HILLS, RIDGES, AND RAVINES

Winding roads through the densely wooded hills of Brown County, punctuated by breathtaking vistas of the deeply entrenched Salt Creek valley system, make Brown County State Park one of the most beautiful recreation areas in Indiana. The distinctive landscape is part of a physiographic region in south-central Indiana known as the Norman Upland. The rugged topography and steep-sided valleys of the upland formed from sandstone, siltstone, and shale deposited over 340 million years ago. The magnificent vistas bear witness to the erosive power of streams and glacial meltwater on ancient bedrock.





Fire Tower

The 90-foot-tall Fire Tower provides a superior view of a pre-Pleistocene landscape. The area of low relief, known as a peneplain, represents a land surface undisturbed by glacial activity.



Weed Patch Hill

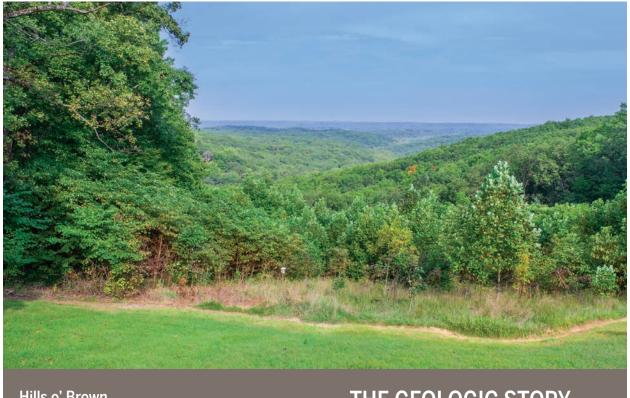
Weed Patch Hill is the third highest summit in Indiana. The slumping of weak shales that underlie sandstone ridges helps to maintain the steep slopes seen from this overlook.



Geology and Vegetation

High sunny ridgetops of weatherresistant sandstone are topped with oak and hickory trees. The moist shaded slopes composed of shale and siltstone contain beech and maple trees, wildflowers, and ferns.





Hills o' Brown

The vista from Hesitation Point, a little more than 2 miles east of the West Entrance gate. offers a breathtaking view of the Salt Creek valley system. The Brown County landscape formed in the past few million years through the erosive power of streams and glacial meltwater on ancient deltaic rocks.

Indiana Geological & Water Survey | Indiana University 1001 E 10th St., Bloomington, IN 47405-2208 812.855.7636 | igwsinfo@indiana.edu | igws.indiana.edu

THE GEOLOGIC STORY

of Brown County State Park



The Bedrock

The ridges, valleys, and stately hills of the park were carved from sedimentary rocks that formed 359-318 million years ago. During the Mississippian Period of geologic time, most of southern Indiana was covered by a shallow inland sea. Sand and silt from the Appalachian Highlands was carried into this shallow sea by the ancient Ontario River system and deposited as a vast delta. The delta intersected and covered broad areas, much like today's Mississippi River delta in the Gulf of Mexico. In time, the weight of overlying sediments and internal chemical reactions hardened the finely laminated delta deposits into silica-rich siltstone, sandy shale, and sandstone. Geologists have classified the rocks exposed in the park as belonging to the Edwardsville and Spickert Knob Formations of the Borden Group.

Evidence from nearby localities indicates that the deltaic rocks in this area were later covered by an additional 1,000 feet or more of limestone and other types of sedimentary rock. All record of these younger formations has been lost to erosion, however, as you will discover later in this story.

Many park visitors notice the multicolored bands that appear on the surface of bedrock outcrops. These red, dark gray, and black layers owe their color in part from iron compounds and organic material deposited in the sediments themselves and by groundwater that flowed through the pore spaces of the siltstone and sandstone.

Eroding the Landscape

After the Borden delta and later sediments were deposited in this area, the land was uplifted above sea level by tectonic forces. Exposed to weathering and running water, the soft, easily eroded shales wore away with the passing ages to form the symmetrical hills and valleys typical of this area. In some places, the more resistant sandstone layers within the Edwardsville Formation acted like an armor plate by protecting the rocks beneath them from the effects of erosion. Weed Patch Hill, parts of Limekiln Ridge,

and Hohen Point are typical hills capped by sandstone and rise more than 1,000 feet above sea level. Weed Patch Hill, in particular, is one of the highest elevations in Indiana and the high point of the nearby-Knobstone Escarpment at 1,058 feet above sea level.

The marked symmetry of the hills and valleys, as viewed from Hesitation and Hohen Points, is due to the homogenous, nearly horizontal bedding surfaces of the Borden rocks that eroded uniformly by stream action. Many overlooks provide superior views of the repeating hills and valleys; the Fire Tower is 460 feet above Salt Creek, while the north lookout is 290 feet and Abe Martin Lodge is 160 feet above the creek.

Untouched by the Glaciers

Although the continental ice sheets of the Pleistocene Epoch (2.6 million–12,000 years ago) did not reach this area, their presence north and east of the park is reflected by increased erosion and filling of local valleys with glacial debris. Glaciers have advanced into Indiana several times in the past 2.6 million years, but it was during one of the earlier glaciations (called the Illinoian) that the ice came the closest to the park. Meltwater from the ice sheet flowed down Salt Creek and its tributaries, leaving behind deposits of gravel and silt from as far north as Michigan and Ontario. Modern streams have all but eroded these sediment terraces. The effect of glacial meltwater in eroding sediments was dominant in the most recent deepening and shaping phase of the Salt Creek valley system.

The geologic story of Brown County State Park, with its deeply carved valleys and sinuous ridges, is largely an account of the erosive power of running water on ancient rocks that were themselves born of soil and rock eroded long ago from another, earlier landscape. By human standards, the hills of Brown County seem everlasting, but in fact they are only momentary features in the history of the changing earth.

