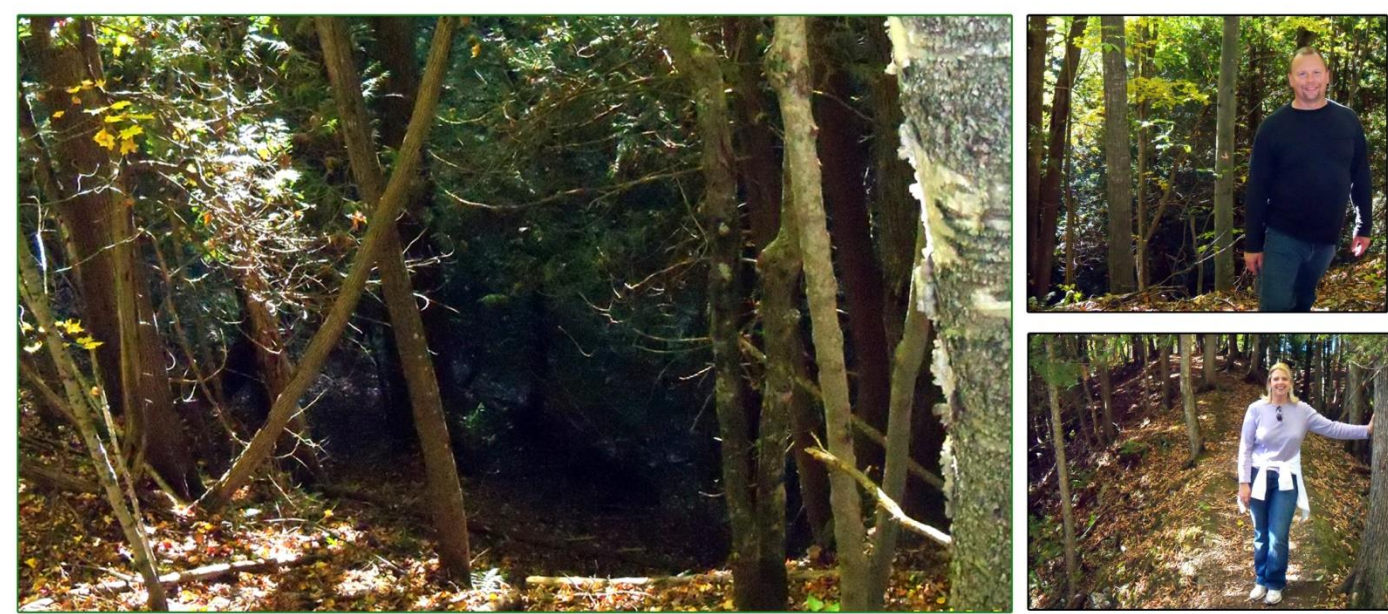


Sanctuary of the Great Lakes Sinkhole Adventure



Photos of Stevens Twin Sinks and Saddle Ridge courtesy Jennifer and George Roznowski.



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Sanctuary of the Great Lakes Adventure



Sinkhole Exploration

Stunningly Colorful Sunken Forests - Sinkhole Geology

Sinkholes are depressions in the landscape caused by the dissolution and collapse of subsurface limestone, dolomite, or gypsum. The term karst is now used to describe regions throughout the world that have features formed largely by underground drainage. Karst terrains are characterized by caves, steep valleys, sinkholes, and a general lack of surface streams.

As a result of rock solubility and various geological processes operating over time (glaciers, etc.); a number of phenomena and landscapes were formed that gave unique but specific characteristics to this terrain as defined by this term. Karst is frequently defined by dolines (sinkholes-dry and wet), cracks and shafts, poljes (elliptical depressions), caves, ponors (swallow holes), caverns, intermittent springs, submarine springs, disappearing and re-appearing streams and rivers, underground river systems, denuded rocky hills, karst plains, and collapses. It is difficult to give a very concise definition of this word because it is the result of numerous processes that occur in various soluble rock with diverse geological and climatic conditions.

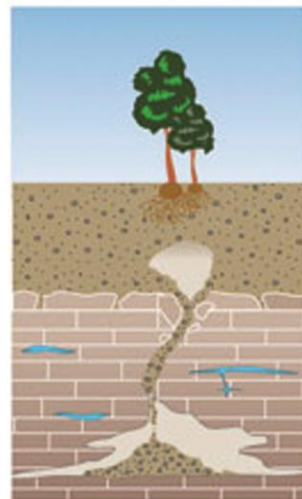
In northeast Michigan, a thick layer of Devonian era limestone and shale, known as the Traverse Group, underlies Alpena and Presque Isle counties. Below that, about 800 feet deep, lies the Detroit River Group, which contains large amount of the evaporites anhydrite and gypsum. These minerals dissolve much more readily than limestone, and as the Detroit River Group rocks erode as a result of water movement and permeation over time, the process creates caverns, Traverse Group rocks above collapse into the caverns creating the "sinkholes" we see from our perspective above ground.

Due to the nature of these rock deposits earth cracks are also often found near sinkholes on bedrock fault lines. Such cracks are caused by "slumping" of rock as the layers beneath erode away. Hammocky terrain results from large rock blocks collapsing and settling, and often shattering in the process. Unique flora can also be found at the bottom of sinkholes a unique biome is created from temperatures changes and light levels. You can find plants growing in the bottom of some sinkholes that are not found anywhere else in the local region.

Basic Sinkhole Development



As rain falls, it absorbs carbon dioxide, making percolating water slightly acidic. As this water migrates downward, the carbonate bedrock is slowly dissolved, creating bedrock voids.



Over time, the underground void becomes larger as soil and rock from above fall into the cavity and are washed away.



The void continues to grow and slope upward toward the surface.



Eventually, the structural integrity of the overlying material is breached and a sinkhole forms.

courtesy MODNR

Get out and Explore!

Northeast Michigan has more than 200 sinkhole formations making it one of the most prolific collections of this type of geology in the world. While most are located on private land a few great specimens are open to the public.



Bruski Sink:

GPS: 45.18231, -83.71981

The 2.5-acre Bruski Sink is located off Leer Rd near the intersection of Maple Lane Rd. Carefully walk the southern edge of Bruski Sink. This sink was used as an unauthorized dumpsite (as many sinkholes were in previous decades) prior to 1999 when it's clean up began. A 75 ft. crane donated by Moran Iron Works lowered dumpsters into this sink to facilitate the removal of cars, refrigerators, rusting containers of motor oil, and rusting farm machinery from the sides and bottom. This sink increased in depth from 85 ft. to 115 ft. after the removal of the debris during a nine year cleanup process. The debris removal reduced the risk of further underground water contamination and allows visitors a more visual perspective of the width and depth of this sink.

El Cajon Bay:

GPS: 45.08629, -83.31786

Karst geology features are prominent in and around the El Cajon Bay of Lake Huron. Earth cracks are common around the bedrock north and west rim of the bay. A large sinkhole in the bay is the outlet of an underground stream. Water discharge from the outlet empties into Lake Huron and, due to the constant flow and warmer temperature of water, the sinkhole never freezes over. When water levels in Lake Huron are high, the El Cajon sinkhole is submerged, but still visible on aerial photos. During low water levels like recent years, one can walk up to the edge of the sinkhole. The sinkhole discharge water has a different chemical composition than surface water of the bay and has a noticeable sulfur-like aroma. The property has excellent examples of untouched northern ferns and is a stronghold for the State's wildflower, the Dwarf Lake Iris, which blooms in mid-May.

Rockport State Park:

GPS: 45.202533, -83.384076

Rockport is Michigan's 100th State Park and is the first State Park where you are allowed to take a piece of it home with you. There are 13 sinkholes located at Rockport as a result of the Karst topography of the area. One of the sinkholes is over 100 feet deep and filled with water from an underground aquifer. Search for Devonian Era fossils around the sinkholes. Visitors are allowed to take up to 25 pounds of rock per person from the park per year. While you are here also check out the old deep port harbor and the 300 acre limestone quarry; remnants of the former mining operations that sat on the property.

Stevens Twin Sinks:

GPS: 45.18231, -83.71981

Stevens Twin Sinks Preserve is a 31-acre parcel purchased in 1993 with gifts from William and Archie Stevens and other members and friends of the Michigan Karst Conservancy. In it are two sinkholes separated by a fragile saddle ridge, each sink is about 200 feet in diameter and 85 feet deep. Located across from the Bruski Sink on Leer Road near the intersection of Maple Lane Road, the Stevens Twin Sinks are a geological treat. Earth cracks are viewable at Stevens Preserve and indicate that the sink hole is slowly continuing to collapse and the surface is sliding toward the sink hole. This Preserve has two self-guided trails. One trail generally follows the perimeter of the sinkholes with a spur to the earth cracks. Another trail is found off the spur trail and takes visitors through the woods and meadows of the preserve and is marked with yellow and red flagging.

Mystery Valley:

GPS: 45.21225, -83.73243

Mystery Valley is a unit of the Thunder Bay Karst Preserve, along with Stevens Twins Sinks and Bruski Sink. The 76-acre Mystery Valley Karst Preserve and Nature Sanctuary is located in Presque Isle County just a few miles north of the Thunder Bay Karst Preserve. It contains one of the largest karst "collapse valleys" in the Great Lakes region, several dramatic earth cracks and a lake that rises and falls, and sometimes disappears! Visitors to the preserve can follow two self-guided trails: Earthcrack Trail and Valley Trail. Earthcrack Trail passes a series of cracks, including two that converge into one that's several hundred feet long and nearly 15 feet deep. Following the Valley Trail, visitors can see fossils of marine invertebrates such as brachiopods, bryozoa and crinoids that lived some 350 million to 400 million years ago. Unlike a valley carved by a river, Mystery Valley was formed by the collapse of the surface into a labyrinth of subterranean chambers created by the water erosion of rock below. Mystery Valley is 1.5 miles long, 500 yards wide at its widest point and about 150 deep, making it one of the largest known collapse valleys in the Great Lakes region.