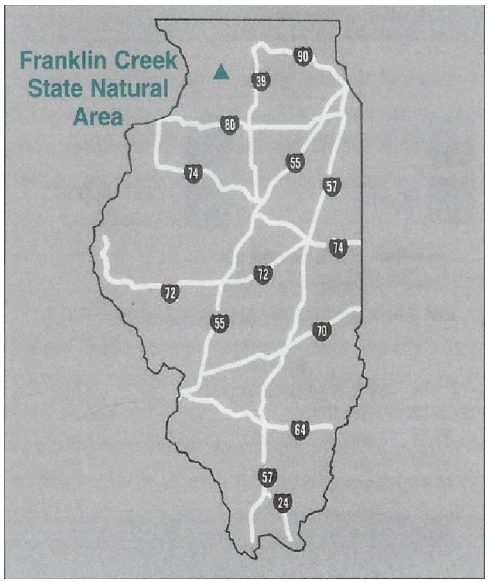
Main features (corresponding to trail markers)

- Monday's Bridge (*Start)*
- Mill Spring (1)
- Lover's Leap (14-15)
- Whipple's Cave (15-16)
- Quarry (41-42)
- Hausen-Knox Shelter *(Finish)*

Are you ready for a quick lesson in geology? This is the place to do it! Most people think of Illinois as being flat, but this part of the state has plenty of outcrops, cliffs and bluffs to see. Be sure to look around between sites, as there is much to see that is not listed or discussed here.

As a starter, notice the ground as you're hiking the Pioneer Pass trail. It appears sandy, doesn't it? That's because it is sandstone. If you look closely, you can see tiny quartz crystals, which reflect the sunlight.

Remember that this is a State Natural Area… Illinois dedicated Nature Preserves are highly protected.



Franklin Creek Conservation Association

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Geology Hike at Franklin Creek State Natural Area

Monday's Bridge ©Kristina McCarthy

The outcrops here are even more ancient than the dinosaurs.

Glaciers that passed through the area long ago have also left their mark. It is the glacial till that makes our soil so rich!

If you like fossils, you can find fossils of burrows, brachiopods, and more while you're out exploring.

Fossils at Franklin Creek

Fossils are the remains, prints, or other evidence of organisms preserved in sediment. The type of fossils found are used to determine the sediment's age and how it was formed, and can also indicate the kind of climate that existed in the past. Fossils can be formed in different ways. Often the mineralized parts of the body are preserved, such as bones, teeth, or the exoskeletons of invertebrates. There are also trace fossils, such as preserved footprints or even feces! Lastly, there are chemofossils; the chemicals left behind by an organism as it decays.

The fossils found in the rock exposed along the Franklin Creek range from about 450 to 500 million years old. They are mostly molds and casts (a mold is filled with sediment and hardened) of animals such as brachiopods and pelecypods (clams and scallops), gastropods (snails and relatives), and cephalopods (relatives of squid). You may even find the burrows of worm-like creatures that lived under the sea bottom.

Fossil of an ammonoid cephalopod ©Alyssa Rod

Monday's Bridge

Notice the rock outcrop across the creek. It is composed of St. Peter Sandstone. This stone is composed of very pure, uniformly fine-grained, and well-sorted quartz sand deposited under an ancient sea that once covered Illinois over 400 million years ago! This sand came from mountains that were uplifted and slowly eroded. St. Peter Sandstone also contains the mineral zircon that was deposited with the mineral quartz sand.

Lover's Leap

This bluff may be nearly one hundred feet tall, but the basal (bottom) layer is of special interest. This layer composes about twenty feet of the outcrop, or exposure of bedrock. Bedrock is the underlying rock just beneath our soils.

This basal layer pertains to the New Richmond Sandstone and was deposited about 485 million years ago during the early Ordovician. At this time the Earth was very different than it is today. This layer appears very smooth and displays aqueous cross-bedding, or wave-like surface features left from ancient water flow. There are also relatively deep crevasses, or indents left from water that lie parallel to the cross-bedding.

Whipple's Cave

Whipple's Cave and the surrounding outcrops reveal three distinct strata, or layers of bedrock. The bottom layer is the New Richmond Sandstone. Sandstone is composed primarily of quartz, with the mineral formula SiO_2 representing silicon and oxygen. Separated by an unconformity (a period of time from which no sediment is preserved), the middle layer is the Shakopee Formation. This is a sandy dolomite also of Early Ordovician age; about 478 million years old. Dolomite consists of calcium, magnesium, carbon, and oxygen with a mineral formula $CaMg(CO_3)_2$.The upper layer is the St. Peter Sandstone, which dates to the Late Ordovician, or 458-453 million years ago. Near the trail, you'll also be able to find some of the aforementioned fossil burrows.

Whipple's Cave

Quarry Pass

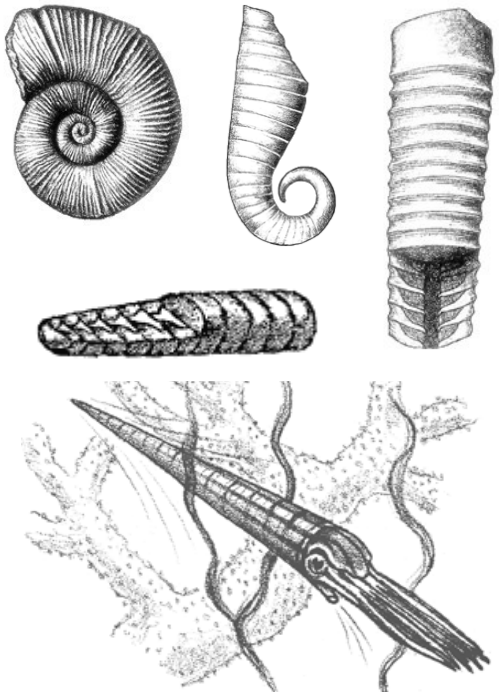
The quarry is just off of the trail between site markers 41-42. The rocks that create the formation here used to be mined during the early twentieth century. The limestone here is primarily dolomite, which is a relatively hard rock compared to sandstone. Some appears more fragile than dolomite, however. Could this be from weathering? Some is highly oxidized, or

rusty looking. Some of the layers are even paper thin like shale. If you look closely enough, you can find dendrites branching through the rock. Dendrites almost look like fossils, but instead they are crystalline structures that formed relatively recently. There are more fossils to be found though… in the parking lot, of all places!

Hausen-Knox Shelter

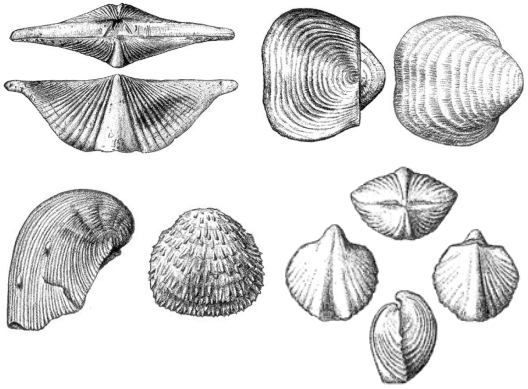
Most parking lots are not that interesting. However, Franklin Creek State Natural Area is the exception. You will notice boulders here that line the parking lot. If you look closely, you can see the layers of deposition, known as bedding planes. You can also see microcrystalline quartz inclusions — quartz that appears milky to the eye — also known as chert. Keep your eyes peeled for fossils. There are brachiopods to be found. Brachiopods are small, shelled organisms that first appeared about 540 million years ago. There are even some species that are still alive today! What kinds of rocks do you think these are? They are surely sedimentary, but think a little harder. Based on what you've learned so far, do you think this is dolomite, or sandstone? You're right, it's both!

Cephalopods

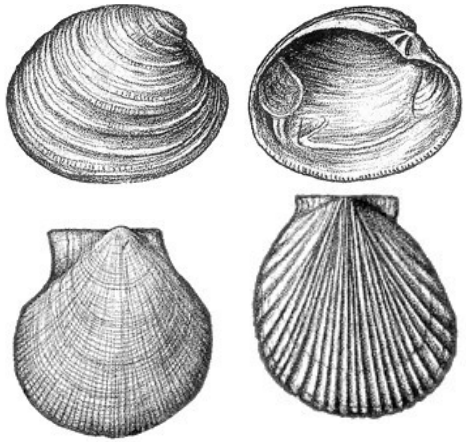


An orthocone; an ancient cephalopod

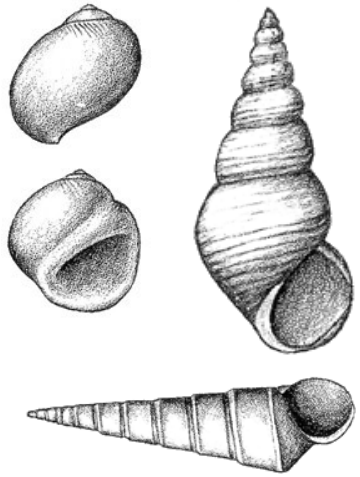
Brachiopods



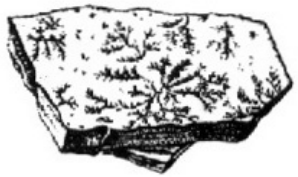
Pelecypods

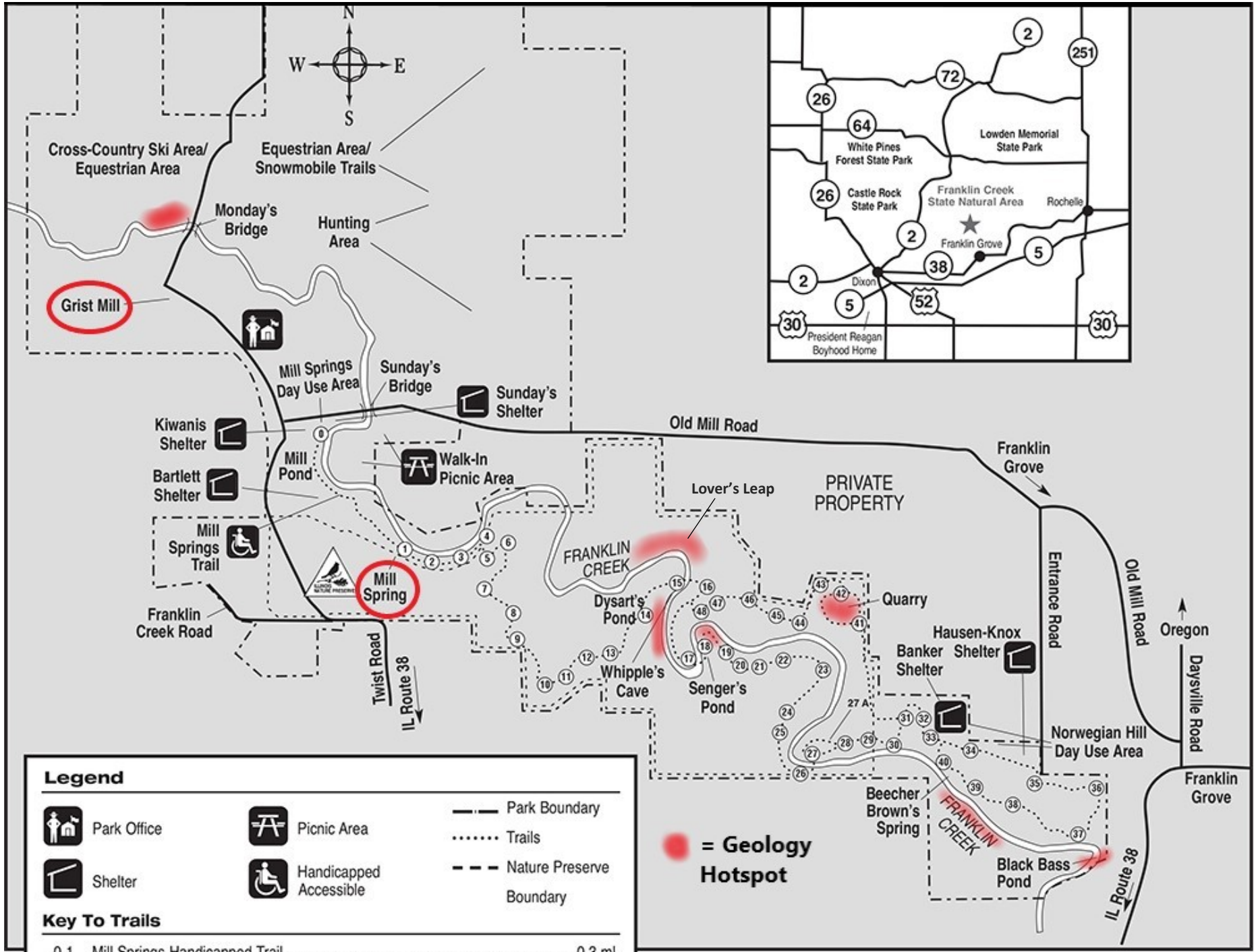


Gastropods



Dendrites





Legend

- Park Office
- Picnic Area
- Park Boundary
- Trails
- Shelter
- Handicapped Accessible
- Nature Preserve Boundary

Key To Trails

0-1	Mill Springs Handicapped Trail	0.3 mi.
1-26	Pioneer Pass	1.85 mi.
27-34	Norwegian Hill Trail	1 mi.
35-40	Black Bass Trail	1 mi.
41-48	Quarry Pass Trail	1 mi.