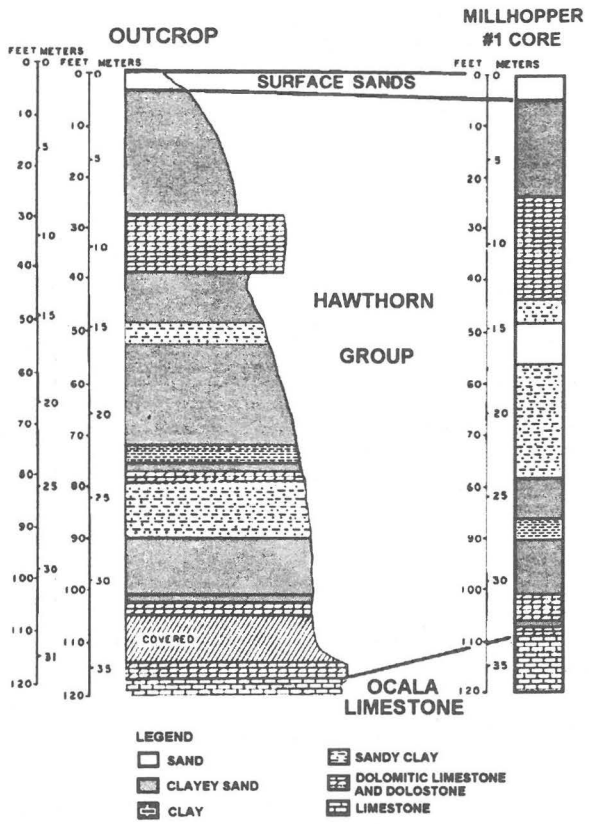

Figure 2. Comparison of Devil's Millhopper outcrop and Millhopper #1 Core (modified from Scott, 1986)

The core hole drilled near the sink encountered 23 feet of Ocala Limestone, 99 feet of Hawthorn Group sediments and 10 feet of undifferentiated quartz sands. This section corresponds well to sections measured in the Devil's Millhopper by various geologists.

Numerous irregularities in the slope of the sink, including large blocks of rock, can be seen. These are the result of sediments slumping from the slopes and moving downslope. The bottom of the sink is filled with debris that has fallen into the Devil's Millhopper in this manner.

REFERENCES

Dall, W. H., and Harris, G. D., 1892, Correlation paper - Neocene: United States Geological Survey Bulletin 84, p. 85-158.

Johnson, L. C., 1888, The structure of Florida: American Journal of Science, 3rd Series, v. 36, p. 230-236.

Scott, T. M., 1986, Devil's Millhopper, Alachua County, Florida, *in*: Neatherly, T. L., (ed.) 1986, Southeastern Section of the Geological Society of America: The Geological Society of America, Decade of North American Geology Centennial Field Guide Volume 6, p.335-337.

Scott, T. M., 1988, The lithostratigraphy of the Hawthorn Group in Florida: Florida Geological Survey Bulletin 59, 145 p.

Scott, T. M., in preparation, Geomorphic Map of Florida: Florida Geological Survey Map Series.

White, W. A., 1970, The geomorphology of the Florida peninsula: Florida Bureau of Geology Bulletin 51, 154 p.

Florida Geological Survey
Gunter Building
903 West Tennessee Street
Tallahassee, FL 32304
(850) 488-9380

An Overview of the Geology of Devil's Millhopper State Geological Site

by
Thomas M. Scott, Ph.D., P.G.
Assistant State Geologist
Florida Geological Survey

Devil's Millhopper is a large, impressive sinkhole located in west-central Alachua County, northwest of Gainesville (Gainesville West USGS 71/2 minute topographic quadrangle - see Figure 1). The State of Florida has incorporated the Devil's Millhopper sinkhole and the surrounding land into the Devil's Millhopper State Geological Site. Access to the sinkhole is limited to the designated trails and a boardwalk to the bottom. A stream enters the sink through a narrow ravine from the west. The boardwalk descends into the Millhopper from the west along the southern side of the stream.

Sinkholes form by the process of karstification which results from the dissolution of limestone by acidic ground water and collapse into the resulting cavities. A karst landscape is one that is dominated by sinkholes and other karst features including caves and springs. The term karst comes from an area of abundant dissolution features in northwestern Yugoslavia.

The Devil's Millhopper, a deep, steep sided, nearly circular sinkhole, occurs within the Alachua-Lake City Karst Hills of the Okeefenokee Basin geomorphic district (Scott, in preparation). This corresponds to the southern portion of the Northern Highlands as described by White (1970). The Alachua-Lake City Karst Hills are characterized by numerous rounded hills interspersed with sinkhole (karst) basins. The surface elevation at the rim of the sink is generally near 175 feet above sea level.

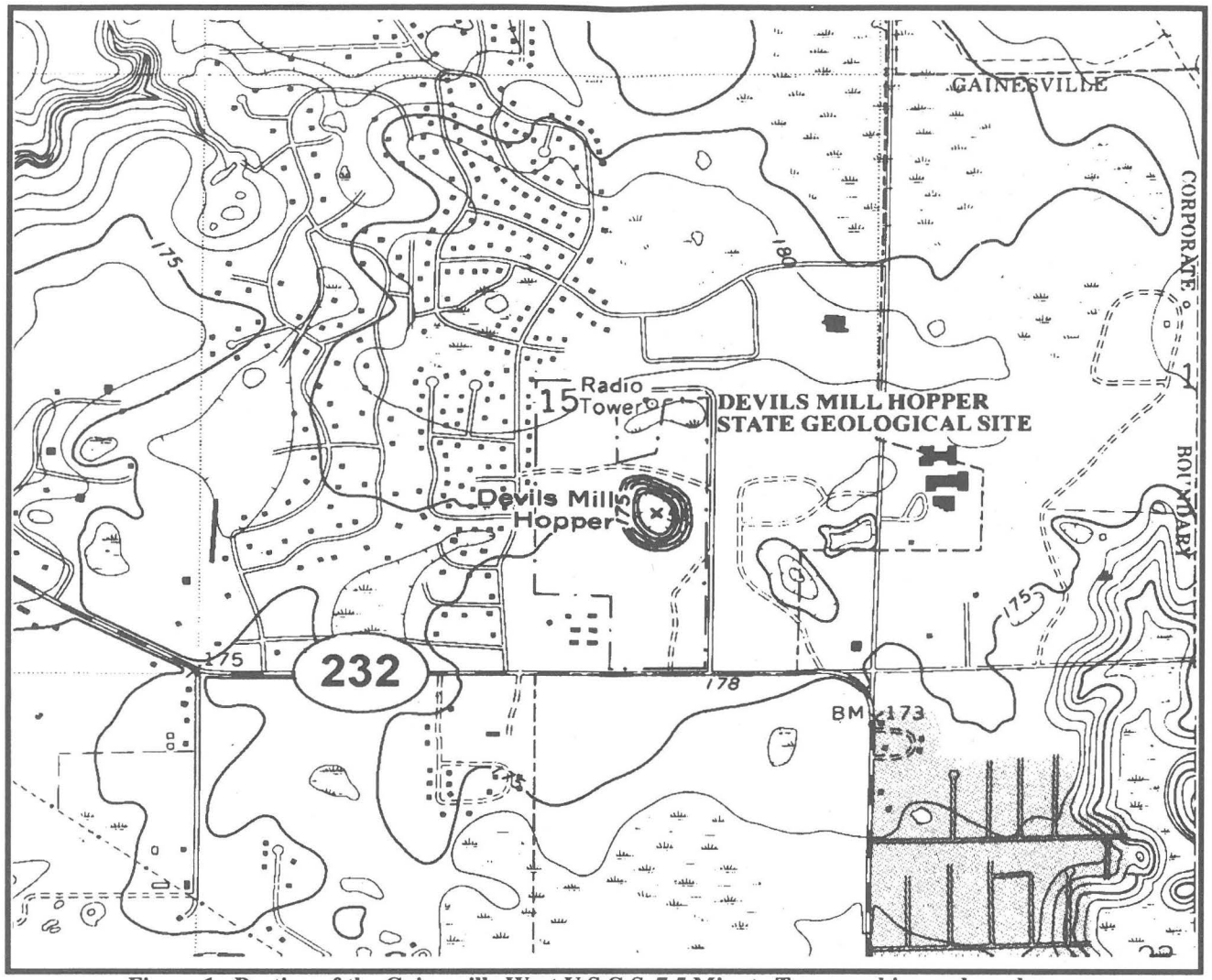

Figure 1. Portion of the Gainesville West U.S.G.S. 7.5 Minute Topographic quadrangle map showing the Devil's Millhopper.

The Devil's Millhopper has long been considered an important exposure of the Lower to Middle Miocene (24 to 10 million years ago) Hawthorn Group sediments due to the thickness exposed. This sinkhole was first mentioned in the geological literature of Florida by Johnson (1888) and later by Dall and Harris (1892) as a reference section for the Hawthorn Formation (now called the Hawthorn Group [Scott, 1988]). Another reference section for the Hawthorn Group, Brooks Sink, is located approximately 15 miles north-northeast of Devil's Millhopper in Bradford County. Due to the importance of the stratigraphic section of the Devil's Millhopper, the Florida Geological Survey drilled a 132 feet deep stratigraphic core east of the sink in 1980. This reference core is archived at the Florida Geological Survey in Tallahassee.

Approximately 120 feet of sediments are exposed in the sinkhole (Figure 2). Although much of the outcrop is covered by lush vegetation, there are a number of places along the boardwalk where the sands, clays, limestones and dolostones can be observed. At the base of the sinkhole, the stream flows into a cave developed in the Upper Eocene (37 million years old) Ocala Limestone. The Ocala Limestone is a very pure limestone composed of the remains of ancient marine organisms including mollusks (snails and clams), foraminifers (single-celled organisms with calcareous shells) and echinoids (sand dollars and sea biscuits). The cavity that collapsed to form Devil's Millhopper formed within the Ocala Limestone. Only a few feet of this limestone are exposed.

Between the Ocala Limestone and the Hawthorn Group is a large gap in the rock record of nearly 13 million years. If any sediments were deposited during that time, they have been removed by erosion.

Overlying the Ocala Limestone are approximately 105 feet of the Lower to Middle Miocene (24 to 10 million years old) Hawthorn Group phosphatic dolostones, clays and sands. The few fossils occurring in these sediments include shark's teeth and other vertebrates and mollusks. Grains of phosphate are very common in the Hawthorn Group sediments. North of Devil's Millhopper, near the Florida-Georgia border, abundant phosphate in the Hawthorn Group is mined to make fertilizer and other commodities. In the vicinity of Gainesville, phosphate is not concentrated enough to be of any economic value.

Overlying the Hawthorn Group is an unnamed sand of unknown age, though it is often referred to as Pleistocene (1.8 million to 10,000 years old). The sand ranges from a few feet thick to approximately 10 feet thick.