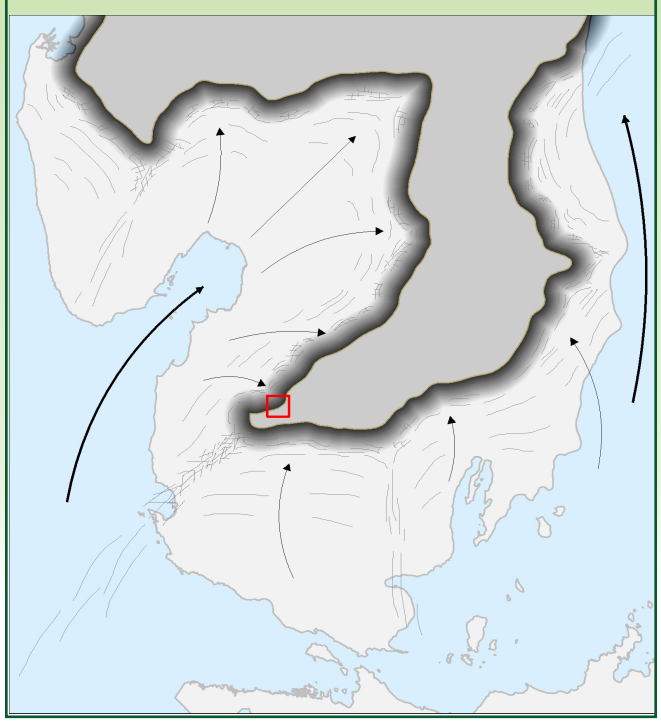

Ice cover about 13,800 years ago. Arrows indicate direction of ice flow. Great Lakes are shown for visual reference; however, they did not exist at that time. Red square shows location of Island Lake day use area.

Glacial Legacy

Several times throughout the past 2 million years, large continental glaciers covered the upper Midwest. Like the ebb and flow of an ocean tide, these colossal masses of ice slowly advanced from the Artic region, flowing south as the climate cooled, and melting away as the climate warmed. Each time the glaciers returned they scoured the landscape, demolishing nearly everything in their path. Upon melting, they deposited enormous piles of debris, made of the materials they plowed over and picked up along the way. This debris, called glacial drift, is generally a mixture of boulders, gravel, sand, silt, and clay. By studying the nature of these deposits, as well as the landforms they create, we can tell where the ice front was at different times in the past. We can also construct an image of what the landscape must have looked like when the glacier was melting.

Wisconsin Glaciation

Because glacial ice is so destructive, each successive glacial advance "erased" the landforms that existed before. So, what we see today is primarily a result of the most recent period of glacial activity, often called the *Wisconsin glaciation,* which covered most of the upper Midwest at its fullest extent. Near southern Michigan, the glaciers started to melt back about 26,000 years ago. Around 13,800 years ago, the ice margin was near the Island Lake day use area. Finally, by 10,000 years ago, most of the glaciers had left the region.

Evidence of Ice

While retreating from Michigan, the glaciers left behind a pattern of broad ridges, called moraines. These moraines mark the former location of the ice margin as it paused for a period of time before continuing to melt back. The Island Lake Trail and surrounding area are part of one such broad ridge, called the West Branch Moraine. Named after the town of West Branch, MI, in Ogemaw County, the West Branch Moraine extends in a northeast-southwest direction in this area. Driving south on M-33 from here to Rose City, you cross the edge of the West Branch Moraine, dropping nearly 400 feet in elevation. This moraine was deposited at the ice margin about 13,800 years ago.

Thickness of Glacial Drift

If you had been standing here 13,800 years ago, you would have seen a great mound of ice. This ice would have extended as far north and south as your eye could see, and perhaps stood 1,000-1,500 feet tall. The glacier deposited an enormous load of drift in this area. Oil and gas well operators nearby report drilling down through 300-600 feet of glacial drift before reaching the underlying bedrock. All of that debris was carried in by glaciers! It would take you 2 months, digging 10 feet per day, to get to the bottom of the glacial drift under your feet!

Crater Lake

Conduct and Ethics

- Dogs must be leashed.
- No bikes or pack animals allowed.
- Use only dead and down wood for fires.
- Build fires in fire rings and grills only.
- This area is open to hunting.

A Recreation Enhancement Act Fee is required at these sites.

Recreation fees help pay for the facilities and services at Loon Lake Day Use Area and Island Lake Campground. Contact an office or visit our website for more information.

GPS Coordinates

Loon Lake Day Use Area -
W: -84.135218 N: 44.513719

Island Lake Campground -
W: -84.141461 N: 44.510199

Crater Lake Day Use Area -
W: -84.135218 N: 44.513719

Loon Lake Day Use

THE GEOLOGICAL SOCIETY OF AMERICA

This interpretive brochure was made possible in part by a partnership between the Geological Society of America and the US Forest Service, Minerals and Geology Program.

For more information visit:
http://geosociety.org/g_corps

Contact Information

Email: r9_hmnf_website@fs.fed.us
Toll Free: 1-800-821-6263
Website: www.fs.usda.gov/hmnf/

Mio Ranger Station
Phone: (989) 826-3252
TTY: 771 + Phone #
Address: 107 McKinley Rd.,
Mio, MI 48647

Supervisor's Office
Phone: (231) 775 - 2421
TTY: 771 + Phone #

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USDA United States Department of Agriculture

Forest Service

Island Lake

Nature Trail/Day Use Area

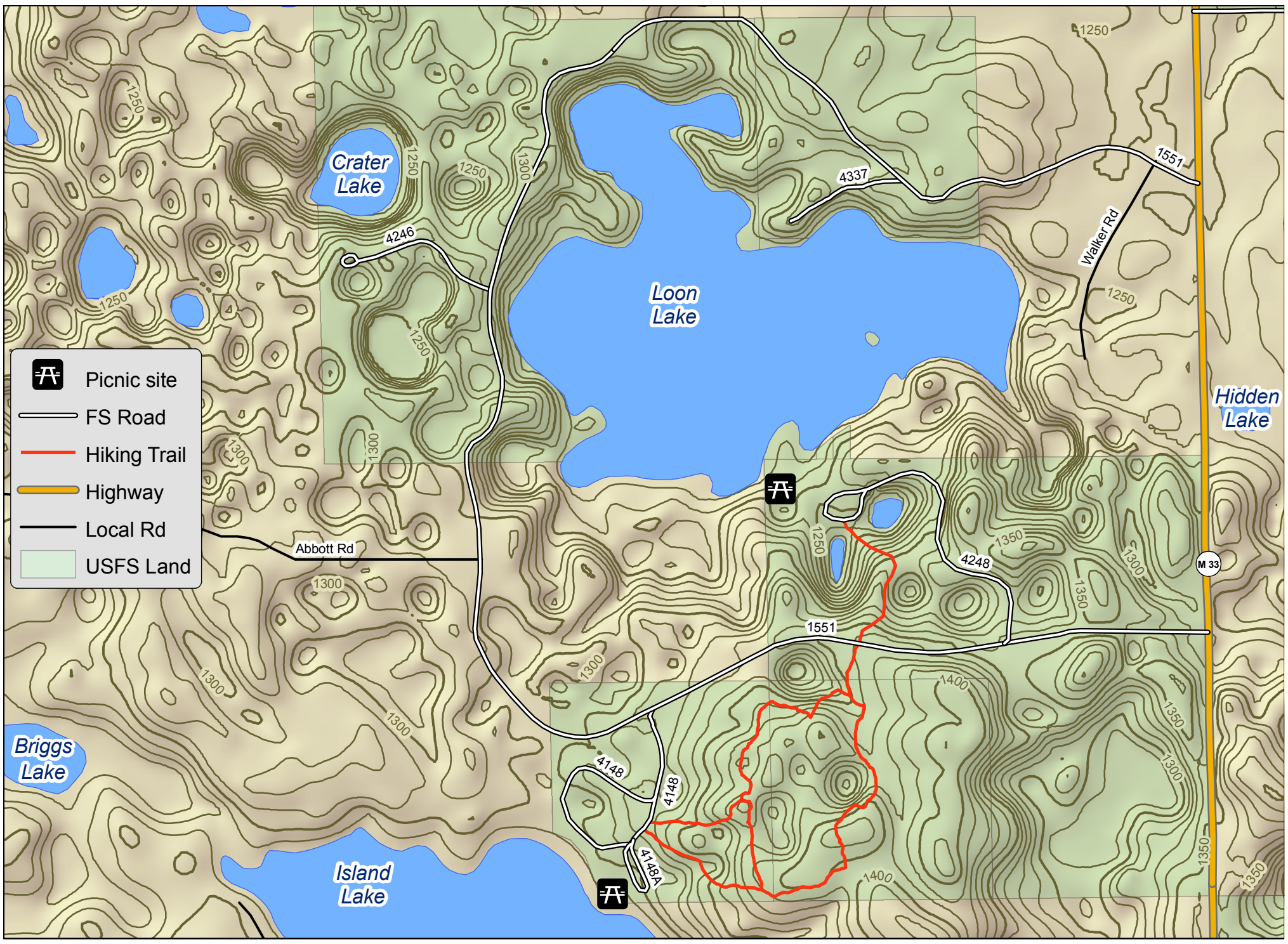
Huron-Manistee *National Forests*

Island Lake

Island Lake Nature Trail

Loon Lake

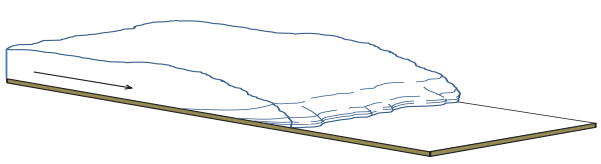
Geologic Interpretation and Trail Map



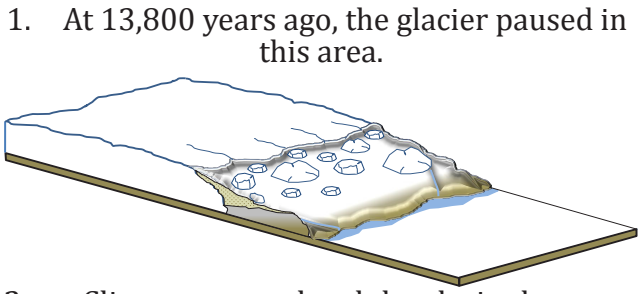
Island Lake Interpretive Trail Map

Melting Ice, Running Water

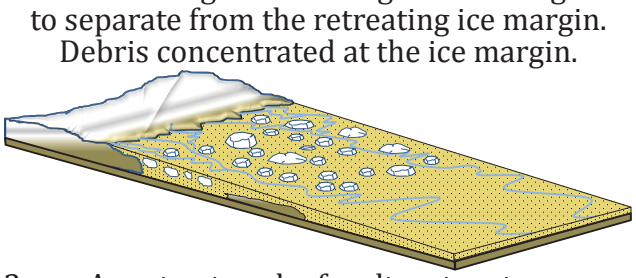
To better imagine the processes involved in shaping this landscape, it is important to realize that the melting glacier produced vast amounts of running water. Follow the block diagrams below while reading the following description of events that lead to the formation of the landscape you see today.



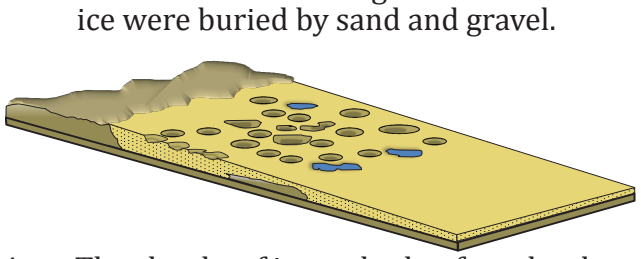
1. At 13,800 years ago, the glacier paused in this area.



2. Climate warmed and the glacier began to melt. Large chunks of glacial ice began to separate from the retreating ice margin. Debris concentrated at the ice margin.



3. A vast network of melt water streams drained away from the ice front. The streams carried loads of sand and gravel. Chunks of ice were buried by sand and gravel.



4. The chunks of ice melted to form kettle depressions. Some kettles became lakes, while others remained dry.

Kettles hold clues to the past

Kettles sometimes contain clues about the past. Whether a kettle is filled with water, like Crater Lake, or dry, like the ones you see along the trail, their unique bowl-like shape traps nearly everything that washes in. Think about it ... all of nature's by-products - leaves, sticks, charcoal, sediment, animal bones, and even human artifacts - that are on the forest floor near a kettle eventually make their way down to the bottom.

Unless this "stuff" is picked up by the wind, or carried out by an animal, it will remain in the kettle bottom indefinitely. Scientists can analyze the materials that accumulate in kettles and kettle lakes to reconstruct a history of events of the surrounding area.

As you hike along the Island Lake Nature Trail, and visit the viewing dock at Crater Lake, think about how the landscape may have changed in the thousands of years since the glaciers melted away... different forest types, and the fungi, plants, and animals they support have come and gone as the climate has changed.

Only recently have humans inhabited this area, bringing along their tools, agricultural practices, roads, and vehicles. Evidence of all these changes is subtly stored within the soils and sediments in the bottoms of kettles.

Kettle and Kame Topography

While hiking the Island Lake loop trail, you'll notice a chaotic arrangement of deep circular depressions and winding ridges. Together, these landforms are known as kettle and kame topography. Kettles mark the spot where large chunks of ice persisted after the glacier retreated. Once the ice chunks finally melted away, a circular depression was left on the landscape. Kames are simply the mounds and ridges between kettles. They formed as glacial drift "washed in" and surrounded the ice chunks that later melted to become kettles.