

*THE CALUMET AREA:
AN INVENTORY OF THE REGION'S RESOURCES*

by Ruth Sparks

Seeking natural areas in the Calumet area seems, at first, a hopeless task. Several Chicago neighborhoods and southern suburbs are located here, as well as the industries, service providers, and retail establishments that provide employment for thousands of people. With nearly a million people living here, the human population density is more than 4,000 people per square mile. A few natural nooks and crannies still exist, however, some of which contain unexpected treasures.

The area is part of the Greater Chicago Metropolitan Region and includes five townships in southern Cook County and a small fraction of Will County. The core of the area is Lake Calumet, but the Calumet Area as defined in this report extends from the Illinois-Indiana border west to just beyond Tinley Park and Burbank and, north to south, from 95th Street in Chicago to Lansing, covering 185 square miles within the watersheds of the Calumet River and the man-made Calumet Sag Channel. Sizeable tributaries include the Little Calumet River and the Grand Calumet River, which drain the eastern portion of the area before joining to form the Calumet River. Stony Creek, in the northwestern part of the area, has a mild slope and gently flowing water. Midlothian Creek and Tinley Creek are located in hillier country south of the Calumet Sag Channel and so have steeper slopes and faster moving water. The Calumet Union Drainage Ditch is a man-made drainage canal which flows into the upper Little Calumet River.

The Calumet area has been a land of constant change. Whether measured on a human scale or a geological one, the changes that have occurred here have been dramatic. Each change has created a new topography, a new flora and fauna, and a new legacy for the land.

Over millions of years the land that is now Illinois has seen completely different rivers, lakes and even salty seas come and go. Much of what we know of the very ancient history comes from the debris brought up from deep in the earth when wells are drilled. As the drill bit grinds its way down, it passes through progressively older layers, each with a different story. The stories are fascinating in themselves, but taken together they help us envision the foundation of the land we live on, and understand its limits and possibilities.

Near the surface the bit cuts through soils that may contain lost tools from our grandparents' day; slightly deeper it may encounter stone arrow points from a more distant generation. A few feet farther down it cuts easily through layers of clay, boulders, sand and gravel that date back to the period when glaciers moved back and forth over the landscape, grinding down the hills and burying the entire region in a thick layer of glacial sediments with particles ranging in size from a speck of dust to boulders bigger than your house. Progress slows as the drill encounters the hard layers of bedrock that lie below the glacial sediments. The top layer of bedrock that serves as the foundation under Northeastern Illinois is dolomite, a type of rock created from the skeletons of shelled animals that lived more than 400 million years ago when the area was not only covered by sea water, but was also located in the tropics, a little south of the equator. (The continental plate that contains Illinois has moved northward over time.) Rich in calcium and magnesium, it is filled with the fossils of the myriad sea creatures that lived at that time, including corals, trilobites, brachiopods.

Deeper still, the drill bit reaches into ancient limestones and sandstones. Each rock layer was once

on the surface and had its own system of hills and valleys, or lay on the floor of a shallow ocean. Gradually each successive layer was covered by more and more sediment. As new layers slowly built up, the older layers beneath hardened into stone.

Four hundred million years ago the dolomite was forming on the bottom of a warm tropical sea; one million years ago the continent had moved north to its present location and northeastern Illinois was covered with ice. During the Great Ice Age, several different glaciers bulldozed back and forth, melting during warmer periods and expanding during colder ones. The most recent cold period ended about 14,000 years ago. Visitors at that time could have walked across Lake Michigan on ice hundreds of feet higher than the present day surface of the lake. In summer they could have watched streams of meltwater flowing into Lake Chicago at the base of the glacier, and seen spruce forests struggling to become established on the moraines — rocky piles of debris that marked the glacier's farthest reach — to the southwest. Eventually the waters of Lake Chicago broke through the moraines, carving out the Saganaskee Valley and sending a torrent of water down the Illinois River Valley.

Even after the ice had melted back from the Chicago area, the glaciers remained nearby, advancing and retreating in response to small changes in the climate. The level of Lake Michigan also rose and fell substantially during this period before reaching its present level. In the process the waves along the successive shorelines deposited sand in beach ridges, sandbars, and spits at several elevations, and the strong winds blowing southeastward across the lake built the sand into large dunes in the Indiana Dunes National. In the early days, these sandy ridges provided paths for people moving through the generally swampy lowlands around the lake and these sand-rich shoreline features remain visible in several places, especially in the eastern part of the area. The development of these beach ridges, sandbars, spits and dunes along the southern coast altered the course of the Grand Calumet and Little Calumet Rivers.

Today most of the Calumet Area is located on the Chicago Lake Plain, the flat, nearly featureless lowland that was once the bottom of glacial Lake Chicago. The names of at least two area locations bring to mind this early history. Blue Island is built upon a moraine that was high enough not to have been inundated and was indeed an island surrounded by the iceberg filled waters of Lake Chicago. Stony Island, in the Calumet Heights neighborhood of Chicago, is built on ancient bedrock that started out as a reef in a tropical sea, and became dolomite so hard that even the glaciers couldn't destroy it. They did shave off the top, but the rest of it persists today as a rounded hill of ancient rock surrounded by the geologically young lake plain.

GEOLOGICAL RESOURCES

The geological processes that have operated for hundreds of millions of years have left the Calumet area rich in natural resources, including building materials, water and soil.

The golden-hued dolomite quarried near Joliet and Lemont has long been a popular building material. Many 19th and 20th century buildings were faced with it or built from it, including Chicago's famously fireproof Water Tower. When the city was being rebuilt after the Chicago fire, the lesson of the Water Tower was not ignored — new buildings had to be less flammable than the wooden ones destroyed by the fire. While the stone from Joliet and Lemont was extensively used for foundations and structures, as facing material, and as flagstone for sidewalks and curbstones for newly paved streets, it remained comparatively expensive despite its easy transport by railroad and along the Illinois and Michigan Canal. The problem of the high cost of stone was partly solved when a layer of clay 20 feet thick was discovered under the bed of Lake Calumet. The high quality clay dredged from the lake was used to make millions of bricks for building new factories, warehouses and homes. The clay dredging operations also extracted great quantities of sand and gravel from the lake bed that were used as aggregate in concrete and to fill marshy land.

The bedrock here provides not only building materials but also groundwater. Layers of porous rock trap water and form aquifers. The very deep sandstone aquifers, although not the most permeable in Illinois, are of great value to the region because of their widespread occurrence and considerable thickness. The two best known, the St. Peter and the Ironton-Galesville, provided much of the groundwater used by industries and communities during most of the 20th century. The first deep bedrock well in Chicago was drilled in 1864 and, like many of the early wells, it had such high artesian pressure that it flowed freely.

Another source of groundwater is the upper bedrock, where groundwater flows along cracks and crevices in the weathered rock that lies just below the glacial drift. Communities needing only small to moderate amounts of water can drill their wells into this top layer of weathered dolomite, as can homeowners living in areas not served by community water supplies. Where it is thick enough, glacial sand and gravel may also provide enough groundwater to supply a single rural household with a shallow well. However, the shallower the well, the more potential there is for contaminants to seep in from the surface.

Since it is a limited resource, groundwater can be over-used. When the water level in an aquifer drops below the bottoms of the wells in it, communities must drill deeper for water or look to Lake Michigan as an alternative water supply. Although Lake Michigan water seems limitless, the amount that can be removed is limited by treaties with Canada and agreements with other Great Lakes states.

While the cracked and weathered dolomite near the land surface is a good source of clean water, at greater depths, where the rock is fresh and sound, the dolomite is a good place to store dirty water. During heavy rainstorms, the sewage treatment plants throughout the metropolitan region often are unable to handle the combined wastewater and stormwater that flows into them. In the past, the overflow was dumped untreated into local waterways, causing serious pollution. The Deep Tunnel and Reservoir Project was chosen as the solution to this problem. Huge tunnels bored into the solid dolomite now act as storage reservoirs during storms. Overflows are diverted to the tunnels and later pumped back into the sewage treatment plants when they are able to handle the load. This strategy has reduced the number of times that untreated sewage is released to regional waterways, resulting in an overall improvement in water quality. The Calumet plant of the Metropolitan Water Reclamation District of Greater Chicago is the oldest of the system's seven treatment plants.

Overlying the bedrock in the Calumet area is glacial drift, from which the area's soils have developed. Covering the unsorted glacial debris is the top layer of soil called loess (rhymes with bus), which was formed during and shortly after the last glacial period. At that time, cold dry winter winds picked up fine particles of dust from the glacial debris. The dust that settled out of these winter storms formed a thin layer on top of the sand, gravel and rocks that were already there. This finely ground, nutrient rich material was then modified over thousands of years by the plants and animals that lived on and under it, creating the very productive loess soils that now cover the western part of the region.

PRAIRIES

In the 1830s the government land office sent teams of surveyors to measure the entire state. As they methodically worked their way across the landscape, they recorded 'witness' trees that occurred at the corners and halfway points of each square mile of land. In areas without trees, they erected a marker post or pile of rocks and noted whatever

vegetation was present. This work was done under the most difficult circumstances — heat, cold, biting insects, muddy swamps and thick forests — yet the work was so carefully done that we can use their data today to determine what the vegetation patterns were at that time.

In the Calumet area, ‘witness’ trees were scarce because approximately 90% of the land was prairie. Today 267 acres of undegraded prairie remain, or 0.25% of the original extent, a higher proportion than remains statewide. Of the high-quality prairie remaining, 168 acres are growing on the silt-loam soils of the Chicago Lake Plain. This silt-loam prairie comprises almost one-fifth of all the remaining high-quality silt-loam prairie remaining in the state in a land area of only 0.33% of the state.

Silt-loam prairie is usually categorized in community types depending on soil moisture. For example, there are only four acres of high-quality dry-mesic prairie, tall grass prairie that grows on well-drained, permeable soil with moderate water holding capacity. Mesic prairie, on the other hand, is moderately well-drained. Here you might find the state threatened ear-leaved foxglove and small sundrops or the endangered prairie white-fringed orchid. This orchid, along with another, the threatened white lady’s slipper, can also be found in wet-mesic prairies, which have somewhat poorly drained soils. There are about 58 acres of high-quality wet-mesic prairie in the Calumet area; 18 of these acres are in “nearly virgin” condition and represent three-fourths of the total undegraded wet-mesic prairie left in the state.

In areas where fine particles of clay accumulated on the bottom of the glacial lake, the poorly drained and slowly permeable soils that developed in these clay-rich parent materials supported the vast marshlands that early settlers found so awe-inspiring. Because these wet prairies were low lying and covered with standing water at least part of the year, they were systematically filled to make the land useful. As a result, wet prairie has become one of the rarest — formerly common — natural community types in Illinois. Seven sites totaling about 70 acres (more than a quarter of the state’s total) of high quality wet prairie remain in the Calumet area. Prairie cord grass, blue-joint grass, and several species of sedge are the dominant plants, interspersed with forbs like swamp milkweed, marsh aster, and blue flag.

Prairies also grow on sandy soils; the community types are distinguished by characteristics of available soil moisture. In the Calumet area sand prairies were once widespread on the former beach dunes near Lake Michigan. Today about 96 acres of high quality sand prairie are left, representing 15% of the state’s total. They include 41 acres of dry-mesic sand prairie that is usually found on the slopes and crests of beach ridges and 42 acres of mesic sand prairie that is found where the sandy soils are usually moist. Several state listed species are found in or near the mesic sand prairie, including the threatened small sundrops and the endangered grass pink orchid, dwarf grape fern, bristly blackberry, and northern panic grass. The remaining 13 acres of high quality prairie is wet sand prairie, which occurs if surface water is present for a few months. This type of prairie was probably common along the Little Calumet River and is significant to the area for what once could be found here, and might still be found with diligent searches. Wet sand prairie was the primary habitat for *thysania*, a plant endemic to a small region of the Chicago Lake Plain (see sidebar).

Good examples of what the original prairie areas must have been like can be found at the Gensburg-Markham, Calumet City, and Sand Ridge prairies. The area’s prairie remnants and other grassland habitats are probably too small to sustain regular breeding populations and successful nesting of most grassland birds.

Typical species include a subset of those found on larger grasslands throughout the state, such as the red-tailed hawk, American kestrel, willow flycatcher, and several sparrows. The only endangered species known to breed in the area is the Henslow's sparrow, and pairs of northern harriers and short-eared owls probably nest here occasionally.

Of the mammals that are primarily associated with prairies, none of those found here are listed as threatened or endangered. The least shrew, the thirteen-lined and Franklin's ground squirrels, and prairie and meadow voles and badgers are a few of the species known or likely to occur in the Calumet Area.

RIVERS AND STREAMS

The rivers of the Calumet region are among the most dramatically altered in the state. Most of the waterways have been created, dredged, straightened, armored, or leveed; some have even been engineered to be reversible. There are more miles of waterway now than there were in presettlement times. Some sections of the 239 miles of flowing water still look like natural rivers, while many others are obviously man-made.

After the glaciers had melted away, the Grand Calumet River and the Little Calumet River flowed westward across Indiana and into Illinois, separated by a low ridge that had once been a beach ridge. At the western end of the ridge, the Little Calumet cut through, made a hairpin turn and joined the Grand Calumet, forming the Calumet River. From this junction it flowed sluggishly past Lake Calumet and into Lake Michigan through a vast and nearly level wetland.

In the 1860s the land around the mouth of the Calumet River was purchased by the Calumet and Chicago Canal and Dock Company, which promoted the area as a good location for iron furnaces. Ore and coal could arrive via Lake Michigan, the company said, and the finished product could then be delivered to nearby markets by rail. All they needed was a harbor. In 1869 Congress appropriated \$50,000 to that end (even though the Army Engineers did not think the benefits were worth the cost). Workers began dredging out a sandbar that lay across the river mouth and building two piers that extended out into Lake Michigan. Congress also directed that the river be deepened and widened upstream to accommodate ships. It took at least 18 years to establish property lines and obtain permission from landowners to widen the river, and another eight years before the Army Engineers carved out a straight channel 20 feet wide and a minimum of 10 feet deep, reaching from the new Calumet Harbor on Lake Michigan inland to Lake Calumet.

Near the beginning of the 20th century, public officials became alarmed at the levels of pollution in the Calumet region. After several years of negotiations, construction of a canal through the Saganaskee Valley finally began in 1911 and, after a few setbacks — permission to divert Lake Michigan water was withdrawn at one point — it opened in 1922. The Calumet Sag Channel, as it was called, reversed the normal flow of the lower Little Calumet River, and diverted the watershed's drainage so that it now flows to the Illinois River (water flows from the Calumet Sag Channel into the Chicago Sanitary and Ship Canal, which flows into the Des Plaines River and on to the Illinois River). In choosing a route, the builders took advantage of low ground and the breaks in the moraines created thousands of years ago by the Lake Chicago floods, which had also drained into the Illinois River. Although originally constructed to help with pollution problems, the channel was later enlarged for barge travel.

In 1960, the O'Brien Lock and Dam was built on the Little Calumet River to control the water level in the Calumet Sag Channel. When the gates of the dam are closed, the dam is the divide between Lake Michigan and the Illinois River watershed. Under certain low flow conditions, water is diverted south through the dam, establishing a flow

gradient that can draw water south from Lake Michigan. In certain high flow conditions the gates of the dam are opened to reduce flooding in the Calumet Sag Channel and the Little Calumet River again flows northward into Lake Michigan.

Smaller streams in the area have also been altered as urban areas developed around them. Most have been channelized to some degree, although there are a few reaches that still flow through their original channels. Midlothian Creek, for example, has been partly channelized and dredged so that it now has very high steep banks on the upstream end. The creek has a more natural appearance downstream where it follows its natural channel and flows through a wooded area. Most of the lower reaches of Tinley Creek also flow through wooded Forest Preserve lands. In contrast, the Calumet Union Drainage Ditch is man-made, built to drain the land and make it less susceptible to flooding.

None of the streams in the area are high quality; all have been extensively modified, and domestic and industrial pollution continues. The best quality streams are the Calumet Union Drainage Ditch, which the Environmental Protection Agency has determined to have good water quality, and Stony Creek and the lower portion of the Calumet River, which have minor impairments.

Small freshwater animals have not fared well in this disturbed environment, so today there is a low diversity of aquatic species. Creeks and small rivers in the area still contain several species of frogs, such as bullfrogs and green frogs, as well as reptiles like northern water snakes and snapping turtles. Fifty species of fish occur here, including minnows, catfish, bass, sunfish and crappies. Because of its connection to Lake Michigan, the Calumet area suffers from the presence of many introduced fish species, including the common carp, goldfish, alewife, rainbow trout, and the round goby.

Due to degraded conditions, few mussels remain and none of the 25 species of native mussels known from the region have been collected alive in the last 20 years. Instead we find the Asian clam and the zebra mussel, two nonnative species that can create havoc on industrial systems and ecosystem balance. The most common crayfish is another introduced species, the rusty crayfish, which is expanding and competing with natives like the virile and the clearwater crayfishes.

LAKES AND WETLANDS

One legacy of the last glacier is a landscape covered with lakes and wetlands. Before European settlement there were more than 18,000 acres of wetlands, five times as many acres as presently exist. Portions of those wetlands were probably open water lakes and ponds, at least part of the year. Even though the Calumet area is now 80% urban, there are still 48 lakes and 3,447 acres of wetlands, but they cover only 2.9% of the area.

The Calumet River used to flow through a vast wetland. Companies like the North Chicago Rolling Mill dredged the river and used the dredged materials as fill to raise the land where they wanted to expand their operations. The company also dumped large quantities of slag and other solid wastes, and eventually created 300 acres of dry land where once there had been lakeshore and marsh. This pattern of dumping dredge spoil and industrial waste in wetlands was repeated by nearly every industry that located along the Calumet River, and on the shores of Lake Calumet.

Many of the natural lakes have also been filled or drained, while artificial ones have been created. Industries such as steel mills and power generating plants have built

cooling ponds for their operations, and quarrying has left behind unintentional lakes after operations ended and the abandoned pits filled with water. Urbanization, especially in the low-lying land, necessitates storm water detention ponds to reduce the risk of flash floods, and the large human population requires extensive wastewater lagoons at sewage treatment facilities.

The largest lake, 724-acre Lake Calumet, is a naturally occurring lake but has been so thoroughly altered that it is hardly recognizable. It was originally larger, shallower, and cleaner. So clean, in fact, that in 1877 Gustavus Swift sent ice-cutters to Lake Calumet to obtain as much ice as possible so that he could safely ship meat, instead of live cattle, to eastern cities. Ice cutting provided winter employment for several years, but as industry moved in, the lake became as polluted as the Calumet River, and ice harvesting had to be done farther and farther away. Soon after, in 1880, George Pullman began building up the land on the west shore of Lake Calumet. In just a few months, one square mile of marshland was filled and raised five feet so that factories could be built. A sewage system was installed to collect both domestic and industrial waste and pipe it to a sewage farm where it was spread over the farmland. As the volume of waste increased, however, the sewage farm was abandoned and Pullman's sewage was dumped directly into Lake Calumet. By 1882, with other manufacturers also dumping waste into the lake, more than 30 acres of land had been added to the lake's natural shoreline.

The next largest lake is 453-acre Wolf Lake which straddles the Indiana border. The state-owned William W. Powers Conservation Area hugs its northwest shore and north of the lake is Eggers Woods and Marsh, important bird habitats. Although it is a natural lake, Wolf Lake has been dredged and partitioned into five separate compartments and stocked with fish that are eagerly sought by urban anglers. It is managed for outdoor activities like boating, picnicking, fall duck hunting, and winter ice fishing. It is so close to population centers in both Illinois and Indiana that it hosts some half-million visits per year.

South of Wolf Lake is Powderhorn Lake, a former borrow pit that supplied fill for a nearby expressway. Since the land is low and marshy, the pit soon filled with water and now supports a sizeable population of the state threatened banded killifish. This little green fish can be found in other states, but in Illinois it used to live in the extensive lakes and marshlands of the Chicago Lake Plain. In the rush to industrialize, its habitat was being destroyed so rapidly that it was in danger of being lost here. Now it has a new home in a new lake.

Concentrations of wetland habitats occur mostly in the eastern Lake Plain section between Lake Calumet and Lake Michigan. About 19% of the original wetland area still remains; this small amount of wetland shelters 26 threatened and endangered birds, more than any other place in the state. The best place to see the state endangered black-crowned night heron is in the marshes on the east side of Lake Calumet, where one of the largest populations in the Midwest now resides. Area wetlands are also home to state endangered yellow-crowned night herons, American bitterns, little blue herons, northern harriers, king rails and yellow-headed blackbirds. State threatened species include least bitterns, pied-billed grebes, red-shouldered hawks, and common moorhens. The wetlands are also heavily used by migrating songbirds, waterfowl, shorebirds, rails and long legged waders. Summer residents include swallows, wrens, purple martins, yellowthroats, and red-winged blackbirds. The area is a prime destination for bird-watchers who are assured of seeing

numerous species almost any time of year.

Wetlands are almost synonymous with amphibians. Almost all frogs, toads and salamanders require aquatic habitats for breeding, so preservation of wetlands is necessary for their continued survival. At least 14 species are known or likely to occur in the Calumet area including northern leopard frogs, American toads and spotted salamanders. Wetlands are also home to numerous reptiles. The painted turtle and common garter snake are typical wetland species. Two state threatened reptiles are present in the area: Blanding's turtle lives in shallow open water areas with mud bottoms and aquatic vegetation. It has most recently been seen in Powderhorn Lake. Kirtland's snake is a rare semi-aquatic animal that prefers seasonally flooded wet prairies. The most recent sightings were in Tinley Creek Park and Palos Hills.

Historically, the wetlands were rich in fur-bearing mammals — beaver, muskrat, mink, raccoon. As habitat was destroyed, the numbers of mammals living in the region declined. Of the 59 mammals that currently occur in Illinois, 42 (71.2%) are still known or likely to occur in the Calumet area. The ones that have remained tend to be habitat generalists that are not restricted to one particular lifestyle. As the human population increased, these mammals adapted to the human presence. Even in urban areas coyote, opossums, rabbits, and squirrels are commonly seen. Nocturnal mammals like raccoons and skunks often make their presence known, and several species of bats commonly roost in buildings. Two introduced species have long been associated with humans—the house mouse and the Norway rat.

FORESTS AND SAVANNAS

The Government Land Office surveyors who mapped the area in the 19th century found only 9% of the area forested. In the last decade of the 20th century, satellite imagery showed that about 13% was forested, an increase of 40%. Statewide, about 30% of the presettlement acreage remains.

The original forests were found in places where trees were protected from prairie fire, perhaps in wet areas near lakes or rivers, or in protected valleys behind moraines. The present day forests bear little resemblance to the ones the early surveyors found. They are located in different places, and are composed of an entirely different mix of species. Some is urban forest, a mix of native trees and introduced ornamentals chosen to withstand city stresses, and some is new growth forest taking over former prairie in the absence of fire. None of the forest here has been designated as high quality (essentially undegraded) by the Illinois Natural Areas Inventory (INAI), though it may be possible to restore some stands. The largest tracts are those that have been protected by the Forest Preserve System, for example, Tinley Creek's drainage is more than 25% forested because of the Tinley Creek Forest Preserve.

Calumet area forests are either upland forest, floodplain forest or sand forest. About 14,483 acres — 12.3% of the area — are upland forest, located mostly in the western morainal section. The mix of species reflects the amount of moisture available. In drier soil, oak, hickory and ash predominate, with scattered sugar maple, black cherry or hawthorn. Where there is more water, there are more species and basswood, hackberry and black walnut will also be found.

Another 872 acres are floodplain forests along the borders of streams which include species that are tolerant of flooding. Close to the banks, on low lying land that is

often flooded, willows are found. On low terraces, where flooding is seasonal, silver maples, cottonwoods and sycamores can grow. On intermediate terraces, where the soil is moist but flooding is short-lived or infrequent, there are swamp white oaks and pin oaks. Where the land rises, trees typical of upland forest appear.

A few of the typical forest bird species include the great horned owl, northern flicker, great crested flycatcher and the blue jay. Rarer species that nest within the area are the broad-winged hawk, black-billed cuckoo, barred owl, and the hooded warbler, to name just a few. Only a few state listed species can be found here, including the endangered yellow-crowned night heron, and the threatened red-shouldered hawk and brown creeper, all occurring in forested wetlands.

Savanna is a habitat that is becoming very rare. In the Calumet area, the only INAI-designated high quality savanna community that remains is dry-mesic sand savanna—32 acres among three nearby sites southeast of Lake Calumet. Twenty-nine acres are essentially undegraded and represent 55% of the remaining statewide total of dry-mesic sand savanna. Plants characteristic of this community include widely spaced black oaks and bracken ferns. In the understory can be found various prairie grasses and forbs such as wild lupine, hairy puccoon, and bird's foot violet.

HUMAN INHABITANTS

A total of 157 archaeological sites have been recorded in the area. Near the Little Calumet River, a small Paleo-Indian site indicates that people have been living here for 12,000 years or more. Small camps with few artifacts suggest short term encampments and a mobile lifestyle.

Pottery, invented about 3,000 years ago near the beginning of the Woodland Period, helps to identify and date early sites. The oldest forms of pottery are thick and poorly fired, but as technology improved finely made and distinctively decorated pots became typical. Most of the Woodland sites found here are located near the Little Calumet and Grand Calumet Rivers.

The people who lived here about 1,000 years ago are called the Mississippian and they also lived along the Little Calumet and Grand Calumet rivers. In addition to native aquatic and terrestrial resources, Mississippian people cultivated crops such as corn and beans. At an Oak Forest site, the remains of eight oval houses have been unearthed, suggesting that the people living here settled in villages.

Although Native Americans were present when the first Europeans arrived in the area, archaeologists have not found their villages. Urban expansion has made some of the locations inaccessible, but the remains of ancient villages may yet be found on Forest Preserve lands.

Historical records indicate that early French fur traders lived fairly peacefully with the Potawatomi who inhabited northeastern Illinois. The extensive marshlands were a ready source of animals whose furs were traded by Native Americans at trading posts in nearby Chicago. Trading involved not only the negotiations, but much gift giving and celebration. The Europeans and Native Americans were friendly with one another, married into each other's families, and produced dual heritage children who often grew up to be key members of the community.

The situation changed in the early 1800s, and after Illinois became a state in 1818 Native Americans were confronted with a government busily surveying land. Even though they did not believe that land could

be bought or sold, the last Native Americans living here, the Potawatomi, signed a series of treaties that turned over more and more of their property. They unwillingly sold their last parcel in 1833 and were forced to leave the state.

That same year, the European population doubled as veterans of the Black Hawk war settled in the area. They sent word back East that land was available and it was not long before easterners outnumbered the French. Within only a few decades the easterners in turn were outnumbered by northern and eastern European immigrants who came to work in area factories. After the Civil War, African-Americans from the South also came North to work for local industries. And in the 20th century, immigrants from Central and South America began arriving.

While most of these early immigrants came to the area for jobs in factories, by 1995 most jobs were found in the retail, service and government sectors. This change in the economy has had a negative impact on the former industrial area. Here, in the eastern third of the Calumet area, per capita income was only \$12,878 in 1990 and the rate of poverty was 16%, far higher than the 6% rate found in the other two-thirds of the region, where per capita income was \$17,602.

PROBLEMS AND SOLUTIONS

As early as the 1890s the Chicago Academy of Sciences recognized that habitat was being lost in Cook County. After years of political wrangling, the Cook County Forest Preserve System was finally established in 1914. Within the Calumet area there are now about 8,000 acres of Forest Preserve land. These include the 1,700 acre Calumet Preserve, a long narrow preserve along the lower Little Calumet River, and the 5,655-acre Tinley Creek Preserve which protects a large part of the Tinley Creek watershed. A small portion of the Palos and Sag Preserve is located on the far western edge of the area and protects the Calumet Sag Channel corridor. These preserves are now refuges for many species of plants and animals whose habitat has been lost elsewhere in the region.

Of the approximately 300 species of birds found in Illinois, an amazing 274 can be found somewhere in the Calumet region. This is not to say that these are healthy populations, however. Area forests and grasslands have been reduced to small isolated areas, and birds that require large stands of trees or wide expanses of grassland generally do not nest successfully because of the nest parasites and predators that live around the margins of fields or forests. Although it will be impossible to restore very large areas in the highly urbanized Calumet area, restoring feeding and resting areas for migrating birds will likely have beneficial results. Protecting remaining wetlands will also help birds as well as amphibians and reptiles.

Small habitat size, fragmentation, and isolation incurs significant ecological stress for both fauna and flora. One hundred acres of wetlands spread out at 10 10-acre isolated sites is not the same as a 100-acre wetland or a contiguous 100-acre wetland complex.

Habitat loss and fragmentation are not the only environmental impacts on the area. Because of its industrial history, environmental contaminants are common. Twelve towns are listed as Historical Hazard Towns, meaning that they historically contained one or more industrial facilities which might have been a source of pollutants. There are 60 impoundments where liquids or liquids mixed with solids are stored, usually uncovered, and 71 facilities, including 25 chemical companies, that are listed on the Toxics Release Inventory. Many of the 139 landfills are unpermitted and three of them are listed as

Superfund Sites. In addition there are 26 other Superfund sites in the area, although none are on the National Priority List.

Cook County as a whole emits more air pollutants than any other Illinois county and 25 years ago, airport visibility was among the poorest in the United States. The Clean Air Act and its 1990 amendments that mandated reduction of airborne sulfur are expected to decrease haziness and increase visibility.

During the 19th and 20th centuries industrialists were considered visionaries. Their dreams coincided with those of much of the rest of the nation — to push West, tame the wilderness, and reclaim useless land for the benefit of an increasing human population. Natural areas were still too common to be valued, and too little understood to be protected.

The few who protested the destruction of forest, prairie and wetland were out of step with most of their countrymen, yet they persisted until they established the Forest Preserve Districts. Following in the footsteps of the people who set aside those lands are men and women who have a vision for the 21st century. In 1999 many of these visionaries came together to work for the preservation and enhancement of natural resources, and formed the Lake Calumet Ecosystem Partnership. This coalition of industries, governmental agencies, educational institutions and neighborhood groups is designing a plan for the Calumet watershed that will protect and restore the natural areas that remain, especially wetlands and other open spaces, and also revitalize the area's industrial base, while considering the health and welfare of the people who live there. Similar groups have formed in the Calumet area, some focused on a particular stream or park, others on a broader area, but all united in their search for ways to meet human needs while protecting the priceless natural treasures still to be found here.

Black-crowned Night Herons

In the midst of one of the most highly disturbed environments in the Midwest, black-crowned night herons, listed as state-endangered, nest in the wetlands of the Lake Calumet area. These large birds have several characteristics which help them survive. They are mostly nocturnal, so while many people have heard their loud call — quock! quock! — not as many have seen them. They are expert fishers, and will stand motionless in still water for long periods until a fish swims within reach. If no fish are available, almost anything else will do. The diet may shift from fish to other water animals including frogs, crayfish, snakes, mussels and dragonflies, or even become vegetarian and include algae and other water plants. Some birds become nest predators and steal nestlings from their neighbors; others have been known to live on meadow mice.

They nest in colonies everywhere from wet marshes to dry woods and prairies, from flat on the ground to high in trees. When building a nest the male selects the site and gathers coarse materials like reeds and branches which the female uses to build the base. He then collects finer material which she weaves into the top and lining. After she lays three to five pale blue-green eggs, both parents incubate them for about three weeks, and care for the chicks another six weeks until they are ready to fly. The first three years are the most perilous, but some have been known to live 10 years or more. So if nesting is unsuccessful one year, they may be able to try again the next.

Even so, the numbers of black-crowned night herons are declining. The species is sensitive to habitat size and structure; they require large habitat blocks with suitable water levels and vegetation, as well as buffers from disturbances, predators and competitors. Many have also been shot while flying back and forth between daytime roosts and nighttime feeding areas.

Exotic Species Invasion

More nonnative species can be found in northeastern Illinois than in any other region of the state. Some, such as wildflowers, can be seductively beautiful and even helpful to other forms of life, but they can also be so aggressive that they crowd out native species and, in the long run, destroy the original ecosystem.

In the Calumet area the list of exotic species is long and growing. It includes more than 125 species of plants (14% of the flora), eight birds, nine fish, two mammals, two mussels, one crayfish and assorted small aquatic and semi-aquatic species. Some of the plants and animals were intentionally introduced because of their beauty or usefulness: carp, as a familiar food for Eastern European immigrants; chicory as a coffee extender or substitute; Kentucky bluegrass for its ability to green up early in the spring; multiflora rose for impenetrable hedges. Most domestic animals and farm crops — honey bees, cattle, wheat, apples — were brought by settlers who wanted familiar things from home. Others on the list were unintentional. Foxtail grass seed arrived mixed with grain, and mosquitoes from Asia hid in shipments of used tires. Not all introduced plants and animals became pests, but some of them found conditions so favorable — especially when the predators that kept them in check in their native lands had not yet arrived — that their populations exploded. In highly urbanized regions, plants and animals that adapt easily to man-made environments have no trouble making a living.

The grasslands of the western Calumet area were largely converted to agriculture in the 19th century. The remnants are subject to invasion by intentionally introduced species, particularly escaped agricultural plants such as sweet clover and cool season grasses such as Kentucky blue grass, that get an earlier start in the spring than do the native warm season grasses. Many familiar wild flowers are also invaders, such as yarrow and crown vetch.

Wetlands have fewer exotics than uplands, but the few species that do invade become serious pests. Purple loosestrife and reed canary grass quickly out-compete other plants, and create monocultures which are of little value to wildlife.

The original forests of the Calumet area were located in agricultural areas and were often grazed by cattle; now they are heavily grazed by deer. Grazing has eliminated species of plants that are palatable and encouraged the spread of those that are thorny or unpalatable because the grazers avoid them. This includes native plants such as hawthorn and blackberry, but also non-native species such as buckthorn, multiflora rose and garlic mustard that in some places have taken over large patches of woods. These exotic species are also common in area forests that are relatively young, especially where former prairie has not been burned and woody vegetation has become established.

Native forest birds have difficulty finding suitable nest sites in these degraded forests. And where there are suitable sites, they must compete with European starlings for scarce nesting cavities.

The Calumet River has become a gateway for exotic aquatic species to invade Illinois because of its connection to Lake Michigan. For example, the white perch is native to eastern North America, but has recently invaded Lake Michigan. It was first recorded in Illinois in 1988 and is now found in several locations in the Calumet area as well as the Illinois and Mississippi Rivers. It competes with native white and yellow

bass. The zebra mussel was first brought into the Great Lakes from Europe in the ballast water of intercontinental ships. It might have been confined there but for the man-made connections to the Illinois River. It is now found in the waterways of much of Illinois and in neighboring states. Native mussels are particularly vulnerable to this invasion because zebra mussels are not just competitors. They directly kill native mussels by attaching to them in such numbers that the native mussels can no longer open their shells to obtain food and oxygen.

Dedicated Nature Preserves

In 1963, the Illinois legislature established the Illinois Nature Preserves System. In order to become a dedicated nature preserve, a parcel of land must still maintain a high degree of its presettlement character, or have significant geological, ecological, or archaeological features. Most of the preserves are open to the public for activities like bird watching and nature photography, some of them provide interpretive programs, and a few are open only by permission because of their fragile nature. Within the Calumet region there are seven dedicated nature preserves. Although they comprise very few total acres, they are remarkably rich and varied in plant and animal life because of the great variety of soil types and available water.

The **Sand Ridge Nature Preserve** was dedicated in 1965 as the ninth Illinois Nature Preserve and the first in the Calumet area. It is located on Cook County Forest Preserve land and is a 70-acre remnant of the dunes that occurred on the shores of Lake Chicago. The tops of the dunes are covered with prairie grasses and scattered black oak trees. There are examples of wetland communities in the swales that range from wet prairies to sedge meadows to marshes, depending on the amount of water available in each area.

The **Chicago Ridge Prairie Nature Preserve** is a 13-acre tract that protects one of only two remaining gravel prairies in the state. The site occurs on an ancient shoreline of Lake Chicago where a stream of meltwater dropped its load of gravel. Because gravelly soils drain rapidly, the plants that grow here require less water than those growing nearby on a wet prairie that is underlain by clay. The white lady's slipper orchid is a state threatened species which grows in this gravelly habitat.

Paintbrush Prairie, Sundrop Prairie, Dropseed Prairie, and Gensburg-Markham Prairie, collectively known as the **Indian Boundary Prairies**, are little oases in an urban landscape. The name refers to the boundary of land conceded by the Potawatomi to the U.S. government to provide a corridor for the I & M Canal. The old boundary line is very easy to find — for some of its length it follows Interstate 57, which cuts right across the area. These prairies, located on the Chicago Lake Plain within the city limits of Markham, total more than 300 acres and show us a microcosm of the land as it used to be. Tallgrass prairie remnants found here represent almost all possible combinations of soil type and available moisture, from silty loam to sand and from dry shrub prairie to sedge meadows.

The Indian Boundary Prairies contain the only high quality sedge meadow found in the Calumet area — 35 acres. These sedge meadows occur in low spots where the soil is continually saturated. While too wet for most grasses, many species of sedges thrive, as do a few water tolerant grasses, ferns, horsetails, scouring rushes, bulrushes, swamp milkweed, marsh aster and willows.

These prairie patches are as pristine as you will find in this highly disturbed area. Although some native plants and animals have been lost, enough of them remain that the prairie patches are good candidates for restoration. The Gensburg tract, for example, has never been plowed, but it barely escaped being developed in the 1930's. Plans had been drawn and roads laid out when financial difficulties put an end to the project. Today the roadside drainage ditches are home to toads and chorus frogs, and plants whose seeds

were collected from nearby prairie remnants bloom annually. Since we now understand that animals are a vital part of an intact prairie, some that were once extirpated have been reintroduced, such as Franklin's ground squirrel (reintroduced in 1982) and the rattlesnake master moth (recently reintroduced).

Farther west at the 52-acre **Palos Fen Nature Preserve**, where lake plain meets moraine, interesting habitats occur. The rocks and gravel in the moraine contain a lot of minerals, especially calcium and magnesium. Water percolating through them dissolves some of those minerals and becomes very hard and alkaline. The soil also contains a great deal of partially decayed plant material, making conditions right for a graminoid fen community to develop. The graminoid fen community contains many of the same plants found in neighboring communities, as well as rare species such as the endangered queen of the prairie. Located on Cook County Forest Preserve land, this preserve protects the last nine acres of graminoid fen remaining in the Chicago Lake Plain and may be entered only with advance permission.

Thismia

In August of every year an annual search will be conducted, not for the winner of a publishers clearinghouse contest, but for *Thismia americana*, one of the most unique species of plant ever found in the continental United States.

On August 1, 1912, Norma Pfeiffer, a graduate student in botany at the University of Chicago, was collecting plants in a wet prairie near Lake Calumet in Cook County. As she waded through the tall grasses and forbs, she occasionally knelt on the ground to investigate the plant life at the surface of the soil. It was during one of these surface inspections that she discovered a small, nearly transparent, bluish-green plant growing between some mosses. There were no leaves, in fact, there was nothing on the plant to indicate the presence of chlorophyll. Stumped for the moment, she collected a few of the plants to take back to the lab and identify.

Subsequent library searches and careful study revealed that she had discovered a new species. She named it *Thismia americana* in 1914. The only other known *Thismias* grew in the rain forests of Australia, Tasmania, and New Zealand. Pfeiffer monitored the *Thismia* populations until September of 1916 when a job took her away from the area. No one has seen the plant since.

Thismia occurred on a wet prairie near Torrence Ave. and 119th street on Chicago's south side. Today, this site lies under 3 feet of fill, but botanical optimists hold out hope for the survival of *Thismia*. Suitable habitat still exists nearby. This spirit of optimism spurred the first Great American *Thismia* Hunt in August, 1991; the hunt continues today. The list of participants reads like a whose-who of Midwestern botany. Hunters split into small groups and spend much of the day on hands and knees in waist high vegetation searching for the pencil-eraser sized above ground portion of *Thismia*. The searchers endure sweltering heat, mosquitoes, and lack of shade, all because August is when Norma Pfeiffer said the plant was most easily seen.

Although *Thismia* has not been found during any of these searches — the event has been dubbed the Wild *Thismia* Chase by some non-believers — participants have found plants not previously known from the area, including many threatened and endangered species. A faded photograph of Norma Pfeiffer accompanies each year's hunt to encourage each participant to keep playing the game — the prize, a tiny bit of botanical immortality.

Caption: The alkali bulrush is considered a state threatened species because of its rarity, but it seems more like an alien. It usually grows in brackish marshes and has never been found in the freshwater marshes of the Calumet area. It is only found in roadside ditches, where runoff from salted highways keeps the salt content of the soil high enough to favor this plant and probably discourage some of its competitors.

Caption: Lands that have high relief have sharply defined divides between watersheds. We usually expect to see some sort of ridge where streams flowing on one side go into a different drainage from streams flowing on the opposite side. The low relief land between Lake Michigan and the Illinois River rises almost imperceptibly — there is no high ridge forming a divide. Before humans intervened, the drainages were separated during low water by moraines on the western edge of the assessment area, but during periods of high water, Potawatomi canoes could glide back and forth from one to the other without portaging. The engineering projects of the last century have permanently connected the two drainages, and built an artificial divide, the O'Brien Lock and Dam on the Calumet River.