

WHY IS KARST IMPORTANT?

Karst is a geological term for landforms that develop on soluble rocks—such as limestone, dolomite, or gypsum—as a result of the dissolving of the rocks by underground drainage. Typical karst features are disappearing streams, sinkholes (also just called sinks), springs, and caves. The most important concerns about karst are groundwater resources, land use, and the presence of unusual habitats for plants and animals.

Groundwater in karst areas travels quite rapidly in underground conduits. Surface water also runs off rapidly and is not stored to any large extent. The rapid flow does not provide time for purification of the water as occurs by bacterial action and filtration in sand and gravel. “Pure limestone springs” of folklore are today almost all contaminated by runoff from farms, gas stations, and homesteads.

Karst areas provide habitats for unique and rare (and sometimes endangered) plant and animal life, which are threatened by pollution or alteration. Beautiful caves are found in some karst areas, of interest in themselves and as part of the underground habitats.

Voids created by dissolving limestone underground can be geological hazards. Sinkholes may be filled with soils, but below them are open channels, often water filled. If water is pumped out, the water table drops, the buoyancy of the water is lost, and the sinkhole sediments may collapse. Also, building on karst areas can concentrate rainwater runoff into small areas, which may contain sinkholes. This leads to flushing the soils from the sinkholes into the subterranean channels, again causing collapse. Enormous collapses in Florida and elsewhere have destroyed property (and contaminated groundwater). This could happen in Michigan. These factors require careful planning for construction in karst areas.

Michigan Karst Conservancy was founded in 1983 to increase public awareness of karst features, and to protect them from misuse and deterioration. The Fiborn Karst Preserve is one of two preserves currently owned and managed by MKC volunteers for public benefit and education. For additional information contact Michigan Karst Conservancy, 2805 Gladstone Ave, Ann Arbor MI 48104-6432, or by e-mail to mkc@caves.org. MKC also has a Web site at <http://www.caves.org/conservancy/mkc/>.

FIBORN KARST PRESERVE OF THE MICHIGAN KARST CONSERVANCY

Trail A – The Dr. Rane L. Curl Sinkhole Trail

Welcome to the interpretive trails of the Fiborn Karst Preserve. These trails provide access to interesting features for education and enjoyment.

Trails policy

The objective of the Michigan Karst Conservancy is to protect karst areas in Michigan and to educate the public about the value of karst lands and the safe and proper use of these lands.

One aspect of this objective is to provide educational trails on its karst preserves. These trails are narrow footpaths that often go through wet or muddy areas; across or around rocks and boulders; and often have steep, narrow, hilly, or sideways tilted surfaces. Some cross bare rock or cross a stream on a narrow rustic bridge.

These trails are not suitable for personal assistance mobility devices such as walkers, manual or motorized wheelchairs, power scooters, golf carts, off-road or all-terrain vehicles. Use of such equipment on MKC trails is not reasonable and is likely to do damage through soil erosion, trail widening, plant and root damage, and is thus prohibited.

Visitation to MKC preserves is at the visitor’s own risk. MKC normally will not have staff or volunteers or emergency phones or equipment present at a preserve. The preserves are a significant distance from emergency medical facilities. Cell phone coverage is limited or non-existent, especially in the Upper Peninsula.

Hiking the trails

We ask that everyone treat the features of the Preserve in such a way that their interest and appearance are not altered. Please do not leave any food or litter along the trails, and consider using the privy near the Emma Kalnbach History Pavilion before venturing onto the trails. A collecting permit from the Preserve Committee is required to collect any animal, plant, or mineral specimens, and written permission and a qualified leader are required from the Conservancy to explore any caves encountered on the Preserve.

We recommend that you wear long pants, long sleeve shirt, sturdy boots, insect repellent (in season), and carry a compass.

The **Sinkhole Trail** is a short loop trail starting near the east end of the parking area along Norton Camp Road. Proceed south from the **Trails** sign, until you see the post marked **1**, turn west (right) and follow the trail and marked posts from there. The trail will return to Norton Camp Road about two hundred yards west of the parking area. If at any time you lose the trail, you can return to Norton Camp Road by heading due north through the forest. Now - your guide to the Sinkhole Trail:

A1: Trailhead: From here the trail goes approximately west along the northern margin of an area in which many sinkhole features have developed in the Fiborn Limestone bedrock. We believe that the swamp now located more to the south once encroached upon the higher ground in this area, probably assisted by the ponding of the swamp by beaver dams. The water began to dissolve limestone in joints in the bedrock to find its way underground to the South Fork of the Hendrie River, about a mile to the northeast.

A2: Shallow sinkholes or “solution pans”: This area, with many shallow sinkholes, may represent an early karst development stage upon the limestone bedrock. Other sinkholes must have pirated the main water flow before these became very deep.

The upland forest throughout the Preserve, which you will pass along this trail, is a second-growth Beech–Maple hardwood forest, consisting of sugar maple (*Acer saccharum*) with scattered trees of beech (*Fagus grandifolia*), hemlock (*Tsuga canadensis*), balsam fir (*Abies balsamea*), and white cedar (*Thuja occidentalis*) in the lower, wetter areas. Red-berried elder (*Sambucus pubens*) is common, while the ground cover consists of woodland fern (*Dryopteris austriaca*), northern wood sorrel (*Oxalis montana*), and ground pine (*Lycopodium obscurum*). Red raspberry (*Rubus strigosus*) is common in open areas.

A3: Flat Creek Sinkhole: Flat Creek flows north from a swamp adjacent to Fiborn Pond and goes underground here. Flat Creek was probably natural, but appears to have been dug deeper at the time Fiborn Quarry was operating to assist in draining the swamp water around the quarry. Recently, with drier weather, the water level in the swamp is lower, and Flat Creek is not flowing rapidly. Please do not walk on the steep sides of the sink, because the soil is very sandy and loose and will be quickly eroded.

The development of the sinkholes has occurred during the past 8–9,000 years, after the glacial Lake Algonquin that covered this area receded. The relatively great speed of the development of the sinkholes may have been due partly to the acidity of the swamp water that ponded upon the limestone, since limestone dissolves more readily in acid solutions. The limestone bedrock here has been dissolved to some depth so it is buried in moderately deep sand and is not exposed.

A4: Cone Sink: Here is an example of collapse induced by a cave passage below, by which sand is being transferred into the subterranean karst system and being carried away by a cave stream. It is probably the Flat Creek stream, underground, that caused this sinkhole, but with the reduced water flow it cannot be currently active. Erosion of the sandy walls of this sink by people would quickly fill the bottom with sand and reduce the steepness of the sides, destroying the original appearance of the sinkhole. Please stay back from the edge.

A5: Brushy Sink: Water ponded upon limestone will form a “distributory” network of streams until the openings in the limestone become large enough that one main stream can carry the available water. Until that happens, many sinks will develop. This is another sink like Flat Creek Sinkhole, but less well developed.

A6: Bog Creek and Reluctant Sink: Surface drainage in this area became better integrated at some time in the past, and a single surface stream from the swamp cut a small canyon into limestone bedrock, heading into this “blind valley” sinkhole. The stream has also been much more active in the recent past. The sinkhole was named “Reluctant” because early explorers hoped that it would provide access to another cave—but it is too narrow and filled with sediments. Please do not climb down into the sink, so that it is not further eroded and filled with sand. Bog Creek upstream curves around to the west as a small canyon until it blends into a shallow, boggy channel.

A7: Sinkhole Trail End: This former “two-track” road is one of the many logging roads cut into the forest when it was timbered selectively in 1987 and earlier. To the south, it crosses Bog Creek and the beginning of the narrow canyon leading to Reluctant Sink. Proceed north (right) on the forest road to return to Norton Camp Road, and then east (right again) to return to the parking area.

We hope that you have enjoyed your walk along the Sinkhole Trail. Please take this pamphlet with you, or return it to a Fiborn Karst Preserve Manager or to the supply box, for “recycling.” Your assistance in removing any trash you observe would be very much appreciated.

Conservancy membership would provide you with regular information about MKC activities, and opportunities to participate in the organization's work at this and other karst preserves. Contributions are tax deductible. Your support would be very much appreciated.

For further information about karst in Michigan, to join MKC, or to support the efforts of MKC to protect and manage examples of karst features in Michigan, write to the Michigan Karst Conservancy. The postal and e-mail addresses are on page 4.