dumps in small towns and rural areas puts the local drinking water supplies at risk.

Because karst systems are dependent on the interaction with the surface, management above ground is extremely important. Contaminants from agricultural pesticides, leaking gasoline tanks or spills, livestock feeder lots, and septic fields may be washed into the underground cavern systems. Dye-tracing studies have shown that sepic tank waste can travel through the thin soils that are characteristic of Wesley Chapel Gulf into the aquifer and then to a spring in only a few hours.

National Natural Landmark!

Wesley Chapel was designated as a National Natural Landmark in 1972 due to its impressive geologic features. The gulf provides a rare glimpse of the Lost River on its subterranean path.

The marker for the National Natural Landmark is shown here with a little boy who came to visit the Gulf.

Location

The Gulf is approximately 4½ miles southwest of Orleans and 2 miles east of Orangeville. From Orleans, follow SR 37 south. Turn west on 490N (road is marked by a sign pointing towards Orangeville). Follow 490N approximately four miles and turn south on 350W at Wesley Chapel Church. Wesley Chapel Gulf is located one-half mile on the east and is marked by a Hoosier National Forest sign. Parking is available.

Visiting the Gulf and Tours

The perimeter of Wesley Chapel Gulf is outlined with a footpath for those interested in visiting. A descending path on the north side of the Gulf provides access to the Gulf floor and Boiling Springs Rise. There are interesting rock shelves as well.

Tours were conducted several times a year for a decade or more by Lost River enthusiast Bob Armstrong on the karst system in the area. Since his death, several groups are working to get tours started again. For more information on possible tours, contact the Orange County Convention and Visitor Bureau at 812.936.3418.

Large print copies available.

USDA

United States Department of Agriculture

Wesley Chapel Gulf

Hoosier National Forest

7/2015

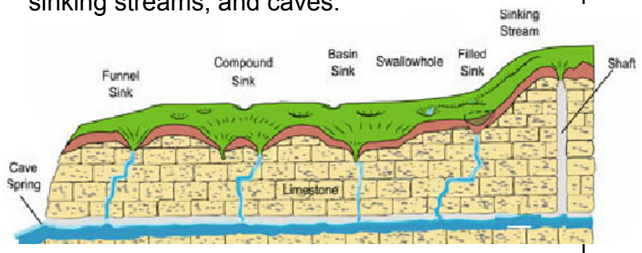
Hidden in seclusion among the hills and woods of south-central Indiana is a unique natural wonder. Wesley Chapel Gulf is a 187-acre tract of land located in the Hoosier National Forest containing a large, deep, and abrupt depression that dramatically drops from the surrounding landscape.

Termed a karst gulf, Wesley Chapel Gulf is an anomalous landform to Indiana and has been proclaimed as one of the most interesting individual features in the Lost River karst system. The Gulf provides a rare glimpse of the Lost River on its subterranean path.

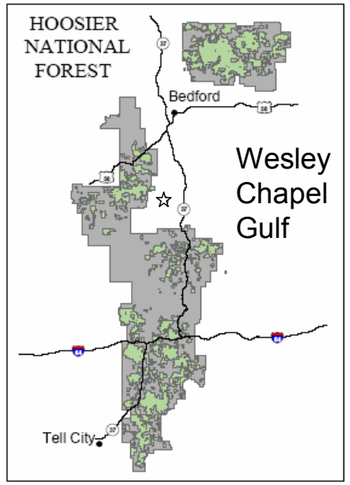
Several other karst features are represented in the immediate area of the Gulf including swallow holes, sinkholes, and caves. In 1972 Wesley Chapel Gulf was designated a National Natural Landmark. The Forest Service recognized the uniqueness of Wesley Chapel Gulf and acquired the property in 1996.

Karst Resources

The term karst implies the processes and phenomena associated with the dissolution of bedrock by water. Karst landscapes are characterized by closed depressions of various size and arrangement, disrupted surface drainage, and caves and underground drainage systems. Karst terrain is typically pictured as an area containing sinkholes, sinking streams, and caves.



Vicinity Map



The nature of the landforms and the diversion of surface water to subterranean passages in karst environments are controlled by the structure and rock type of the area. The Mitchell Plateau is underlain by limestone rocks of the Blue River Group, which are highly susceptible to chemical dissolution, particularly the St. Louis and Ste. Genevieve limestones. Karst formations specific to the Lost River watershed are shown in the diagram to the left.

For More Information:

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Toll Free: 1-866-302-4173
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Hardin Ridge Recreation Area
Office: (812) 837-9453

Federal Relay: 1-800-877-8339

Forest Service

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How the Gulf was Formed

A gulf is always associated with an underground stream, and its development is dependent upon the collapse of the overhead rock. The fallen rock is then dissolved and removed by the stream flowing through.

Gulfs begin as collapsed sinkholes. When a collapsed feature has its steep-walled perimeter enlarged to such an extent that it possesses a distinct alluviated floor in which an underground stream rises and sinks, it may be called a gulf. The alluviated floor is usually marked by stream-formed channels which pass from the rise to the swallow hole or series of swallow holes where the water is returned to the underground channel.

Wesley Chapel Gulf and its deeply alluviated floor of clays and silts indicate that approximately 720,000 cubic yards of native limestone have been dissolved and removed. The width of the gulf is far greater than any known section of underground Lost River. The gulf is more than a collapsed cavern whose rock has been dissolved away. The shape of the gulf and its present relationship to the underground water courses suggest the nature and method of its development.

It likely formed when one or more sinkholes collapsed. The collapsed rock obstructed free passage of the water, which caused the water to further undermine the walls around the collapse depression. Further collapse increased the perimeter of the initial depression. If two or three collapse areas formed in a row, their perimeters in time merged to form a large and elongated depression with semicircular ends, such as the depression found at Wesley Chapel Gulf.

Horns of rock would extend out in the depression for a time, but eventually would erode away. One such horn of rock, tumbled and broken, still extends into the floor of Wesley Chapel Gulf. Wesley Chapel Gulf (pictured from the air at left) is an abrupt steep-sided depression, which resembles a large peanut shell. The gulf measures 1,075 feet in length and averages approximately 350 feet in width. The gulf walls vary in height from 25 feet on the northwest side to approximately 95 feet on the southwest side.

The Rise of the Underground Lost River

Lost River rises from a 125-foot rise-pool called Boiling Spring (shown below) located at the southern end of the gulf. The artesian waters rise from the main subterranean course of Underground Lost River. The Boiling Spring waters are forced to rise 20 feet or more from the submerged passage during low-water. During floods they rise as much as 50 feet or more.

Photo by Steve Higgs

During low-water periods the Boiling Spring pool is 25-30 feet deep, azure blue in color and perfectly calm. The water flows for a short distance and then disappears through the mud-covered talus rock at the base of the south wall of the gulf.

During high-water periods the water increases in volume and becomes muddy and silt-laden as it rises turbulently from Boiling Spring Rise. The photo above shows the gulf during flood,

when the waters almost fill the gulf.

There are other smaller active boil holes within the gulf area. One is shown here.

The Archaeology of Wesley Chapel Gulf

The Hoosier National Forest has allowed for the systematic archaeological study of Wesley Chapel Gulf. The results of this research have shown that this unique geological feature was of interest to prehistoric Native Americans for over 10,000 years. Artifacts recovered from the site indicate that Wesley Chapel Gulf was used by prehistoric Indians as a short-term camp. Small groups of people visited this place time and time again to gather plants for food and medicine, hunt animals, collect water, and quarry Lost River chert – a raw material used by Native Americans to manufacture projectile points and other stone tools.

This is an example of an archaeological test unit.

Threats to Karst Resources

Karst landforms are vulnerable to groundwater pollution because surface waters channel rapidly into the subsurface at sinkholes and swallow holes. These waters flow underground without the benefit of filtration or exposure to sunlight, which might remove or kill some organic contaminants. In addition, the use of cave conduits as natural sewer lines and sinkholes as garbage