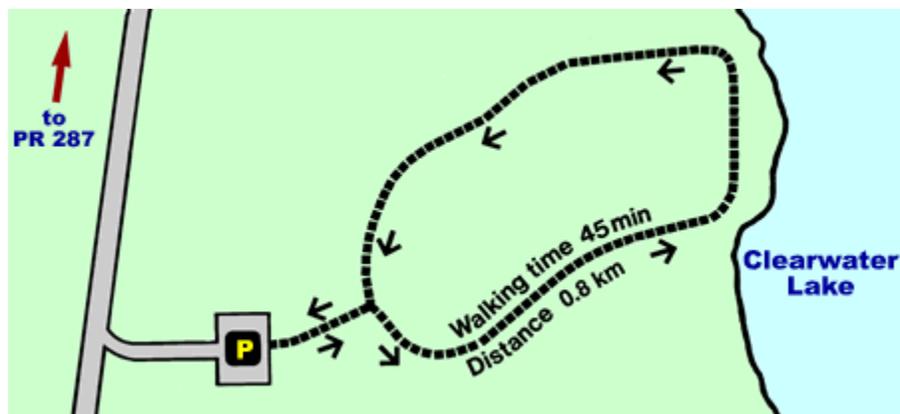


Caves Self-guiding Trail



Half-way around this 0.8-km hiking trail, you'll find one of Clearwater Lake Provincial Park's special places. These are not true caves but rather deep crevices that formed when rock masses split away from shoreline cliffs. In the dark, cool depths you may see snow in early July and hardy plants which can grow in little light.

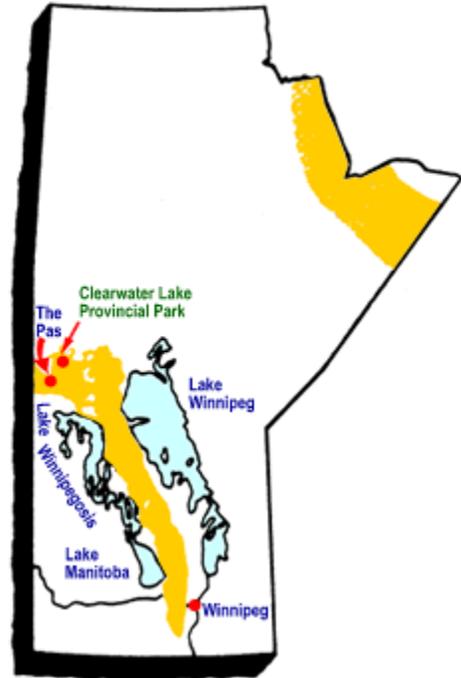
While exploring this impressive park feature, please stay on the designated trail, use the stairways and viewing platforms. These are provided for your safety and to protect sensitive plant growth. Allow about 45 minutes.



Trail map

Beneath this mantle of moss, shrubs and trees, the bedrock is dolomite, a light-colored rock often mistaken for limestone. Both types of rock are hard, horizontal layers of sediment formed on the bottom of ancient seas. Dolomite is composed of previously deposited limestone.

This dolomite was formed 400 - 435 million years ago during the Silurian time period when Manitoba was covered by a warm shallow sea. Also during this time, the first land plants appeared on Earth.



Shaded area shows extent of Silurian dolomite in Manitoba.

The "caves" area begins at the crack a few metres below and extends along the length of this cliff, roughly parallel to the lake. Broken and fallen rock create its cave-like spaces.

True caves are formed when water percolates through sedimentary rock, from above. Following vertical fractures and spaces between layers, parts of the rock are dissolved and eroded. Caves are tunnels and caverns shaped by water.



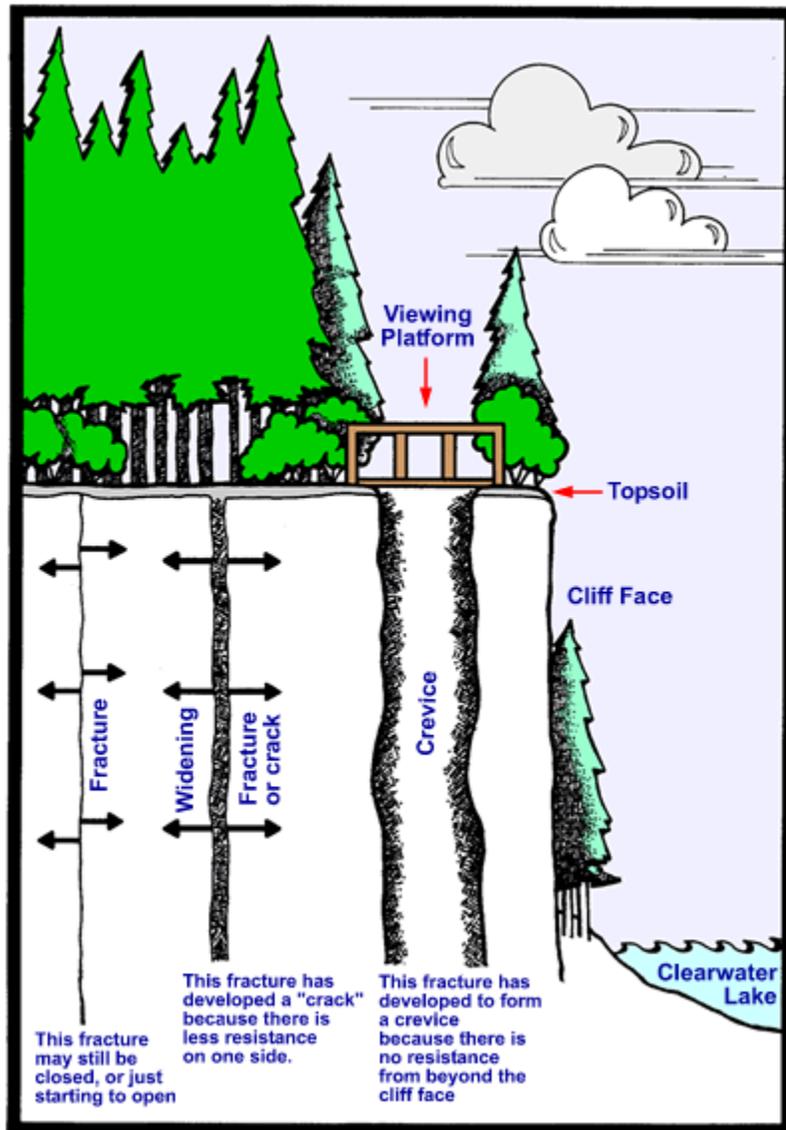
Both cave-like formations of broken rock and true caves, can provide shelter for wildlife such as black bears, squirrels and weasels. In the park, garter snakes spend winters in compartments below the frost line.

(The Narcisse snake dens near Inwood, Manitoba are also in this geological formation.)

During its long history, this bedrock was subject to minor stresses that caused fractures or joints. Fractures are usually straight and vertical. Viewed from above they appear like cracks in a sidewalk.

Since glacial Lake Agassiz retreated from here 8000 years ago, recurrent freezing and thawing of water in the fractures and between the horizontal layers has exerted stress on the dolomite.

Because the cliff was unable to resist the pressures of freezing water on one side, the fractures have widened into crevices. We cannot observe the development of parallel fractures into crevices because topsoil and vegetation cover the surface.



The rocks below were at one time part of this cliff. Their flat surfaces reveal views of horizontal dolomite layers and provide "snapshots" of the ancient sea bottom, from more than 400 million years ago.

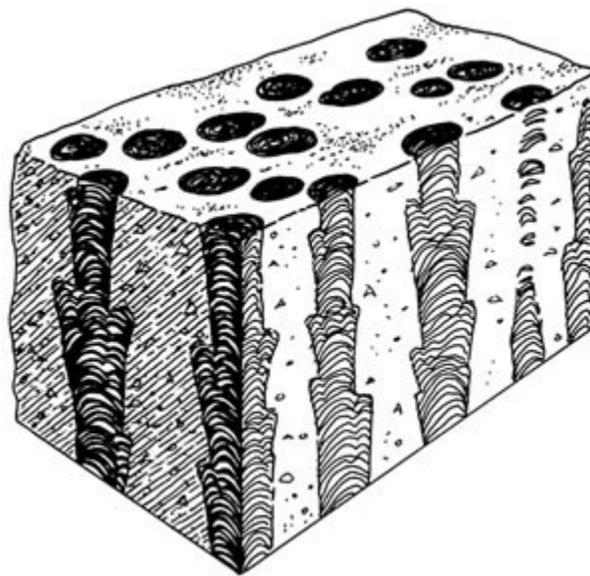
Wavy lines are fossilized ripple marks, similar to those you may see in the sand of the shallows at Clearwater Lake's beaches.

Circular patterns on another boulder are stromatolites*, fossilized plants (blue-green algae) which grew in mounds, domes and columns on the seabed.

*Pronounced "stroh-mah-toe-lites"

As sediment accumulated on surface layers, algae mounds grew upward. Lower parts became fossilized in fine layers of sediment. Modern stromatolites grow in Shark Bay, Australia.

The crevices and the present landscape reflect more than 400 million years of natural change. A primordial sea, glacial Lake Agassiz and Clearwater Lake are just three steps in the long process. Development of a geological formation and weathering occur so gradually, that changes cannot be witnessed in one or even many lifetimes.



Stromatolites in dolomite block.

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