A look at Ohio's past: A focus on Ordovician and Silurian Period fossils found in the Dayton area

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Abstract

Ohio has a rich geologic history involving the Paleozoic era, specifically the Ordovician and Silurian periods of time for the southwestern part of the state. Ohio was once covered with tropical seas, the evidence for which are the marine fossils found in the limestones, dolomites, and shale rocks in the area. This research project involves a comparison of fossils and geological history of Clifton Gorge, Germantown MetroPark and other parks in the Dayton area. This project also includes a guide for educators on how to engage students through the connection of real world experiences at the high school level using the Ohio Model Curricula (Next Generation Science Standards) and local geology.

Ohio Geology

Ordovician: Paleozoic, 485 million years ago

The Ordovician landscape of Ohio is the most recognized in the state with regards to Paleozoic time. The formation comes from the subtropical climate that Ohio was once located in before the North American and European plates collided to form Pangea. These rocks are found in the Dayton region and reach to adjacent Indiana and Kentucky. With regard to fossils, the most common are bryozoans and brachiopods.

Silurian: Paleozoic, 445 million years ago

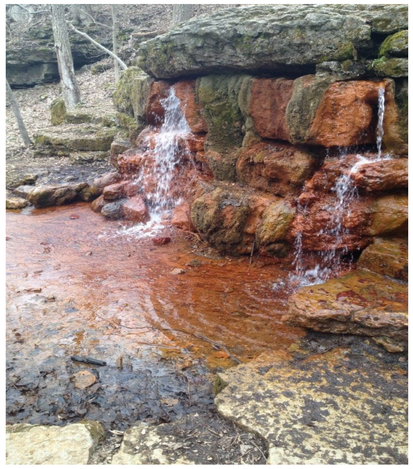
The Silurian landscape in Ohio is made up of mostly limestones and dolomites and they contain deposits of salt, natural gas, and oil. Much like the Ordovician before it, Ohio was still tropical and located near the Equator. The rocks of chemical precipitates of the salty waters and climate attribute to the salt deposits. This system is bounded through an unconformity which means that erosion of the Ordovican landscape before it occurred before Silurian deposition. Types of fossils present in this formation include corals and echinoderms with emphasis on crinoids.

Clifton Gorge
Northeast of Dayton, near John Bryan State Park

Time Period: Silurian

Main Rocks and Fossils: Most notable rocks include Cedarville and Euphemia dolomite and Osgood shale.

Interesting Facts: Little Miami River is down cutting the dolomite, creating a 'new' gorge.



Glen Helen
Yellow Springs, Greene County

Time Period: Silurian

Main Rocks and Fossils: The main rocks are Cedarville and Springfield Dolomite and Osgood Shale. The main fossils are brachiopods, echinoderms, and other invertebrates.

Interesting Facts: There is a glacial erratic in Glen Helen, which was not originally present. The glacial erratic was moved to Glen Helen. There is a "yellow" spring in Glen Helen that is precipitating travertine (an iron-rich limestone deposit). This gives the spring water an iron taste.

Germantown Dam
Southwest of Dayton, in Germantown MetroPark

Time Period: Mostly Ordovician

Main Rocks and Fossils: Limestone and shale; fossils may be very abundant in shell-rich layers packed with brachiopods and bryozoans.

Interesting Facts: Storms over shallow marine seas caused massive deposits of now-fossilized material.