

1974  
State Park Guide 1

# GEOLOGIC STORY OF POKAGON STATE PARK

LEGACY OF INDIANA'S ICE AGE

Artist's concept of the melting edge of the towering Saginaw ice lobe as it might have appeared about 12,000 B.C.

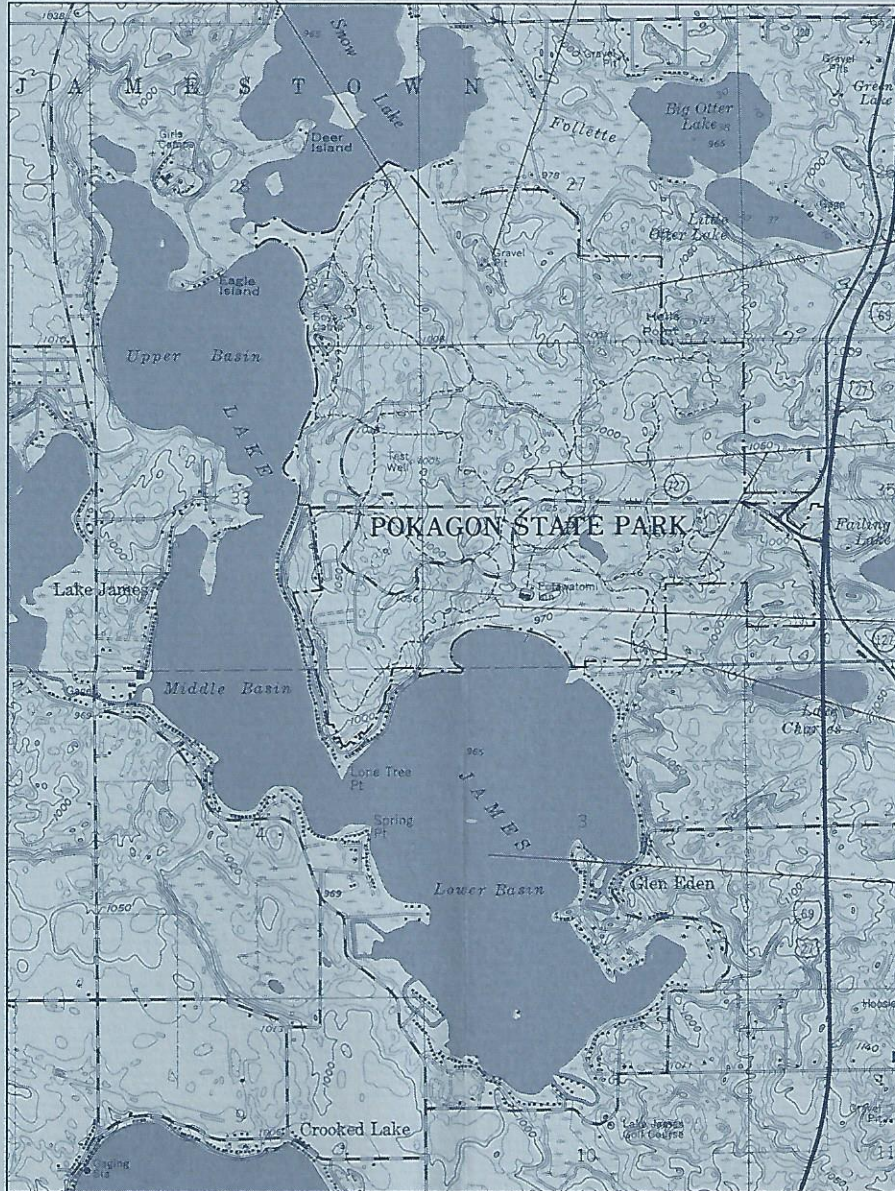
STATE OF INDIANA  
DEPARTMENT OF NATURAL RESOURCES  
GEOLOGICAL SURVEY

611 NORTH WALNUT GROVE AVENUE - BLOOMINGTON, INDIANA 47401

PRICE 10¢

*Ice-block depression,*  
underlain by muck and peat

Gravel pit ridge – a  
linear *crevasse filling*



Hells Point – a  
*kame complex*

*Kame complex*

Dip in toboggan run – a  
*kettle hole*, a closed de-  
pression typical of about  
75 present within the park

*Ice-block depression,*  
underlain by muck  
and peat

Lake James basin – a lin-  
ear *ice-block depression*

EXPLANATION

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Park boundary

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Trail

Topographic *contour lines*  
connect points of equal  
elevation. The vertical  
distance between lines,  
the *contour interval*, on  
this map is 10 feet.

0 1 Mile

Base modified from U. S. Geological Survey 7½  
Angola West topographic quadrangle map, 1960.

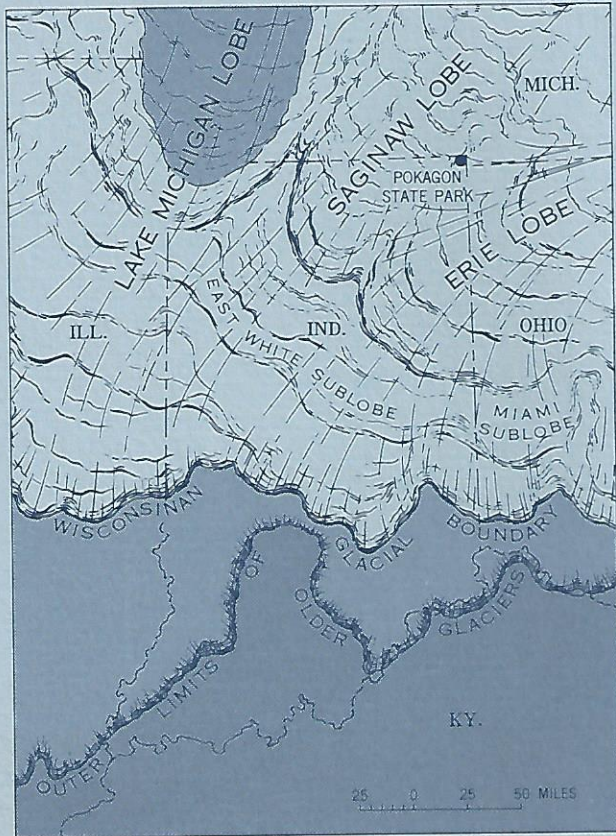
TOPOGRAPHIC MAP OF POKAGON STATE PARK AREA,  
STEBEN COUNTY, INDIANA

### INTRODUCTION

Indiana's Pokagon State Park is truly an Ice Age legacy. The irregularly shaped hills, bogs, and lakes, collectively called *moraine* by geologists, are underlain by an assortment of materials that melted from a rugged, disintegrating ice sheet a mere 14,000 years ago.

### THE ICE AGE

Under the influence of a worldwide climate that was perhaps 10°F cooler than at present, more snow fell during the winter than melted in the summer in northern latitudes. Beginning in the highlands of Canada, the deepening snow turned to ice that eventually began to flow plastically under its own weight and to grow into a great continental ice sheet many thousands of feet thick.



Several times in the past few million years ice built up in Canada and moved into the north-central United States. The most recent major glaciation, which reached central Indiana, is called the Wisconsinan.

### WHAT IS THE MORAINE?

Pokagon's morainal landscape is a product of the decay of the Saginaw ice lobe. Unlike other glacier lobes in Indiana, the Saginaw Lobe became stagnant; that is, forward motion of the ice ceased and melting took place



The morainal landscape of Pokagon State Park. A view southward, Hells Point to the left.

through massive downmelting. As downmelting progressed, the ice surface became more and more rugged. Crevasses enlarged. Thin patches of dark debris warmed and melted depressions in the underlying ice. Some debris that was being carried along in the ice melted from the base of the glacier. Some of the debris was carried by meltwater across the ice surface and into great crevasses, and was left as the long gravel ridges, *crevasse fills*, and irregular sharp-crested hills, or *kames*, that we see today. Some unsorted debris slid and flowed down

the rugged melting ice surface and accumulated in the natural melt hollows on the ice surface; this material later formed some of the Pokagon hills as the surrounding and underlying ice melted away. Some masses of ice were buried by debris at an early time during the glacier's melting, and were eventually insulated by thick debris, so that they remained long after all other ice melted. But they finally melted, too, leaving *ice block depressions*, or *kettle holes*. The largest of these features are Pokagon's lakes. Pokagon's well-developed morainal topography, like that of the famous kettle interlobate moraine of eastern Wisconsin, is in part due to its position between two confronting lobes of Wisconsinan ice. But also, so little time has elapsed since the melting of the last ice that the topography has been very little changed by erosion. At Pokagon we see a landscape nearly as the ice left it.

### THE GLACIAL MATERIALS

Melting of the ice left unsorted loamy debris called *till*, composed of materials that had been frozen within the glacier or that lay on its surface. Glacial meltwaters deposited sorted sand and gravel that make up the kames and other forms. Glacial boulders that are so conspicuous throughout Pokagon, granite, gneiss, basalt, and other such rocks, are found at the bedrock surface in Canada. These *erratic* boulders have been transported to Indiana by the only medium capable of carrying their great mass—glacial ice.



Glacial erratics.

### OUR ICE AGE LEGACY

The ice masses took many hundreds of years to melt, and even as they wasted away, plant communities began their colonization and migration northward over the debris. Pollen found in lake and bog deposits in northern Indiana record the postglacial succession from spruce to pine and finally to oak forest, which is indicative of the general warming of the climate. Some of these northern Indiana bogs also have yielded the remains of the extinct mastodon, woolly mammoth, and giant beaver. White man found northern Indiana a patchwork of oak forest, bogs, and lakes. He soon found, however, that many of the youthful glacial soils were rich in nutrients and adaptable to agriculture. The Ice Age has also left the midwestern United States with abundant buried sand and gravel beds capable of supplying fresh water, with an abundant supply of sand and gravel construction aggregate, with peat and marl, and in the Northern Moraine and Lake Region, including Pokagon, with interesting scenery and abundant recreational opportunities.

### THE REVERSE SIDE—MAP

A topographic map showing some geologic points of interest in and near Pokagon is found on the reverse side.

For interested readers:

"Let's Look At Some Rocks," by W. J. Wayne, available from the Geological Survey, Bloomington, Ind. 47401; 35 cents (plus 10 cents mailing fee).

"Ice and Land," by W. J. Wayne, a review of the glacial history of Indiana, available free from the Geological Survey, Bloomington, Ind. 47401.

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