

OUTSTANDING GEOLOGIC FEATURE OF PENNSYLVANIA

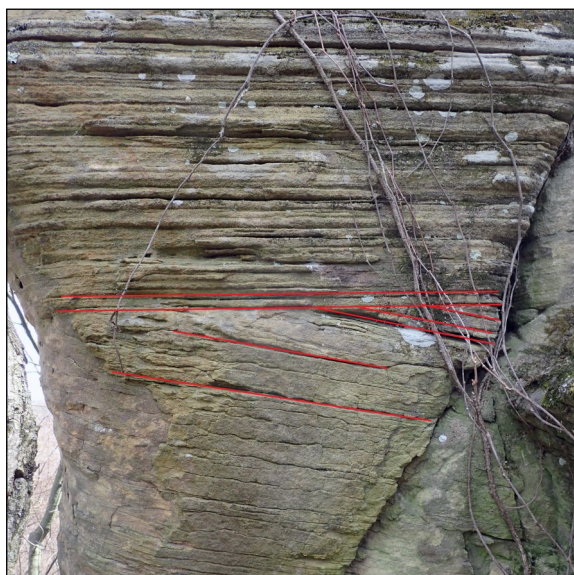
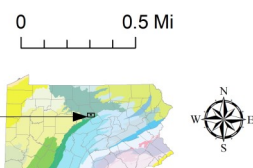
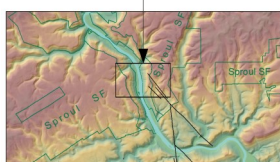
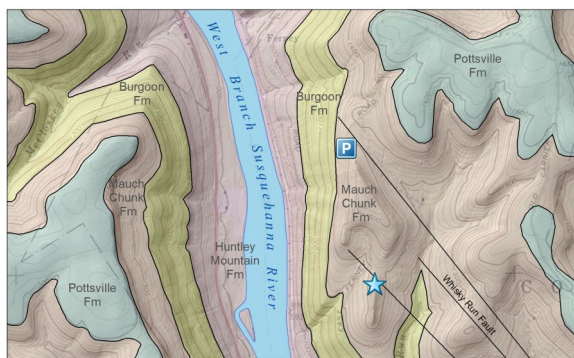
CASTLE KEEPS OF THE LOYALHANNA, CLINTON COUNTY



Rose-Anna Behr, 2021

Location

Sproul State Forest, Clinton County, Colebrook Township, lat: 41.21647, lon: -77.55543 (parking); lat: 41.20772, lon: -77.55306; Farrandsville 7.5-minute quadrangle



Photograph of crossbeds, which form when underwater sand dunes migrate. Red lines were added to illustrate the beds.

Recommended Reading

[Sproul State Forest](#) web page of DCNR.

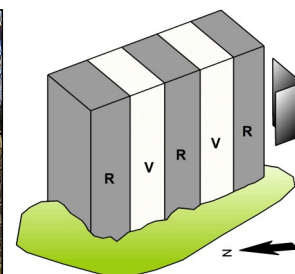
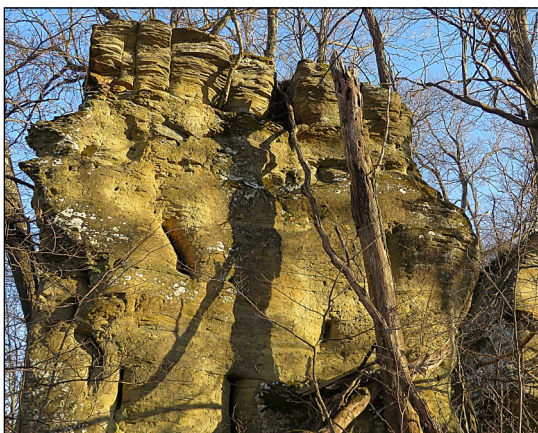
Geology

Nestled in the hardwood forest of Sproul State Forest, the Castle Keeps of the Loyalhanna are four free-standing, blocky towers, remnants of the lower Loyalhanna Member of the Mississippian Mauch Chunk Formation. The northernmost, and largest, is 12 feet high, 10 feet long, and 5 feet wide.

Thin layers of light-olive-green, calcareous sand were laid down in a shallow sea 346 to 330 million years ago. Evidence of ripples and underwater sand dunes can be seen in the crossbeds on the towers.

After the sand solidified into rock, mountain-building events fractured it. The fractures (joints) are at nearly right angles. They opened preferential pathways for weathering to occur. In places, additional dissolution formed small nooks and crannies, some appearing like crenellations on a parapet. The remaining rock forms the captivating features we see today.

Take time to explore the towers and impressive hillside outcrops to the south. The calcareous rocks and soil support a unique flora and fauna that prefer the basic soil and crevices that the Loyalhanna provides.



R = Rock

V = Void

Gray corner plate on right indicates joint directions.

Above left: Photograph of a magnificent free-standing tower of Loyalhanna Member sandstone of the Mauch Chunk Formation. To get to this site, start at the Sproul State Forest parking area and walk or drive about 0.65 mile to the south on the unpaved E. Ferney Road. Sketch on right: How fractures in original rock weathered to the features you see today. Water flowing through the fractures dissolved the calcite cement and carried away sand grains. Over time, the fractures grew wider as more material was removed, until there was more open space than rock.