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“Go visit the Prairies in June, when for scores on scores of miles you wade knee-deep among Tiger-lilies - what is the one charm wanting? — Water — there is not a drop of water there!” Herman Melville, *Moby Dick*, Chapter 1.

INTRODUCTION

Prairie! What does this word remind you of? Perhaps a television program, an old movie, or the series of books by Laura Ingalls Wilder. The word “prairie” is from the French word for a meadow grazed by cattle. It was applied by the early French explorers to the vast inland area of North America that is mostly devoid of trees and instead covered with waving grasses and a vast variety of colorful wildflowers in various shades of yellow, white, pink, and blue. It is an unforgettable experience to be out on a prairie on a beautiful day when dozens of different kinds of plants are in bloom, insects are busily pollinating the flowers, birds are singing, and a brisk wind is blowing.

“The Prairie State” is a frequently used nickname for Illinois, yet few people know what a prairie is or have ever visited one. At the same time, there is a growing awareness of prairies. Prairies are an important part of this state's heritage, and in the past few years there have been numerous conferences, radio programs, popular articles, books and scientific papers on prairies. Unfortunately, most of this information is not readily available. This article provides an introduction to the fascinating world of prairies.

WHAT IS A PRAIRIE?

Prairies are a type of grassland, a landscape dominated by herbaceous plants, especially grasses; trees are either absent or only widely scattered on the landscape. Grasslands occur in many regions, such as the llanos of Venezuela, the pampas of Argentina, the cerrado of Brazil, the steppes of central Asia, the veldt of Africa, and the grasslands of Australia. Approximately 32 to 40% of the world's land surface is, or was, covered by grasslands. Today, grasslands are extremely important for agriculture, and approximately 70% of the food produced for humans comes from these regions.

Grasslands are the largest vegetation type in North America, covering approximately 15% of the land area. Prairies are the grasslands found in the central part of the North American continent. They form a more or less continuous, roughly triangular area that extends for about 2,400 miles (3,870 km) from Alberta, Saskatchewan, and Manitoba southward through the Great Plains to southern Texas and adjacent Mexico and approximately 1,000 miles (1,612 km) from western Indiana westward to the foothills of the Rocky Mountains, covering 1.4 million square miles. Rainfall decreases from east to west, resulting in different types of prairies, with the tallgrass prairie in the wetter eastern region, mixed-grass prairie in the central Great Plains, and shortgrass prairie towards the rain shadow of the Rocky Mountains. Today, these three prairie types largely correspond to the corn/soybean area, the wheat belt, and the western rangelands, respectively.

Illinois lies within an area called the “prairie peninsula,” an eastward extension of prairies that borders deciduous forests to the north, east, and south. This is part of the tallgrass prairie region, sometimes called the true prairie, with the landscape dominated by grasses such as big bluestem and Indian grass as well as a large number of other species of grasses and wildflowers, the latter called forbs. The vegetation sometimes reaches a height of 10 feet or more.

The first European settlers moving westward from the forests of the eastern United States encountered the prairies, which seemed like a vast ocean of grass. The wind caused waves on the surface of the shimmering grasses. One type of wagon used by the pioneers was the “prairie schooner,” a reference to a sailing vessel, further adding to the analogy of the prairie being a large inland sea of grasses. It was easy to get lost in the prairie, especially since there were few trees or other natural features to act as landmarks. Even when on horseback, it was often not possible to see across the prairie to the horizon.

FORMATION OF PRAIRIES

Prairies are one of the most recently developed ecosystems in North America, formed after the period of Pleistocene glaciation. About 18,000 years ago, much of Illinois was covered by glaciers. As the glaciers melted, the land was covered at first with tundra type vegetation, then by spruce forests. As the climate became warmer and drier, between 14,000 and 10,000 years ago, a cool mesic hardwood forest with ash, oak,

elm, maple, birch, and hickory trees replaced the spruce forest. About 8,300 years ago, the climate became substantially warmer and drier, and within the relatively short time of 500 to 800 years, most of the forests in Illinois died out, except along stream banks, and prairies spread over the landscape. For more information about glaciation in North America, see the excellent book by E. C. Pielou, *After the Ice Age* (1991).

During the last 1,000 years the climate has become slightly cooler and wetter, making conditions more favorable to trees. Savannas, characterized by a grassy prairie-type ground cover underneath an open tree canopy, were common in northeastern Illinois. Scattered out on the prairie were patches of rich forests completely surrounded by prairie; these forests are called prairie groves.

Prairies developed and were maintained under the influence of three major non-biological stresses: climate, grazing, and fire. Occurring in the central part of North America, prairies are subject to extreme ranges of temperatures, with hot summers and cold winters. There are also great fluctuations of temperatures within growing seasons.

Rainfall varies from year to year and within growing seasons as well. The prairie region is also subject to droughts. Usually there is a prolonged dry period during the summer months, and in addition there are major droughts lasting for several years that occur every 80–120 years or so. People are often surprised to hear that the annual rainfall in Champaign, Illinois is seven inches MORE per year than London, England (35" vs. 28"), but London rarely has the kind of severe droughts found in central Illinois or the prairie region in general.

Before European settlement, the eastern boundary of the prairie was in a state of flux. During periods of drought, trees died and prairie plants took over previously forested regions. When rainfall was abundant, the trees and forest were able to reestablish themselves.

Prairie fires, started either by lightning or by Native Americans, were commonplace before European settlement. Any given parcel of land probably burned once every one to five years. These prairie fires moved rapidly across the prairie, and damaging heat from the fire did not penetrate the soil to any great extent. Fire kills most saplings of woody species, removes thatch that aids nutrient cycling, and promotes early flowering spring species. Today fire also is beneficial to control non-native herbaceous species that can invade prairie remnants.

A considerable portion of the above ground biomass of a prairie was consumed each year by the grazing of a wide range of browsing animals, such as bison, elk, deer, rabbits, and grasshoppers. This grazing was an integral part of the prairie ecosystem, and therefore grasslands and ungulate mammals coevolved together. Grazing increased growth in prairies, recycles nitrogen through urine and feces, and the trampling opens up habitat for plant species that prefer some disturbance of the soil.

Prairie plants have adapted to these stresses by largely being herbaceous perennials with underground storage/perennating structures, growing points slightly below ground level, and extensive, deep root systems. The tender growing points of prairie plants occur an inch or so below ground and are usually not injured by prairie fires, which move rapidly across the prairie. These underground growing points are also left unharmed by browsing animals. During droughts, the deep roots of prairie plants are able to take up moisture from deep in the soil.

The soil underneath the prairie is a dense tangle of roots, rhizomes, bulbs, corms, and rootstocks. While the above ground part of most prairie plants die back each year; the plants are kept alive from year to year by these underground structures. The roots of prairie plants often extend deeper into the ground than the stems rise above it. For instance, the roots of big bluestem may be 7 feet or more deep, and switchgrass roots more than 11 feet deep. Some of the roots die and decompose each year, and this process has added large quantities of organic matter to the soil. This is one reason why the prairie soils are so fertile.

SETTLEMENT

When European settlers began moving westward from the original eastern States, they encountered large expanses devoid of trees but covered with a sea of tall grasses and wildflowers undulating in the wind. The settlers adopted the French word 'prairie.'

The early settlers, originally from the forested regions of Europe, found the prairies to be rather frightening. They were not used to the hordes of biting insect, intense summer heat and high humidity, bleak, windy winters, and periodic raging prairie fires. Because no trees grew on the prairie, the settlers at first considered the prairies to be infertile. This, plus the need for firewood and construction timber prompted them to build

homes at the edges of the prairies and along rivers, where trees persisted. It was not long, however, before the settlers discovered that the prairie soil was more fertile than forest soil, and was in fact among the most productive soils in the world.

A difficulty the settlers encountered was that their plows, made for forest soils, were not able to cut through the dense prairie sod. It was not until 1837, when John Deere invented the self-scouring, steel-bladed plow in Grand Detour, Illinois, that it was possible to break the prairie sod and farm the prairie on a large scale. Then, in a remarkably short period of perhaps 50 years, the vast majority of prairie in Illinois was plowed and converted to agriculture. Of the approximately 22 million acres of original prairie in Illinois, just over 2,000 acres remain, less than one-hundredth of one percent.

TYPES OF PRAIRIES IN ILLINOIS

The natural landscape of Illinois can be divided into 14 natural divisions, based on topography, glacial history, bedrock, soils, and distribution of plants and animals. Various kinds of prairies occurred in each of these natural divisions. The prairies of Illinois were by no means a homogeneous stand of grasses and forbs. The 1978 Natural Areas Inventory recognizes six main subclasses of prairie. Further divisions are made based on soil moisture classes yielding 23 prairie types in Illinois.

- black soil prairie,
- sand prairie,
- gravel prairie,
- dolomite prairie,
- hill prairie, and
- shrub prairie.

The largest original prairie type was the Grand Prairie (black soil prairie) of central Illinois, with flat landscapes, deep loess soil, and poor natural drainage resulting in wet conditions during part of the year. This kind of prairie is the rarest today because the soil is so productive for agricultural crops.

Along the shores of Lake Michigan and the Illinois, Kankakee, and Mississippi rivers, are extensive sand deposits, often forming dunes or ridges and swales, and several kinds of sand prairies can be found in such areas. Hill prairies are found on dry, southwest-facing, loess-covered hill tops above bluffs overlooking floodplains of rivers, especially the Illinois and Mississippi rivers. In northeastern Illinois some distinctive prairie vegetation can be found in very wet alkaline fens and marl flats.

BIODIVERSITY OF PRAIRIES

According to a document produced by The Nature Conservancy, the tallgrass prairie is “the most diverse repository of species in the Midwest [and] ... habitat for some of the Midwest's rarest species.”

It is rather difficult to give a total number of species that occur on prairies in Illinois. Since the tallgrass prairie ecosystem is recently evolved, there are few endemic species and few species that occur on prairies are restricted to the prairie habitat. Most prairie species also occur outside the prairie region in habitats other than prairies.

Prior to European settlement, the landscape of the tallgrass prairie in Illinois was a complex matrix with specialized communities embedded in the prairie:

- fens,
- pannes,
- sedge meadows,
- marshes,
- ponds,
- kames,
- sand blowouts,
- savannas, and
- prairie groves.

The borders between these communities and the prairie fluctuated on both short and long term bases depending on rainfall, drought, and fire frequency. This ever changing matrix adds to the problem of placing some species into the “prairie species” category. For this discussion we include all species that occupy or utilize during some stage of their life cycle the types of habitats recognized as prairie by the Illinois Natural Areas Inventory; excluded are species restricted to open grass, sedge, and forb-dominated communities classified as wetlands, such as sedge meadows and fens.

PRAIRIE PLANTS

The Illinois Plant Information Network (ILPIN), located at the Illinois Natural History Survey, is a computerized data base listing life-history, habitat, taxonomic and geographic distribution information available for the vascular flora of Illinois. The ILPIN data base records 851 species of plants native to Illinois prairies. Examining the diversity of Illinois prairies by county shows that this diversity differs from region to region. The Chicago region, with its large diversity of prairie types, contains many plant species. Many species also occur along the Mississippi and Illinois rivers. Somewhat surprising is the large number of prairie species in extreme southern Illinois, occurring in the numerous small prairie openings in this part of the state.

This level of plant diversity, however, is not found on any single prairie. A general pattern of increasing diversity with size of a habitat patch is commonly observed across a wide range of taxonomic groups and habitat types. Patches larger than 10 acres contain most of the local diversity of plants, approximately 100-120 species. Unfortunately, fewer than 17% of all remaining prairies in Illinois are above this size threshold. Nevertheless, a substantial amount of floristic diversity is preserved in small habitat patches.

While the number of species of prairie plants found in prairies is rather low compared to the number of forest and woodland species, the species diversity within a given prairie can be quite high, and over 100 species can occur in an area of less than 5 acres. Not all species of plants are noticeable at one given period of time, rather there is a progression of species throughout the growing season.

Only a few species appear and flower very early in the spring, such as the following. The first three are quite rare in Illinois, and all are low herbs.

- pasque flower (*Anemone patens*)
- prairie smoke (*Geum triflorum*)
- prairie dog-tooth violet (*Erythronium mesochoreum*)
- prairie violet (*Viola pedatifida*)
- blue-eyed grass (*Sisyrinchium campestre*)

In late spring to early summer, a wide variety of colorful wildflowers cover the prairie. Most of these are also short plants, seldom exceeding one to two feet in height.

- shooting star (*Dodecatheon meadia*),
- wild strawberry (*Fragaria virginiana*),
- lousewort (*Pedicularis canadensis*),
- hoary puccoon (*Lithospermum canescens*),
- downy phlox (*Phlox pilosa*),
- wild hyacinth (*Camassia scilloides*),
- violet sheep sorrel (*Oxalis violacea*),
- bird's foot violet (*Viola pedata*),
- cream false indigo (*Baptisia leucophaea*),
- needle-grass (*Stipa spartea*), and
- June grass (*Koeleria macrantha*)

During the summer a large number of prairie plants flower, increasing in height as the summer progresses. Some summer plants include the following.

- purple and white prairie clovers (*Dalea purpurea* and *D. candida*)
- leadplant (*Amorpha canescens*)
- butterfly weed (*Asclepias tuberosa*)
- Sullivant's milkweed (*Asclepias sullivantii*)
- bergamot (*Monarda fistulosa*)
- New Jersey tea (*Ceanothus americanus*)
- black-eyed Susan (*Rudbeckia hirta*)
- rattlesnake master (*Eryngium yuccifolium*)
- pale coneflower (*Echinacea pallida*),
- Culver's root (*Veronicastrum virginicum*)
- rosinweed (*Silphium integrifolium*)
- compassplant (*Silphium laciniatum*)
- prairie dock (*Silphium terebinthinaceum*)
- prairie dropseed (*Sporobolus heterolepis*)
- switchgrass (*Panicum virgatum*)
- Indian grass (*Sorghastrum nutans*)
- little bluestem (*Andropogon scoparius*) and
- big bluestem (*Andropogon gerardii*)

Fall is dominated by various members of the sunflower family (Asteraceae or Compositae).

- smooth blueaster (*Aster laevis*)
- sky-blue aster (*Aster azureus*)
- rigid goldenrod (*Solidago rigida*)
- showy goldenrod (*Solidago speciosa*)
- sawtooth sunflower (*Helianthus grosseserratus*).
- downy sunflower (*Helianthus mollis*)
- compass plant (*Silphium laciniatum*)
- prairie dock (*Silphium terebinthinaceum*)
- rosin weed (*Silphium integrifolium*)
- rough blazing-star (*Liatris aspera*)
- tall coreopsis (*Coreopsis tripteris*)

By late autumn some of the plants attain a height of 6 to 10 feet or more. The last plants to flower in the prairie are small plants tucked in among the much taller grasses and forbs.

- downy gentian (*Gentiana puberulenta*)
- nodding ladies'-tresses orchid (*Spiranthes cernua*),

Some of the prairie grasses, such as big bluestem, little bluestem, and prairie dropseed, turn beautiful shades of orange as they go dormant for the winter.

WHERE TO SEE PRAIRIES

Although the majority of original prairies in Illinois have been destroyed, there are still a number of areas where people can see prairies. Some are former pioneer cemeteries that were laid out on the original prairie. Many of these are part of the system of Illinois Nature Preserves. Information on these can be obtained from:

Illinois Nature Preserves Commission
600 North Grand Avenue West
Springfield, IL 62706

Some of the Dr. Robertson's favorite natural prairies are:

- Ayres Sand Prairie (Carroll County)
- Belmont Prairie (DuPage County)
- Bluff Springs Fen (Cook County)
- Bonnie's Prairie (Iroquois County)
- Braidwood Dunes & Savanna (Will County)
- Denby Prairie (Macoupin County)
- Desoto Prairie (Jackson County)
- Foley Sand Prairie (Lee County)
- Freeport Prairie (Stephenson County)
- Fults Hill Prairie (Monroe County)
- Gensburg-Markham Prairie (Cook County)
- Goose Lake Prairie (Grundy County)
- Hanover Bluff (Jo Daviess County)
- Harlem Hills Prairie (Winnebago County)
- Henry Alan Gleason (Mason County)
- Hooper Branch Savanna (Iroquois County)
- Illinois Beach State Park (Lake County)
- Lake-In-The-Hills Fen (McHenry County)
- Lockport Prairie (Will County)
- Loda Cemetery Prairie (Iroquois County)
- Long Run Seep (Will County)
- Manito Prairie (Tazewell County)
- Nachusa Grassland (Lee County)
- Prospect Cemetery Prairie (Ford County)
- Revis Hill Prairie (Mason County)
- Roberts Cemetery Savanna (Montgomery County)
- Robinson Park Hill Prairies (Peoria County)
- Sand Prairie-Scrub Oak (Mason County)
- Searls Park Prairie (Winnebago County)
- Shoefactory Road Prairie (Cook County)
- Site M (Cass County).
- Thomson-Fulton Sand Prairie (Whiteside County)
- Tomlinson Pioneer Cemetery Prairie (Champaign County)
- Twelve Mile Prairie (Effingham, Fayette, and Marion Cos.)
- Weston Cemetery Prairie (McLean County)
- Wolf Road Prairie (Cook County).

Because of the rarity of natural prairies, a number of prairie restorations and reconstructions have been developed in Illinois. A few of these are given below:

- Chicago Botanic Garden, Glencoe (Cook County)
- College of DuPage, Glen Ellyn (DuPage County)
- FermiLab, Batavia (DuPage County)
- Doris Westfall Prairie, Westville (Vermilion County)
- Funks Grove, SW of Bloomington (McLean County)
- Goose Lake Prairie, Morris (Grundy County)
- Meadowbrook Park, Urbana (Champaign County)
- Morton Arboretum, Lisle (DuPage County)
- Peck Farm Park, Geneva (Kane County)
- Rexroat Prairie, Virginia (Cass County)
- Rock Springs Prairie, Decatur (Macon County)
- Weldon Springs State Park (DeWitt County).

PRAIRIE RESTORATION

Habitat restoration has been heralded as an important tool to ameliorate the tremendous impact that humans have had on natural ecosystems. Restoration refers to the purposeful assembly of plant and animal communities in order to reconstruct a stable ecosystem that is compositionally and functionally similar to that which originally existed.

Among the first attempts at habitat reconstruction have involved the tallgrass prairie, and the first of these prairie restorations was started at the University of Wisconsin-Madison Arboretum. Aldo Leopold and John Curtis provided the early leadership, and the early stages of work utilized crews from the Civilian Conservation Corps between 1935 and 1941. The two prairie restorations at the Arboretum, Curtis and Greene, now total more than 110 acres (46 hectares) making them among the largest prairies now occurring in that state. More than 300 species of native vascular plants have been recorded from the restorations, and they provide excellent habitat for numerous prairie insects, small mammals, and birds.

Within Illinois, several prairie restorations have been successful in establishing high biological, or at least botanical, diversity on formerly agricultural or degraded land. A good example is the Schulenberg Prairie at the Morton Arboretum in Lisle, which covers over 100 acres (40 hectares). Initially, volunteers were used extensively to grow plants from seed in a greenhouse, hand-plant the material on the site, and control non-native species. Some direct seeding has been done on additional parts of the site, and there has been considerable species enrichment through transplanting, and this is one of few prairie restorations with a complete phenology of plants, from early spring through late fall. Another diverse restoration is the Doris L. Westfall Prairie in Forest Glen Preserve. Over 120 species of prairie plants native to Vermilion County are found in this site, and most have been introduced through repeated seeding.

A large prairie restoration project is at Fermilab in Batavia, Illinois. The goal is to convert the entire area enclosed by the nuclear accelerator ring into prairie; the ring is 1.2 miles (2 km) in diameter, 3.9 miles (6.3 km) in circumference, and encloses 776 acres (314 hectares), with an area of 455 acres (184 hectares) available for restoration; additional restorations have been planted outside the ring.

A very exciting development in prairie restoration is the conversion of the former U.S. Joliet Army Ammunition Plant into the Midewin National Tallgrass Prairie. Created when President Clinton signed the Illinois Land Conservation Act of 1995 on February 10, 1996, Midewin is the nation's first federally-designated tallgrass prairie. The legislation designated the transfer of a 19,165 acre parcel of land in Illinois from the U.S. Army to the U.S. Department of Agriculture Forest Service. Much of the land will be the subject to a massive prairie restoration project, which is far beyond the scale of previous prairie projects.

However, most prairie restorations are much smaller, often just a few acres, and many are simplistic and contain at most one-fourth to one-half of the plant species that would be found in a natural prairie remnant of comparable size. Several factors are responsible. Because of cost and labor limitations, most prairie restorations are planted with a one-time seeding. Relatively few species (mostly warm season grasses and rather aggressive forbs) are included in the seeding mixes, a complete phenology of species is not attempted, a number of species included in the mixes rarely succeed from seed, and follow-up species enrichment does not take place.

The following steps are often used with prairie restorations:

- 1) Site Preparation – The mode of site preparation depends on the vegetation present on the site before restoration. For a spring planting, soil can be turned over in the fall to kill the roots of perennial weeds by exposing them to winter temperatures. Annual weeds are controlled by working the ground at a shallow depth at least twice during early spring. A dense sod of non-prairie cool-season grass may require the application of a short-lived, non-selective herbicide.
- 2) Seed Selection and Storage – Prairie seed should be of high quality and should originate within 200 miles of the planting site. Most prairie seed needs to be stratified (cold, damp storage) before they will break dormancy. This fact is useful in counteracting the problem of prairie grass outcompeting forbs. Forbs can be stratified for an appropriate time (this varies depending on the species) while grasses are planted without a stratification period. This differential stratification will give prairie forbs an advantage over grasses in the initial phase of establishment.
- 3) Planting Methods – Depending on the species/site conditions, prairie plants can be established by broadcasting seed, by drilling seed into the soil, or by transplanting plants from the greenhouse to the field. A

good way to prevent prairie grasses from outcompeting forbs is to plant in a mosaic and create areas where forbs are disproportionately represented.

4) Fire – Restored areas should be burned regularly, often yearly. Opinions differ (often heatedly) on the advantages and disadvantages of "spring" versus "fall" season burns. In my view, the primary emphasis should be on whether burns are conducted during the growing season or when the plants are dormant. There are situations where burning is not practical or legal, and yearly mowing may be used, although this does not have the same effect.

The success of prairie restorations seems to depend largely upon the techniques used to restore the prairie. While there are a great many prairie restoration that have been planted in the past 20 years or so, few long-term detailed monitoring studies have been undertaken quantifying different techniques. Restorations can be conducted through a process of seeding, planting seedlings, or transferring sod from intact prairie. It appears that transplanting sod increases the likelihood of success in establishing soil microorganisms and a fuller complement of vascular flora. The lack of a full diversity of prairie plants, however, should not discourage the use of restoration techniques to increase the total area of prairie within the Midwest. At present, we do not yet know whether these restored sites will eventually become more diverse. Also, over the short term these restoration sites provide habitat for species that are becoming increasingly rare in the state. The application of ecological theory such as niche quantification, mechanisms of succession and community stability, and spatial heterogeneity and landscape ecology, may improve the success of prairie restorations.

The restoration of ecosystems is a practical science and generally not based on rigidly controlled and monitored experimental plantings. Rather, increases in knowledge are acquired by the arduous process of trial and error. One example is the paper by Peter Schramm entitled "Prairie restoration: a twenty-five year perspective on establishment and management," which was published in the Proceedings of the Twelfth North American Prairie Conference. The reference given below by Scott Weber (1999) have a very good discussion on the issue of seed mixes and suggestions for improvements that will result in prairie restorations and plantings that contain more species diversity, including "conservative" species.

Common ecological problems associated with natural prairies, but which also need to be addressed with prairie restorations, include fragmentation, the suppression of fire, exotic species invasions, and habitat destruction and degradation. Small, isolated fragments tend to support many species at low population levels (thus prone to local extinction) too distant to be enhanced through natural mechanisms of species dispersal. Isolated prairies may also be lacking appropriate pollinator species for successful sexual reproduction of many outcrossing species. The greater edge-to-volume ratios of small sites offer greater opportunities for exotic species invasions since the matrix areas typically are dominated by non-native vegetation. Highly fragmented and developed landscapes also lead to altered fire regimes often eliminating fire from prairie remnants until restoration efforts commence. Fire absence results in ecological changes such as encroachment of woody plants that can eliminate many prairie species. Fire absence can also lead to a severe invasion of exotic cool-season grasses like the ubiquitous species meadow fescue, smooth brome, and Kentucky bluegrass. Over-grazing by domestic stock typically degrades prairie remnants by eliminating many species and promoting the increase of several weedy native and non-native taxa. Soil disturbances such as past efforts at cultivation result in loss of prairie species and opportunities for the establishment of weedy taxa. All of these factors, and combinations of factors, tend to result in loss of species diversity and ecological integrity for all prairie community types. The water regimes of mesic, wet-mesic, and wet prairies have often been altered by the installation, sometimes long ago, of drainage tile and/or drainage ditches in adjacent areas.

While new restorations are an important way to increase prairie acreage in Illinois, they are no substitute for the preservation/restoration of the remnants of original prairie. Even the best prairie restorations do not approach the species diversity of the original systems. Some new restorations are successful at recreating the prairie plant community but, most fall short of replicating the insect, small mammal and soil invertebrate communities. Some restorationists feel we will never reach that point.

LANDSCAPING WITH NATIVE PLANTS

The first European settlers to arrive in Illinois encountered a fabulous natural landscape. The northern part of the state was a mosaic of many prairie types, wetlands, forests, and savannas. Along the magnificent natural shoreline of Lake Michigan were beaches, sand dunes, swales, and cliffs dissected by wooded ravines. The central part of Illinois was primarily tall grass prairie, spectacular at all seasons, dotted with isolated woods known as prairie groves. Towards the west and south the prairies gave way to mature forests and tall cliffs of sandstone and limestone. Occurring at the extreme southern part of the state were swamps filled with giant bald cypress and tupelo trees, reminiscent of a much farther south and lacking only Spanish moss and alligators. What a sight this original and wild Illinois must have been!

The rapid settlement and subsequent economic development of Illinois has dramatically effected the biology of Illinois. Most of this development has been based on the conversion of original native habitat to agricultural fields and areas for industry and urban development. Logging, mining, and pollution have degraded the remaining natural habitats. Regrettably, only a tiny fraction of the original prairies, forests, savannas, and wetlands have survived. In this regard we rank 49th among states (Iowa is 50th).

Today, however, many people are concerned about how human activities are modifying the very nature of our world. Climatic changes, toxic pollution, erosion, diminishing water quality, food shortage, and depletion of our non-renewable energy resources affect everyone's life. Native vegetation soak up pollution, capture and store carbon dioxide, filter and dilute noise, dust, and exhaust pollution, retard erosion and loss of top soil, and prevent siltation of our stream, rivers and lakes. Cultivated landscapes that use native species require less maintenance, such as mowing and the application of fertilizers and herbicides. Using native landscaping also helps activate local interest in environmental issues and stimulate grassroots efforts for an environmentally sound Illinois.

There is a wealth of native plant materials that can be used in landscape situations — trees, shrubs, woodland wildflowers, and prairie plants. Because many prairie plants are beautiful in themselves, they are often cultivated in gardens. In fact, many herbaceous perennial borders throughout the world contain numerous species native to prairies. Examples include:

Forbs:

- Queen-of-the-prairie, *Filipendula rubra*
- Cone-flowers, *Echinacea pallida* and *E. purpurea*
- Obedient plant, *Physostegia virginiana*
- Sunflowers, *Helianthus* species
- Blazing stars, *Liatris* species
- Goldenrods, *Solidago* species
- Black-eyed Susan, *Rudbeckia hirta*

Grasses:

- Prairie dropseed (*Sporobolus heterolepis*)
- Big bluestem, *Andropogon gerardii*
- Little bluestem, *Andropogon scoparius*
- Indian grass, *Sorghastrum nutans*
- Side-oats grama (*Bouteloua curtipendula*)
- Switchgrass, *Panicum virgatum*

As part of the modern “green” or ecological movement, many persons want to use native plants in their home landscapes. This is too complex a topic to cover in this present article, but there are numerous books and magazine/journal articles on this subject. These are available at various libraries. For a table giving various attributes of prairie plants are helpful when growing prairie plants in a landscaped setting, see <http://www.inhs.uiuc.edu/~kent/prairietable1.html>.

CONCLUSIONS

Prairies are wonderful places, and I hope that your interest has been stimulated. Reading about them is a good beginning, but there is nothing like visiting the real thing. I hope that you have the opportunity to experience the vibrant, living world of prairies.

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For more information, here are some references that you may consult.

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when you think of prairies, think of:

fire!