



Cover photo NPS/Bob Daum

Nature often moves in mysterious ways, but here at Indiana Dunes National Lakeshore a rule of thumb may be observed: age is a function of distance from the lakeshore. The closer to the lake, the younger the feature, whether sand dune, wetland, or forest. You can gain an appreciation of the forces that shaped this land by wandering back from the water's edge past dunes grasped by strands of marram grass, half-buried cottonwoods, and rush-filled ponds and marshes, and through hardwood forests and remnants of once-vast prairies.

The dunelands of southern Lake Michigan are renowned for stretches of uncrowded beaches, bird-filled marshes, oak and maple forests, and towering dunes. Shoreline sand dunes are created when wind blowing off Lake Michigan lifts grains of sand and transports them inland until plants and hills slow the wind and it drops its cargo. On windy days you can place an obstacle on the beach and watch a miniature dune form behind it. The process is more apparent on some dunes. Mt. Baldy is a "live" dune that

marram grass and cottonwood trees cannot hold in place. Mt. Baldy's dynamics become evident if you view it today, next month, and next year.

Perhaps the "singing sands" have caught your ear. The sands of Indiana Dunes have a special quality that makes music for those who listen. Walk along the shore and listen for an unusual sound as you stride just above the water's edge. The combination of quartz crystals, moisture, pressure, and friction from your feet creates a musical tone—a clear ringing sound of singing sand. Only a few beaches worldwide are known to sing with this same tone.

If you favor a relaxing walk in woodlands, along dunal ponds, or through native prairies to observe wildflowers or songbirds, the Lakeshore area offers many trails and interpretive programs, including those at Pinhook Bog, Heron Rookery, and Hoosier Prairie. Hoosier Prairie, a state nature preserve managed by the Indiana

Department of Natural Resources, is the largest tract of ancient prairie in Indiana. You may wish to take a camera or sketch book as you investigate the Lakeshore's varied ecology, for each area offers a dramatic glance at nature's handiwork.

People have long valued this bountiful land. Native Americans traveled the dunes along major routes between the Great Lakes and the Mississippi River. Miami and Potawatomi Indians hunted here and used local plants for food and medicine. U.S. Highway 12 follows the Calumet Beach Trail, which linked yesterday's Forts Dearborn and Wayne—today's Chicago and Detroit—and points in between. In 1822 Joseph Bailly, a fur trader who exchanged blankets and guns for furs supplied by Indians and voyageurs, established a trading post and raised a family at the Bailly Homestead. Chellberg Farm, begun in 1872 by Swedish immigrants Anders and Johanna Chellberg, provides a good picture of early agriculture. The Chellberg family farmed the land for nearly a century.

Economic interests have determined much of the land use, as witnessed in the industrial areas, but conservation campaigns beginning in the 1900s sought to halt this trend. An attempt in 1916 by Stephen T. Mather, director of the newly-created National Park Service, to establish a Sand Dunes National Park failed, but partial success was realized in 1923 with the creation of Indiana Dunes State Park. In the 1960s Illinois Sen. Paul H. Douglas, fearing that commerce would swallow the remaining lake front and dunes, joined the crusade to save the dunes begun a decade earlier by Dorothy Buell, a former school teacher and the founder and first president of the Save the Dunes Council of northwest Indiana. Through these efforts, Indiana Dunes National Lakeshore was authorized by Congress in 1966. In recognition of her contributions, Congress designated the principal visitor facility as the Dorothy Buell Memorial Visitor Center. Whether you walk the musical beaches or explore the woods and dunes, you can treasure the beauty preserved at Indiana Dunes.



Building castles



NPS Maple Sugar Time



NPS Melting shelf ice at West Beach



NPS Henry Cowles



NPS Spring bloom at West Beach



NPS Beach combing

NPS



NPS/Carole Lerner

"Botanically the Indiana Dunes are a floral melting pot...(where) one may find plants of the desert...rich woodlands...pine woods...swamps...oak woods...and prairies together in such abundance as to make the region a natural botanical preserve...."

Dr. Henry Cowles

Plant Succession

Professor Henry Cowles found the Indiana Dunes and Lake Michigan shoreline a natural laboratory for developing important principles of plant succession. He arrived at the University of Chicago on a graduate fellowship in 1896 and retired as chairman of its botany department in 1934. He and his students conducted extensive field research in this region, and his dedication to deciphering its bewildering diversity of plant life led to the naming of Cowles Bog in his honor.

Thanks to the Ice Age, environments collided and deposited their remnants here at Indiana Dunes. The resulting strange combinations of neighboring plants attracted Cowles's interest.

Arctic bearberry grows next to prickly pear cactus, and southern dogwoods grow just over a dune from northern jack pines. Something else puzzled Cowles. Plant life differs dramatically from dune ridge to dune ridge. Plants growing near the lake front are not usually found farther inland, and inland trees cannot be found on dunes near the beach. He wondered why. Cowles observed that as plants grow on a site they change it. When pioneer plants have changed the site sufficiently, the way is prepared for other plant species. New plants can now be more successful, so they crowd out the pioneers. For example, once marram grass becomes established on a dune, that dune changes from an area with full sun to one with partial

shade. As grass blades decompose, they build humus. Where there was only sand, now there is the beginning of soil. Change sets in. Cowles pieced together the puzzle and formulated basic ecological concepts.

These changes do not happen quickly. At the close of the Ice Age about 10,000 years ago, the landscape was covered with spruce and fir forests like those now found in Canada. As the climate warmed and glaciers melted to the north, the forests retreated. Some arctic plants, such as bearberry and jack pine, persisted while plants forced south by the Ice Age reappeared. Dry sand areas with minimal soil made homes for prickly pear cactus. Red oaks and sugar ma-

ples grew nearby in the deeper soil and humid conditions of protected areas.

The curious landscape that caught Cowles's inquiring eye is still here for you to explore. Ponds are scattered among younger dunes, which are closer to the lake. Marshes are found on old lake bottoms between long dune ridges. Sphagnum bogs, with their unusual environment and vegetation, are tucked in glacial moraines. These bogs and marshes, which are gradually filling with vegetation, will eventually become meadows, then forests.

The Glacier—Nature's Landscape Architect

The landscape reveals natural processes at work here for millions of years. From the piles of rock and sand at Indiana Dunes, the geological story of the Great Lakes can be told in miniature. During the million and a half years of the Ice Age, massive sheets of ice crept southward across the continent in four waves. The last, called the Wisconsin Glacier, reached as far south as central Indiana. Following the bed of an ancient northward-flowing river, the mile-thick glacial lobe that would become Lake Michigan rested heavily upon the land. In its gradual advances and retreats over the eons, the

glacier crushed all beneath it, scouring lake beds from river valleys, grinding rocks into pebbles. If you look at a map of North America and note the positions and dimensions of the Great Lakes, you may sense the powerful forces that created them. The glaciers' stupendous leveling and bulldozing effect may also become apparent as you explore the park.

The receding Wisconsin Glacier paused about 16,000 years ago near present-day Valparaiso, Ind., and deposited rocks and soil of glacial till in a ridge of rolling hills called the Valparaiso

Moraine. Between the moraine and the present shoreline of Lake Michigan is a series of similar lower ridges, further evidence of the glacier's remodeling activities. Stretching from the Valparaiso Moraine to the beach, these ridges of moraines and dunes mark the shores of a once larger lake that shrank by stages after the glaciers disappeared. You may not recognize such ridges today because they are concealed with vegetation, but beneath the veneer of plants and soil stretch massive sand piles just like those at today's lake front. Note that there are no mountains here, in the sense of the Rockies or

Alleghenies, to interrupt the relative flatness of the Indiana Dunes area; all interruptions are deposits of sand or rock. As you drive through road cuts you see no massive bedrock to shape the land, only remnants of glacial moraines and former lake dune ridges.

As the glacier melted, plants colonized in its wake. The strange environment called Pinhook Bog was once part of this massive glacial system. Formed from an ice chunk marooned by the retreating glacier some 14,000 years ago, the bog is now filled with sphagnum moss and

hosts unusual vegetation, from deciduous evergreens to insect-eating plants and delicate orchids. The shape of today's beach front is still changing, reminding us that the geological story of the Indiana Dunes National Lakeshore has no end. Like the other Great Lakes, Lake Michigan shapes what it touches—the land, the climate, and the lifestyle of people who live near it.

Paul H. Douglas

The National Lakeshore is dedicated to Senator Douglas (1892-1976) in grateful recognition of his efforts to preserve the Indiana Dunes. The Paul H. Douglas Center for Environmental Education is a fitting tribute to a man who worked tirelessly in a decade-long effort to establish a national park at the dunes. The Douglas Center has live animals and environmental education programs that allow students to become acquainted with ecology and environmental sciences.

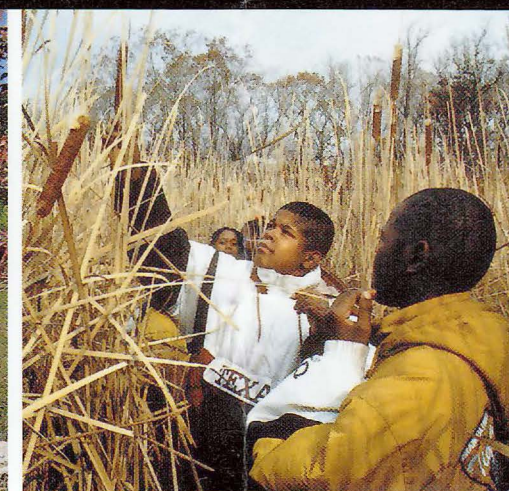
Exploring Indiana Dunes



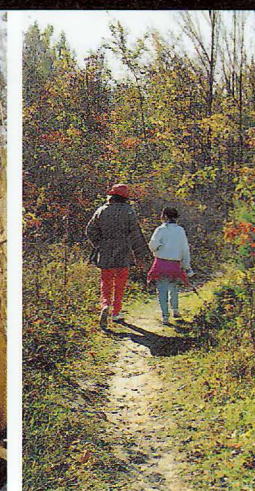
Swimmer's paradise



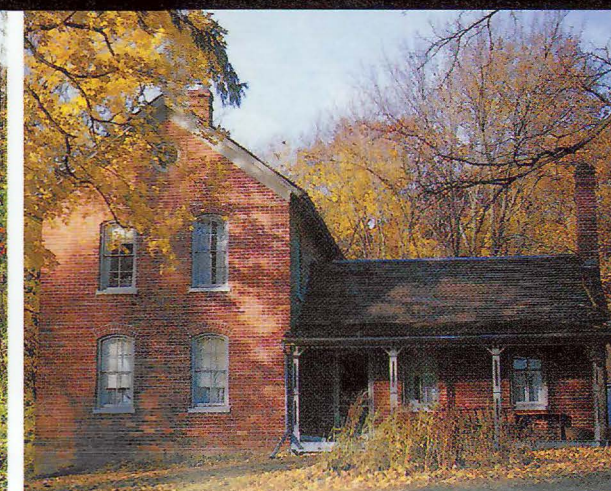
Duneland Harvest Time



Environmental education near the Douglas center



Hiking the dunes



Chellberg Farmhouse



Accessible trails

Visiting the Lakeshore

Visitor Center Begin at the Dorothy Buell Memorial Visitor Center, located at U.S. Highway 20 and Indiana 49. Here are activity schedules, information, and a bookstore. Open daily except Thanksgiving, December 25, and January 1.

Beaches Use caution when swimming in the lake. The bottom is uneven with holes and deep drop-offs. To avoid dangerous currents, do not swim or play in waves or rough water. Beach parking (fee in summer), Porter Beach, Kemil Beach, Dunbar Beach, Lake View, Central Beach, and Mt. Baldy. Showers and restrooms are at West Beach. Restrooms are at Lake View, Mt. Baldy, and Kemil, Porter, Dunbar, and Central beaches.

Dune Climbing Prevent erosion; hike only on marked trails.

Hiking and Walking Here are highlights of the park's trails: **Bailly-Chellberg**: historical structures, woods, river, floodplain; **Hoosier Prairie**: wet prairie; **Inland Marsh**: marsh woods, dunes; **Little Calumet River**: woods, river floodplain, old fields; **Ly-co-ki-we**: woods, marsh; **Miller Woods**: dunes, ponds, woods, beach; **Mt. Baldy**: dunes, woods, vistas, beach; **Pinhook Bog**: classic bog plants (scheduled tours only); **West Beach**: dunes, woods, prairie, beach,

Long Lake, ponds; **Dune Ridge**: woods, dunes, vistas; **Calumet Bike Trail**: along edge of woods and prairie. **State park trails**: dunes, beach, marsh, woods.

Accommodations and Camping Motels, food, and service stations are nearby. The national lakeshore, Indiana Dunes State Park, and commercial campgrounds offer camping. Dunewood Campground in the national lakeshore has restrooms, showers, and 54 drive-in and 25 walk-in sites. There are no electrical hookups. All facilities and some campsites are accessible to persons with disabilities.

Fishing and Boating Fishing is allowed under federal, state, and local laws. You need an Indiana fishing license and trout-salmon stamp. Watch for drop-offs in creeks and along beaches. The Little Calumet River has dangerous currents. Boaters must stay 500 feet from marked swimming areas, even when beaching. Nearby communities offer boat launching facilities. Personal watercraft are prohibited.

Picnicking Tables and grills are provided throughout the park. Shelters and restrooms are at West Beach, Bailly-Chellberg Visitor Center, Lake View, and Tremont areas.

Horseback Riding Ly-co-ki-we Trail is the only horse trail. There is no horse rental concession. The trail is open to horses from mid-March to mid-December.

Winter Activities Hiking, cross-country skiing, and snowshoeing are popular. Lake shelf ice is dangerous; stay on solid ground whenever ice is forming. Snowmobiling is not permitted.

Protected Ecosystems Bogs and prairies provide shelter and breeding sites for threatened and endangered species; some areas may be closed. Ask at the visitor center about interpretive and nature programs.

Environmental Education The Douglas center and other park areas present day-use environmental education programs. The Indiana Dunes Environmental Learning Center operates a residential facility for schools and other organizations. For information on day programs, call 219-926-7561. For the Learning Center's residential programs, call 219-395-9555 or write 870 Howe Road, Chesterton, IN 46304.

Special Activities Activities include year-round programs, March's Maple Sugar Time, and September's Duneland Harvest Time.

State Park The park offers dunes, trails, camping, and naturalist programs. Special fees and regulations apply. For information

write: Indiana Dunes State Park, 1600 North 25 East, Chesterton, IN 46304-1142; call 219-926-1952; or the park website www.state.in.us/dnr.

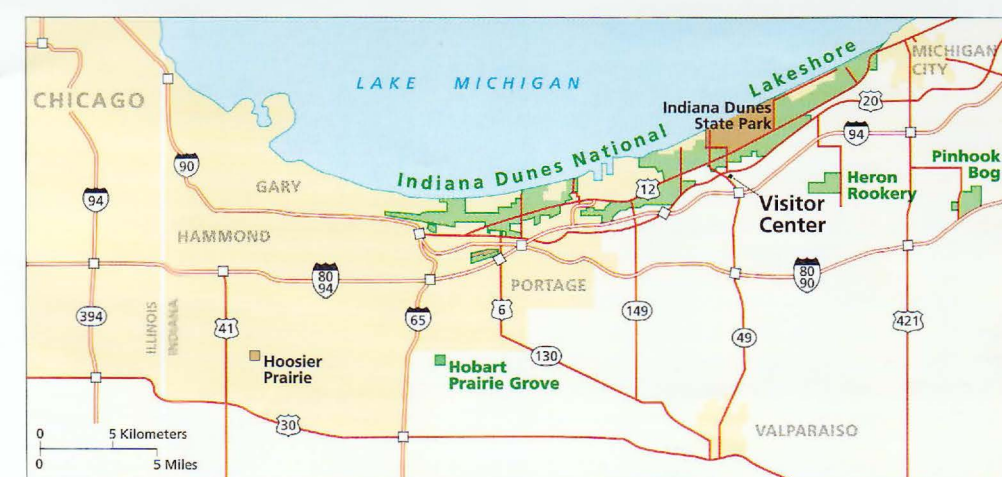
Regulations Plants, animals, and natural and historical features are protected by law; do not destroy or disturb them. Some areas within park boundaries are private property; do not trespass. Hunting and trapping are prohibited. Firearms must be cased, broken down, and packed away. Ground fires are prohibited. Use fire grates, grills, or portable charcoal, gas, or liquid fuel stoves. Pets are not allowed in swimming areas and must be leashed at all times. Protect yourself from sun, poison ivy, and ticks, mosquitoes, and other biting insects.

Hang-gliding is allowed at Mt. Baldy, by permit only. Bicycles are permitted only on designated trails. Motorized vehicles must stay on roads.

Emergencies Bailly Ranger Station is at park headquarters on Mineral Springs Road south of U.S. 12. Contact a ranger or call 1-800-727-5847 (1-800-PARK-TIP).

For More Information Indiana Dunes National Lakeshore 1100 North Mineral Springs Road Porter, IN 46304-1299 219-926-7561 www.nps.gov/indu

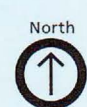
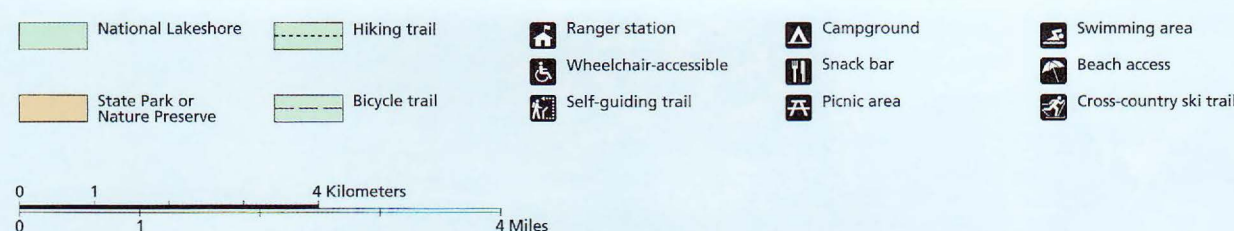
Also visit the National Park Service website at www.nps.gov.



Indiana dune country stretches along southern Lake Michigan. Over 15,000 acres are preserved in Indiana Dunes National Lakeshore, Indiana Dunes State Park, Hoosier Prairie, Hobart Prairie Grove, Heron Rookery, and Pinhook Bog.

Getting Here Many auto routes are available. By rail, South Shore Railroad from Chicago or South Bend stops at Miller, Ogden Dunes, Dune Park (Indiana 49), and Beverly Shores near Dunewood Campground. For park accessibility information, check the park website (www.nps.gov/indu) or call 219-926-7561.

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Water Safety Lake Michigan waters can be hazardous. Rip currents occur frequently during periods of high wind and waves. During the winter, shelf ice forms along the lakeshore and is never safe to walk on. Check with local authorities about conditions and potential hazards.

