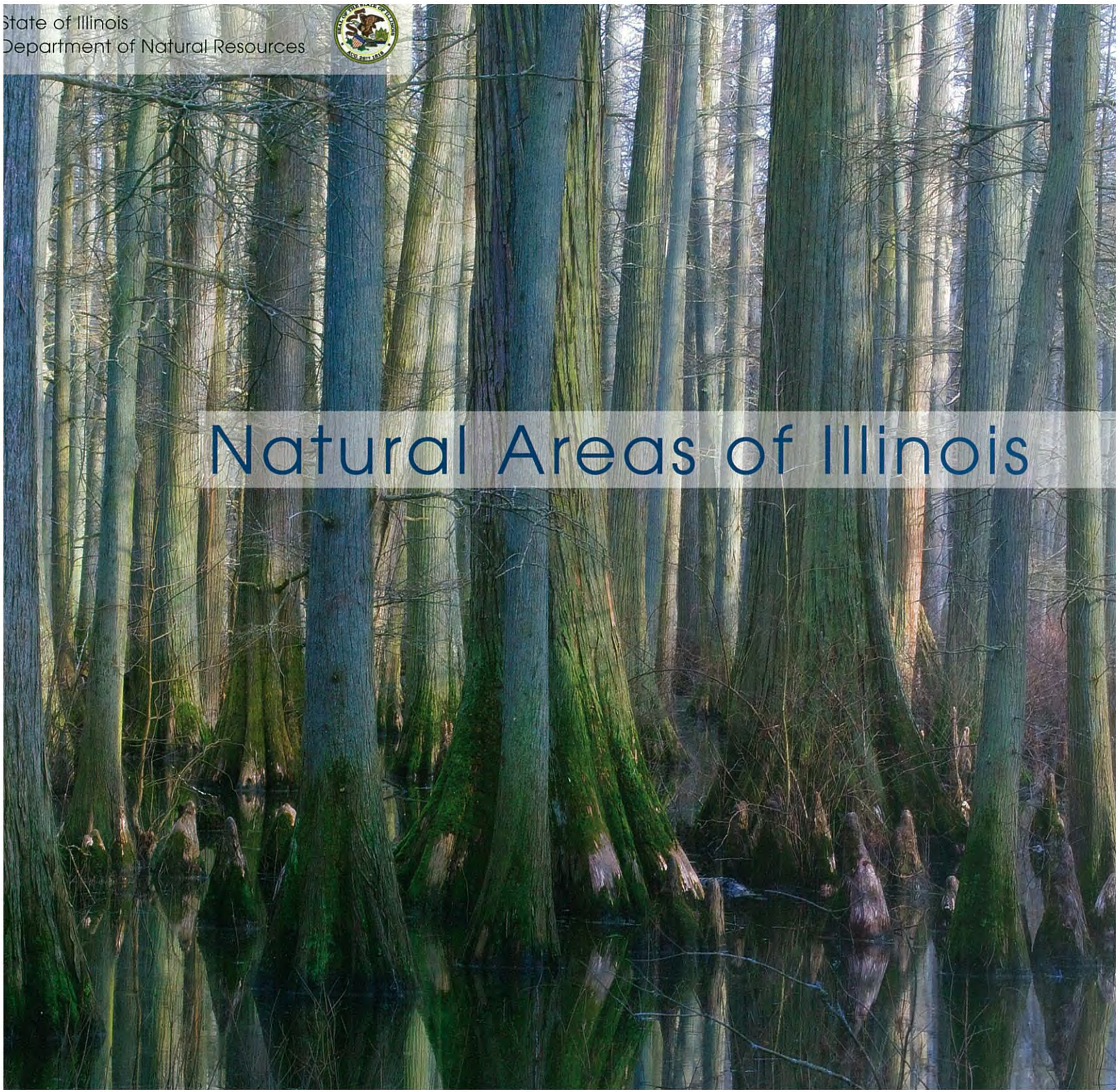
State of Illinois
Department of Natural Resources



Natural Areas of Illinois

"Two hundred years ago Illinois was one immense natural area, dotted with islands of human development. Today, Illinois is an almost completely developed landscape with islands of natural habitat occurring across the state. It's as if a vast quilt of development has settled upon Illinois, but one with threadbare patches that allows remnants of the original landscape to show through. These natural areas are our biological heritage and show us what the landscape of Illinois once was. They act as reservoirs for much of the state's biodiversity and serve as templates for current and future restoration efforts."

—Michael Jeffords, 2003

Natural Illinois

Defining a natural area may seem to be a very personal endeavor. Each of us, operating in our hectic, stressful, day-to-day life has our own vision of "natural area." To a child, it may be an overgrown, forgotten corner of the neighborhood, sheltered and free of adult demands. To a business person it might be the gentle, green, rounded swells of the local golf course. To a parent perhaps the quiet park bench under a spreading shade tree, close enough to keep the children in view, yet far enough away to be alone and relaxed, will suffice. None of these, however, capture the true biological meaning of a natural area. What exactly is a natural area? The answer is not so simple.

Before we can define the term, we must take a brief look at our state. Illinois is long. From north to south it extends over 400 miles. Its borders are mostly defined by irregularly shaped bodies of water that need no superimposed political boundaries. The state is easily discernable on any satellite image of North America. Illinois also lies at the junction of several major natural eco-regions that characterize North America—the eastern forest, western Great Plains, southern Coastal Plain, Ozark uplift, and northern forest. Thus, it is a melting pot for plants and animals that are characteristic of these different landscapes. Each contributes to Illinois' rich diversity of native species.

Natural Divisions

Prior to the 1970s, state ecologists surveyed Illinois on a coarser scale. The state's landscapes were described by differences in topography, glacial history, bedrock, soils, and the distribution of native plants and animals. Using these natural features, Illinois was divided into 14 natural divisions. These natural divisions were defined in 1973 in a technical report authored by then state botanist John Schwegman and colleagues. According to Schwegman, "Natural divisions are geographic regions of a larger entity.... A division contains similar landscapes, climates, and substrate features like bedrock and soils that support similar vegetation and wildlife over the division's area. Natural divisions help conservationists classify land for purposes like protecting natural diversity."

Over the years, Illinois' natural divisions have proven very useful to the natural areas preservation movement within the state. They have helped biologists categorize and prioritize Illinois' 90+ natural community types for preservation efforts. Illinois was one of the first states to have its natural divisions defined and this classification system has guided the Illinois Natural Areas Inventory, the development of the state's nature preserve system, and the Illinois Natural Areas Plan.

Cover: Heron Pond Nature Preserve (Cache River State Natural Area) in Southern Illinois on an early winter day. *Left:* The view from Sentinel Nature Preserve (Mississippi Palisades State Park) of the Upper Mississippi River. *This page:* White Pelicans along the lower Illinois River. *Above:* The Natural Divisions of Illinois and the distribution of natural areas in Illinois.

The "Inventory"

Historical accounts of Illinois noted huge trees, vast grasslands, and extensive wetlands. The state was chiefly a combination of flat, "marshy" prairies and forested hilly country. Interspersed in these habitats were a variety of other habitats, including sand dunes, bogs, fens, sedge meadows, savannas, and swamps.

Unfortunately, little of that original landscape remains. Illinois ranks an unenviable 49th among states in the percentage of natural lands surviving. Of the original 22 million acres of prairie, only 2,300 acres (0.01%) remain. Of the 14 million acres of forest present in 1820, only 13,500 acres (0.1%) of undisturbed forest survive. Many of our wetlands have been, and continue to be, drained before they can be biologically inventoried to determine their value.

How do we know these seemingly disheartening numbers? During the 1970s, Illinois conducted the Illinois Natural Areas Inventory (INAI), the first statewide survey of its kind in the U.S. The inventory's mission was to identify, evaluate, describe, and classify areas remaining in a natural state and little disturbed since the mid-1800s. This three-year project was completed in 1978. Every acre of Illinois was studied with maps and aerial photographs. Sites were visited and surveyed, knowledgeable citizens were interviewed, and historical records examined. As much information as possible was gathered about each site. The words of British paleontologist Richard Fortey, although he was writing about fossils, sums up what the inventory was about and its accomplishments. He says, "These remains are just scraps, bits and pieces, odds and ends .... The skill of the scientist ... lies in being able to identify small pieces of the whole .... Every morsel of the past is useful."

The inventory revealed that no more than .07% of Illinois' land reflects the original natural conditions before settlement—indeed, a very tiny morsel. For every million acres of black-soil prairie that originally existed in Illinois, only 39 acres remained. Of the 1,089 significant natural areas that were identified, only 610 were of the highest quality.

While natural areas occur in all but 3 of Illinois' 102 counties, they are not evenly distributed (see map on page 3). It should come as no surprise that natural areas are absent from the flat prairie land that is almost completely farmed. After all, some of the best soil on earth formed under Illinois' prairies. Most of the natural areas are concentrated in the hilly regions, along rivers, and, surprisingly, near cities. Just being on the "inventory" certainly did not provide protection for a site. In the 18 months between autumn 1978 and spring 1980, Illinois lost 3 more prairies and 7 forests, while portions of other natural areas were destroyed. However, armed with the INAI, a significant percentage of the original 610 high-quality areas have been protected. But how does the INAI define a natural area?

Left: Sand prairie (Green River Conservation Area) in northern Illinois. *Above:* Fringed gentians occupy a few calcareous wetlands in northern Illinois.

Baltimore checkerspot on sandstone ledge at Bell Smith Springs Recreation Area (Shawnee National Forest) in southern Illinois.

Olympia marble on bird's foot violet (Ayers Sand Prairie Nature Preserve) in northwestern Illinois.

Community Classes

Another important step in the process was defining and describing the natural communities found in Illinois. Natural communities are specific groups of organisms that interact with each other and their environment. The community classes found in Illinois include: forest, woodland, prairie, savanna, wetland, lake and pond, stream, cave, bedrock, and shore. These communities were further subdivided into different types, based on soil, slope, moisture, climate, and the plants and animals adapted to a site's conditions.

Forest

The forest community includes lands that are dominated by trees, with an average canopy cover of 80% or greater. There are three different types—upland, sand, and floodplain. These are mostly distinguished by their topography and soils. In addition, Illinois forests are categorized by the types of trees present—e.g., oak-hickory and elm-ash-maple.

Woodland

The woodland community is characterized by a broken or incomplete canopy with 50–80% coverage. Trees have spreading branches that allow enough light onto the forest floor to support an abundant and diverse ground vegetation. The woodland community exists on level to rolling ground, on upper slopes as well as ridges and blufftops, under dry conditions, or in the presence of fire. Five subclasses have been suggested for woodlands—closed barrens, closed woodland, open woodland, flatwoods, and sand woodland.

Prairie

Prairies are largely treeless grasslands dominated by warm-season grasses and forbs. Trees cover less than 10% of the land. Six types of prairie are recognized in Illinois—typical tallgrass prairie on silt-loam soils, sand prairie, gravel prairie, dolomite prairie, hill prairie, and shrub prairie. Further divisions may be defined based on soil moisture and soil type, yielding a somewhat bewildering 23 prairie types in Illinois!

Savanna

Savannas have scattered, open-grown trees and form an intermediate landscape between prairie and woodland. They have an airy, open-canopied structure (10–50% coverage), are dominated by oaks, have a ground cover rich in tallgrass prairie species, and depend on fire for maintenance and stability. Three savanna types—typical savanna, sand savanna, and barren—are distinguished by the amount of soil moisture.

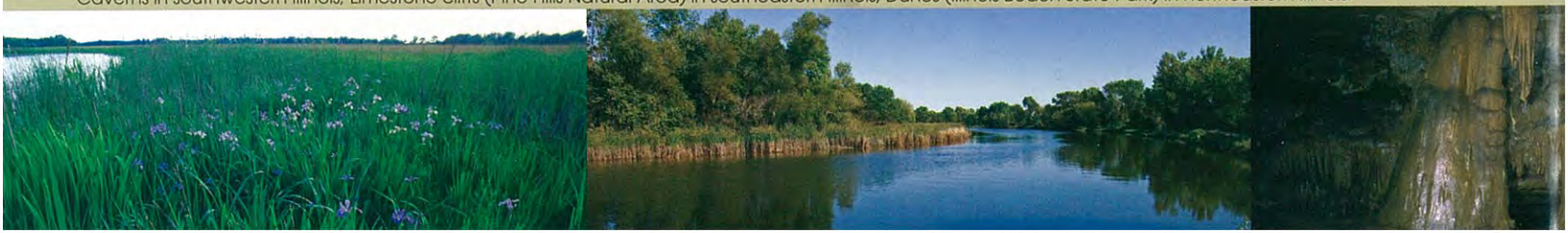
Wetland

Wetlands occur where the water table is at or near the surface. Their soils are hydric (developed in low-oxygen conditions mostly under water). They are occupied by plant species adapted to life in water or saturated soils. Wetland types are marsh, swamp, bog, fen, sedge meadow, panne, and seep and spring. These are recognized mainly by differences in water chemistry and vegetation.

Lake and Pond

Lakes and ponds are open, standing bodies of water. Ponds are small, nonseasonal, and less than 20 acres in size. They are shallow enough to allow rooted, aquatic vegetation to grow in them. Lakes are larger (greater than 20 acres), deeper than ponds, and may have wave action that usually produces a semi-barren, wave-swept shore. Portions of a lake are too deep to support rooted aquatic plants. Two types are the typical lake and great lake (Illinois borders Lake Michigan).

Top, left to right: Floodplain forest (Robert Allerton Park) in central Illinois; Woodland (Lake Argyle State Park) in western Illinois; Pale purple coneflowers and bee balm along railroad prairie; Hooper Branch Savanna Nature Preserve in east-central Illinois; Tamarack trees in fall (Volo Bog Nature Preserve) in northern Illinois. *Bottom, left to right:* Wetland vegetation often dominates a natural pond's edge; Fox River (Chain O' Lakes State Park) in northeastern Illinois; Formations in Illinois Caverns in southwestern Illinois; Limestone cliffs (Pine Hills Natural Area) in southeastern Illinois; Dunes (Illinois Beach State Park) in northeastern Illinois.



Stream

Streams (either rivers or creeks) are natural communities with permanently flowing water throughout the year. Creeks are distinguished from rivers by having watersheds of less than 200 square miles. The individual streams are also described according to gradient (how steep a slope the stream has, which determines water speed) and overall size. Our waterways range from small, woodland creeks to major rivers, such as the Mississippi, Ohio, and Illinois.

Cave

A cave is a natural underground cavity usually large enough for a human to enter and it often has a section that receives no sunlight. There are two communities within a cave—terrestrial (basically air-filled cavities in the rock) and aquatic (pools, streams, and waterfalls within the cave).

Bedrock

Bedrock communities are established where the soil is thin or absent and the parent material (usually bedrock) is at or near the surface. These communities are in a perpetual stage of early succession. Either natural disturbances or the parent material itself prevents these communities from maturing. There are two subclasses of this community—glade and cliff.

Glades are local areas in the forest where bedrock is at the surface. Vegetation is often sparse with large areas of exposed bedrock. Glades are defined by their rock type—sandstone, limestone, or shale.

Cliffs are vertical exposures of bedrock and can range from a few feet to about 300 feet high in Illinois. Soils are usually nonexistent and communities are again defined mostly on the basis of rock type or formation—sandstone, limestone, dolomite, sandstone overhang, and eroding bluff.

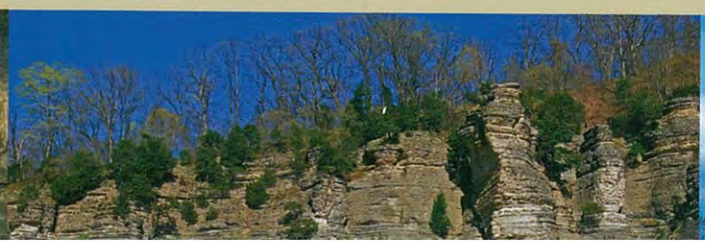
Shore

In Illinois, the major lakeshore community occurs in the northeastern corner of the state along Lake Michigan. Wave action creates a zone of no vegetation, backed by a larger dune that can have plants adapted for this ever-changing landscape in a perpetual state of succession. While the dunes that form here are not particularly high, they support a unique community dominated by northern species of plants.

Criteria for Natural Area Eligibility— Categories

To qualify for the Illinois Natural Areas Inventory, a site must have significant features that are evaluated for their quality and statewide significance. Five Categories are used.

- *High-quality Natural Communities*—A high-quality natural community is a collection of flora and associated fauna that are representative of natural conditions that occurred in Illinois prior to 1800.
- *Specific Suitable Habitat of Endangered and Threatened Species*—Habitat for a threatened and endangered species (listed) comprises the physical and biological features of the landscape that a listed species requires to survive and reproduce.
- *Illinois Nature Preserves, Land and Water Reserves, Natural Heritage Landmarks*—These sites are identified and voluntarily protected by landowners as state-dedicated Nature Preserves, registered as Land and Water Reserves, or enrolled as Natural Heritage Landmarks.
- *Outstanding Geological Features*—Sites that are representative examples of the state's geologic history.
- *Unusual Concentrations of Flora and Fauna*—Land and waters that possess unusual biological features or support extraordinary rich or diverse concentrations of flora and or fauna.



Natural Area: Defining

At last we come to our definition of a natural area. In its most basic form, a natural area contains relatively undisturbed terrestrial, wetland, or aquatic natural communities with flora and fauna that reflect as nearly as possible the conditions at the time of European settlement.

Protecting

Overseen by the Illinois Nature Preserves Commission, three land protection options are available to public and private landowners.

- Dedication as an **Illinois Nature Preserve**—A dedicated nature preserve offers permanent protection and only high-quality natural areas qualify for this. The owner retains custody of the site, but voluntarily restricts future uses of the land so that it may be preserved and natural conditions perpetuated.
- Registration as an **Illinois Land and Water Reserve**—Land and water reserves support either significant natural heritage features or archeological resources. The Land and Water Reserve determines allowable uses for the land and stipulates management objectives. This agreement may be for a term of years or permanent.
- **Natural Heritage Landmark**—This program introduces a landowner to the concept of natural area protection and allows the state to assist with the management of the natural area. This voluntary program increases the understanding of the value of natural areas and encourages their preservation. The agreement may be terminated with 60 days notice.

Visiting

Visiting a natural area is not difficult, and many of us have probably been to one and not even been aware of it. Many of our state parks contain natural areas or nature preserves. In far southern Illinois the Cache River State Natural Area is one huge natural area at over 14,000 acres. Iroquois County State Wildlife Area, at 2,480 acres, is a conservation area with 480 acres designated as the Hooper Branch Savanna Nature Preserve and 2,000 acres as an Illinois Land and Water Reserve. While many nature preserves are contained within state and county parks, others occur as isolated examples of prairies, forests, and wetlands, and may not be easy to find or access. For a listing of state nature preserves log on to http://dnr.state.il.us/INPC/NPdir.htm and click on the region you are interested in.

Left page: Great Blue Heron in southern Illinois marsh. *This page: left to right, top to bottom:* Net-winged beetles (Hooper Branch Savanna Nature Preserve); Sandstone canyon (Shawnee Hills) of southern Illinois; Zebra swallowtail on vervain (Revis Hill Prairie Nature Preserve) in west-central Illinois.

Nature Preserves: A Final Note

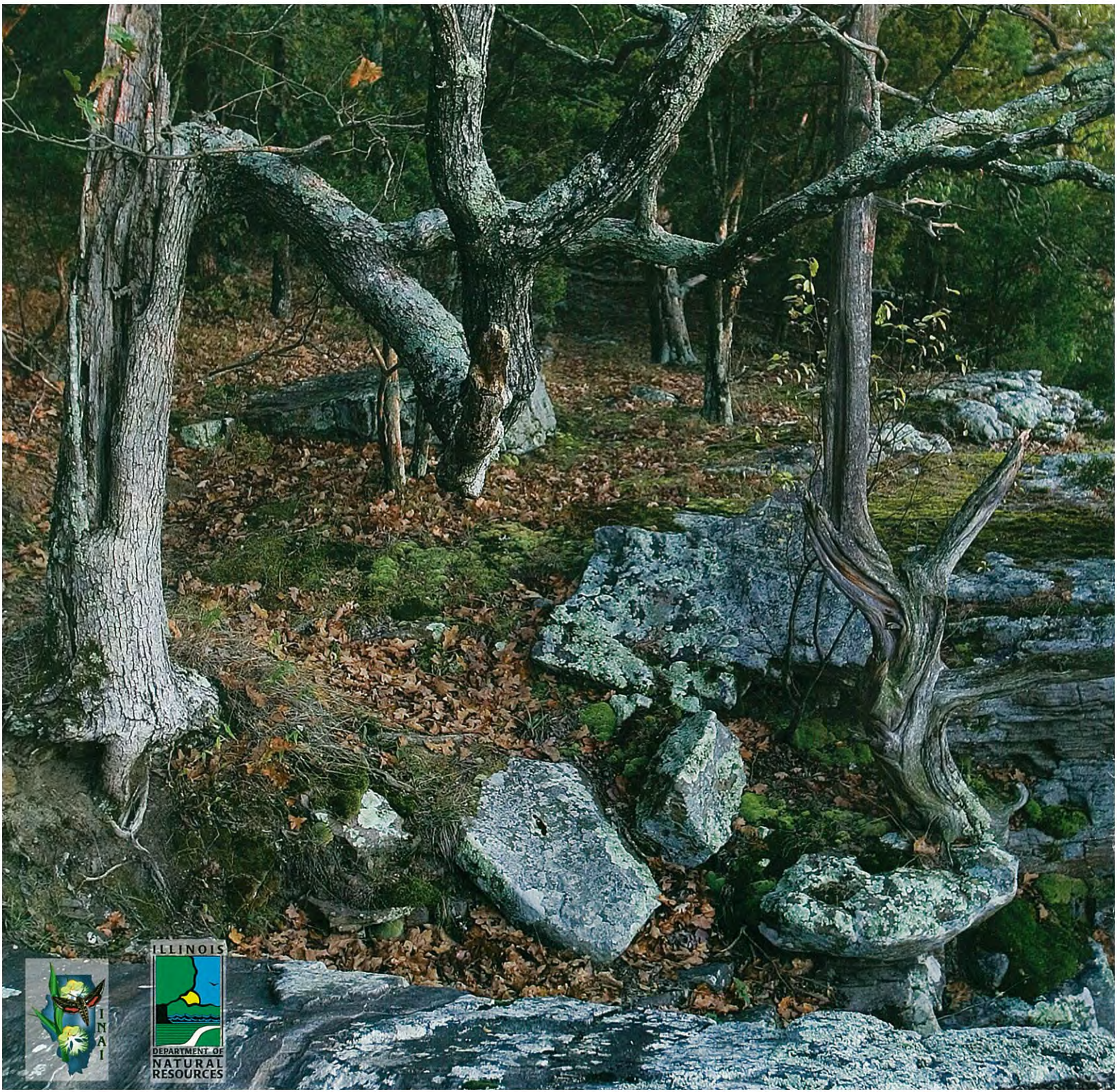
As you have learned, when natural areas are protected into the future by state law, we call them Nature Preserves. Ranging in size from 1 acre to more than 2,000 acres, these lands are the last remnants of the Illinois wilderness. Without this protection, many of these exceptional areas would be lost forever. In 1963, the Illinois General Assembly established the Illinois Nature Preserves Commission (INPC). It was charged with founding a system of natural areas representative of Illinois' landscape. This commitment to preserve the state's rare natural treasures made Illinois the first state to create such an innovative land protection program. The INPC is now a national model. In 1992, the INPC received international acclaim when it was recognized at the Earth Summit in Rio de Janeiro, Brazil, as an "efficient and effective model of how to provide long-term protection for high-quality natural areas." Dedication as a nature preserve provides the greatest amount of protection that natural land can receive in Illinois.

Aldo Leopold wrote, "The last word in ignorance is the man who says of an animal or plant, 'What good is it?'" The scientific value of natural areas cannot be questioned. They are resources from which knowledge emerges or from which new knowledge can be derived. They are reference areas for studies relating to air, water, and soil pollution and many other aspects of land management. They are indispensable outdoor classrooms. Perhaps most importantly, natural areas are sources of beauty and inspiration. They serve as living, dynamic entities, examples of the rich and diverse natural world from which our state and our country were created.

A.W. Herre, a botanist at Stanford University, spent part of his boyhood on a farm in Tazewell County. "From the end of spring 1873, until the late summer of 1878, it was [his] privilege to see and enjoy life of a great tract of virgin prairie." Herre published his remembrances titled, *An Early Illinois Prairie*, in 1940 in the journal *American Botanist*. Through his eyes we begin to "see" the vast landscape that is relegated to the written memories of those fortunate enough to have experienced it firsthand. He concludes with, "What a pity that some of it could not have been preserved, so that those born later might enjoy its beauty also."

While we no longer have the luxury of standing on a hillock or an old glacial moraine and viewing a limitless expanse of prairie or forest, thanks to Illinois' natural areas and the programs that identify and protect them, we have remnants of these landscapes. Many have been preserved, so that our and future generations may experience, through the natural wonders of these places, the essence of Illinois.

Left: Purple cone flowers (Cave Creek Glade Nature Preserve) in southern Illinois. *Above:* Great white trillium on display (Sentinel Natural Preserve) in northwestern Illinois. *Back cover:* Forest growing on a sandstone outcrop (Shawnee Hills) in southern Illinois.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