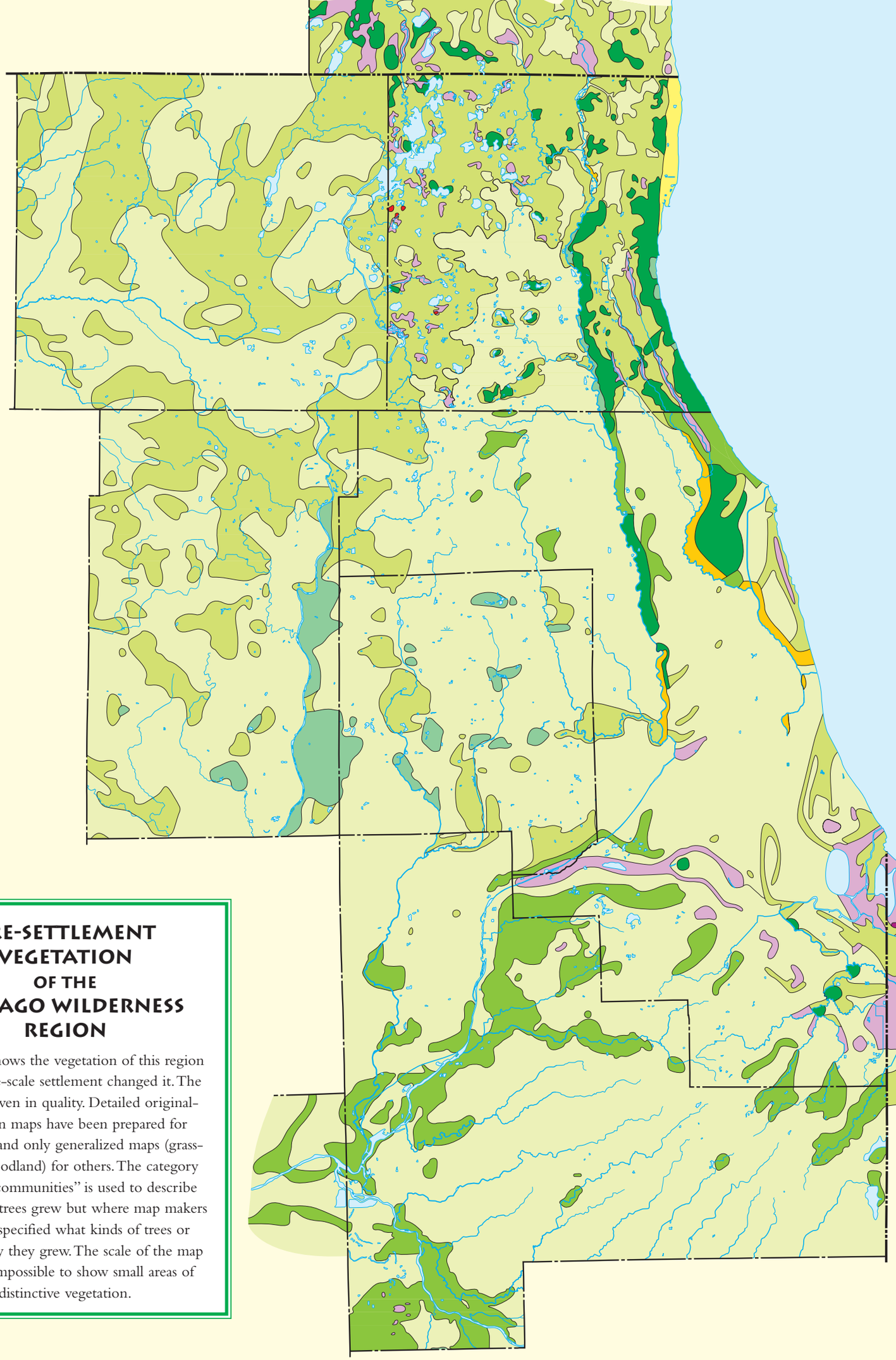
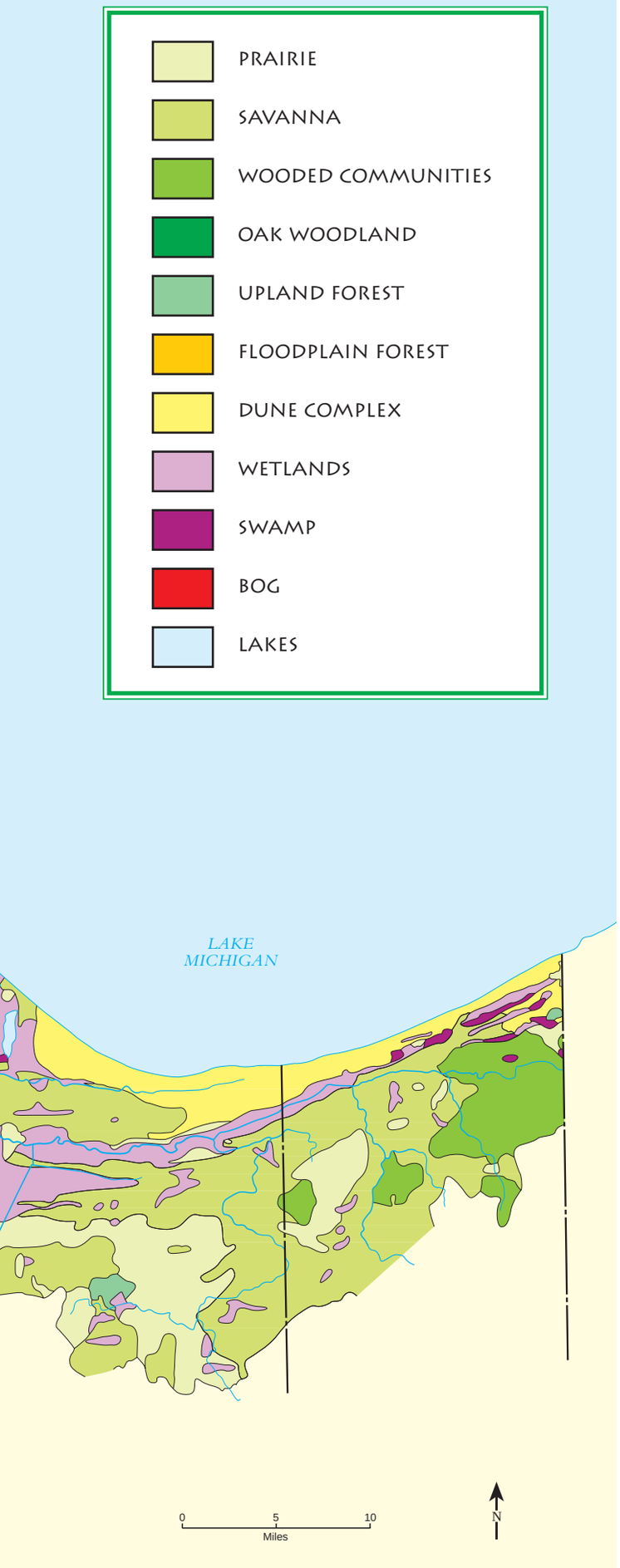


PRE-SETTLEMENT VEGETATION OF THE CHICAGO WILDERNESS REGION

This map shows the vegetation of this region before large-scale settlement changed it. The map is uneven in quality. Detailed original-vegetation maps have been prepared for some areas and only generalized maps (grassland vs. woodland) for others. The category "wooded communities" is used to describe areas where trees grew but where map makers have not specified what kinds of trees or how densely they grew. The scale of the map makes it impossible to show small areas of distinctive vegetation.



LIVING COMMUNITIES

The varied landscape that remained when the ice departed and the lake retreated to its present shoreline is the base that supports the biodiversity of the Chicago Wilderness. Sands and clays, hilltops and plains offer different opportunities to different plants and animals. Geology, topography, and climate combine with living things to create *ecosystems*. When we talk of a prairie ecosystem or a forest ecosystem we include both the living things and the non-living things that have an effect on life.

The term *community* or *natural community* refers just to the living things in the ecosystem. Since plants respond more specifically to moisture and light, communities are usually described or named by the vegetation. The members of a natural community are connected in many ways, and these connections are so complicated that we will never understand all of them.

We do know that the loss of a single species in a community can lead to the loss of more species. A flower disappears because the insect that pollinated it is gone. Insects vanish because their food plants have died out.

Healthy natural communities have room for all their species. In healthy communities, we see biodiversity. "Biodiversity" refers to the variety of life, from variations in the genes of individuals to the whole planet and all its millions of species. On a regional level, biodiversity can refer to the many communities that exist side by side.

Biodiversity helps natural communities survive catastrophes. Indeed for some species, events such as floods and storms are opportunities rather than catastrophes.

In the Chicago Wilderness, we see biodiversity within communities and in the great variety of communities found in the region. We have nearly a dozen wooded communities. Our prairies are wet prairies, dry prairies, gravel hill prairies, and others. Our wetlands are a very diverse collection of marshes, fens, sedge meadows, bogs, and swamps. Each of these separate types has its own special combination of animals and plants.

The next section of this Atlas will introduce you to the natural communities of the Chicago Wilderness and describe some of the animals and plants that make their homes in these communities.

PRAIRIES

In all my life, I never saw or dreamed of so beautiful a sight as the rolling prairies. Nothing can equal the surpassing beauty of the rounded swells and the sunny hollows, the brilliant green of the grass, the numberless varieties and splendid hues of multitudes of flowers. I gazed in admiration too strong for words.

Ellen Bigelow
1835

Miss Bigelow's reaction was shared by many who were lucky enough to see the tallgrass prairie in all its glory. She was a New Englander who had grown up among forests. There are prairies as far east as Massachusetts, but they are small, sunny islands in a sea of trees. In the Illinois country, people moving west found tall waving grasses and the "splendid hues" of wildflowers covering much of the land. Here the prairies were the sea, and the woodlands were shady islands. The prairies of Illinois were the first real American experience of the wide-open spaces. Here you could find yourself in a prairie that stretched to the horizon, without a single tree in sight.

Many early visitors expected the prairies to be of little use to farmers. Their belief was that any soil too poor to grow trees was too poor to grow crops. Others noted the advantages of land that did not need to be cleared of trees. The prairie was instant pasture for cattle and horses and needed only a plow to make it ready to grow crops.

However, the first settlers who tried turning prairie sod with the light wooden plows they had used in the forests got a rather nasty shock. A plow that would turn a clean furrow in forest soil skittered over the surface of the prairie sod like a pebble skipping across a pond. Prairie soils seemed to be mostly roots.

Breaking prairie sod became a business. Men traveled the settlements with heavy plows pulled by several teams of oxen and hired out to plow land at so much an acre. The sound of the tearing roots, they said, was like the rattle of small arms fire, as if an infantry company was engaged in battle. Individual farmers couldn't plow the prairie until 1837 when an Illinois blacksmith named John Deere invented the steel moldboard plow.

EVOLUTION OF THE PRAIRIE

Prairies are grasslands. The dominant plants are grasses—although many other kinds of plants are present. The group of plants we call grasses evolved during the Miocene Epoch, a period that began about 25 million years ago. Grasses have since become the dominant vegetation over large areas of the earth. The prairies of North America, the pampas of South America, the steppes of Central Asia, and the plains of East Africa are all grasslands.

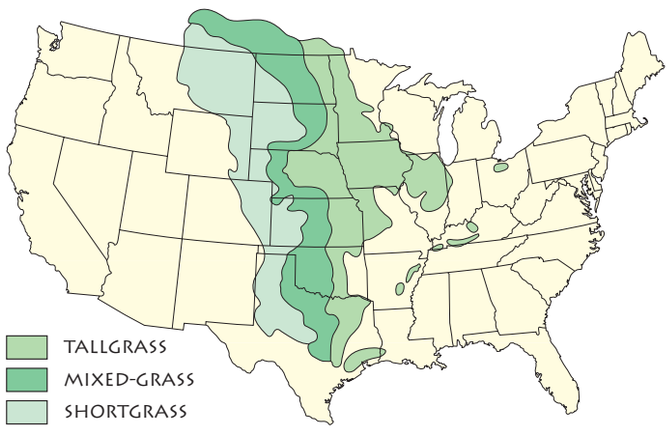
Grasslands develop on flat lands in areas where long periods without rainfall are common—although the climate is not as dry as it is in deserts. These periods of drought may be regular seasonal occurrences—like the dry seasons of tropical lands—or they may happen only in some years—like the summer droughts of the American Midwest.

Those periodic droughts and the flat ground that offers few obstacles to advancing flames have made fire a major force in the ecology of the world's grasslands. Millions of years of evolution in the presence of fire have

Blazing star and goldenrod create a colorful display in a mid-summer prairie. The flower show starts in spring and continues until October.

HISTORIC RANGE OF THE PRAIRIE

Little remains east of the Mississippi, but some of the biggest and best of the surviving remnants are in the Chicago region.



made the tallgrass prairie dependent on periodic fires for its survival.

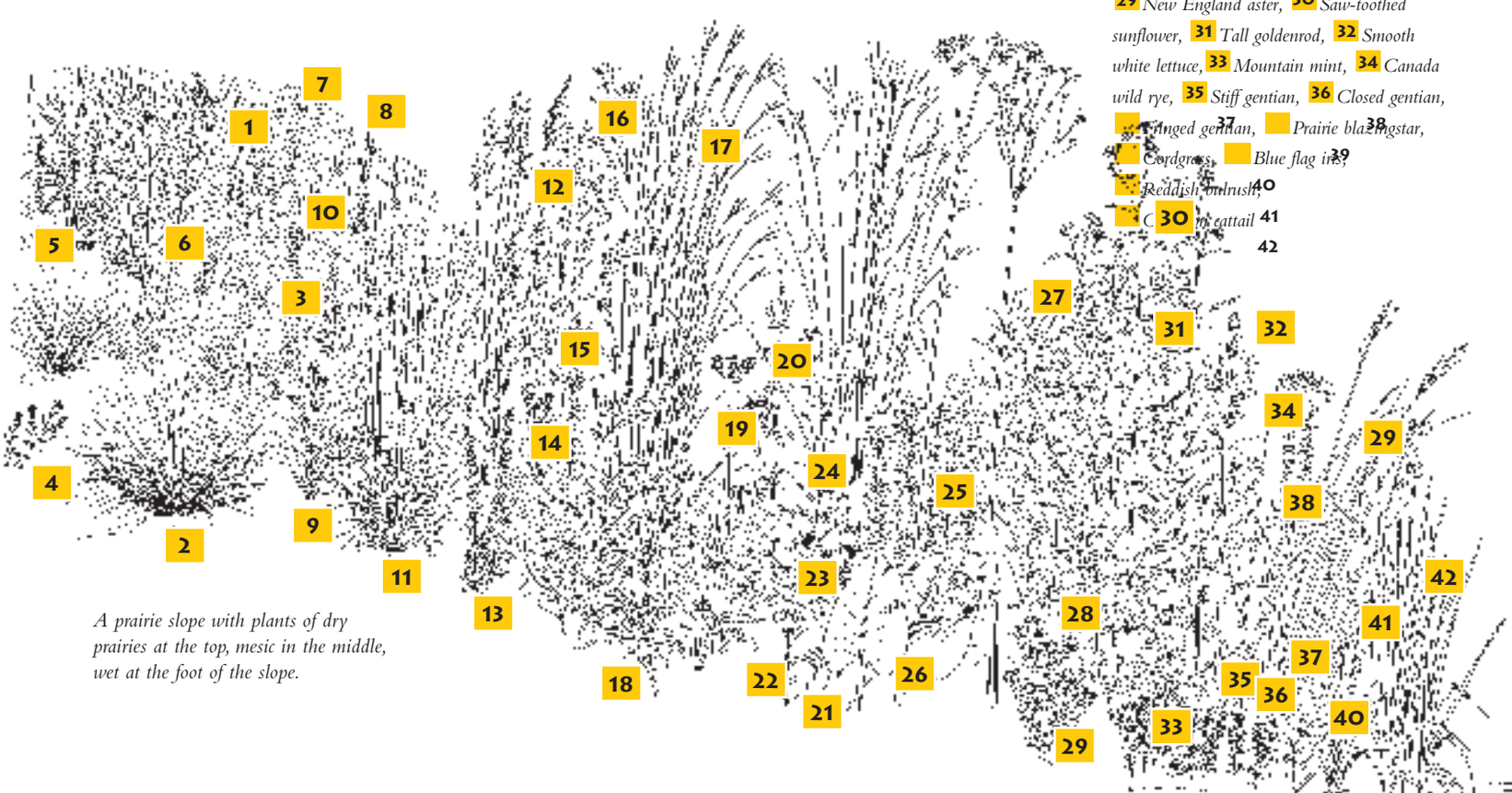
The prairies of central North America form a triangle extending from the foothills of the Rockies on the west to Ohio on the east. In the Chicago Wilderness, the prairies share the land with a variety of wooded communities. To the west, trees become more rare. On the high plains in the shadow of the Rocky Mountains, they grow only in narrow strips along the rivers.

The western prairies—the grasslands of eastern Montana, Wyoming, and Colorado, are considered short-grass prairies. Precipitation averages less than 20 inches a year. In the dry, windy environment, plants hug the ground, seldom growing much above a foot in height. With increasing precipitation, the grasses and other prairie plants get taller. From central Nebraska east, tallgrass prairies dominate the treeless parts of the landscape. Early accounts tell of grasses tall enough to hide a man on horseback. That height must have been rare, but settlers often lost cattle in the pastures of August.

ROOTS AND SOILS

Most of the biomass, the living material, of both prairie grasses and prairie wildflowers—botanists call them forbs—is underground. On deep soils, the root systems of some prairie species extend nearly 20 feet below the surface. They may live for decades, each spring sending up new green shoots to flower, set seed, and die.

1 *Side-oats grama grass,* 2 *Prairie dropseed,* 3 *Whorled milkweed,* 4 *Purple prairie clover,* 5 *Gray goldenrod,* 6 *False boneset,* 7 *Tall boneset,* 8 *Hoary vervain,* 9 *Cylindric blazingstar,* 10 *Daisy fleabane,* 11 *Little bluestem,* 12 *Indian grass,* 13 *Rough blazingstar,* 14 *Round-headed bush-clover,* 15 *Stiff goldenrod,* 16 *Compass plant,* 17 *Big bluestem,* 18 *Wild quinine,* 19 *Rattlesnake master,* 20 *Culver's root,* 21 *Wild onion,* 22 *Flowering spurge,* 23 *White wild indigo,* 24 *Yellow-headed coneflower,* 25 *Canada goldenrod,* 26 *Prairie dock,* 27 *Switchgrass,* 28 *Obedient plant,* 29 *New England aster,* 30 *Saw-toothed sunflower,* 31 *Tall goldenrod,* 32 *Smooth white lettuce,* 33 *Mountain mint,* 34 *Canada wild rye,* 35 *Stiff gentian,* 36 *Closed gentian,* 37 *Fringed gentian,* 38 *Prairie blazingstar,* 39 *Cordgrass,* 40 *Blue flag iris,* 41 *Reddish bulrush,* 42 *Common cattail*



A prairie slope with plants of dry prairies at the top, mesic in the middle, wet at the foot of the slope.

Dr. Robert F. Betz
of Northeastern Illinois University led campaign to save Indian Boundary Prairies; initiated first large scale prairie restoration at Fermi National Accelerator Lab near Batavia, Illinois.

These huge root systems are constantly growing and constantly dying. New roots seek new sources of minerals and water in the subsoil. Old roots die and decay, adding organic matter to the soil.

Organic matter may form a layer nearly two feet thick in prairie soils. It is this organic matter that gives prairie soils their dark color. Organic matter also made prairie soils extremely productive of crops such as corn and soybeans. This fertility doomed nearly all the prairies.

TYPES OF PRAIRIES

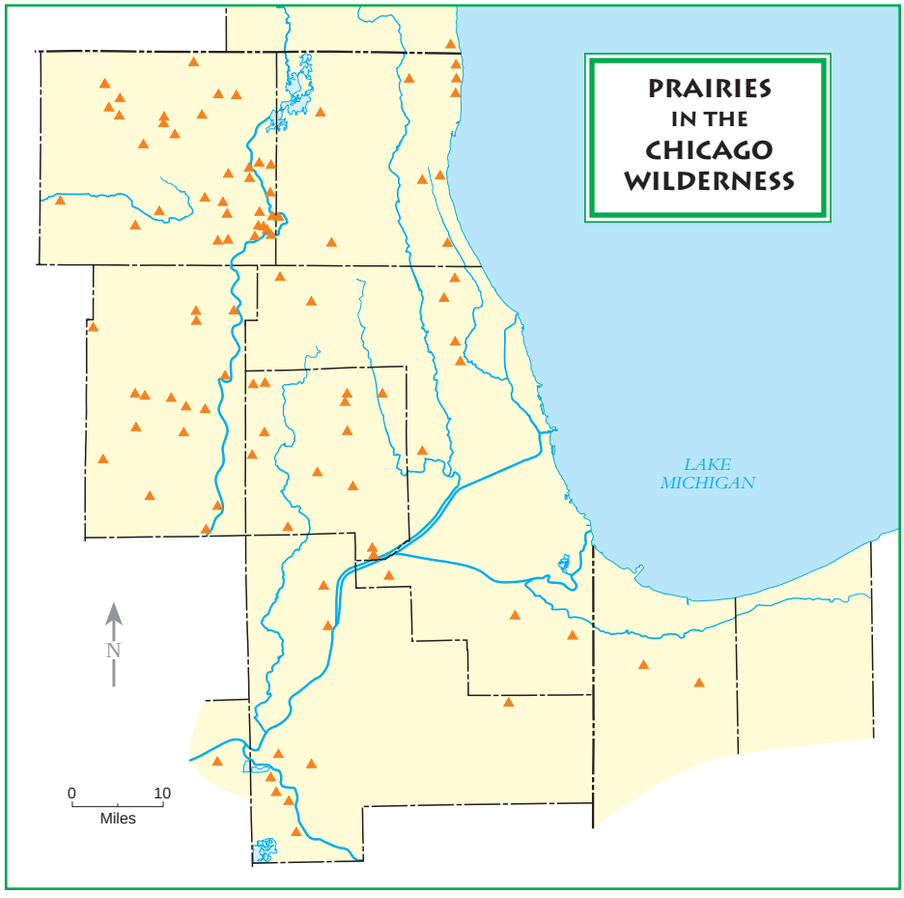
As many as 350 different species of plants grew on the prairies of Illinois, Indiana, and Wisconsin, but they didn't all grow together. Instead they grew in distinctive communities. Each community had its own unique mix of species. Soil moisture and soil texture are the two most important factors in controlling where these communities grew. Prairies on wet soils shared many plants with such wetland communities as sedge meadows and fens. Prairies on sandy soils, where the coarse soil texture lets water drain away quickly after rains, often contained plants more common in the drier lands to the west.

Ecologists have named five moisture groups: wet, wet-mesic, mesic, dry-mesic and dry. The word "mesic"—which means "in the middle" or "moderate"—turns up often in ecology. In addition, two kinds of prairies are classified by the texture of the ground they grow in. Sand prairies grow along Lake Michigan and inland as well. Gravel hill prairies often grow on top of kames.

If we survey the plants growing in a wet prairie, we are likely to find that cordgrass (*Spartina pectinata*) and blue joint grass (*Calamagrostis canadensis*) are the most common grasses. In dry prairies, side-oats grama (*Bouteloua curtipendula*) becomes important. In mesic prairies, the dominant grasses are big bluestem (*Andropogon gerardii*) and northern dropseed (*Sporobolus heterolepis*). The forbs show similar shifts.

A line of life-giving fire blows across a prairie in the Chicago Wilderness. Fires are essential to the health of this ecosystem.

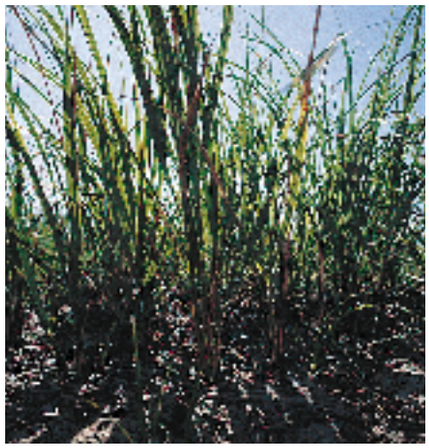
Prairie remnants are scattered over the Chicago region. Most of the prairies shown on this map are less than 20 acres.



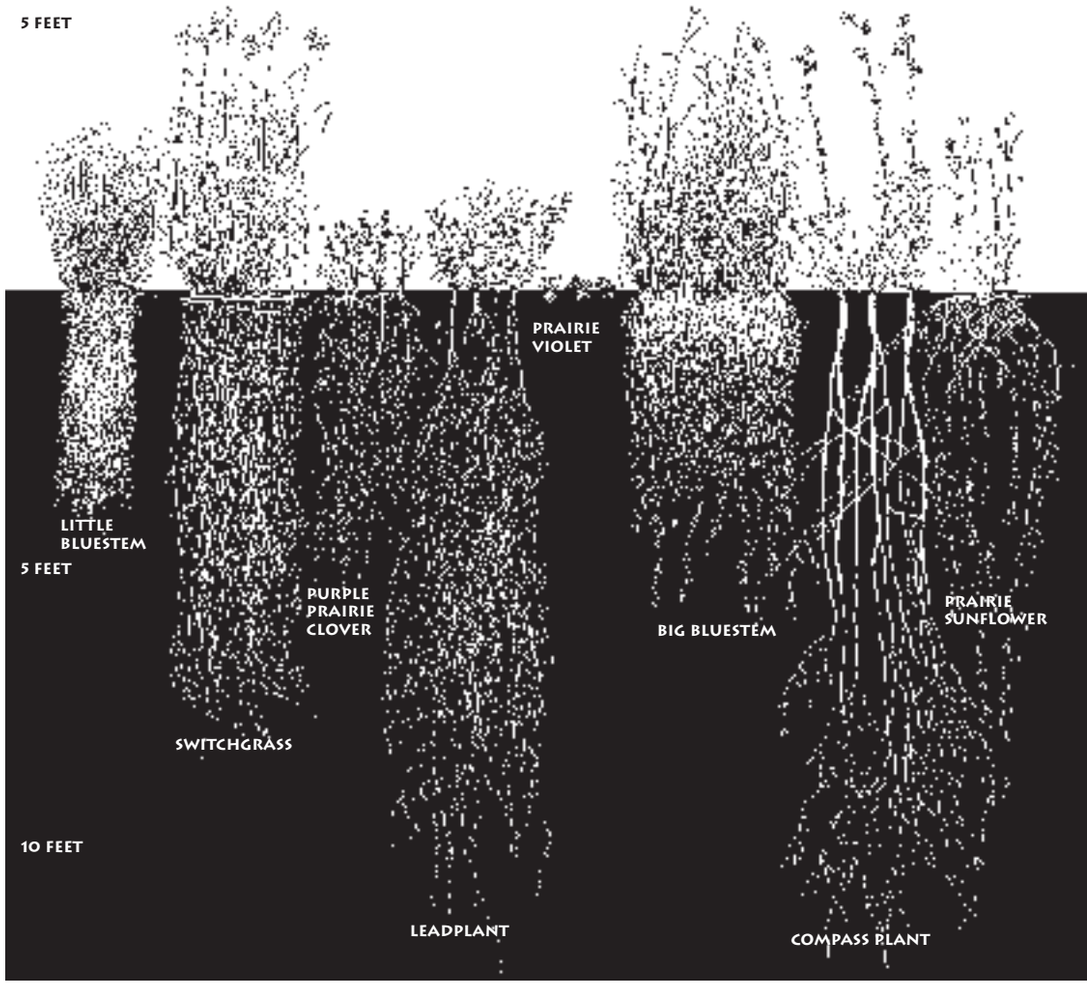
PRAIRIES AND FIRE

Prairies are fire-dependent communities. Without fire, tallgrass prairies are invaded by trees and shrubs that kill the prairie plants with their shade. Without fire, species begin to vanish from the prairie. Smaller plants and plants with small seeds seem to go first. Legumes also disappear. Their removal makes it easier for weeds to invade.

Some trees can survive regular prairie fires. Bur oak (*Quercus macrocarpa*) and black oak (*Quercus velutina*) can live for a century or more even though regular fires repeatedly kill all parts of the plant that are above ground. They survive as roots—called "grubs." The grubs are not harmed by the fires and each year, they produce new sprouts. When large scale settlement began, people noticed communities they called "brushy prairies." These were prairies where bur oak, black oak, and sometimes white oak grubs were common. Fire suppression after settlement quickly turned these brushy prairies into oak woods.



New growth sprouts with the help of minerals released by fire.



Most of the living stuff in a prairie is underground. The huge root systems of prairie plants live for many years, sending up new green shoots every year. The death of old roots adds humus to the soil.

Historical accounts tell us that Native Americans set fires every year to improve forage for bison and elk. If the weather was right, these fires might burn for days.

Fires burn best on level ground. In hills, they burn well uphill but are likely to go out on the downhill side. In the Chicago Wilderness, prairies dominated the flat land unless that land was on the downwind side of a river, lake, or other permanent body of water. Fires burning from west to east often went out on the west banks of river or the western shores of lakes and permanent wetlands.

PRAIRIE SUCCESSION

In the presence of fire, prairies are very stable communities. Many of the common prairie plants live for many years, but they do not readily invade new ground. Before settlement, disturbed places—like buffalo wallows—would be quickly filled with weedy prairie species—plants that grow fast and specialize in invading disturbed ground. In time, the more conservative species would replace these invaders.

During the past 175 years, millions of acres of tall-grass prairies have been converted to cornfields or covered with buildings. Surviving prairies are small and widely scattered. It is impossible for seeds from these small prairies to reach all the lands where they could grow.

With the native prairie species so rare, a cornfield left idle for a few years is likely to be invaded by plants from Europe and Asia that have been imported into this area since settlement. Most of the grasslands in the Chicago Wilderness are dominated by exotic (non-native) species such as Hungarian brome grass (*Bromus inermis*) and Queen Anne's lace (*Daucus carota*).

The tallgrass prairie survives in tiny fragments. Conservationists have mounted protracted campaigns on behalf of prairie remnants of five or ten acres. Hope for the survival of this ecosystem rest on good management of these fragments and on restoration projects that return prairie to lands where it has not grown for a century or more. The Midewin National Tallgrass Prairie in Will County, the largest restoration ever undertaken, will someday soon return the bison to the Illinois prairie.

VIOLA PEDATIFIDA
Prairie violet

POTENTILLA ARGUTA
Prairie cinquefoil

SISYRINCHIUM ALBIDUM
Common blue-eyed grass

POTENTILLA SIMPLEX
Common cinquefoil

ZIZIA APTERA
Heart-leaved meadow parsnip

PHLOX PILOSA
Prairie phlox

The Beauty of

Imagine a circle the size of a hula hoop. All 30 of the plants pictured on these two pages were found growing in just such a circle randomly placed at the Somme Prairie Nature Preserve in Northbrook, Illinois. Biodiversity is typical of tallgrass prairie. If we studied a few acres of prairie, we might find a hundred species of plants.

In our hoop, the violets bloom first. Their flowers open in late April. From that point until the moment in October when the last aster fades, something would always be blooming inside this small circle. A bumble bee in search of pollen, a butterfly looking for nectar would stand a good chance of finding what it needs.

HEUCHERA RICHARDSONII
Prairie alum root

TRADESCANTIA OHIENSIS
Common spiderwort

FRAGARIA VIRGINIANA
Wild strawberry

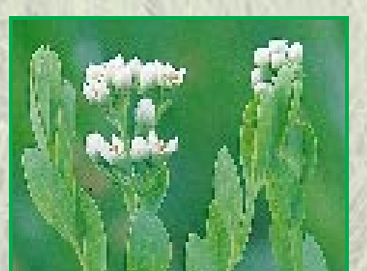
LITHOSPERMUM CANESCENS
Hoary puccoon

VIOLA PAPILIONACEA (VIOLA AFFINIS)
LeConte's violet

SMILACINA STELLATA
Starry false solomon's seal

PARTHENIUM INTEGRIFOLIUM
Wild quinine

ERYNGIUM YUCCIFOLIUM
Rattlesnake master



COMANDRA UMBELLATA
False toad flax

SORGHASTRUM NUTANS
Indian grass

RATIBIDA PINNATA
Yellow coneflower

CAREX CONOIDEA
Prairie gray sedge

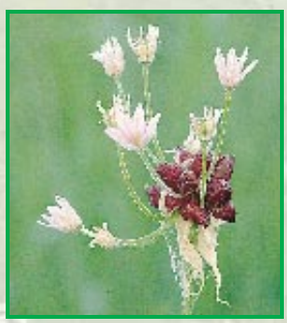
CAREX BICKNELLII
Copper-shouldered oval sedge

ASTER ERICOIDES
Heath aster

Biodiversity

Several species of the tiny butterflies called skippers could reproduce in our hoop. Skipper caterpillars feed on grasses and sedges. On the violets, we might find caterpillars that would grow into gaudy orange and black fritillaries.

In healthy ecosystems, energy flows freely through the system. There are many pathways for it to follow. Plants of many species support a variety of insects. Snakes, salamanders, and meadowlarks eat the insects and northern harriers eat the insect eaters. Thanks to the biodiversity in our hoop, the flow of energy can support them all.



ALLIUM CANADENSE
Wild onion

ASTER NOVAE-ANGLIAE
New England aster

LIATRIS SPICATA
Marsh blazing star

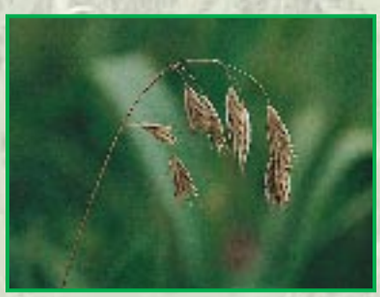
SOLIDAGO JUNCEA
Early goldenrod

ANDROPOGON SCOPARIUS
Little bluestem grass

LIATRIS ASPERA
Rough blazing star

SILPHIUM TEREBINTHINACEUM
Prairie dock

AGROPYRON TRACHYCAULUM
Bearded wheatgrass



BROMUS KALMII
Kalm's brome

ASTER AZUREUS
Sky-blue aster