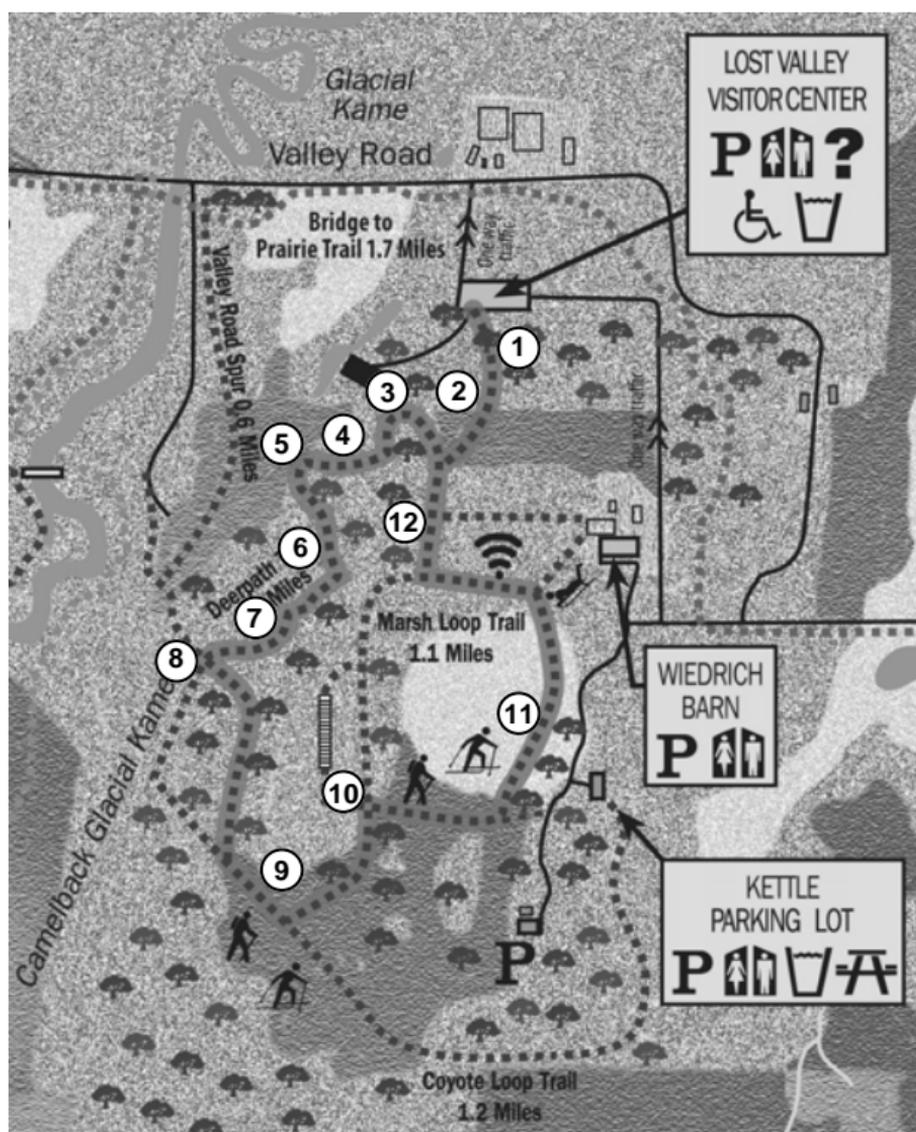


Glacial Park Interpretive Trail: Geology



A publication of the
McHenry County
Conservation District
www.MCCDistrict.org





Please follow these trail rules:

- Stay on designated trails.
- Respect all plants and wildlife.
- Leave all natural items where you found them.
- Pets must be kept on a leash.
- Pick up after your pet.
- Use the trash cans and recycling bins at the trail heads and picnic areas.
- Be courteous to fellow park users.



About 12,000 years ago, the last of the glaciers retreated from this area, leaving the land behind them scraped, scarred, and shaped into unique landforms. Glaciers “moved” by a combination of freezing and thawing caused by small climate changes during a million year cold spell that spread the arctic glaciers all the way to Illinois. The glaciers were hundreds of feet thick, and carried with them till -- a combination of gravel, sand, and rocks -- that was scraped up and engulfed in the mass of ice. Here at Glacial Park, we can see evidence of the glacier’s presence still today. This booklet helps to point out glacial landforms and explains the Ice Age and how it affected what is now Glacial Park.

2

The Tallgrass Prairie



While this area has been used for pasture land and now contains a mixture of pasture plants and prairie plants, we hope that one day it will again be a tallgrass prairie, comprised of a mix of grasses and flowers, some of which can grow to be 10 feet tall! Despite their size above ground, most of the prairie plant is actually below ground, not above it. Roots extend far into the soil, reaching down into the depths for water and nutrients. Because glaciers deposited so much till, the bedrock in some areas is buried under as much as 100 feet of glacial debris. As the till broke down, plants began to grow in the new soil. Decomposing plant material and the prairie plants' extensive root systems continued to create a rich, fertile soil. Thanks to those fertile prairie soils, this area became one of the top agricultural regions in the nation.



As you walk to trail marker three, notice how the shape of the land, the topography, is changing.

3

The Wisconsin Glacier



Extent of glaciation in the Midwest during the Wisconsin advance of the last ice age (gray area indicates land covered by ice).

The rolling topography of northern Illinois is due to the Wisconsin advance of the latest Ice Age. As the glacier moved forward and melted back, it carved the landscape of the area. McHenry County was near the edge of the Wisconsin advance 10,000 to 14,000 years ago. Scientists have been able to determine the time frame by carbon dating the organic material found in the glacial till.



As you walk to trail marker four, notice how the vegetation has changed in addition to the topography.

4

Oak-Hickory Savannas

While ice helped form the topography of the area, fire played an important role in dictating where different ecosystems developed. In dry open areas, prairie fires burned very hotly and eliminated any woody vegetation trying to establish itself. But trees were able to gain ground on the hillsides and those that were able to withstand the prairie fires comprise the oak and hickory woodlands such as the one you are in now.



As you walk to number five, take a closer look at the thick, corky bark of the trees around you. Most of these trees are bur oaks and shagbark hickories. Do you think you can tell which are which?



***Bur oak
leaf and acorn.***



***Shagbark hickory
nut and leaf.***

5

The Nippersink Creek



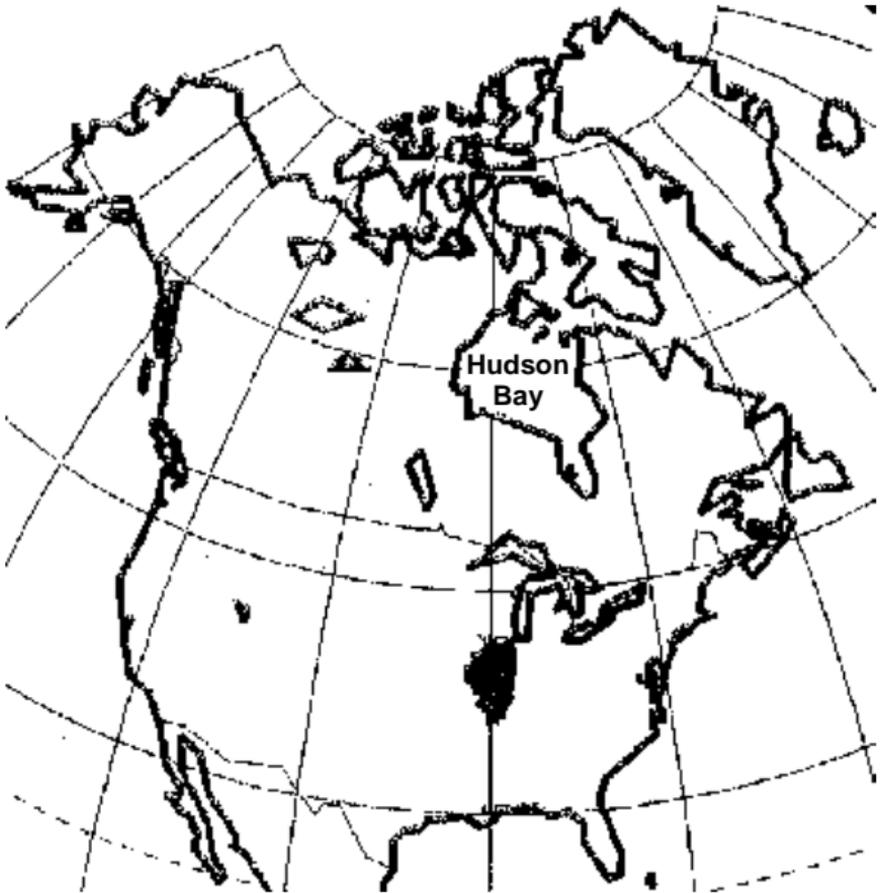
Looking down the valley in front of you, you can see the winding waters of the Nippersink Creek. Today the creek is just a fragment of the magnificent waterway it was as it drained the meltwaters of the Wisconsin ice sheet. However, it is no less important. Creeks offer a valuable source of water to local wildlife and a wetland habitat to aquatic plants and animals. In addition, the Nippersink Creek is a part of a vast system of wetlands and streams that make up the Fox River watershed. This watershed encompasses almost 1,800 square miles and serves over 90 communities. People depend upon watersheds for drinking water, recreation, and flood control.



As you walk to number six, notice all the large rocks beside the trail.

Rocks from Canada

The rocks you saw are called erratics. They too were brought here and left by the glaciers. As the massive floes of ice traveled southwestward, they carried not only gravel and sand, but large boulders as well. At times these boulders would drop off of the glacier and get left behind in unusual places. If you think they look out of place, you are correct. Some could have been brought here from as far away as the Hudson Bay!



*Hudson Bay is labeled.
The state of Illinois is highlighted black.*



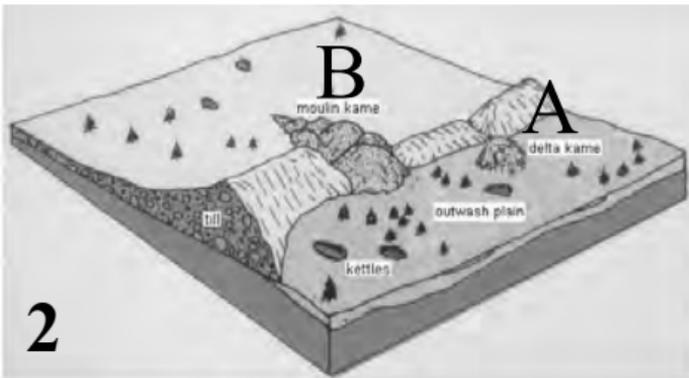
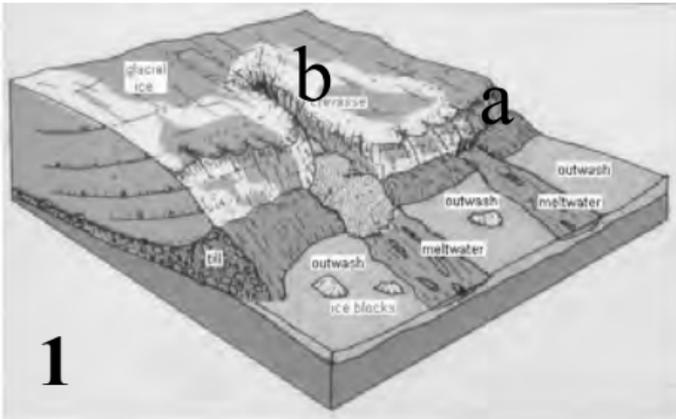
One of the first families to settle in this area may not have known to thank the glaciers for the fertile soil and for the hills that gave them shelter from the wind. Despite such resources, life was still not easy and several of the Thomas children did not live into adulthood. Five gravestones were placed here in a ceremony in 1995. This is the area thought to be their actual burial site.



Signpost number eight is at the base of the large hill near the bench. As you walk to this post, begin looking towards the big hill to the south.

The Kame

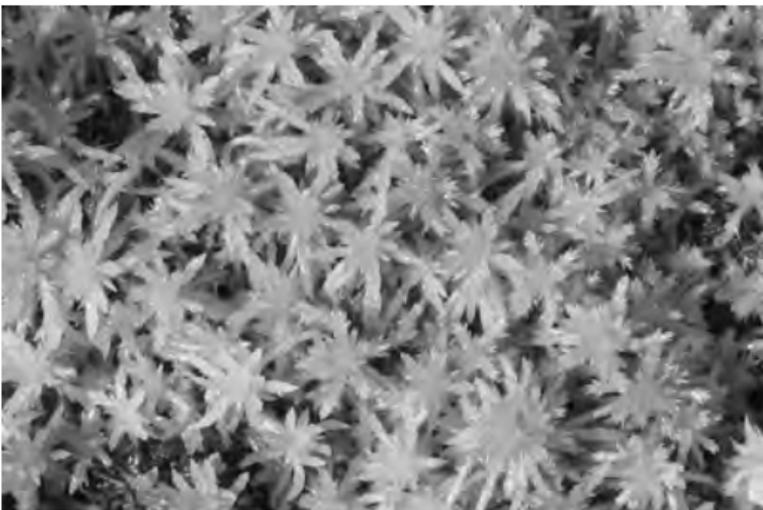
You are standing at the base of a kame, a glacial hill formed from gravel deposited by a glacier. There is still some dispute whether this kame was formed by meltwater and till rushing off the edge of the glacier (a), which would be called a delta kame (A), or whether the gravel spilled down through a crack in the glacier in a conical shape (b), forming a moulin kame (B). In either case, there is no mistaking that this is a glacial deposit.



You may choose to skip the steep route by walking the flat trail between the trees and the kames. It meets up with the other trail at the far base of the hill. Otherwise, as you walk up over the kame to stop number nine, notice how much gravel is in the trail. And when you stand on top of the 80 foot high kame, imagine the mass of ice that would have stood almost 5 times taller!

The Kettle Bog

You are now facing a bog wetland. Bogs' predominant vegetation is moss. Notice that you can see no open water from here. A glacial lake formed here thousands of years ago, but it has since filled in. The lake was low in nutrients and oxygen due to bad drainage. The vegetation that was able to withstand the poor conditions tended to make conditions even poorer for other plant life. For example, the sphagnum moss that dominates the bog absorbs most of the nutrients and oxygen. In addition, it releases hydrogen ions. This causes the water to be very acidic. Unable to decay, dead vegetation builds up layer upon layer, and, over time, this creates a soupy mixture of partially decomposed plant material called peat.

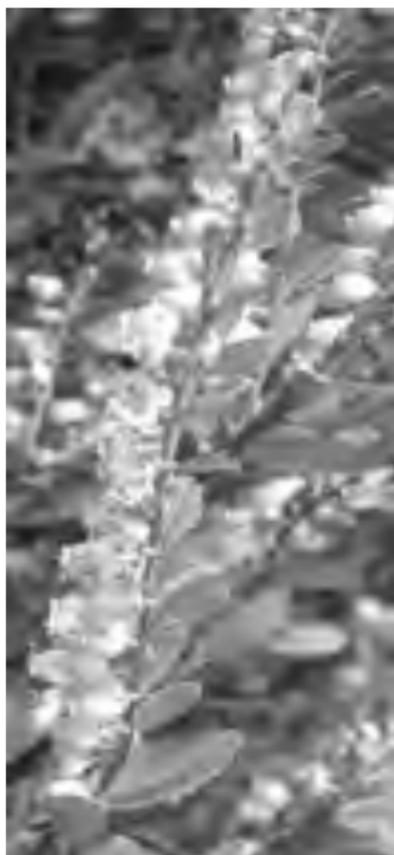


Sphagnum Moss



On your way to the bog, notice the clearly visible “island” hill savannas to your right.

As you walk across the bog boardwalk, you can see that on top of the moss grows the leatherleaf plant, a shrub that is perfectly suited to survive the bog's harsh environment. In fact, leatherleaf grows in no other type of environment. Be careful not to harm this rare species. It is classified as threatened in the state of Illinois. There may seem to be a lot in this bog, but not much remains anywhere else in Illinois.



Leatherleaf branch with flowers.



After visiting the bog boardwalk, walk back up to the benches and head downhill to the trail directly across from you. Do not turn left on the Deerpath Trail.

You are now circling around the marsh. Marshes are defined by emergents, plants that grow with their roots in the soil but whose stems grow upward, or emerge out of the water and stick up into the air. Notice how the marsh resembles a bull's eye. The concentric circles you see are made up of different types of vegetation. Around the edge is where many of the sedges and grasses grow. As the water gets deeper, the cattails and bulrushes start to grow. Even further in are the floating plants, such as lily pads. Therefore, by identifying the different plants, you can identify differing depths of water. The presence of this "bull's eye" proves that this is a sloped depression. It is a kettle, formed by a glacial block of ice. The next stop further explains how kettle depressions are formed.

Cattails***sedge******bulrush***

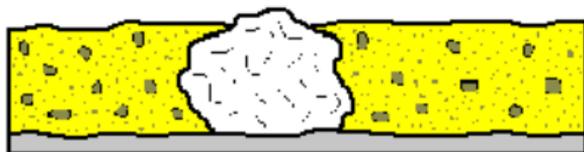
As you walk along the edge of the marsh, notice all of the plant life and wildlife that are here because of the glaciers.

Look back at the marsh behind you and notice the round depression. This depression is called a kettle. Kettles are formed when chunks of ice break away from a retreating glacier and are left behind (1). As the glacier melts further, layers of till wash in around and over the chunk of ice (2). As the ice melts under the till, a depression is left behind (3). In some instances the kettle fills with water. Then, plants may grow, forming different types of wetlands. (The bog was also formed in this way.) This is neither a lake nor pond. From here, you can see some open water, but notice how much vegetation there is.

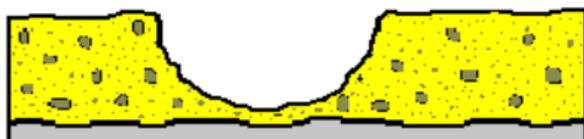
1



2



3



Conclusion

As you head back up the hill to the visitor center, imagine the kind of force it took to shape all the hills around you. Will the earth ever see anything like it again? Scientists believe that ice ages come in cycles. We are now in a warming period longer than is thought to ever have existed between ice ages. No one is quite sure how our last ice age started. Some speculate that the earth was tilted on its axis so that our northern hemisphere was pointed away from the sun for years, rather than a season. Other scientists believe that changes in the ocean currents pushed around by the breaking apart of Pangea, the combined land mass of all of the continents, changed the earth's climate drastically. In any case, if we are headed for another ice age, you will not see the signs tomorrow. They will develop slowly, over hundreds of years.

Thank you for hiking the Glacial Park interpretive trail. We hope you have enjoyed your visit. You may keep this brochure for future reference, but if you do not want it, please replace it in the box so that others may use it.



For more information, please contact
McHenry County Conservation District
18410 U.S. Highway 14
Woodstock, IL 60098
(815) 338-6223
www.MCCDistrict.org