

# Geology of the Shaddox Hollow Trail

## Trail Description

Stop 1: The rock unit at the surface near the trailhead and at this stop is the Boone Formation, the youngest rock formation along the trail. Mostly seen here is weathered light-gray chert fragments scattered throughout the landscape. Along the trail, the thickness of the Boone is approximately 150 feet. A wet weather spring may be flowing across the valley from Stop 1.

Stop 2: You have now traveled down from the chert landscape to bluffs of the St. Joe Limestone (on your left). The St. Joe is a prominent bluff former and contains many fossils, especially crinoids. These animals are the fossilized remains of marine invertebrates related to starfish and sea urchins. Only sections of the crinoid stems, or columnals, are preserved in the limestone.

Two features are present in the St. Joe Limestone at this location. The first feature resembles teeth protruding from beneath each bed of rock. This feature is a type of karst weathering called scalloping and is formed by the dissolving of limestone by slightly acidic groundwater when it flows along natural cracks or fractures. The second feature, known as a stylolite, is a line in the rock that resembles a small wave. This is an irregular surface that formed when the rock dissolved due to the pressure of the overlying rocks.



Stop 2. Crinoid columnals



Stop 2. Scallops



Stop 2. Stylolites

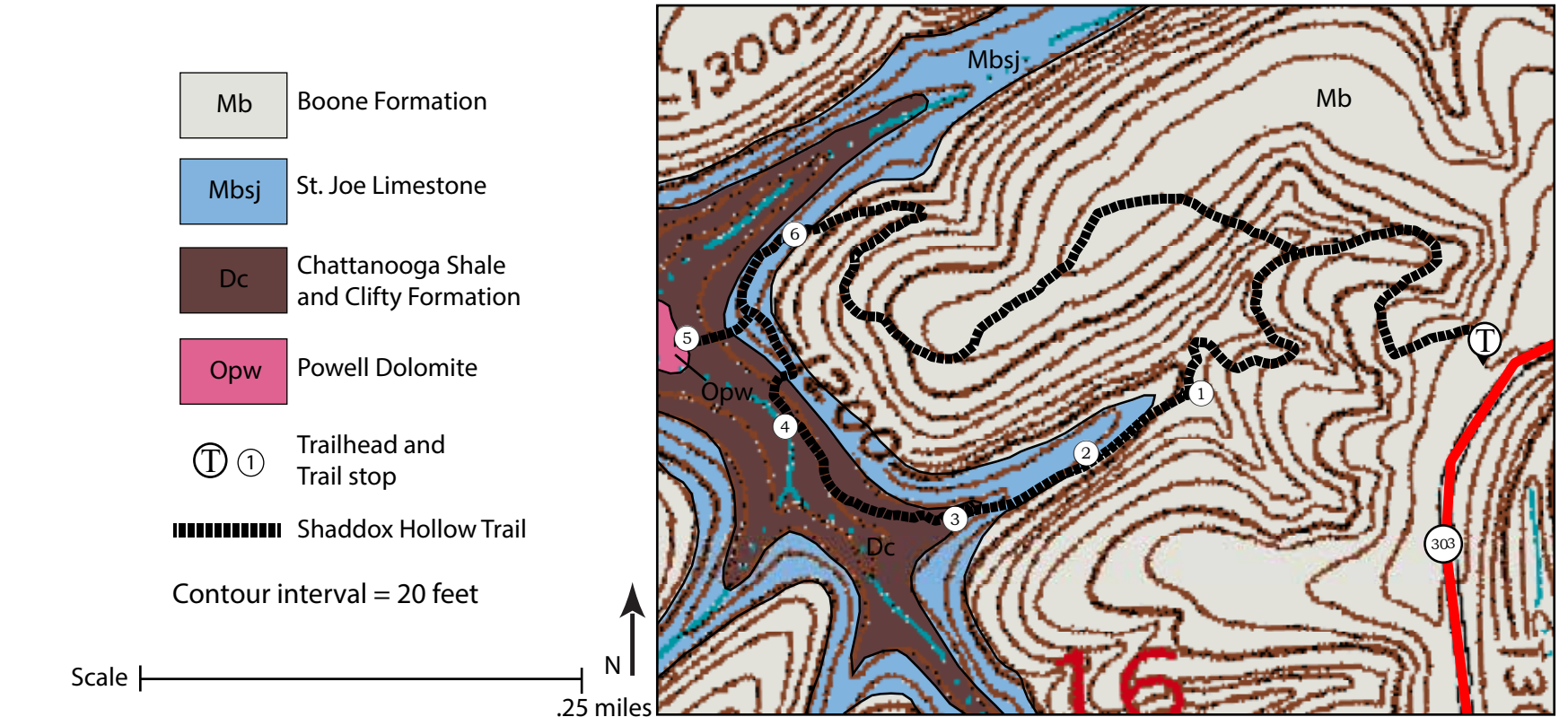


Stop 4. Contact between the St. Joe Limestone and the Chattanooga Shale (red line).

Stop 3: A noticeable slope begins just below the bluff of the St. Joe Limestone. A change in slope indicates a change in rock type. In this case, the slope-forming rock is the Chattanooga Shale, a black brittle shale that breaks down, or weathers, into very thin flakes. Since shale breaks down faster than limestone, gentle slopes are formed, usually covered by vegetation. The best outcrop of this black shale is located along the creek just below the footbridge.



Stop 4. Travertine



Stop 4: You can easily see the St. Joe Limestone bluffs from this stop. For an even better look, you can trek along an offshoot trail that leads up to the bluffs. As you travel up, you are walking on the Chattanooga Shale. Upon reaching the bluffs, you are standing on the contact between the Chattanooga Shale and the St. Joe Limestone. A contact is just as it sounds; where two different formations meet. Travertine, calcite deposited by water flowing out of the rock, is present along the contact.

Once back on the trail, the Clifty Formation is visible below (left) in the dry creek. This sandstone lies below the Chattanooga Shale and is light gray.

Stop 5: The contact between the Clifty Formation and the Powell Dolomite is visible in the creek, just a few steps off the trail. The Powell is light gray to white and is the oldest unit along the trail.



Stop 5. Powell Dolomite below slabs of sandstone in the Clifty Formation.

Stop 6: An enlarged fracture, or joint, is exposed in the St. Joe Limestone. This joint was originally just a small crack. Over time it has widened due to slightly acidic groundwater flowing through the crack causing the rock to dissolve.

As you travel higher in elevation, toward the end of the trail, you will once again encounter chert fragments from the Boone Formation.



Stop 6. Widened joint created by dissolution of the limestone.

