABOUT THIS REPORT

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

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

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

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

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

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

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

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

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

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

(continued on inside back cover)

A Project of the Critical Trends Assessment Program

THE CHICAGO RIVER/LAKE SHORE

AN INVENTORY OF THE REGION'S RESOURCES



October 2004

Published by the Illinois Department of Natural Resources
Office of Realty and Environmental Planning

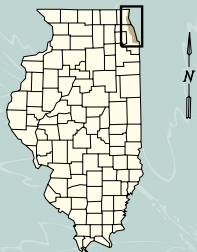
3M

Printed by the authority of the State of Illinois
Printed with soy ink on recycled and recyclable paper

Landforms in the Chicago River/Lake Shore

Surface elevations range from 590 feet above sea level along Lake Michigan's shore to 885 feet above sea level just south of Grayslake in Lake County.

- town or village
- ┌─┐ assessment area boundary
- county boundary
- ┌─┐ stream or river
- ▭ lake



Lisa Smith, Illinois State Geological Survey





The Chicago River at night.

THE CHICAGO RIVER/LAKE SHORE

AN INVENTORY OF THE REGION'S RESOURCES

The fact that the landscape drained by the Chicago River is home to a great city is obvious to even the most distracted tourist. Less obvious is the fact that nature survives, even thrives, amidst the Midwest's greatest city. Few places in Illinois offer the variety of habitats, and thus of living things, that are found in and around Chicago. In the mid-1970s, experts combed Illinois to compile a catalog of significant living communities and other natural features. To the surprise of many, they found that Lake and Cook counties contain by far the richest concentration of such treasures in all of Illinois.

THE CHICAGO RIVER/ LAKE SHORE WATERSHEDS

As described here, the 348-square mile Chicago River/Lake Shore area includes the Chicago River watershed and those parts of Cook and Lake counties that drain into Lake Michigan, excluding the area in Cook County that drains into the Calumet River. Water made the area, and at times has threatened to unmake it. On its eastern edge lies Lake Michigan, a water resource vital to the young city of Chicago because it carried shipping to and from warehouses and factories, and because it was a convenient source

of drinkable water. It still is the latter, but today the lake and its shore are also treasured as sources of pleasure.

The western boundary of the area follows the ridge of high ground that separates the Chicago River watershed from that of the nearby Des Plaines River. Approximately eight miles southwest of the Chicago River mouth, near Harlem Avenue and Interstate 55, the divide is quite low. Here lies the old Chicago portage. The westernmost branch of the Chicago River reached nearly to the Des Plaines here, close enough that travelers could carry canoes and cargoes from one stream to the other. In wet seasons Mud

Lake, the swampy area that fed the old West Branch of the Chicago River, turned into a real lake, rising enough to temporarily inundate the divide and making it possible to paddle from one watershed to the other.

On such a spot a great trading and shipping city might be built. Dreamers of several generations concluded that a canal might be easily built here that would link the two river systems, and thus link the eastern seaboard to the Mississippi valley. Such dreamers were right about the city, it turned out, but wrong about the “easy;” French explorers Marquette and Joliet were the first to come up with the idea, in 1673, but such a canal—the Illinois & Michigan Canal—would not open until 1848.

The local terrain owes much to water too. A surface of mostly weathered and eroded bedrock was obliterated as walls of glacial ice pushed through the area, first crushing the surface then burying it in debris as the ice melted. The most recent invasion—and in geological terms it was very recent indeed—during what is known as the Wisconsin Episode of glaciation left broken-up rock of all sizes (what geologists call drift) more than 50 feet thick everywhere but the southern third of the area, where it thins to less than 25 feet. In some parts of the area drift lies as much as 200 feet thick above the old bedrock. Lake Bluff Woods, a natural area in Lake County, includes a cliff where this glacial drift is exposed.

PRE-EUROPEAN SETTLEMENT LAND AND LIFE

Most people divide the area into city and suburbs, or Cook and Lake counties. Biologists divide it into the Chicago Lake Plain and the Wheaton Morainal Country. The latter takes in the northern three-quarters of the area. Some 14,000 years ago

a warming climate began to drive the ice sheets away. In their retreat they occasionally lingered in place long enough to pile up debris, freed from the melting ice, at the ice’s edge, forming north-south ridges that parallel the shoreline of the present Lake Michigan. These piles of rocky debris are known as moraines, and northern Cook and Lake counties are covered by them.

The lake shore and the southern part of the drainage have very different terrains. As the Wisconsin-episode ice was melting, it left water dammed up between the moraines and the retreating ice margin; when fine-grained sediment settled out of the still water of these temporary lakes, it formed a nearly pancake-flat surface. The lake plains were interrupted here and there by low sandy beach ridges and rocky islands. The two most obvious rocky islands are Stony Island and Blue Island.

The most massive of these glacial lakes was Lake Chicago, which formed more than 13,000 years ago. At its fullest Lake Chicago stood about 60 feet higher than today’s Lake Michigan. As it drained, the lake fell

in stages, dropping about 20 feet each time. As a result, the lake plain is ringed by old beach ridges that reveal the extent of the vanished lake like rings left behind in a bathtub. At its highest, the lake shore ran from Winnetka south through Norwood Park, thence southwestward and southward to Maywood and McCook before swinging southeastward toward Palos Heights, Homewood, and Glenwood. Remnants of another old beach ridge, at about 40 feet above the present lake level, can be seen in the Jefferson Park neighborhood, where it then arcs south through the Chicago neighborhoods of Cragin and Austin to suburban Riverside. Another segment runs from Summit southeastward through Washington Heights before curving toward Thornton. The lowest and most recent beach line has been largely obliterated by the building of the city, but traces of it were recorded at Milwaukee and North avenues, near the intersection of Chicago and Western avenues, and running southwestward from the corner of Douglas and Central Park boulevards.

By the time Euro-Americans arrived, the cool-weather spruce forest



Much of the Lake Michigan beach line is occupied by city buildings.



A greater percentage of high-quality prairies remain in this region than in the state as a whole. This beautiful prairie is part of Illinois Beach State Park.

that sprouted in the shadow of the glaciers had given way to Illinois' characteristic mix of hardwood forest and tallgrass prairie ecosystems. About three-fourths of the landscape is thought to have been covered by prairie, especially in the southern part of the area, perhaps because the featureless former lake bottom left trees exposed to killing wildfires. The rest of the drainage was festooned with trees in varying densities. A very small fraction of the drainage was open-water habitats of one kind or another, from lakes to marshes and wet prairies in the low land between moraines.

Forest grew thickest on the sheltered ground between moraines in the northern part of the drainage. Elsewhere in the area trees tended to grow in groves rather than as large tracts of woods, a fact confirmed by the common occurrence of "grove" in local place names, such as Morton's Grove. One of the few surviving remnants of these once-common woods is Kennicott's Grove Nature Preserve (commonly known as "The Grove") in Cook County; a portion of the pre-

serve is located at the very edge of the Chicago River/Lake Shore area.

Savanna—an open forest in which prairie plants mixed with fire-resistant trees—occupied large areas of the uplands and moraines in what became Lake County. Exactly how much of the region's nearly 53,000 acres of presettlement forest was savanna is unknown. Savanna swelled and shrank in area depending on several factors including climate and the frequency and intensity of fires that maintained its characteristic sparse tree cover.

Most of the wetlands in the Chicago area have been drained. Wetlands, however, leave behind telltale soils whose extent suggests that there were about 42,000 acres of wetlands before Euro-Americans settled here. That's about one-fifth of the area. The term "wetlands" includes many different environments—wet sand prairie, marsh, and sedge meadow, among others. Illinois Beach State Park, in the Lake Michigan watershed (or Lake Shore), alone has nearly a dozen different types, each with communities of plants and animals adapted to it.

The Area at a Glance

△ The Chicago River's drainage is the most urban part of a mostly rural state. In three local stream sub-basins, at least 95 percent of the watershed is devoted to urban uses.

△ Population averages more than 8,000 persons per square mile; Cook and Lake counties encompass only 2.5 percent of Illinois' land area, but account for 50 percent of its population.

△ Agricultural crops covered 35 percent of the area as recently as 1925, but only in northern Lake County are there still expanses of undeveloped land. Roughly the same percentage of land is citted—about 80 percent—that is farmed in Illinois as a whole.

△ The drainage includes only one state park, but includes 16 county forest preserves that cover nearly 8,500 acres.

NATURE TODAY

The vast majority of habitats in the area today are no longer natural but “cultural” habitats formed by and for humans. They run the gamut from Loop skyscrapers to crop fields and pastures, artificial lakes, even reconstructed prairies. But nature was not wholly destroyed. Patches of grass and woods and dune survived on unbuildable properties and on old farms and factory sites left derelict by a changing economy.

About 12.9 percent of the area, or nearly 30,000 acres, is forested. Forest cover is concentrated along the Skokie River and the North Branch and West

Fork of the Chicago River. Woods also are found on the bluffs lining Lake Michigan, in older residential subdivisions, and in forest preserves, parks, and other protected areas. These woods harbor a few breeding populations—some fairly large—of forest songbirds, and use of the forested corridor by migratory birds may be intense.

A bit more than half of the pre-European settlement acreage is forested today, compared to a statewide figure of about 30 percent. But the forest that is left is not the forest that once was; most of the current forest consists of new trees that sprouted on former prairie or savanna.

Perhaps 51 percent of Lake County was savanna around 1840; the same was probably true of the drainage as a whole. Most of the savanna became forest when settlers stopped the fires that kept the invading trees at bay. Only three patches of savanna, covering 173 acres in all, retain much of their ecological integrity, although there is much former savanna in the region that could be restored.

Of the approximately 169,000 acres of prairie that originally graced the area, only 0.4 percent (671 acres) is known to remain in various conditions. That is still greater than the statewide proportion of 0.01 percent, thanks to the region’s many poor soils; almost all (94 percent) of the prairie is on sandy or gravelly soils that were never farmed or were farmed only briefly.

According to the Illinois Wetlands Inventory and land cover data from the early 1990s, about 2.4

percent of the area (5,400 acres) is wetland. By far the most common type is “emergent wetland,” such as marsh, that is shallow enough that rooted plants extend above the surface. The drainage has lost significantly more of its wetland acreage, proportionately, than has Illinois as whole, one reason why plants and animals that require water for breeding are among the rarest inhabitants of the area. (Wetland habitats are also used heavily by migrating waterfowl, shorebirds, rails, and long-legged waders such as herons.) However, a substantially greater proportion of remaining wetlands are of high ecological quality compared to the rest of the state—about 33 percent of the remaining local wetland acreage compared to less than one percent statewide.

THE BEST OF THE REST

Approximately 2,300 acres, about 1 percent of the area, are natural areas of high ecological quality. Statewide, the proportion is only 0.07 percent. Some 500 acres are quality prairie. This is about 0.3 percent of the original prairie acreage. Paradoxically, few if any comparably sized areas in Illinois support a greater proportion of high-quality prairie than does its most urbanized corner.

Thanks to the protection provided by the Illinois Beach and Illinois Dunes North natural areas, in the Lake Michigan watershed, the area contains 1,153 acres of wetland that have not been degraded. This is only 2.8 percent of their original extent, but it is a high percentage of the region’s surviving wetland acres, and includes marsh habitats that are home to several species listed as threatened or endangered in Illinois. The prairie white-fringed orchid is one of these species (the plant also is on the federal threatened list), as is the marsh speedwell, speckled alder, and Crawford’s oval sedge.



Wading birds, such as the Great Blue Heron, rely on wetland habitats. This region of the state has a greater proportion of high-quality wetlands remaining than the rest of Illinois.

THE CHICAGO RIVER/LAKESHORE

Nature preserves within the boundary

- A Illinois Beach
- B Morion Grove Prairie
- C Somme Prairie
- D Glenbrook North High School Prairie
- E North Dunes
- F Hybernia
- G Highmoor Park
- H Spring Bluff
- I Skokie River
- J Florsheim Park
- K Kennicott's Grove

Natural areas within the boundary

- 1 Somme Prairie
- 2 Glenbrook North High School Prairie Nature Preserve
- 3 Morton Grove Prairie
- 4 Sidney R. Yates Flatwoods
- 5 Glencoe Botanical Area
- 6 Oak Grove Botanical Area
- 7 Blair Woods
- 8 Crabtree Farm Woods
- 9 Tangley Oaks Woods
- 10 Shaw Prairie
- 11 McLaughlin Prairie
- 12 Ravinia Bluff
- 13 Lake Bluff Woods
- 14 McCormick Nature Preserve
- 15 Waukegan Beach
- 16 Illinois Dunes North
- 17 Fort Sheridan Bluff
- 18 Illinois Beach
- 19 Riverwoods Site
- 20 Hybernia—Highmoor Prairie
- 21 Middle Fork Savanna
- 22 Blodgett Bluff
- 23 Fort Sheridan Site
- 24 Lyons Woods
- 25 Oak Grove White Fringed Orchid Site North
- 26 Sauganash Prairie
- 27 Hubbard Woods Site
- 28 Clayton F. Smith Woods
- 29 Miami Prairie—Indigo Oak Openings
- 30 Wayside Prairie
- 31 Kennicott's Grove
- 32 Glenview Naval Air Station Prairie
- 33 Florsheim Park
- 34 Ascension Sedge Meadow
- 35 Elm Road Woods

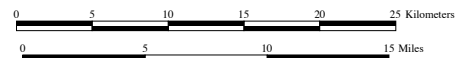
○ Nature preserve
 ■ Natural area



Nature preserves and natural areas boundaries from 1:24000 IGIS database, January, 1997.



Scale 1:411840



Chicago River System



*The mouth of the Chicago River
at Lake Michigan.*

Lake Michigan connected Chicago to the east, but it was the Chicago River that connected the lake to the rest of Illinois. The river thus had an importance out of proportion to its size. It is only about one mile long from its lake mouth to near the Merchandise Mart, where it splits into two branches.

The North Branch originates in eastern Lake County and flows south for 43 miles; it is fed in turn by the Middle and West forks, the Skokie River, and, since 1909, the North Shore Channel. The North Branch originated in sloughs so extensive that in winter one could skate from near Waukegan all the way south to Chicago. The North Branch and its tributaries were bucolic streams until well into the mid-1800s.

The South Branch system was less extensive, consisting of a West Fork and an abbreviated South Fork. The South Branch originally rose in Mud Lake near the present-day community of Stickney between Harlem and Kedzie avenues. The South Branch became an industrial river almost from the start. In 1848 the Illinois-Michigan Canal was constructed alongside the South Branch, connecting to it at the canal's eastern terminus at Bridgeport. Its South Fork originated near the old Union Stockyards, and quickly became infamous as an open sewer. While Cleveland became infamous when the Cuyahoga River caught fire in 1969, the South Branch often caught fire decades before then; the last occurrence was probably in 1889. Today the South Branch, only about four miles long, connects the main branch of the river to the Chicago Sanitary and Ship Canal.

The Chicago River's North Branch used to be known as Gaurie's River after a settler; the South Branch was known as Portage River, as it led to the overland connecting point with the Des Plaines River.

Five canals were added to nature's system of waterways. The famous ones are landmarks: the Illinois and Michigan Canal, completed in 1848; the Sanitary & Ship Canal (1900); the North Shore Channel (1909); and the Cal-Sag Channel (1922). The mining of brick clay from a natural bulge in the riverbank on the North Branch created a new channel that turned the bulge into Goose Island. Goose Island became the site of distilleries, steel mills, tanneries, and other firms with polluting potential. These factories did to the waters downstream from the island what the stockyards did to the South Branch.



Chicago skyline as seen from Lake Michigan.

Few of the area's woods have survived in top ecological condition—292 acres (about 0.3 percent of the current forest area) scattered among five woodland sites. Even so, the figure is quite a bit greater than the 0.08 percent of undisturbed woodlands that survive statewide. Among the local jewels is a rare 51-acre stand of sand flatwoods along the North Branch between Caldwell Avenue and Devon Avenue in the Bunker Hill/Edgebrook Flatwoods Forest Preserve. Flatwoods are unusual forest communities growing atop buried layers of clay, a punishing environment for trees that few species can tolerate.

As one might expect in a former lake bed, sand figures prominently in the ecology here. Beach and fore-dune, two natural communities rooted in sand, are found nowhere else in Illinois. All 63 acres of high-quality beach habitat that remain in the state are found here, as are all 102 acres of high-quality foredune.

The area also contains about 55 percent of all the high-quality sand prairie remaining in Illinois, including 21 acres—79 percent of the state's total—of what naturalists know as wet-mesic sand prairie, which occurs in seasonally flooded swales between beach dunes. The sandy "soil" of a panne community is rich in calcium, making conditions very alkaline, and several plant species found in them have become specifically adapted to

these unusual conditions. Panne occurs in Illinois only in Lake County, where 57 acres of panne occupies the wet ground between beach dunes along Lake Michigan.

The region's varied habitats make it home to a wider variety of plant life than one finds almost anywhere in Illinois. More than 48 percent of the native vascular plants from Illinois occur here—a remarkable proportion considering that the Chicago River/Lake Shore takes up only 0.6 percent of the state's land area. The variety of animals that occupy this mosaic of habitats is impressively diverse as well. At least 288 of the 300 species of birds that regularly occur in Illinois (not counting vagrants) can be found in the area, as well as 14 amphibian species, 21 reptile species, and 44 species of mammals. The Chicago River drainage is known to have supported at least 77 species of fishes, 16 species of bivalves, and 12 species of large crustaceans, although fewer may be there today.

FLORA AND FAUNA

Like humans, mammals adapt to life in many different kinds of environments—one reason why three-fourths of the mammal species found in all of Illinois are found here in spite of urban development. The gray squirrel is a creature of mature forests with dense understory, but the animal has become

The Area at a Glance

△ Various attractions drew 2.9 million visitors to Illinois Beach State Park in 1999, making it the most-visited Illinois state park.

△ In the 1970s, surveyors of the Illinois Natural Areas Inventory found 34 natural areas within the Chicago River drainage, of which 16 were high-quality, essentially undegraded natural communities.

△ The Wheaton Morainial Country includes the northern three-quarters of the drainage, and consists of north-south ridges of glacial debris that parallel the shoreline of the present Lake Michigan.

△ The Chicago Lake Plain covers the present Lake Michigan shore and much of the inland parts of the southern half of the Chicago River drainage. It was formed when fine-grained sediments settled out of the still water of temporary meltwater lakes several thousand years ago.



Bullfrogs are abundant in area wetlands.



The fringed gentian can be found in the dune and swale community of Illinois Beach State Park.

common in the parks and residential areas of Chicago and suburbs.

Cooper's hawk, recently removed from the state's list of threatened and endangered (T&E) species, has already become relatively common locally as a nesting species; the suburbanized environment in the northern part of the region offers this predator rich picking at backyard bird feeders. Due to the efforts of the Chicago Peregrine Release and Restoration Project, the state-endangered peregrine falcon has also become a regular breeding bird in the region. Indeed, more than three dozen species of birds manage to coexist with humans here. Eastern bluebirds are present in the dwindling number of farmsteads, killdeer can be found along roads, and common nighthawks on roofs, while the red-bellied woodpecker, Baltimore oriole, warbling vireo, black-capped chickadee, and eastern wood-pewee all make do with the "urban forest" of street trees and parks.

Among the amphibians, the American toad, western chorus frog, and bullfrog can be found in local crop fields, pasture, successional fields, developed land, and tree plantations—just about anywhere that ditches, flooded fields, stock tanks, and remnant marshes are available for use as breeding sites. Among the reptiles, the plains garter snake, common garter snake, brown snake, and northern water snake are common in cultural habitats throughout the drainage.

For every species that can coexist with humans, however, many more struggle, still present but in reduced numbers. Suburban lawns are as carefully cropped as the grain fields of central Illinois, and have the same effect in eliminating habitat for grassland birds; the loggerhead shrike, which often forages in mowed grass of rural farmsteads, has practically been driven from the area. This shrike is one of several bird species that are locally extirpated (or nearly so), but were once

regularly present and in some cases nested in large numbers. Others include the bald eagle, osprey, swallow-tailed kite, ruffed grouse, sharp-tailed grouse, greater prairie-chicken, wild turkey, northern bobwhite, yellow rail, black rail, piping plover, long-billed curlew, black tern, barn owl, common raven, lark sparrow, and Bachman's sparrow.

Many aquatic species have disappeared altogether from the area in recent decades, too, due to polluted water, development, competition from aggressive non-natives, and other perils. The Iowa darter, which inhabits vegetated lakes and pools of quiet streams, still dwells in the Lake Michigan basin; it was recently found in the West Fork of the North Branch and in the Old School Pond near Libertyville. However, this species once was widespread across the northern half of Illinois but now is found only in extreme northern Illinois, and in one location in central Illinois.

Fifty-six plant species found here are listed by the Illinois Endangered Species Protection Board as threatened or endangered (T&E). Two of these listed species, prairie white-fringed orchid and Pitcher's (dune) thistle, are also listed by the U.S. Fish and Wildlife Service as federally threatened, meaning they are in danger of disappearing not only from Illinois, but from the U.S. Almost three-fourths of the state's T&E birds species are found here, as are 13.3 percent of the T&E reptiles, 12.9 percent of the fish, 7.4 percent of the mollusks, and 8.3 percent of the T&E insects.

A large number of the T&E bird species occur in local wetlands, such as the pied-billed grebe, northern harrier, red-shouldered hawk, king rail, common moorhen, sandhill crane, and yellow-headed blackbird.

State nature preserves are set up in large part to provide havens for plants and animals whose habitats are dwindling. Eleven preserves may be found



The prairie white fringed orchid is a federally threatened species that survives in the region.

in the drainage, and they collectively cover almost 1,900 acres, or less than 1 percent of the drainage. Unquestionably the crown jewel is the 1,087-acre Illinois Beach Nature Preserve, which in 1964 became the first preserve to be dedicated in Illinois. Designated as a National Natural Landmark in 1980, it is one of the richest, most biologically diverse areas in Illinois, supporting more than 500 plant species and a large variety of animal species.

CURRENT THREATS

Several changes imperil surviving natural communities in the Chicago River/Lake Shore area. Among the more significant are the interruption of natural fires, the fragmentation of habitats, the physical alteration of habitats, competition from species introduced by humans, and pollution.

End of fire People usually think of humans as being the cause of distur-

bance in the environment, but nature has its own ways of disturbing things, ways to which many species (especially plants) are adapted. When natural patterns are disrupted—by stopping wildfires or keeping spring flood waters out of floodplains—adapted species come under stress. The end of wildfires has allowed fire-dependent savannas to become forests and prairies to become shrubland. One of the first things that prairie and savanna restorers do is conduct prescribed burns that favor fire-dependent species and kill off vulnerable intruders.

Fragmentation Construction of roads, fields, and houses divides forests, wetlands, and prairies into small habitat islands. There are 178 separate forested wetlands in the Chicago River drainage. The biggest is 80 acres but most are very small; the average size of contiguous forested wetlands is only seven acres. The region's marsh is split into 380 separate parcels, and while the largest sprawls over 600 acres, the average size is 6.8 acres.



The yellow-headed blackbird is a state threatened species that breeds in area wetlands.

The Area at a Glance

△ About three-fourths of the presettlement landscape was thought to be covered by prairie, which was especially common in the southern part of the area; the rest of the drainage bore trees in varying densities, with a very small fraction of the drainage being open-water habitats of one kind or another.

△ Most of the wetlands in the Chicago area have been drained, but it is estimated that there were nearly 42,000 acres (about 19 percent of the area) of wetlands before Euro-Americans settled the area.

△ About 13 percent of today's Chicago River drainage, or nearly 30,000 acres, is forested. Forest cover is concentrated along the tributaries of the North Branch of the Chicago River, the bluffs lining Lake Michigan, in older residential subdivisions, and in forest preserves, parks, and other protected areas.

Lake Michigan



The land along the lake is quite new, and not at all settled. Waves easily chew through it, for example. The rate at which the shore is pushed back varies with water levels, storms, and the configuration of the shore, but has averaged about a foot a year over recent decades.

The ecological conditions immediately adjacent to a great lake are, by Illinois standards, peculiar. Many plant species, indeed whole plant communities, that are rare or don't exist elsewhere in the state can be found along the remnant bluffs, beaches, and foredunes of the original Lake Michigan shore. Common juniper and white cedar, uncommon shrubs in Illinois, are found on the eroding bluffs in the region. Foredunes—the sandy terrain slightly removed from the water's edge that is less disturbed by waves—harbor many plant species listed as threatened or endangered by the state, including Canadian buffalo-berry, bearberry, beach pea, and sand-dune willow.

In Lake County the dunes that line the lake support no fewer than 16 natural communities. As many as 60 T&E plant and animal species occupy a spectrum of habitats from dune faces to ponds to savanna. In the 1970s a new species of aquatic beetle was found here in the Dead River, a stubby stream whose outlet to the lake is usually blocked



The state endangered bearberry persists on the foredunes of Lake Michigan.

by sandbars and so spends most of its life as an elongated pond.

The list of bird species that have been noted along Illinois's Lake Michigan shoreline is longer and more extensive than in any other area of its size in Illinois. If you count the rare species that occasionally stray or are blown into the area, it is longer—for an area its size—than all but a few places anywhere else in the interior U.S. One reason is the "Magic Hedge," a 150-yard plant screen that surrounded a 1950s-era missile installation that stood on Montrose Point on Chicago's north side until 1970. The jumble of shrubs and trees on the point offer a rare spot in which migrating birds can find shelter, rest, and food. In season, experienced birders can spot hundreds of species in a single day, from



tiny warblers to falcons. In spring of 2002 the Chicago Park District further enhanced Montrose Point as a migratory bird haven by planting bur oaks, jack pines, plum, and hawthorn trees. Similar improvements have been made elsewhere on the lakefront, at Lincoln Park Bird Sanctuary, South Shore Cultural Center, and Wooded Island in Jackson Park.



Birders flock to the Lake Michigan shoreline during bird migration to view hundreds of species, including great egrets (above).

The Area at a Glance

Δ More land remains in forest compared to presettlement days than is the case in Illinois as a whole—a bit more than half of the original acreage.

Δ Savanna—an open forest in which prairie plants mixed with fire-resistant trees—occupied large areas of the uplands and moraines in what became Lake County. Only three patches of savanna, covering 173 acres, retain much ecological integrity today.

Δ Of approximately 169,000 acres of original prairie, only 671 acres are known to remain, primarily on sandy, gravelly soils that were not farmed.

Δ While only about 2.4 percent of the region is wetlands, compared to the rest of the state a greater proportion is of high ecological quality—about 33 percent.

These habitat islands isolate small breeding populations genetically, and even accidental disturbances—a construction accident, for example, or misapplied weed killer—can be enough to doom them. Fragmentation also severs the natural landscape links that connect disparate habitats needed by so many animal species to breed or hibernate.

Re-engineering habitats Alterations to natural systems in Chicago and environs have been made on a massive scale. Virtually the whole of the Lake Michigan shore along the city proper, up to Devon Avenue, is artificial. (As recently as 1886, Lake Michigan near Van Buren Street lay just a few paces from Michigan Avenue.) Virtually all the 325 miles of rivers and streams in the area have been altered, mainly by channelizing or straightening them into ditches to maximize their water-moving efficiency. Engineers gave the Chicago River a new mouth, obliterating a large obstructing sandbar created by south-flowing current along the lake-shore that kept the river from flowing directly into the lake. (The original mouth was close to where Fort Dearborn was built in 1803, near today's Michigan Avenue and Wacker Drive.)

The subcontinental divide that used to separate the Chicago River drainage from that of the Des Plaines was initially breached by construction of the Illinois & Michigan Canal, and then was bulldozed away by construction of the Chicago Sanitary and Ship Canal, which permanently reversed the flow of the Chicago River.

Competition from non-native species

Many species of plants and animals that have been introduced to Illinois have no natural predators, or are better adapted than native species to the disturbed habitats typical of the metropolis. Unconstrained, they can take over natural areas. The woods of northeast Illinois include many varieties of exotic shrubs, such as common and glossy buckthorn, amur honeysuckle, common privet, multiflora rose, and European high-bush cranberry; garlic mustard also is a widespread pest. The greater edge-to-volume ratios of small prairie patches make it easy for exotic plant species to encroach upon them; the more common of these interlopers include yard grass. Fens have been invaded by purple loosestrife and glossy buckthorn, many sedge meadows have been taken over by Kentucky bluegrass, and many wetlands are being



The trailing juniper creeps across the sand near the lake shore.

choked by Reed canary grass as well as purple loosestrife.

The list of introduced animal species is a long one. Huge populations of introduced European starlings, house sparrows, rock doves (common pigeons), and house finches out-nest and out-eat many natives. The zebra mussel is a fast-multiplying invader that can infest waterways in densities of several thousand per square meter; it has been found in the Chicago Sanitary & Ship Canal, as well as in Lake Michigan. Navigation channels allowed Atlantic Ocean species such as the alewife and the parasitic sea lamprey to migrate into lake waters, where they either competed with natives for food or fed on them.

Many of Lake Michigan's fish species were introduced deliberately, usually to provide sport fish. Whatever their origins, exotic species have disturbed the lake ecosystem, leading to unstable fish stocks with fluctuating population densities. The sea lamprey is thought to have helped kill off the lake trout in local waters by the mid-1950s. The white perch was first recorded in Illinois in 1988 and is rapidly expanding its range. It has been recorded in Lake Michigan and is closely related to, and likely competes with, the larger native white and yel-



The brown snake is still common in the region.

low basses in the lake. Coho and chinook salmon, western fish introduced to Lake Michigan in 1967 as sport fishes (and to control the then-run-away population of alewife, another introduced species) may be competing with the native lake trout.

Pollution Pollution alters ecological systems too. In its youth Chicago was known as the City of Big Shoulders, but visitors often described it as the city of the big stink. Its pollution was fabled. While local air quality falls short of perfection, the improvements since the 1970s verge on the miraculous. Ozone remains a problem at times, but not once in the mid- to late-1990s did sulfur dioxide or carbon monoxide exceed various federal limits. Nitrogen oxides and particulate matter were generally within official limits too.

Polluted soils and sediments have proved a more durable legacy of Chicago's unbridled industrial era. Of the 46 Superfund sites in the area, three are polluted enough to merit inclusion on the National Priority List



Blue flag is a wild iris that occurs along the edges of wetlands and streams.

for cleanup. Eighty-nine of the 135 landfills recorded in the region date from the days before regulation.

Water quality remains less than pristine too. Metals, fertilizers, and sewage-borne pathogens are the main problems locally, along with low levels of dissolved oxygen, siltation, and alteration of stream habitat such as channelization. About 167 of the 325 river miles that lie within the area had been assessed by the Illinois Environmental Protection Agency as of the mid-1990s. Water quality in the watershed was rated as good or fair; no streams were classified as meeting full support for overall uses, including aquatic life use. But while every stream in the area is impaired to some degree by pollution, real progress has been made. The closing of many factories, plus improvements in city sewage treatment (see Sewage sidebar on page 14) has spurred a resurrection in area streams since the 1980s.

These days anglers go home happy, and neighbors dare to sit outdoors beside local canals in warm weather—unthinkable a generation ago. In the 1970s residents and businesses along the North Shore Channel complained about midge flies, which hatched in channel sediments and swarmed in huge numbers around trees and bushes. Ironically, the annoying insects were a sign of healthier water—nothing could have lived on the bottom of that waterway in earlier decades. Chemical insecticides controlled their numbers until the mid-1980s, when fish began to reappear in the now-cleaner channel, and by the 1990s the fish were eating enough midge fly larvae to keep the population in check.

NATURE'S REVENGE

Wetlands are rich ecosystems in terms of the diversity and amount of life they sustain, and the chronically wet ground around Chicago was a

The Area at a Glance

△ Approximately 2,300 acres of high-quality natural areas remain here. About half is in the Illinois Beach and Illinois Dunes Natural Areas and includes marsh that is home to several state T & E species, such as the prairie white-fringed orchid and the marsh speedwell.

△ Among the surviving 292 acres of undegraded woodlands is a 51-acre stand of rare sand flatwoods along the North Branch between Caldwell Avenue and Devon Avenue in the Bunker Hill/Edgebrook Flatwoods Forest Preserve.

△ The region contains all 63 acres of high-quality beach habitat that remain in Illinois, all 102 acres of the state's remaining high-quality foredune, and more than half the remaining high-quality sand prairie.

Sewage



The Illinois and Michigan Canal was used to remove sewage from the city and provide a route for commercial navigation.



In most parts of Illinois sewage is a problem in local surface waters; in a city with as many people in it as Chicago, treated sewage often is the local surface water. Low flows in most of the region's streams vary measurably with the discharge of treated wastewater from plants run by the Metropolitan Water Reclamation District of Greater Chicago and others. For example, the wastewater treatment facility on the West Fork of the North Branch Chicago River at Northbrook augments the average flow in that stream by almost 50%.

The craze for bottled water is nothing new in Chicago; it was common practice in the 1880s. Drinking tap water was not unfashionable then but it was dangerous— cholera and typhoid were common water-borne diseases in the 19th century. All local streams then drained into the lake, which also was the city's source of drinking water. Solving the city's chronic pollution problem required engineering that deserves to be called heroic. In the 1850s for example, the city was raised by as much as 10 feet in order to tilt its new sewer pipes so that waste would drain to the Chicago River.

Discharging sewage into the river moved the problem from the streets and yards of Chicago but did not eliminate it. When the slaughterhouses were running full tilt, most of what flowed through the South Fork of the South Branch was not water. By the 1860s, the Illinois & Michigan Canal had to be

widened and deepened to carry off contaminated flow from the South Branch; pumps assured a constant flow of water into the canal, effectively pulling water from Lake Michigan and forcing the South Branch to reverse its flow. In 1907 the North Shore Channel was built to similarly flush the North Branch with lake water, but it did not reverse the flow of the North Branch.

By the late 1800s even the expanded Illinois-Michigan Canal was no longer adequate to carry both the increasing sewage and commercial navigation needed for the city. The problem required a radical solution—reversing the direction of the river so that it and its load of sewage flowed away from the lake. In its final form, the solution—still in use today—was to build a new canal that joined the Chicago River to the Des Plaines River at an elevation lower than the Chicago’s mouth on the lake, causing clean lake water to drain into the river.

In 1900 the Sanitary & Ship Canal opened, totally and permanently reversing the Chicago River. That solved Chicago’s problem. The poisons were flushed into the Illinois River (and, ultimately, the Mississippi River) via the Des Plaines River, nearly killing the Des Plaines for miles downstream. That problem was partially solved with advanced sewage treatment, but more was needed. During a heavy rain, stormwater runoff rushes into sewers, often flooding sewage treatment plants. Unable to treat so much water at once, the plants merely dump sewage and stormwater together, untreated, into nearby rivers, canals, and Lake Michigan. The Metropolitan Water Reclamation District’s solution was the Tunnel and Reservoir Plan (TARP), a network of 109 miles of stormwater-storing reservoirs and tunnels bored in bedrock. Planned in the 1970s and not expected to be completely finished until 2019, the TARP has been the object of vast spending and equally vast controversy. Critics have claimed that it is too big, too expensive, and the wrong approach—a “hard” fix rather than a cheaper and more flexible “soft” fix such as restoring water-catching wetlands. It may not have been the most efficient or the cheapest solution, but even critics concede that TARP has reduced stormwater overflows.

The Area at a Glance

Δ The region harbors a wider variety of plant life than almost anywhere in Illinois—more than 48 percent of the state’s native vascular plants in only 0.6 percent of the state’s land area.

Δ Animal life is surprisingly varied—at least 288 of the 300 species of birds that regularly occur in Illinois (not counting vagrants), at least 77 species of fishes, 16 bivalves, 12 large crustaceans, and 44 mammals.

Δ Fifty-six of the area’s plant species are listed by the Illinois Endangered Species Protection Board as threatened or endangered.

Δ Three-fourths of the state’s T & E bird species are found here.

Δ Eleven State of Illinois nature preserves cover almost 1,900 acres in the region.

Δ The 1,087-acre Illinois Beach Nature Preserve is one of the richest, most biologically diverse areas in Illinois, supporting more than 500 plant species and a large variety of animal species. In 1964 it became the first preserve to be dedicated in Illinois, and was designated as a National Natural Landmark in 1980.

haven for wildlife. Hunters made fat livings from them, but otherwise it was a lousy place for people. Low places collect water—a useful thing in a floodplain, not so good in a building foundation. The land on which Chicago was built lies only a few feet above Lake Michigan’s water surface. It is flat as well as low. The North Branch’s West Fork and the Skokie River drop about three to four feet per mile but the branches that run—or rather amble—through the old lake plain are much flatter. The South Branch of the Chicago River has a slope of less than 0.1 feet per mile.

Using a stream as a dump works fairly well if the flow of water is vigorous enough to flush the stream of waste, or at least dilute it. In the Chicago River drainage it wasn’t. “Too lazy to clean itself” was a common epithet directed at the Chicago River when it was being used as a dump. “Bubbly Creek” near the Union Stock Yards—officially the South Fork of the South Branch of the Chicago River—was the most notorious of these riverine dumps. Slaughterhouses and processing plants flanked the river from 35th to 47th streets, and Bubbly Creek was named for the escaping gas produced by rotting waste on its bottom.

The Chicago River and its branches not only did a poor job of carrying away sewage, they did a poor job of carrying away water. Flooding has always been a problem in Chicago and it is getting worse, partially due to continued urbanization. Local records of peak flood discharges show that the highest floods on local streams occurred in 1987, but other significant floods occurred in 1957, 1967, 1982, and 1997. Almost all stations that monitor the amount of water

flowing through local streams show a gradual increase in the magnitude of flood peaks. The only exception is the West Fork of the North Branch at Northbrook, where flood peaks have dropped over the past 30 years thanks to stormwater detention facilities built upstream.

Water used to linger in sloughs, particularly in Lake County and northern Cook County where the “river” used to be just a series of meandering sloughs. Marshes were common along the Chicago River in Cook County, soaking in water overflow; now stormwater is rushed quickly into the river system by pipe and culvert, often overwhelming stream channels that are too small to handle it. Modest rains or snowmelt produce bigger floods, as water that used to linger in floodplains ends up in the channel. Official policy at all levels of government until recently was to drain or fill in wetlands as nuisances either to the public or to developers. That is changing. It is fair to say that it is not their value as habitat that has made official Chicago so suddenly respectful of these once-despised “swamps.” Controlling floods is something that nature does pretty well. Unlike culverts that shoot stormwater to its destination,

wetlands catch and hold rainwater. If an outlet is present, the water is slowly released to a receiving stream. This decreases peak flows after storms, thus reducing flood damage.

THE HUMAN PRESENCE

The territory between the Des Plaines River and Lake Michigan includes the city of Chicago and its near suburbs, north to the Wisconsin state line and south to Oak Lawn—the most urban part of a mostly rural state. The human population in the region averages more than 8,000 persons per square mile, and parts of Chicago have more than 14,000. Cook and Lake counties encompass only 2.5 percent of Illinois’ land area, but account for 50 percent of its population.

Farming was surprisingly extensive as recently as 1925 when agricultural crops covered 35 percent of the area. Since World War II agriculture has been pushed out. Only at the very northern edge of the area, in Lake County, are there still expanses of undeveloped land. Roughly the same percentage of land in the Chicago area is urbanized—about 80 percent—that is farmed in Illinois as a whole. In

The Dead River is a stubby stream whose outlet to the lake is usually blocked by sandbars.





Skokie Lagoon along the north shore.

Native Americans relied on for food, today serve purposes that are hardly less essential to humans living in such a built-up environment—one reason why restoring natural systems has attracted thousands of local volunteers.

Sixteen county forest preserves are located here, covering nearly 8,500 acres. The Lake County Forest Preserve District owns a handful of properties along the Chicago River and near the Lake Michigan shore that it maintains for picnickers and hikers, such as Greenbelt and Lyons Woods, or for golfers, such as Fort Sheridan and Thunderhawk. A four-mile gravel trail for hiking, biking, and cross-country skiing recently opened at Middlefork Savanna. Cook County Forest Preserve District

three local stream sub-basins at least 95 percent of the watershed is devoted to urban uses. The woods, the sloughs, the marshes teeming with birds that

also has sites within the area that are concentrated in northern Cook County along the North Branch and Skokie rivers. The picnic areas, two golf

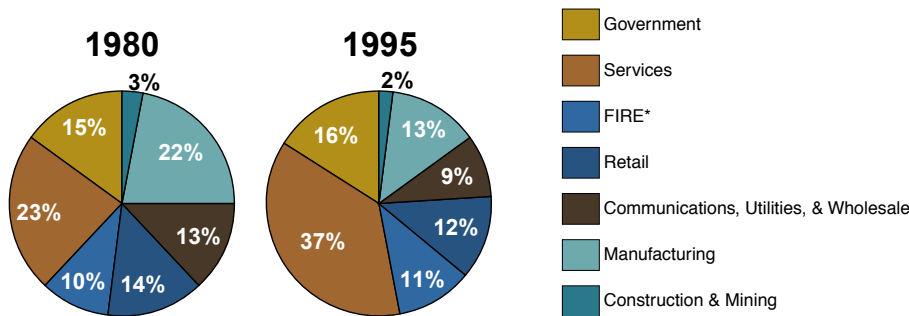
The Area at a Glance

△ Habitat fragmentation is a problem in such a developed area. The biggest of the region's 178 separate forested wetlands covers 80 acres, but most are much smaller; the mean size of contiguous forested wetlands is only 7 acres.

△ Many of Lake Michigan's fish species were introduced to provide sport fishing; such exotic species have disturbed the lake ecosystem, leading to unstable fish stocks with fluctuating population densities.

△ Air quality has improved since the 1970s. Not once in the mid- to late 1990s did sulfur dioxide or carbon monoxide exceed various federal limits. Nitrogen oxides and particulate matter were generally within official limits too.






Employment Distribution

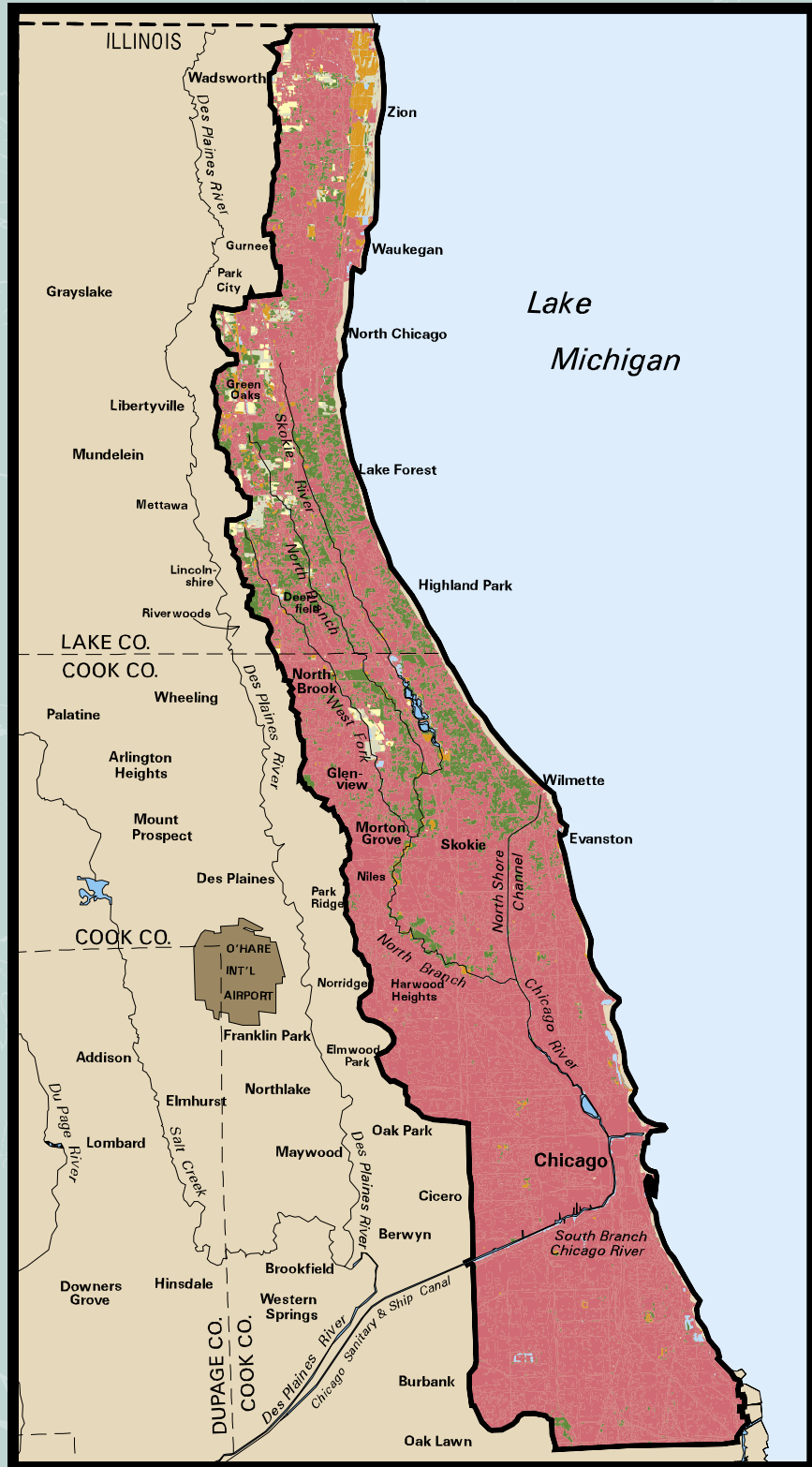
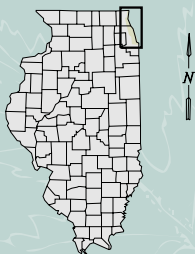


* Finance, insurance, and real estate

Land Cover

-  cropland
-  rural grassland
-  forest and woodland
-  urban and built-up land
-  wetland
-  lakes and streams
-  barren and exposed land
-  outside assessment area
-  Lake Michigan
-  O'Hare Airport

-  assessment area boundary
-  state boundary
-  county boundary
-  subbasin boundary
-  river or stream



Lisa Smith, Illinois State Geological Survey





Monarch casualty on lakeshore.

courses, and swimming pool that make up this part of the system are accessible by public transportation, which helps make them the busiest in the Cook County system.

Although only one state park is located here, it is an important one. The nearly 3,100-acre Illinois Beach State Park stretches along 6.5 miles of lakefront in northern Lake County. Bisected by a power plant, this part of the lake shore was long considered waste land and so was never developed. What humans had little use for, nature has made a home. The site has a surprising array of natural features from dunes and swales to marshes. The dunes area alone is home to more than 650 plant species, and 260 bird species have been identified in the park since 1980.

While the park is an important nature refuge (parts of it are officially

Lake Michigan is a prominent recreational resource.

protected for that purpose) most of its many visitors come there for other things. In addition to a 96-room lodge with conference facilities, the park provides swimming—very popular in the summer months—fishing from the beach, five miles of hiking trails plus smaller biking and skiing trails, and nearly 250 class “A” campsites. Such attractions drew 2.9 million visitors in 1999, making Illinois Beach the most-visited Illinois state park.

The lake shore itself is Chicago’s preeminent recreation resource. The number of people who fish, sun themselves, walk, cycle, boat, skate, or swim in this elongated playground is huge. In addition to Lake Michigan, there are 60 lakes in the Chicago River drainage. Although most are small—only eight have surface areas equal to or greater than 20 acres—they are still used for local recreation.

In a remarkable trend, nature is not only the setting for recreation but also a recreation itself for thousands of Chicago-area residents. For some years experts such as the University of Wisconsin Arboretum’s William Jordan have considered the city, somewhat improbably, to be the “hot spot for community-oriented ecological restoration in the U.S.” Journalist Stephen Budiansky, having surveyed similar projects

The Area at a Glance

△ Polluted soils and sediments are a durable legacy of Chicago’s industrial era, with 46 Superfund sites listed in 1996. Of 135 landfills, 89 of them date from the days before regulation.

△ Every stream in the area is impaired to some degree by pollution; about 167 of the 325 river miles that lie within the Chicago River drainage have been assessed by the Illinois Environmental Protection Agency as of the mid-1990s, and their overall conditions were rated “good” or “fair.”

△ Metals, fertilizers, and sewage-borne pathogens are the main water problems locally, along with low levels of dissolved oxygen, siltation, and alterations of stream habitat such as channelization.





Dragonfly thermoregulating (orienting to the sun to control its body temperature).

around the country in his 1995 book, *Nature's Keepers: The New Science of Nature Management*, called Chicago “one of the remarkable success stories of ecological restoration.”

For decades, forest preserve lands were managed more as parks than as nature preserves. In 1975 amateur naturalist Steve Packard discovered prairie remnants along the North Branch of the Chicago River that were degraded, garbage-strewn, and being taken over by brush—the inevitable result of stopping the fires that used to keep woody invaders out. Two years later, with the permission of the landowner—the Cook County Forest Preserve District—Packard’s North Branch Prairie Project began restoring the first of 11 sites along the Chicago River from Foster Avenue north to

I-94. Volunteers removed buckthorn and other competing weedy shrubs, used controlled burns to control other competing non-native plants, and culled trees that, in the absence of fires over the past century, had taken root in formerly open areas.

Restoration is time-consuming and sometimes controversial—killing trees to save ecosystems struck some neighbors as being wrong-headed and a moratorium was ordered in 1996. Since then District officials have allowed restoration work to resume in most places.

While the North Branch Project was not the first attempt to restore or reconstruct tallgrass ecosystems in the region, it proved to be the most important. The work inspired a book, *Miracle Under the Oaks*, by a veteran New York Times science writer; the title sums up its message. More important, it inspired a movement. In 1983 The Nature Conservancy sponsored the Volunteer Stewardship Network, which in turn served as a model for Chicago Wilderness, a coalition of more than 140 public and private organizations committed to protecting, restoring, and managing natural systems across the whole metropolitan region.

The ecological restoration projects undertaken in recent years number in the dozens and have been conducted under the aegis of all manner of public and private organizations, from churches to Fortune 500 corporations. This is a very brief sampling:

- Beginning in 1992, Friends of the Chicago River joined with the National Park Service to initiate a comprehensive assessment and planning effort for the 156-mile-long Chicago River waterways. Dubbed the Chicago River Demonstration Project, later just “ChicagoRivers,” the effort draws on the technical assistance of the U.S. Fish and Wildlife Service and other agencies.

- Prairie Wolf Slough stands on Lake County Forest Preserve District land, adjacent to the Middle Fork on Half Day Road. In the mid-1990s this former farm field was turned back into a wetland. Staff and volunteers installed 51,000 plants; more than 120 bird species, particularly water birds, have been seen at the site.
- The Skokie River between Lake-Cook and Willow roads was “improved” in the 1930s when it was converted into a series of seven lagoons meant to catch and hold flood water. Over the next half century the shallow lagoons filled up with sediments and sewage occasionally backed up into them; algae grew in profusion and fish didn’t. In the 1990s sewage effluent was diverted, the lagoons were dredged, and native fish species were reintroduced.



Wood lilies in dune swale community.

- At the corner of Foster Avenue and Pulaski Road the North Branch rolls through the 39-acre Gompers Park, a former wetland. In the early 1990s, the Chicago Park District recontoured the site to recreate the original wetland. Volunteers got a demonstration of wetlands function in the spring of 1999 when the river twice overflowed; the new vegetation filtered out pollutants and sediment as the captured water percolated slowly back into the soil.
- In the late 1990s a community advisory committee approved a restoration plan for the Middlefork Savanna Forest Preserve, as well as plans to establish it as a national ecological research site and outdoor classroom for universities, schools, and other organizations. More than 25 of the Preserve's 567 acres are considered the highest quality tallgrass savanna of its kind in the nation.

HOPE FOR THE FUTURE

While natural systems will never function as they should in the midst of

a great city, they can function better than they used to. Biologists believe that many of the aquatic species that have disappeared from the area in recent decades could return with improvements in water quality. Indeed, as prairie and savanna restorations have shown, whole natural communities could become reestablished in areas where they have been eliminated or altered.

Humans are still manipulating the system, and will continue to do so, but today do so with new ends in mind. They are looking at new ways to armor riverbanks, using "soft" engineering rather than seawalls. Local agencies are gradually adopting "best management practices" such as building detention ponds in new developments that mimic wetland functions by holding the water on-site, filtering it through wetland vegetation, and slowly releasing it into the river, much the way the old floodplain did.

The results are visible everywhere. The Chicago River and its branches, for decades little more than sewers, are now amenities. With improvements in water quality, they are increasingly being used by canoeists and anglers and have acquired new importance

The Area at a Glance

△ Flat terrain has left rivers prone to flooding and unable to flush themselves of wastes. While the North Branch's West Fork and the Skokie River drop about three to four feet per mile, the South Branch has a slope of less than 0.1 foot per mile.

△ The highest floods on local streams occurred in 1987, but other significant floods occurred in 1957, 1967, 1982, and 1997, and stream monitors show flood peaks getting gradually higher.

△ Chicagoland has been called the "hot spot for community-oriented ecological restoration in the U.S."



Skunk cabbage is an unusual plant that can be found in area wetlands in early spring.

for “nature sports” such as birding. Northern suburbs such as Northbrook and Glenview have new riverwalks, and regional greenway plans adopted in the 1990s foresee a network of nearly 2,000 miles of connected linear open space, of which the Chicago River and its banks are an integral part. As veteran river guide and author David Solzman has put it, “They are exclamation points in an otherwise undistinguished landscape.”

The agencies making these changes have themselves been changed by shifting public expectations. Originally the charge to the Metropolitan Water Reclamation District of Greater Chicago was to simply get rid of sewage; later, when the river proved not up to that task, the district treated the sewage. Now it is committed to flood control, since stormwater overflow carries polluted water with it. The need to contain floods also pushed the district toward ecological restoration of whole river systems, now that the vital role of floodplains is realized.

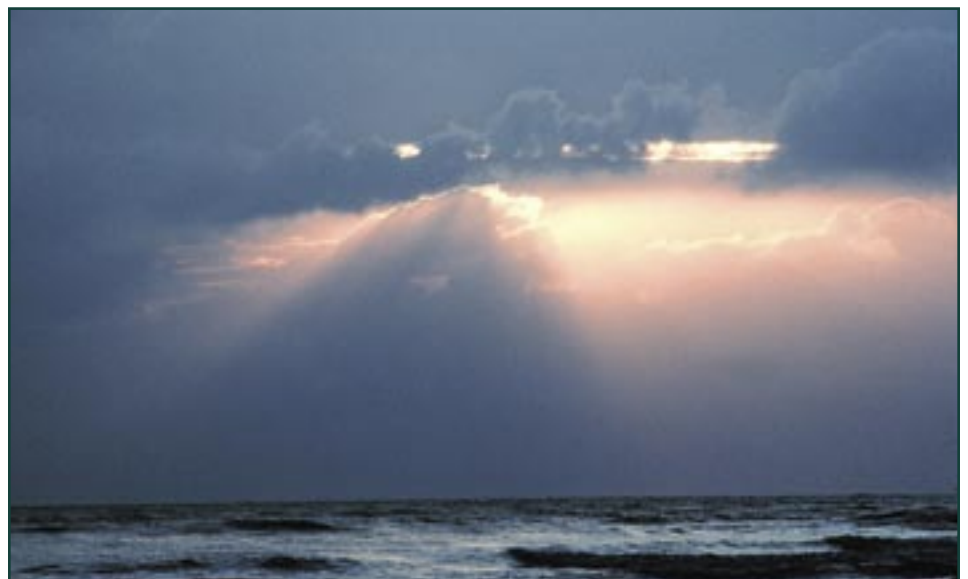
Streams, once merely a means to the end of sewage disposal, now are ends in themselves. Wetlands, once the bane of the region, are now appreciated as plant and animal habitat and—perhaps winning more fans—because they mitigate the effects of rainstorms.

The challenges will be less technical than political and the debate is likely to be less about whether or how to rescue natural systems than about who can use them, and how. Settling disputes will not be easy. The fragmentation of the physical landscape is nothing compared to that of the bureaucratic and legal landscape through which the modern river system runs. Among the entities with authority over some aspect of the river system are the State of Illinois, landowners with riparian rights, U.S. Army Corps of Engineers (navigable rivers and their tributary streams and wetlands), U.S. EPA, Illinois EPA, Illinois Pollution Control Board (water quality), Illinois Department of Natural Resources (water allocation from Lake Michigan),

Lake County Stormwater Management Commission, municipalities (riverbank zoning and land use), and drainage districts. As many as a dozen agencies have license or permit authority over some projects. As for funding, the restoration of what is now known as the Prairie Wolf Slough was paid for by the Illinois Environmental Protection Agency, the Urban Resources Partnership, the Lake County Stormwater Management Commission, and the U.S. Fish and Wildlife Service, with numerous other agencies providing in-kind assistance.

Managing a resource for so many uses is complicated, and the many agencies involved are still exploring the best way to do it. Having made a reputation for boldly altering nature, Chicago is today making a reputation for restoring it. 🌿

Sunrise over Lake Michigan.



(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 among 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.

The Chicago River/Lake Shore: An Inventory of the Region's Resources is based on one of these assessments, the *The Chicago River/Lake Shore 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 Chicago River/Lake Shore Area Assessment and all other CTAP and Ecosystems Program documents are available from the IDNR Clearinghouse at (217)782-7498 or TTY (217)782-9175. Some are also available on the World Wide Web at:

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

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

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

Equal opportunity to participate in programs of the Illinois Department of Natural Resources (IDNR) and those funded by the U.S. Fish and Wildlife Service and other agencies is available to all individuals regardless of race, sex, national origin, disability, age, religion or other non-merit factors. If you believe you have been discriminated against, contact the funding source's civil rights office and/or the Equal Employment Opportunity Officer, IDNR, One Natural Resources Way, Springfield, Ill. 62702-1271; 217/785-0067; TTY 217/782-9175. This information may be provided in an alternative format if required. Contact the DNR Clearinghouse at 217/782-7498 for assistance.

AUTHOR: JAMES KROHE, JR.

PUBLICATION DESIGN: CAROLYN NIXON

PHOTOS: MICHAEL JEFFORDS

