

# Killarney

## Famous Canadian Shield White Mountains and Pink Shores

Killarney sits on the rocky shores of Georgian Bay at the end of Highway 637, an hour and a half drive from Sudbury. This picturesque harbour has a long history as a fur trading outpost and thriving fishing village. Just north of town is Killarney Provincial Park, a wilderness park famous for its white mountains and clear water lakes. Its landscapes inspired members of Canada's Group of Seven artists to paint some of their most famous works and to petition the government to designate the area a provincial park. This GeoTour guide describes sites along the Highway 637 corridor that are easy to access and that tell the story of the area's geological origins.



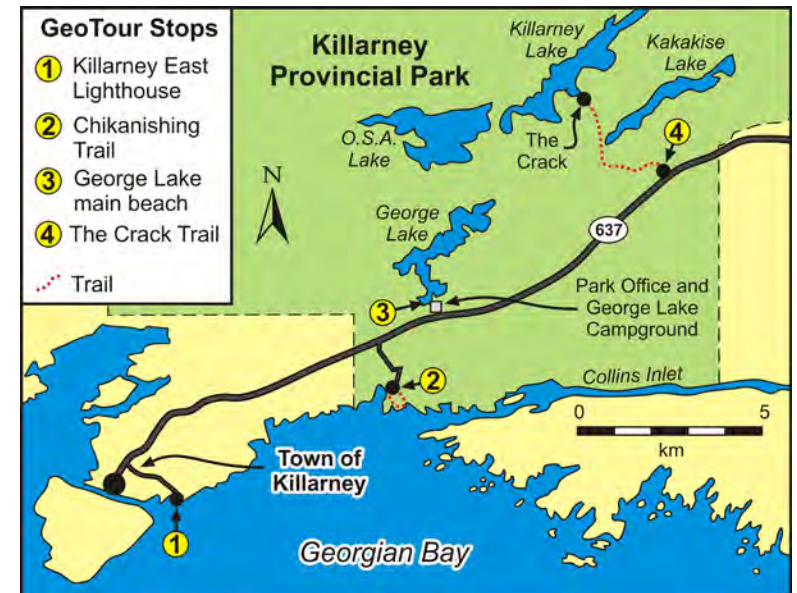
A day hike along the Crack Trail in Killarney Provincial Park leads to this view of white quartzite of the LaCloche Mountain range.

### How to get there

The town of Killarney is 110 km by road southwest of Sudbury. Highway 637 provides access to the southern end of Killarney Provincial Park. GeoTour stops 1 and 3 require only a short walk from parking areas, while stops 2 and 4 are longer walks along hiking trails. Be sure to check for current trail conditions at the park office. Fees are required for use of the park trails and other services. For more detailed descriptions of the geology of Killarney Provincial Park, see Ontario Geological Survey Guidebook No. 6, *Geology and Scenery, Killarney Provincial Park Area, Ontario*.



Town of Killarney harbour.

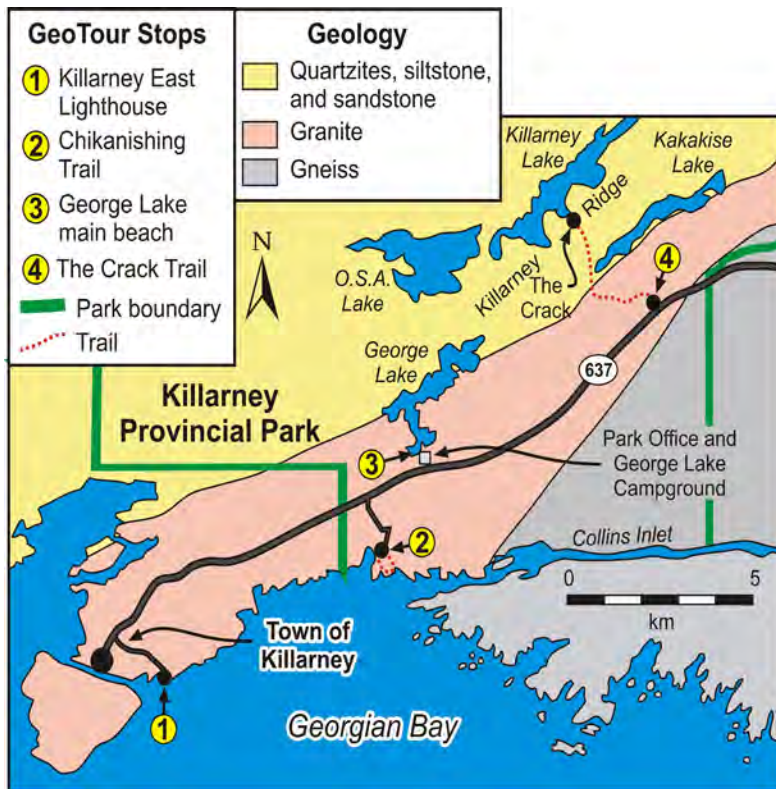


GeoTour stops near Killarney.

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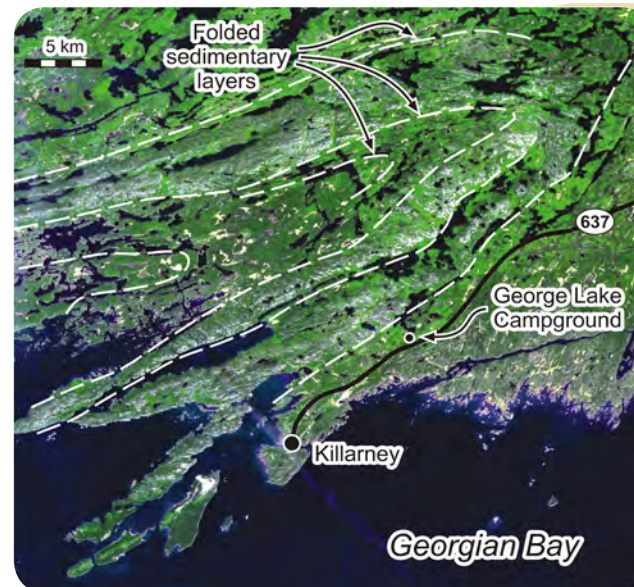
## The eroded roots of ancient mountains

Killarney Provincial Park straddles the boundary between a belt of *gneiss* (pronounced “nice”) that underlies the cottage country of Muskoka and Georgian Bay and a belt of deformed sedimentary rocks (sandstones and siltstones) to the northwest. In Killarney Provincial Park, a band of granite occurs along this geological boundary and these pink rocks are featured along the Highway 637 corridor northeast of the town of Killarney. Northwest of the highway corridor, along the canoe routes and hiking trails of Killarney Provincial Park, are the sedimentary rocks that include the white quartzite mountains that have made the park famous.



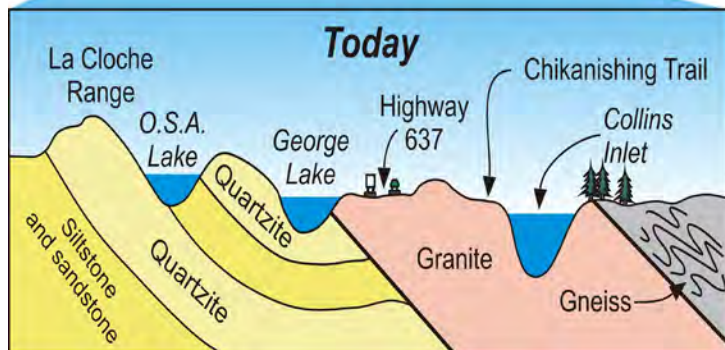
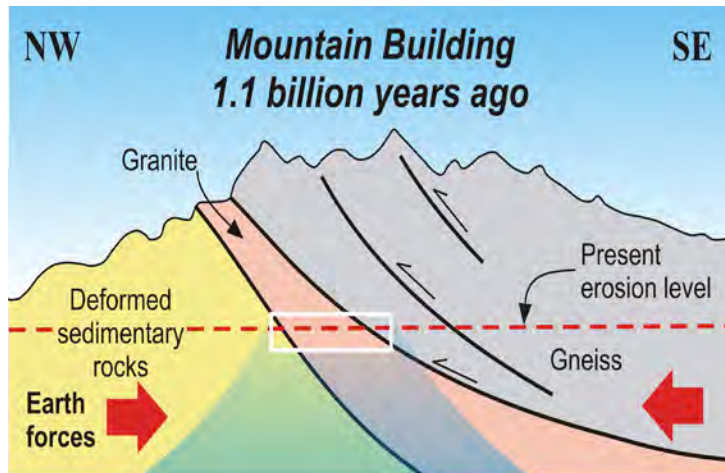
A geological map of the region near Highway 637.

From the main beach on George Lake there is a striking juxtaposition of a pink granite shoreline set against a backdrop of a white quartzite ridge.



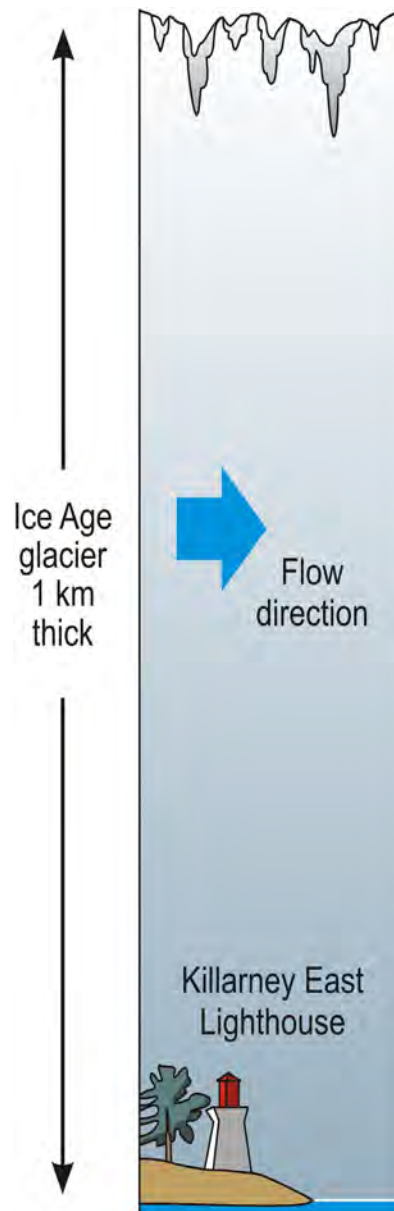
Giant folds in the sedimentary rocks north of Killarney are visible from space. Layers of resistant white quartzite have been folded during ancient mountain building and today form curved ridges. *Image generated from Natural Resources Canada GeoBase Orthoimage 2005–2010 under the Open Government Licence—Canada.*

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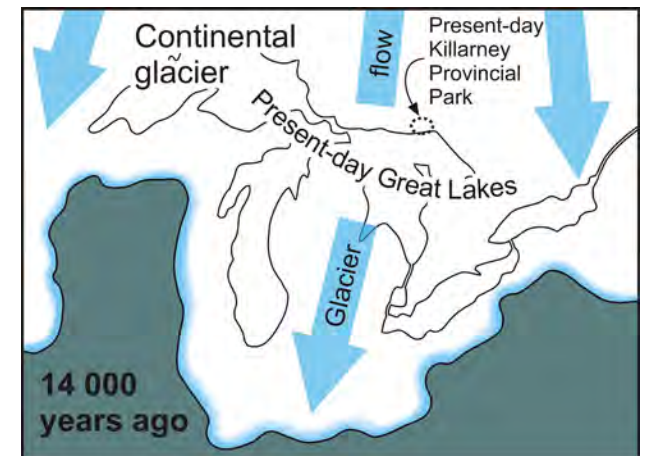


The rocks in Killarney Provincial Park are part of the eroded roots of an ancient mountain range that once stretched from Georgian Bay to Labrador. Rocks caught between 2 colliding continents were squeezed and thrust together, deforming the rocks and metamorphosing them to various degrees. Eons of erosion have worn down these mountains.

## Ice Age!



Fourteen thousand years ago, the Killarney region lay below at least a kilometre of slow-moving glacial ice. At this time, a vast continental ice sheet (large glacier) covered almost all of Canada. These were the final stages of the Ice Age that lasted 2 million years. Ice sheets advanced and melted back many times during the period. Sand, mud and stones lodged in the base of the ice scratched, ground and polished the rock surface below, sculpting the rocks that today make up the Killarney region.



The continental glacier flowed south across the Great Lakes region, scouring the lake basins and carrying debris southwards.

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## ➤ Stop 1: East Lighthouse, Killarney

GPS co-ordinates: N45° 58.209', W81° 29.423'

Our first stop is the shoreline at the iconic East Lighthouse near the town of Killarney. These rocky shores are easily accessible and provide evidence of Ice Age glaciation. A broad exposure of shoreline granite showcases glacier-sculpted features. The lighthouse is accessed from Highway 637 by way of Ontario Street and Airport Road on the outskirts of Killarney.



**Stop 1:** The East Lighthouse sits on glacier-sculpted pink granite.



**Stop 1:** Smoothed and polished surfaces of granite along the shoreline indicate glacier scour. The orientation of aligned scratches and grooves indicates that Ice Age glaciers flowed from northeast to southwest towards Georgian Bay.



**Stop 1:** A photograph of granite at the East Lighthouse. Cream- and pink-coloured feldspar grains occur in a dark, finer grained matrix. Weathering of iron in the granite produces orange-coloured stains. Together, the pinkish feldspars and iron weathering impart the characteristic pinkish colour to the granite outcrops throughout the Killarney area.

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## ➤ Stop 2: Chikinishing Trail

GPS co-ordinates: N45° 59.702', W81° 24.843'

The Chikinishing Trail follows a 3 km loop that crosses a series of small ridges near the scenic windswept shores of Georgian Bay. It requires 1.5 to 2 hours to walk. Along the trail, great expanses of glacier-sculpted pink granite are separated by lower ground, pocket forests of pine and oak. Six interpretive signs along the trail highlight the history of First Nations, voyageurs and the local lake fishing industry. These interpretive signs serve as landmarks to locate geological features described in this GeoTour guide.



**Stop 2:** The start of the Chikinishing Trail crosses the first of many rock barrens which are common in this region. Forests are confined to pockets of soil in hollows.

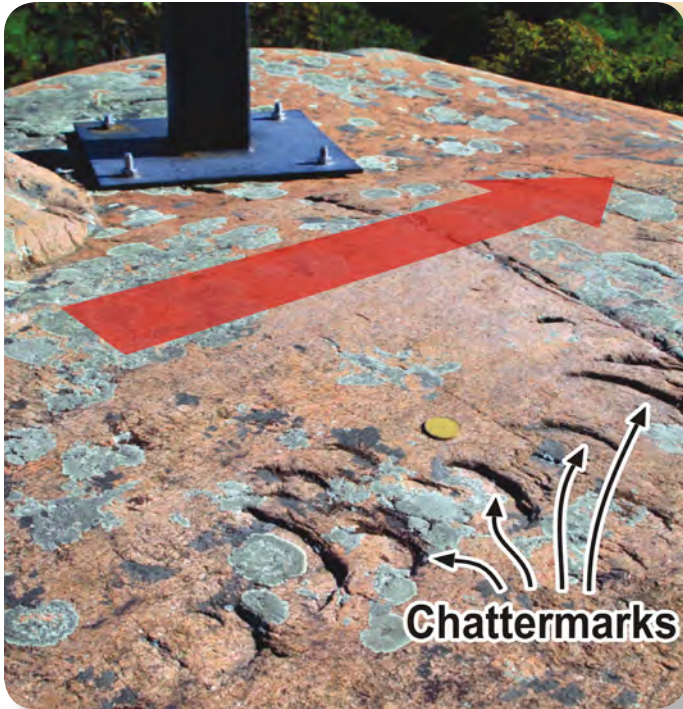


**Stop 2:** A flake of weathered rind has broken off the outcrop, revealing the true pinkish-grey colour and texture of the fresh granite beneath.



**Stop 2:** A map of Chikinishing Trail with the location of interpretive signs.

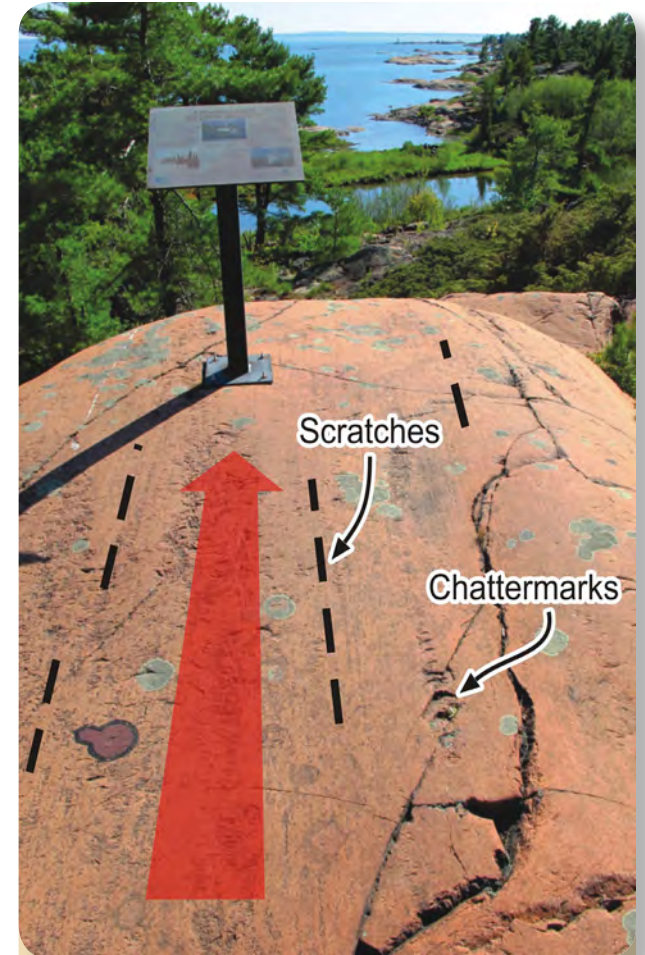
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**Stop 2:** At the second interpretive sign, the glacially smoothed granite bedrock displays a series of crescent-shaped fractures, or “chattermarks”, which geologists interpret to have formed by the pressure and impact of a stone dragged or rolled by the base of the Ice Age glacier. The alignment of the chattermarks, with the crescent openings to the northeast, indicates the direction of glacier movement was from northeast to southwest (direction of red arrow). Look for other chattermarks elsewhere along the trail.

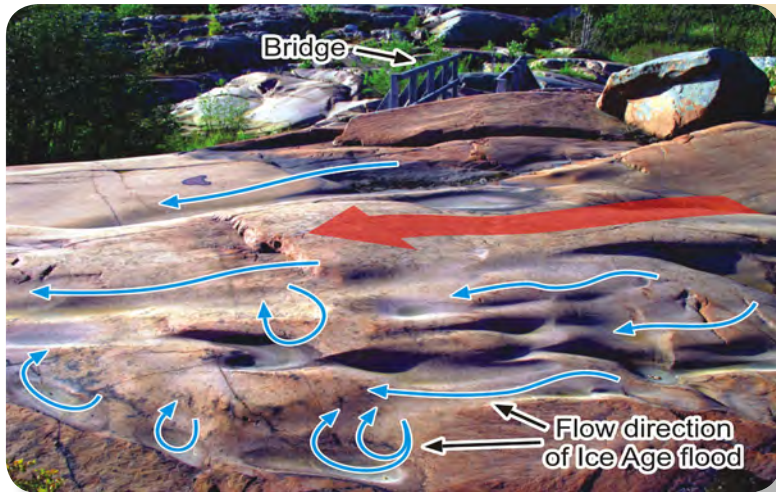


**Stop 2:** A view from the site of the fourth interpretive sign of the many islands and shoals along the granite shoreline of Georgian Bay. The tops of low ridges and hills on the granite surface form islands and shoals as the granite surface gradually slopes southwards below the waters of Georgian Bay. On the horizon is the low profile of Manitoulin Island, the largest freshwater island in the world.

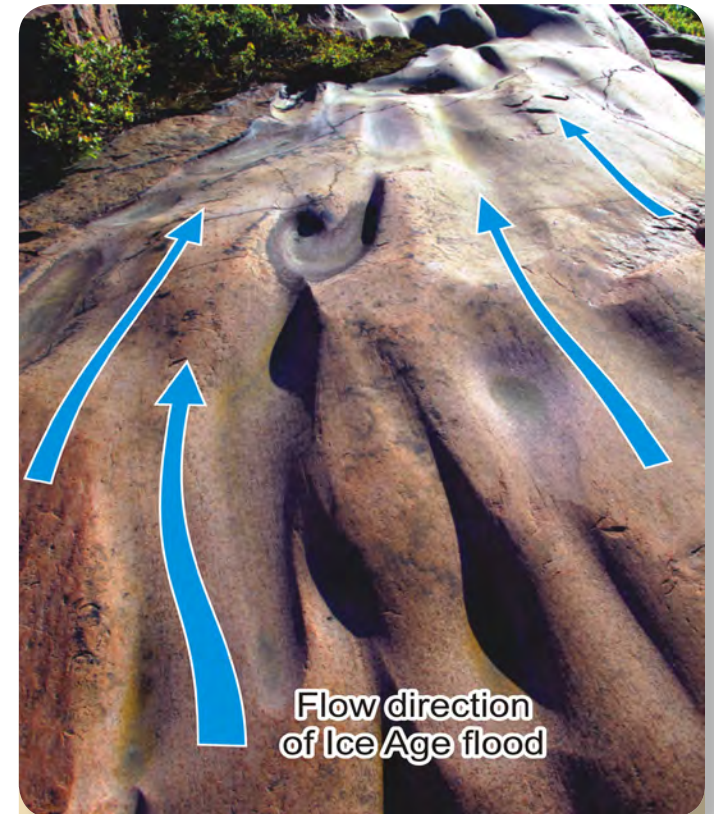


**Stop 2:** At the fourth interpretive sign the glacially smoothed granite displays both scratches and chattermarks that indicate the direction of glacier travel was from northeast to southwest (direction of red arrow). Look for other glacial scratches along the trail.

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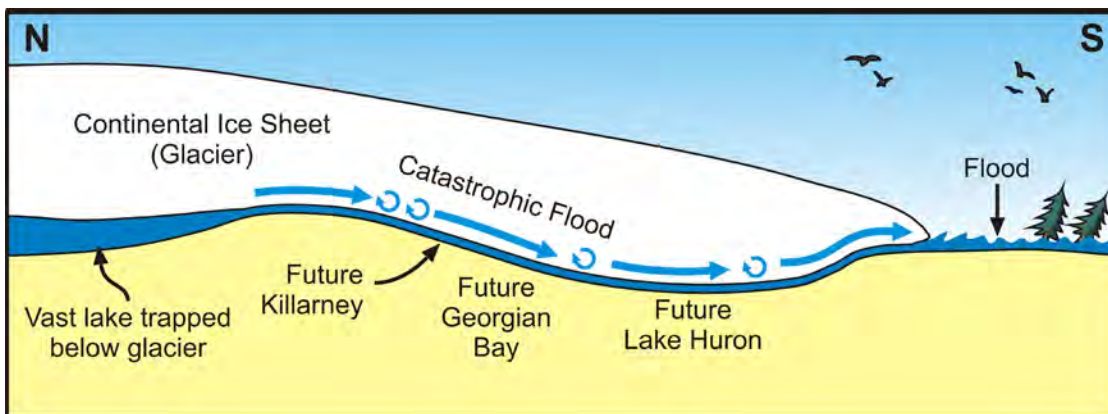


**Stop 2:** Just south of the bridge (upper centre of photo), between the fifth and sixth signs, are features on the bedrock that suggest scouring of the granite bedrock by rapid flow (likely a flood) of sediment-rich water along the base of the glacier.



**Flow direction of Ice Age flood**

**Stop 2:** Another view of water-scour features on granite bedrock near the bridge. Similar scour marks are abundant on bedrock surfaces along the northern shoreline of Georgian Bay and may be evidence of a giant, catastrophic flood along the base of the continental ice sheet during the Ice Age.



**Stop 2:** Movements by the continental glacier during the Ice Age may have suddenly released floodwaters from a vast subglacial lake that rushed along the base of the glacier.

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**Stop 2:** Near the sixth interpretive sign there are extensive rock barrens of glacially smoothed granite that extend back from the shoreline. The rock has been swept clean by storm waves.



**Stop 2:** A large vein of white milky quartz is exposed on the rocky shoreline beyond the sixth interpretive sign. This vein is the eroded remnant of an ancient crack in the granite that was once a pathway for mineral laden hot waters circulating through the earth. The waters slowly deposited quartz, completely filling the crack.



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## ➤ Stop 3: Park office and George Lake campground

GPS co-ordinates: N46° 0.740', W81° 24.091'

The entrance sign to George Lake campground features blocks of the white quartzite from the park. White quartzite is Killarney Provincial Park's best known type of rock. However, this is the only place along the highway where you can see quartzite close up. A striking juxtaposition of pink granite and white quartzite landscapes is visible from the main beach on George Lake.



**Stop 3:** Provincial Park sign at the entrance to George Lake campground features blocks of white quartzite from nearby hills.



**Stop 3:** A close up of quartzite at the entrance sign. Close inspection shows the rock is made up of grains of quartz cemented by quartz. Quartzite is a very hard rock because it consists of greater than 95% quartz. Quartz is 7 on a hardness scale of 1 to 10, where 1 is the hardness of talc, which you can scratch with your fingernail, and 10 is diamond.

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## ➤ Stop 4: The Crack Trail

GPS co-ordinates: N46° 2.593', W81° 19.458'

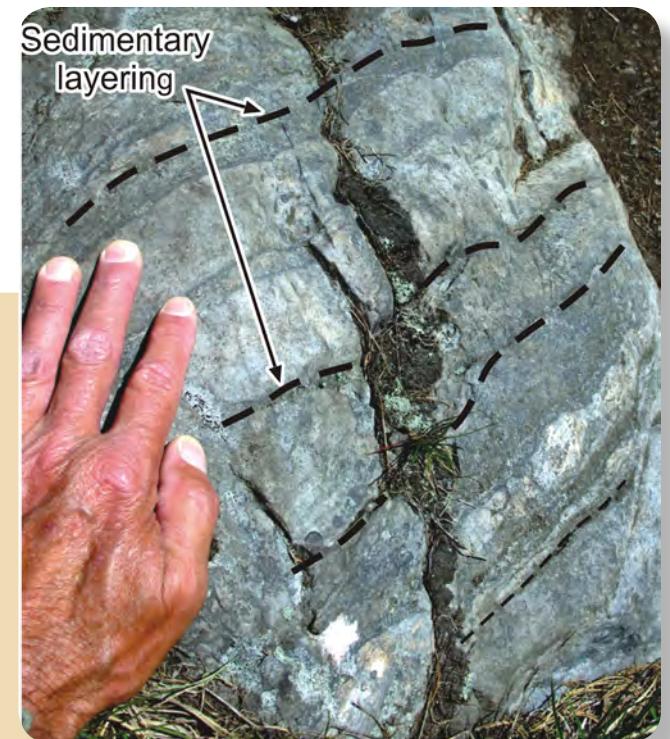
The Crack Trail climbs a ridge of quartzite to a stunning view of the great white cliffs of the LaCloche Mountains. At the crest of the ridge, the trail passes through a large cleft known as "The Crack", and this dramatic feature gives the trail its name. The trail is challenging, covering 6 km return, and rising 170 m near the end to the viewpoint. The 6 km round trip takes 4 hours of steady hiking. Access to the trail is from a parking lot 7 km east of the park office along Highway 637.

The Crack Trail crosses the geological boundary between granite terrain to the southeast and quartzite landscapes to the northwest. Erosion of the less resistant granite produces a more subdued landscape covered with thicker soils and extensive forests. The first part of the trail is through forest and along the granite shoreline of Kakakise Lake. At the geological boundary the terrain changes and the trail begins to climb a sparsely forested ridge of white quartzite.



**Stop 4:** A post marks the route of the trail as it goes up the sparsely vegetated quartzite slopes of Killarney Ridge. The white quartzite is brilliant in the sunshine.

**Stop 4:** Although sedimentary layering is difficult to see in the white quartzite, it is highlighted by occasional thin interbeds of grey sandstone. The layering not only illustrates the sedimentary nature of the rocks but also shows that the entire ridge is formed of steeply dipping quartzite and sandstone layers.

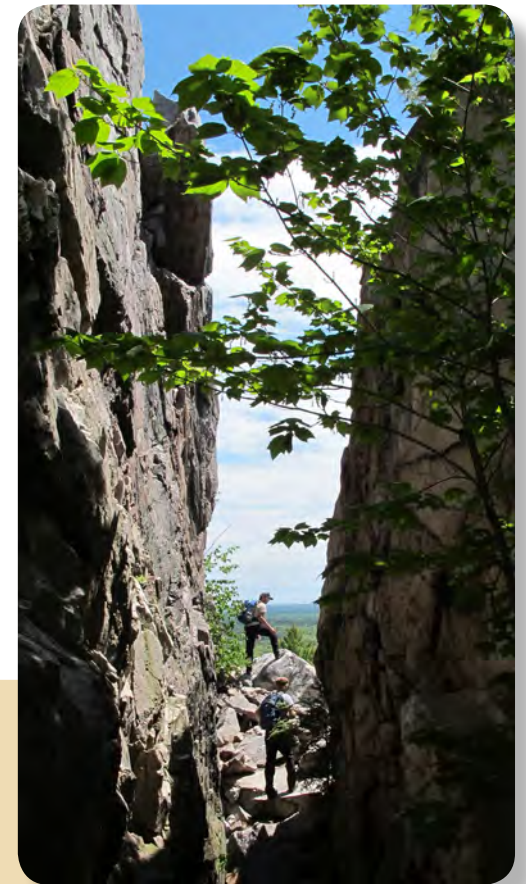


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**Stop 4:** At the top of Killarney Ridge, a visitor is rewarded with a panoramic view of the white, sparsely forested mountain ridges and lakes in the heart of Killarney Provincial Park. Ridges are underlain by steeply-tilted layers of hard quartzite that resist erosion more than the softer siltstone and sandstone that underlie adjacent lakes and forested valleys. These ridges are just stumps of their former glory. A billion years ago, they stood as high as the Himalayas. This tremendous view concludes the Killarney GeoTour!

**Stop 4:** A view from the narrowest portion of the Crack, where large blocks of quartzite have collapsed from the walls of the Crack, widening and partly filling the fracture that forms it.



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