

Eastern Parks

Whiteshell Provincial Park

McGillivray Falls Self-guiding Trail

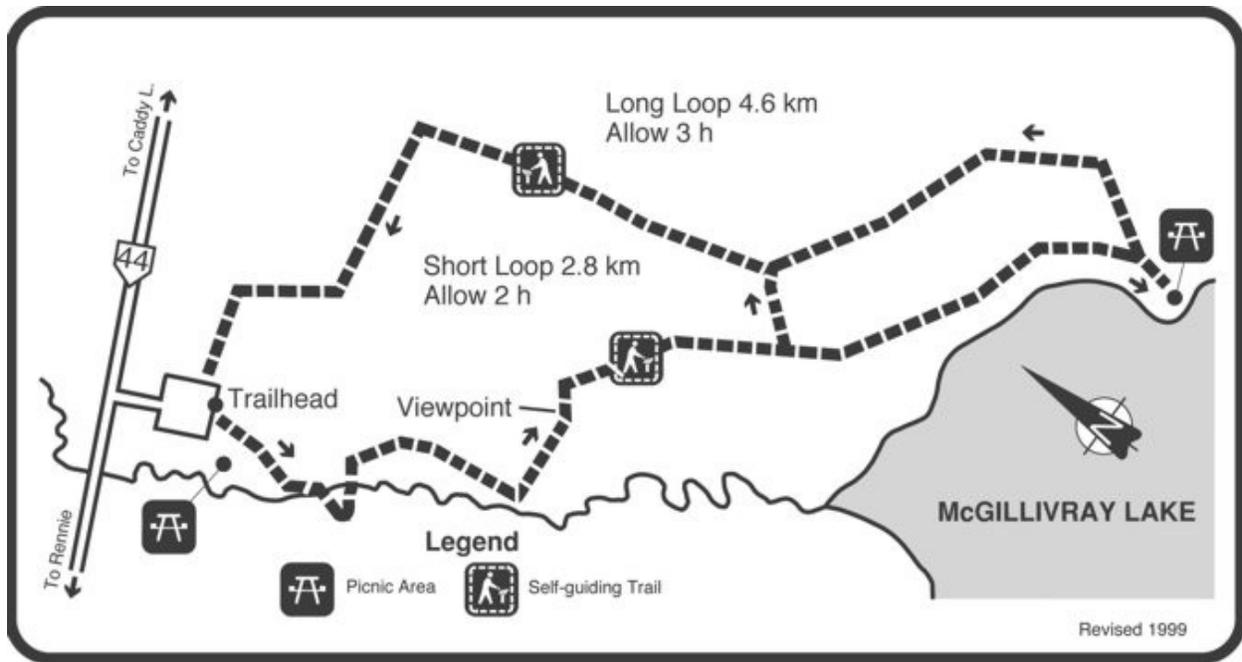


Welcome to one of the Whiteshell Provincial Park's first interpretive trails. It leads through a small, drainage system that is typical of the park and the vast Precambrian Shield.

You may choose to hike the short loop of 2.8 km, or the longer 4.6-km trail which reaches McGillivray Lake. Hikers on this trail for the first time, should be aware that there are several, fairly steep inclines along the way and that rock surfaces are slippery when wet. Depending on the season, recent rainfall and beaver activity, you may encounter wet conditions that require short detours. Always return to the main, marked trail as it is easy to get disoriented on rock outcrops. Proper footwear will make your hike more enjoyable.

As the force of gravity pulls water from higher to lower levels, it creates moving streams like creeks and rivers.

Water always finds the easiest routes to follow. Within a given area, a network of drainage paths are collectively called a drainage pattern. Because the park's landscape is dominated by erosion-resistant bedrock, water's paths are highly irregular here. This type of drainage is referred to as a deranged drainage pattern.



Map of McGillivray Falls Self-guiding Trail

The existence of McGillivray Falls indicates that this stream is relatively young in terms of geological time. Barriers of bedrock have kept this stretch of water at an early stage of development. After many thousands of years, the falls will erode down to a smooth channel.

The rock face on the other side of the falls has no water line or other marks of erosion by the stream. This is because the stream follows a natural channel cut in the rock by the movement of glaciers, which melted away about 10,000 years ago. Had there been no natural depression, the stream would not be flowing here, as granite rock is very resistant to water erosion.



Map 1 - Deranged Drainage Pattern

Water drains by irregular paths, wherever the hard, granite foundation permits. Arrows indicate waterflow directions.

Beavers bring about changes in drainage by building dams with branches and mud. The dams create reservoirs in the stream, resulting in a lower but more constant flow downstream. For more information on the beaver, visit Cabin Lake Hiking Trail and the Whiteshell Natural History Museum at Nutimik Lake in the north end of the park.

From this viewpoint you can see the natural depression in the bedrock. This depression has been partially filled with material carried down by the stream and washed in from the sides. It has taken thousands of years to reach this stage.

Below are the remains of a dam built many years ago to hold back spring runoff and maintain a higher waterlevel in McGillivray Lake. Some years ago part of the dam was removed to restore the natural flow of the stream.

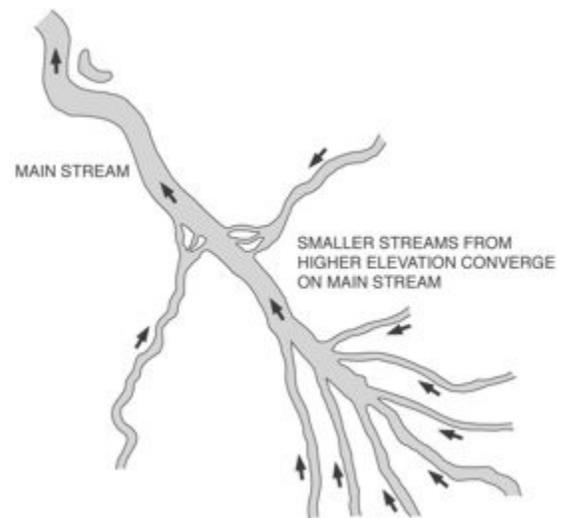
Viewpoint. McGillivray Lake, and the bog through which the stream flows, can be seen from this ridge. Changes in the vegetation to the left of the stream indicate the amount of water in the soil at different elevations.

The several varieties of trees on this rocky slope indicate the varying amounts of soil and water present. Jack pine grows at the top of the ridge where there is little soil and water runs off quickly. Dry ridges such as this are extremely susceptible to fire in dry seasons. Where there is water draining down the slope and more soil, birch, aspen and white spruce flourish. Where water accumulates at the bottom, only bog plants and black spruce grow.

In April 1998, a 5-ha fire swept up the ridge and into the grasses on the right. Moisture in the meadow helped to contain the fire which could have become much more extensive. Snags-burned but still standing trees-are attracting a variety of insects and birds that thrive in burned areas only.

Trail junction. The uphill path-about 100 m long-is part of the short loop and connects to the return trail that leads back to the trailhead. To the right is the long loop which leads to the picnic site and shelter.

This is McGillivray Lake. It is a typical lake of the Precambrian Shield with a maximum depth of about three metres. The water is rich in nutrients, algae and naturally occurring humic acid, giving the water its brownish tinge. The lake is fed by two small streams and by run-off water.



Map 2 - Dendritic Drainage Pattern

Water has shaped regular pathways through a landscape dominated by materials which are softer than granite. Smaller streams from higher elevations converge on the main stream. Arrows indicate waterflow directions.

Lakes such as this, with a small volume and a slow flushing action, are extremely sensitive to environmental pollutants.

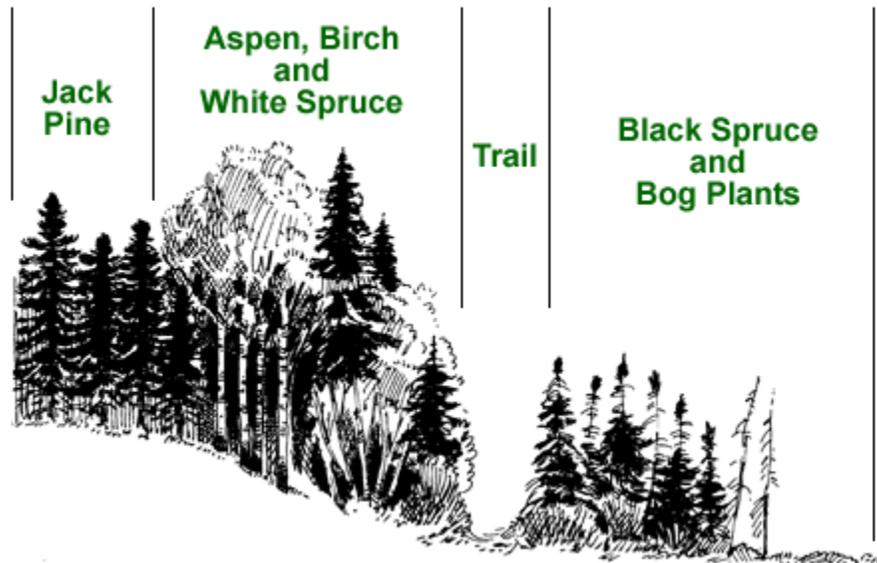
Trail junction. You're on the long loop and the picnic area is about 415 m, one way, on the right path. The left trail leads back to the parking lot.

This black spruce bog is different in origin from the one seen earlier, beside the stream. This bog is completely enclosed by rock ridges. Water accumulates in this depression in the bedrock because it cannot drain away. Evaporation is minimal because the water is held within the spongy sphagnum moss covering the bog. This creates a very moist habitat on what would otherwise be dry rock.

Trail junction. The long loop has reconnected with the short loop. Follow the trail uphill to return to the trailhead and parking lot, about 750 m.

You are now on the top of a granite ridge which the trail follows to the parking lot. Here, the environment is dry because water drains away quickly. Ridges such as this are usually dominated by jack pine, one of the few tree species that can grow under these austere conditions.

The short remaining portion of the trail is very steep and rough. It is also very slippery when wet. Please proceed with caution!



Conclusion

This small drainage basin is very similar to others in the park. River systems such as the Whiteshell, Rennie, and even the mighty Winnipeg, are just larger examples of the drainage system you have been exploring.

The eventual destination of water in this drainage system is Hudson Bay. During its journey through the park it takes on many forms, sustains plant and animal communities, and provides the recreational opportunities for which the Whiteshell is renowned. We must ensure that while water travels through the park, it is not impaired through carelessness or misuse.