

# Caves And Karst Topography In Pulaski County

By Dan Slais

The topography, or lay of the land, in Pulaski County and much of the Ozarks is characterized by caves, losing or lost rivers, springs, sink-holes, and natural bridges. This type of landscape is called karst topography. The term "karst" comes from a classic example area of this type of terrain found along the Adriatic coast of Yugoslavia and Italy. Much of the east central and southern U. S. exhibit these features. States with karst landscape include Missouri, Kentucky, Tennessee, Alabama, and Florida.

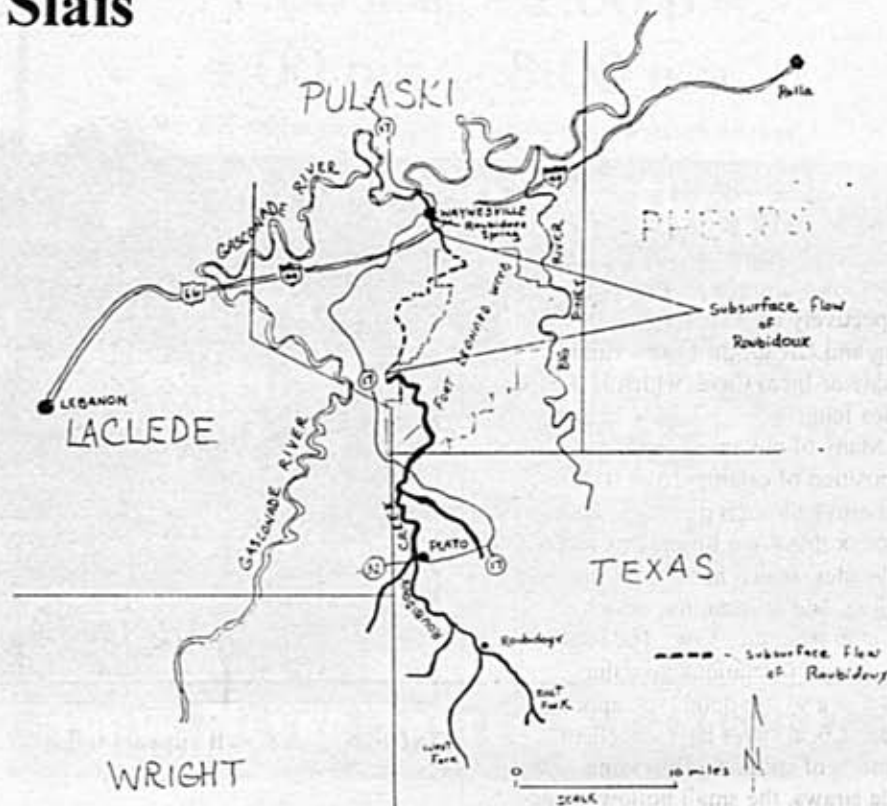
The development of caves and karst features is directly related to the action of water on soluble bedrock. The basic bedrock where caves form in Pulaski County is the Gasconade Dolomite. The necessary chemistry to begin a cave is fairly simple. Water is the active solvent. As water runoff

passes through the floor of an oak-hickory forest, it picks up carbon dioxide. The water runoff is now a very mild carbonic acid.

The action seen in nature is the same acid-base reaction that happens when you mix vinegar and baking soda. I remember making quite a mess in my mother's kitchen with such an experiment. These ingredients can react violently before they harmlessly neutralize. In nature, when the mild carbonic acid comes in contact with the basic rock dolomite, the rock begins to dissolve. It takes many years of this type of reaction before any significant amount of change takes place.

## Caves in Pulaski County

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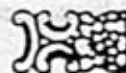
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with a count of 5,475. In 1952, Pulaski County had more recorded caves than any other Missouri County. Today, Pulaski County has 304 caves, according to the Missouri Geologic Survey. Pulaski is in fourth place behind Perry, Shannon, and Greene counties. As more caves have been logged in the state, Pulaski has slipped somewhat. Several primary highways through Pulaski apparently facilitated the discovery of its many caves at an earlier date than in some other counties.

Missouri's longest cave list contains at least three Pulaski County Caves in the top twenty five. Piquet Cave is 8th longest in the state at 4.86 miles long. Number 24 and 25 respectively are Cox Cave, 2.06 miles long and Great Spirit (also called Maxie or Inca) Cave, which is 2.01 miles long.

Many of our caves contain deposition of calcium from waters that move through the cave. Calcite or onyx dripstone formations include stalactites, which hang from the ceiling, and stalagmites, which develop from the floor. The bizarre patterns of formations give the caverns a wonderland type appearance. Local caves have excellent exhibits of columns, flowstone, and soda straws, the small hollow stalac-



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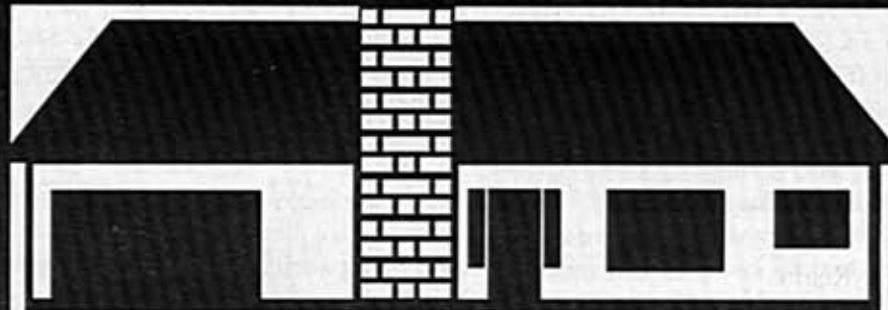
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tites. Several of our caves have been "show" caves that were open to the public.

Among the "show" caves in our area was a cave originally known as Maxie Cave. The story goes that the name Maxie was gained from an early owner who hid in the cave following a "shoot out" with a neighbor named White. Maxie was eventually captured. Later the name Inca was given by commercial developers. This name stems from unusual artifacts in the cave that were thought to resemble Incan relics. Features in the cave were then named to fit the Incan title.

Inca Cave is three miles south of Buckhorn on Highway NN. Visitors reached Inca Cave on a tramway down from the top of the hill. The huge entrance is 70 feet wide and 30 feet high. The cave was open from 1952 until the 1960's. The state bought the cave and it has been renamed Great Spirit Cave. Today, it is a protected bat sanctuary, and therefore is closed to the public.

Indian Cave, or Pike's Peak Cave, at the confluence of the Roubidoux and Gasconade Rivers opened in 1953 as a bar-dance hall. It is currently back to its natural opening and has easy access. The cave can be seen from Highway 17.

Two caves that are currently open to the public include Onyx Cave and Ozark Springs Cave. Onyx Caverns is off of Highway J near the interstate. Its owners offer daily tours. Ozark Springs Cave is now the home of Cave Man Barbeque at Steckel's Ford towards Richland.

According to archaeologists, nearly every cave suitable for habitation was used by early man along the Gasconade River. Consequently, there is a vast richness of archaic material in the area. Miller Cave in southern Pulaski County is known for its petroglyphs, or carvings in stone, that were crafted by Indians. Today, it is illegal to dig in caves for Indian relics.

Spelunking can be fun, but also dangerous. The first rule is always to get permission from the cave owner before entering. Do not trespass. Never go caving alone, and leave word with someone outside as to where you are going. Always have three light sources, because flashlight batteries may run out. Candles, carbide lamps, and even lanterns are sometimes applicable. Helmets can be surprisingly helpful and are recommended. Above all, never exceed your capabilities. Don't push yourself beyond your physical limits. Safe caving means protecting yourself and caving companions from injury, as well as preventing damage to the cave and its fragile environment.

Caves always reveal surprises. Just as Mark Twain remarked of his

great cave south of Hannibal, "No man knows the cave. That was an impossible thing."

Vertical shafts in Pulaski County caves are somewhat prevalent, and a rope can be a useful tool. It is easy for an explorer to find ten to twelve foot drops. Floodprone underground streams can be a major hazard. Deaths from accidental drowning have had occurrence in Missouri. Weather conditions should be considered.

## ROUBIDOUX--A LOST RIVER

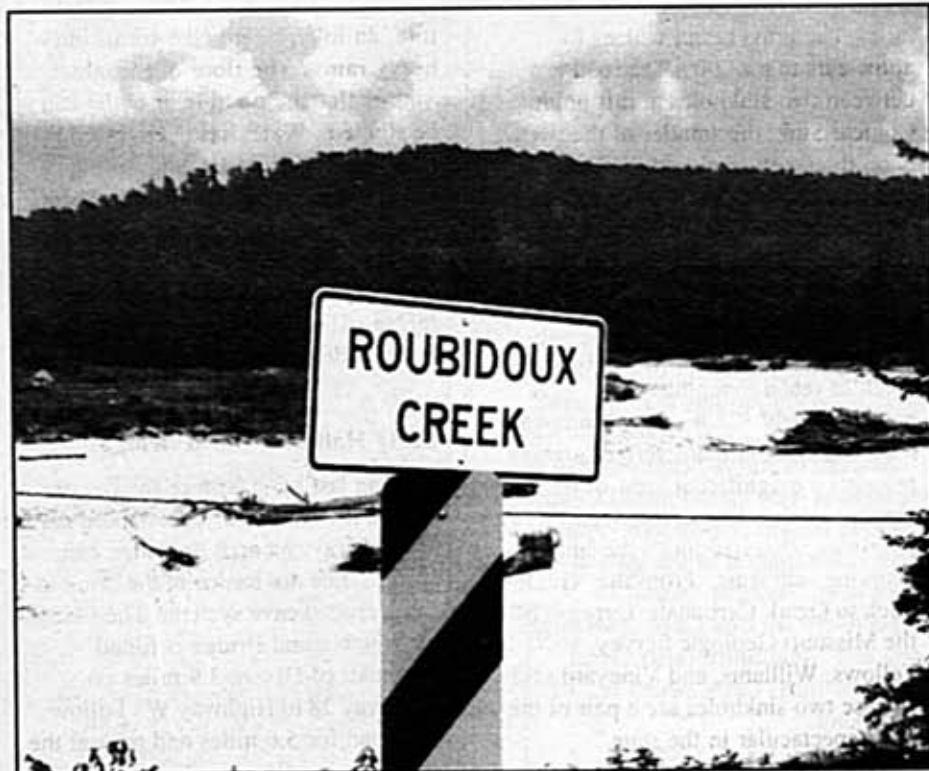
Classic to the list of karst features in Pulaski County is Roubidoux Creek, a lost river. Several of our county's streams have sections where they actually lose water into the ground. The Gasconade from Highway 7 to Bartlett Mill Spring has been checked several times since 1953 to show measurements of losing water. The Roubidoux, however, is more than just a losing stream because it goes completely underground on Fort Leonard Wood.

Roubidoux Creek begins in Texas County as a number of tributaries, mainly the East and West Forks of the Roubidoux, come together at the former town of Roubidoux. There is still a house at the town location south of Plato, Missouri. The stream maintains an adequate creekly flow. Missouri Stream Team #226, the Slais Family, has monitored an average of between 60 and 90 cubic feet per second of flow in the area north of Plato.

The stream continues north under the bridge in south Highway 17 flowing into Pulaski County and onto Fort Leonard Wood. The Roubidoux passes Blades Ford and Cookville Ford. This stretch is adjacent to Cannon Range and the Artillery Impact Zone. One common theory regarding the Roubidoux being a lost river is that the Roubidoux flows into the impact holes on Cannon Range. This is not true.

The Roubidoux, still possessing a steady flow, goes by Dundas Ford, where Fort Leonard Wood sections 20, 21, 22, and 14 meet. Quesenberry Ford is near the western Fort boundary where the creek goes off of Fort Leonard Wood. The Roubidoux makes a tight loop next around the Devil's Backbone, a 300 foot high ridge. As described in "Geologic Wonders and Curiosities of Missouri," "On the south side of the Backbone a permanent eddy is indicated, whereas on the north side no water is indicated in the channel along a lengthy stretch of the stream. Obviously, the flow is subsurface in this stretch, in the sands and gravels of the streambed and possibly, to some degree, in karst channels."

The rest of the Roubidoux is



VIEW OF THE waterless Roubidoux Creek bed looking from the H Highway bridge. (Photo supplied by Dan Slais).

mostly dry with occasional holes of water, but no flow. The best example to see the dry bed is on south Highway H, where it crosses the creek. Normally, a visitor here will see nothing more than several hundred yards of gravel. Spring rains and storms will bring surface flow to this area periodically.

The creek channel goes again onto Fort Leonard Wood, where it continues around section 36 before leaving post again. The bridge in section 36 shows an area of water collection. However, the flow does not continue off post. Moving north, the channel seems to regain some flow approximately one mile before Roubidoux Spring. The interstate 44 bridge crosses a substantial Roubidoux Creek.

Roubidoux Spring in Waynesville adds an average of 60 to 75 cubic feet per second of water into the creek. The lost water has been dye traced to follow the creek channel underground and to come back up at the spring. The spring itself has had a colorful history as a grist mill when Waynesville began. Today, the cool spring water has made trout fishing possible through Missouri Department of Conservation Department trout stockings that are made on a regular basis. About two miles further down the Roubidoux brings its moderate flow into confluence with the Gasconade River.

Roubidoux Creek is quite a tremendous example of a lost river. Of its approximate 56 mile length, 10 map miles (or 15 river miles) is spent underground with a dry surface channel.

Drury College at Fort Leonard Wood has offered a class in karst topography in the past. The title,

"Caves and Lost Rivers" seemed to add excitement and perhaps increased enrollment. Part of that class included a fairly easy drive to see the Roubidoux, the lost river. Starting on Highway 17 about 20 miles south of Waynesville, the creek has a good flow. Then, crossing it on Highway H just south of Waynesville, it has no water. When the interstate crosses, the Roubidoux again has water. The final step is to view the Roubidoux Spring, where the lost water comes back up again.

## Slaughter Sinkhole

The definition of a sinkhole is a depression produced in a region where soluble rock has been removed by groundwater. Many form as the dolomite baserock is removed gradually over many years. This type of sinkhole has gentle slopes and are usually not very deep. The drainage, however, in all sinkholes will be straight down through the soil. This is a key for identifying sinkholes. They have no drainage path outward. There are several small sinks in Pulaski County.

Sinkholes can also form when the roof of a cave collapses. The sides can be steep and the depression can be deep. Such is the case of Slaughter Sink. There is a concentration of karst features in the area of Slaughter Sink, including Conical Sink, Boiling Springs, and Onyx Cave, which is commercial. Slaughter Sink is on U. S. Forest Service property, which is open to the public.

Slaughter Sinkhole is located off Interstate 44 at the Highway J interchange. Take the north outer road east for one mile and turn left on Boiling Springs Road for a quarter





mile. The gravel road widens to allow cars to pull off. The road is between two sinkholes at this point. Conical Sink, the smaller of the two, is on the south side, and Slaughter Sink is 150 yards north of the road.

Conical Sink can be seen from the road. It has been used as a dump in the past. It is about 100 feet deep by 300 feet in diameter.

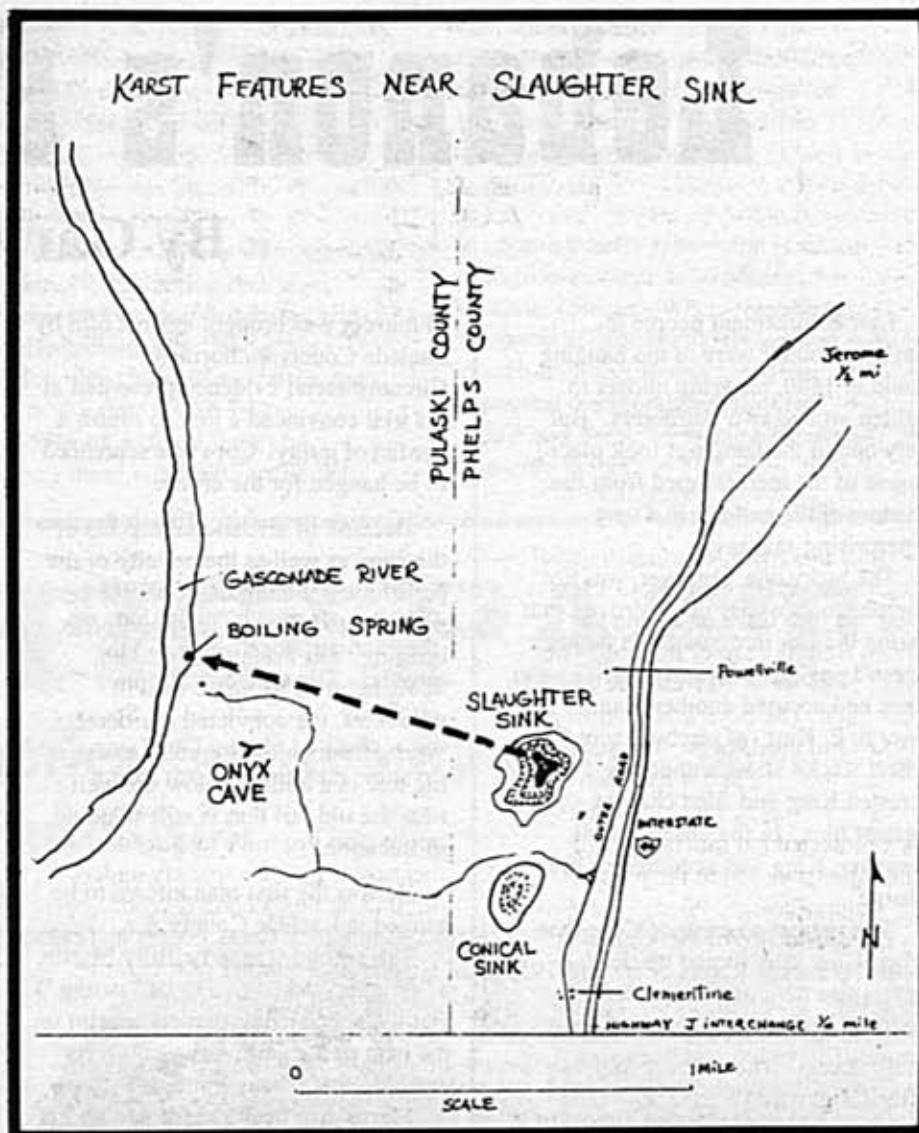
A path through the woods must be taken to reach Slaughter Sink. It is approximately 175 feet deep and over a quarter mile in diameter. Slaughter presents a magnificent view of its vertical walls when standing on a promontory that overlooks the sink from the southeast. From the "Guidebook to Ozark Carbonate Terrane" by the Missouri Geologic Survey, 1970, Fellows, Williams, and Vineyard said, "These two sinkholes are a pair of the most spectacular in the state."

The drainage from the large basin of Slaughter Sinkhole is not capable of carrying away all the water that enters during stormy periods. There-

fore, an intermittent lake forms after heavy rains. The floor of Slaughter Sink is flat and no hole or outlet can be sighted. Water has been traced by florescein dye into Boiling Spring about one mile away. Boiling Spring is the fifteenth largest spring in the state of Missouri, and it is the largest spring in the Gasconade Basin. The spring rises into the channel of the Gasconade River.

#### Clifty Hollow Natural Bridge

One last karst feature seen in our area is the natural bridge. There are several ways an arch or bridge can form. They are basically the remains of an eroded cave system. The Clifty Hollow Natural Bridge is found northeast of Dixon, 3.9 miles on Highway 28 to Highway W. Follow this road for 5.6 miles and park at the conservation signs on the left. The hike north down to the creek and east to the Natural Bridge is about one mile.



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