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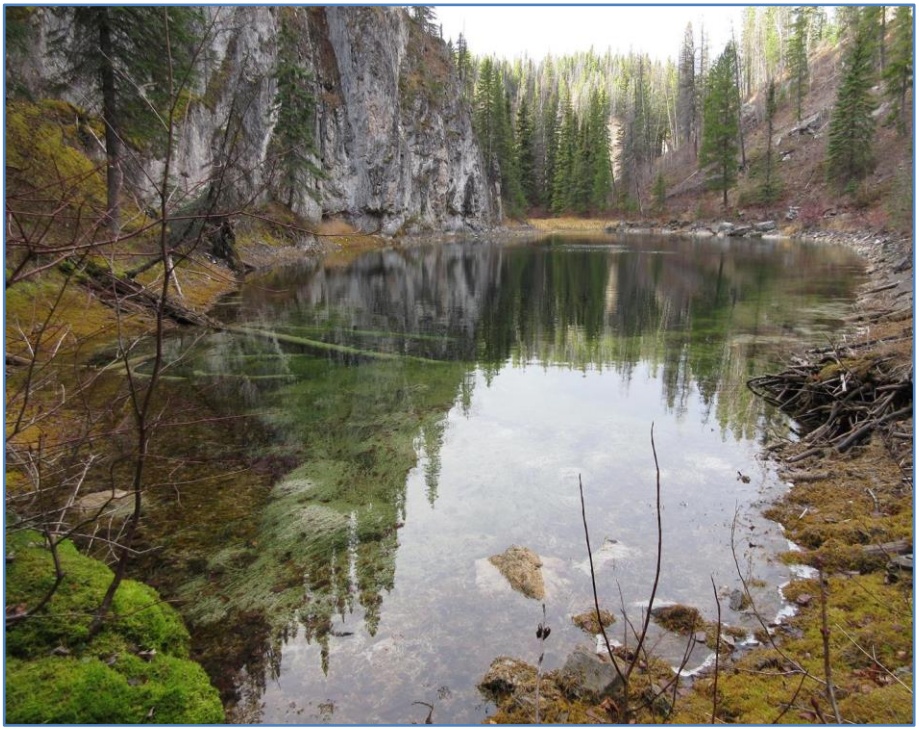
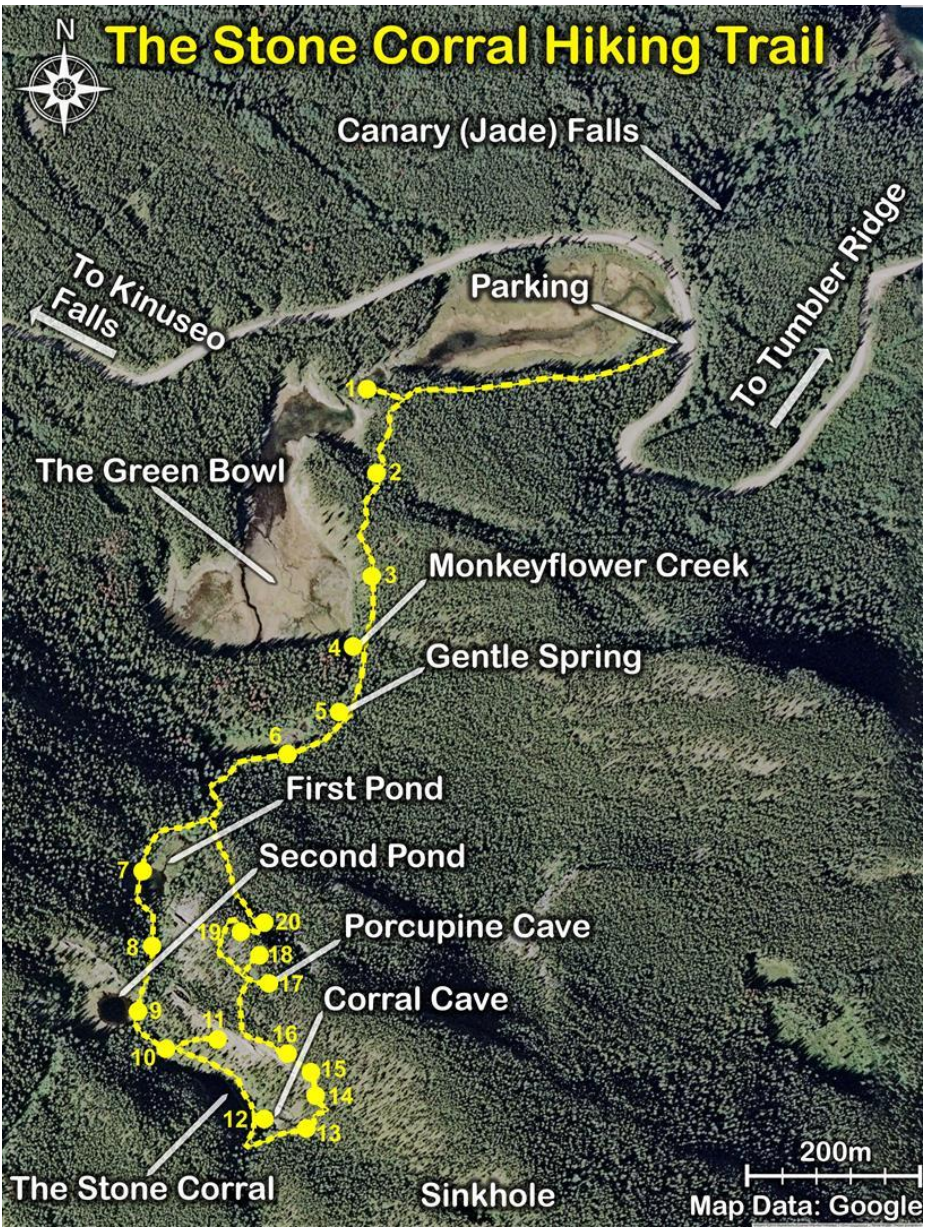
The Stone Corral
Monkman Provincial Park



Rating: Moderate

Time: 2 - 3 hours

TUMBLER RIDGE GLOBAL GEOPARK


The Stone Corral Hiking Trail
N
Canary (Jade) Falls
To Kinuseo Falls
Parking
To Tumbler Ridge
The Green Bowl
Monkeyflower Creek
Gentle Spring
First Pond
Second Pond
Porcupine Cave
Corral Cave
The Stone Corral
Sinkhole
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200m
Map Data: Google

THE STONE CORRAL

The Stone Corral hike will take you through an area featuring small caves and other limestone formations, ponds and many kinds of moving water, interesting and poisonous plants, fossils and magnificent viewpoints. Allow at least two hours for the hike and bring a flashlight for the caves.

The trail is rated moderate with some steep sections and considerable elevation change. There are a number of high vertical cliffs. The trail passes close to cliff edges, and children should be closely supervised. Make lots of noise on the trail, as black and grizzly bears are common in the area.

The Stone Corral was identified in 1999 by a party of Tumbler Ridge cavers: Charles Helm, Daniel Helm, Al Tattersall and Lindsey Tattersall. The area was then added to Monkman Provincial Park. The trail was constructed by two E-teams, in cooperation with the Ministry of Environment Lands and Parks, BC Parks, the Wolverine Nordic & Mountain Society and Tumbler Ridge Youth Services. None of these organizations or individuals is liable for any accident, illness or injury which may occur on the trail.

Time/Distance: 2-3 hours/ 4.5 km return
Elevation Gain: 90 m (300 ft)
Rating: Moderate

Directions to the Trailhead

The trailhead parking lot is shared with the Lake Joan and Canary Falls trail. To reach it, take the road from Tumbler Ridge to Kinuseo Falls – this leads to the right off Hwy 52 E (Heritage Highway) 14 km south of Tumbler Ridge. The end of pavement is reached after 3 km on the Kinuseo Falls Road. 23 km from Tumbler Ridge, after the road crosses the Murray River, there is a junction. Continue straight ahead towards Kinuseo Falls. The parking lot is reached on the left, soon after entering Monkman Provincial Park (62 km from Tumbler Ridge).

Geological Summary

Bedrock near the trailhead is made up of siltstone of early Triassic age (about 250 million years old) from the Sulphur Mountain Formation. Along the trail there is a transition to rocks of Mississippian age (340 million years old) from the Rundle Group. Elsewhere in the world, rocks of this time period contain the remains of great forests and yield large supplies of coal. Here, however, they were formed in warm shallow seas, much like the modern day Caribbean. These deposits became limestone, which was then dissolved by slightly acidic groundwater, creating what is known as a karst landscape of caves and sinkholes.

STOP 1: BEAVER DAMS

A short side-trail leads down to a series of beaver dams which have formed the lake that fills the Green Bowl upstream. Beavers create their lodges by piling sticks, rocks, logs and mud to form a hollow mound. They enter their homes from beneath the water surface, which protects them from predators. You may find signs of beaver activity along the trail, including partially gnawed trees.

STOP 2: BERRIES

You can find a remarkable variety of berries here in late summer and fall, including Black Huckleberry, Northern Gooseberry, Saskatoon, Wild Strawberry, Bunchberry and Soopallalie. Before tasting berries, it is important to be familiar with the toxic species first: don't eat what you don't know! One of the most striking berries along this trail is highly poisonous: Red Baneberry, a member of the buttercup family. The name is derived from an Old English word meaning "murderer". Look for clusters of smooth, glossy red or white berries at the end of long stalks. The leaves are divided in threes and are toothed and lobed. All parts of this plant are toxic. Eating just a few berries causes severe abdominal symptoms. This effect was well known to First Nations peoples who used it as a purgative. The distinctive paired berries of Black Twinberry should not be eaten. Fruits of the members of the lily family are generally not edible. Three examples here are Twistedstalk with its oblong hanging fruits, False Solomon's Seal and Fairybells. Highbush Cranberry is edible raw in small amounts only and should preferably be boiled or cooked.

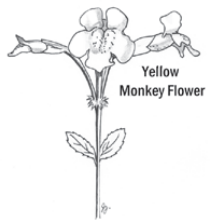
STOP 3: THE GREEN BOWL

This is historic ground. In the entire history of northern B.C. and Alberta it is hard to find a tale of cooperative bravado and dedication that matches the building of the Monkman Pass Highway in the late 1930s. In trying to establish a route between north-western Alberta and the railhead near Prince George, to shorten the export route for their grain, Alex Monkman and his volunteer band of pioneers almost succeeded in overcoming government resistance and great physical odds. By the end of 1939 they had carried a symbolic bag of grain and almost coaxed an automobile over the trail they had blazed over the mountains, and built a road as far as Kinuseo Falls which brought weekly floods of tourists to the cabins and restaurant there. Monkman National Park was even proposed. Just when success was in sight, Britain declared war and Canada soon followed. Many of the pioneers enlisted and some died in action. After the war the B.C. government closed the pass and prohibited further work. Most of the work was done on horseback, and good feed was scarce. The Green Bowl was one exception, offering feed for tired horses. Nestling between rocky cliffs, it remains an enchanting spot.

The Green Bowl in the 1930s

STOP 4: MONKEYFLOWER CREEK

This creek flows year round although it has a very small surface catchment area. Its temperature is a relatively constant 8 degrees Celsius. Such clues first alerted explorers to the possibility of caves in the region. Moisture-loving plants such as Yellow Monkeyflower hug the shores of the creek: look for its large, showy yellow flowers in July and August.



STOP 5: GENTLE SPRING

The creek ends at another set of beaver dams holding back crystal clear water. The trail passes by a sizeable spring, the source of the creek. Although the volume increases in spring the flow is fairly constant for the rest of the year. This kind of resurgence spring is common in limestone areas where drainage does not occur through surface streams. Instead, water moves down through cracks in the slightly soluble rock, emerging lower down as a spring when impervious rock is encountered. When this process continues long enough, cave systems form. Larger springs can sometimes be entered by cave divers. Many such cave systems probably exist in the area but are undiscovered as they have no connection with the surface. In some places (such as sinkholes) connections between these systems and the surface can be found, and the result is larger caves that can be entered.

STOP 6: SURFACE LIMESTONE FEATURES

As you climb the stairs of this steep hill to reach a notch in Chambers Ridge, pause to examine the underside of this large overhanging limestone rock. Note that its texture is not smooth but consists of innumerable small bumps and depressions. This is a typical surface limestone feature, contrasting with the underground features that are described at Stop 12.

STOP 7: FIRST POND

The trail has passed through a notch and winds around the western shore of a pond. The far side at the foot of the cliffs is deeper and is the site of another spring. No outflow is evident as the drainage happens below the surface to the spring you have already passed. Look up at the impressive vertical rock strata, harbouring a number of Paper Birch trees between them.

STOP 8: DEVIL'S CLUB

The trail ascends up the moist valley between the first and second ponds. Despite the lush vegetation and the carpet of ferns there is no surface water. The shrub with the large maple-like leaves is Devil's Club, a name that strikes terror into the heart of the bushwhacking hiker. Both the undersides of the leaves and the thick stems are

Devil's Club

filled with spines that easily penetrate the skin and tend to fester if not removed early. In late summer large clusters of inedible red berries develop. This plant is considered to be a strong medicine by many First Nations. Its Latin name, *Oplopanax horridus*, can be translated as “murderous weapon”.

STOP 9: SECOND POND

The second pond is equally beautiful. It is lined by cliffs and also has underground drainage. The meadows lining this pond are home to the bluish-purple flowers of Mountain Monkshood, another member of the buttercup family. The upper part of the flower looks like the hood of a monk. This is another very poisonous plant, all parts of which contain the toxin aconitin. The trail passes along the eastern shore, then takes a sharp 90^0 turn to the left (east) to climb into the Stone Corral. Earlier explorers continued on through the notch straight ahead. The Stone Corral was located and explored with the use of aerial photos.

STOP 10: THE STONE CORRAL

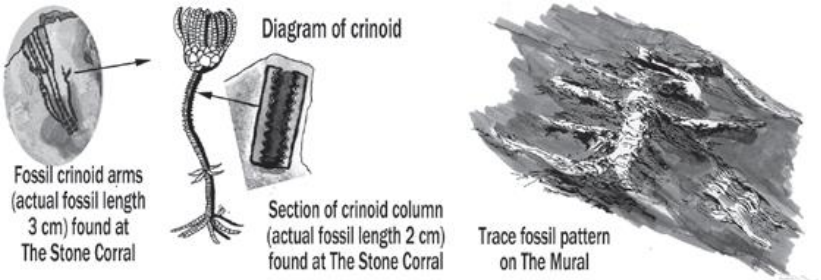
Welcome to the Stone Corral, a very special and beautiful place. A dark tarn is encircled on three sides by impressive vertical cliffs. This is a good example of a doline or sinkhole that forms in areas of weaker limestone rock where the surface caves in. The waters appear deep, but scuba diving has shown a maximum depth of only 8 metres.

The Stone Corral

Jumping off the cliffs into the pool is discouraged. No underwater cave entrances have been discovered and the water appears to seep through small openings towards the Second Pond. Western Toad and Wood Frog can be found in considerable numbers in summer. No fish are known to be present in the lake, although small invertebrates are common in the dense underwater vegetation.

STOP 11: FOSSILS

These rocks are of Mississippian age. Approximately 350 million years ago lime particles, corals and minute shell fragments were deposited in a shallow warm sea. In time these solidified into limestone which today forms part of the Rocky Mountains, including many of the surrounding summits. Embedded in the rock below the sign are fragments of the stems of crinoids or sea-lilies, relatives of the sea-stars. These were common when these rocks were formed but the group has become almost extinct; only a few species still exist in the deep oceans.



Looking at Fossils on the Mural

If you have the energy for a short extra climb, you will be rewarded by an interesting fossil site known as The Mural on the vertical cliffs immediately above and to your left. To reach these cliffs, retrace your steps a short way and then climb up the rough side-trail to the foot of the cliffs (climbing straight up leads to erosion and presents a significant rockfall hazard for other hikers). Note the beautiful orange lichens that cover part of

the cliff where a small seep has moistened the surface. Beyond this is a big darker area of rock, a single bedding plane that contains a large collection of interwoven crustacean burrows with a specific pattern. Such trace fossils were originally named fucoids because they were thought to be fossilised seaweed. However, even what appear to be large fronds and leaves are simply smaller burrows adjacent to each other.

Fossil sites are easily vandalised and damaged. Removing fossils from a provincial park is against the law. These fossil burrows, once removed, have no aesthetic value. Please do not remove any portion of this wall, and leave it for others to enjoy.

STOP 12: CORRAL CAVE

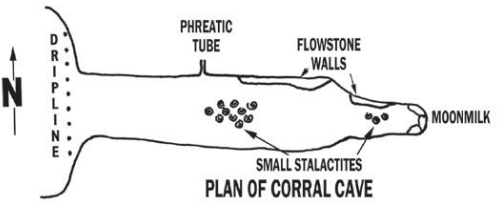
At the far end of the Stone Corral, beneath the steepest cliffs, lies the large entrance to Corral Cave. Paper Birch grow here, indicating moist, well-drained soil. Caves are fragile environments that need to be treated with the greatest respect. Do not touch the walls, take anything from the cave, or leave anything inside.

Corral Cave Entrance

Icicles in Corral Cave

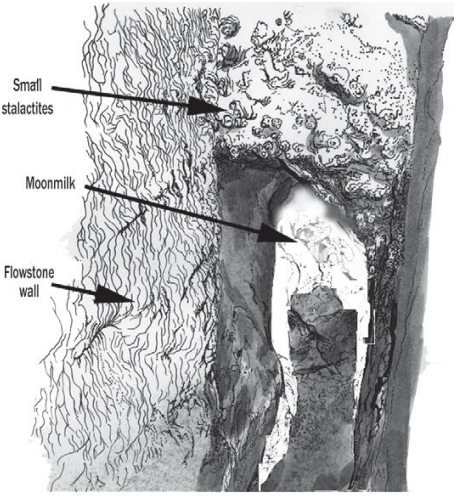
Although this cave is only 20 metres deep, it contains a number of interesting features. The walls are smooth and vertical and the ceiling is high, making for an easy walk-in cave. The floor is rock-strewn, and there are a number of large perpetual drips. In spring and early summer the floor of the cave is a dramatic collection of large icicles.

Look on the left wall, about halfway in, for a small round hole. This is a typical phreatic tube. The initial dissolution process that widens the cracks underground occurs below the water table. Because of the very slow movement of the water and because it completely fills the crack, the result is a perfectly round tube. Later in the history of a cave when the water table drops and air enters, if water is still passing through the crack it will selectively erode the bottom portion. The resulting V-shape is known as a vadose feature, as opposed to the round phreatic features.



PLAN OF CORRAL CAVE

Where the cave reaches an abrupt end, shine your flashlight up into the top corner and you will see a few tiny stalactites. Beyond these is a long descending tongue of a softer white substance, moonmilk, an organic form of calcite. It is gooey when wet, with a texture like cottage cheese, but crumbly and powdery when dry. The origin of the name is traced to Europe, where the exact translation means “gnome’s milk”. It was used in medieval times as a wound dressing and recent research has shown the appropriateness of this remedy, as moonmilk contains a number of substances with anti-bacterial properties. Shine your flashlight directly overhead, and slowly move it towards the origin of the dripping. You will see some beautiful calcite flowstone walls, as well as another attractive collection of small stalactites at the drip sites.



View looking up t the end of Corral Cave

STOP 13: CHAMBERS RIDGE

The trail leaves the Stone Corral via a staircase through a weakness in the cliffs where forest and moss have taken hold, emerging onto Chambers Ridge at the top of the cliffs surrounding the Stone Corral. There is a large variety of lichens along this ridge, from the dark brown hair lichens hanging down from

Staircase beyond Corral Cave

the branches of trees to reindeer lichens on the forest floor. Chambers Ridge was named after Ted Chambers, one of the heroic pioneers of the Monkman Pass Highway.

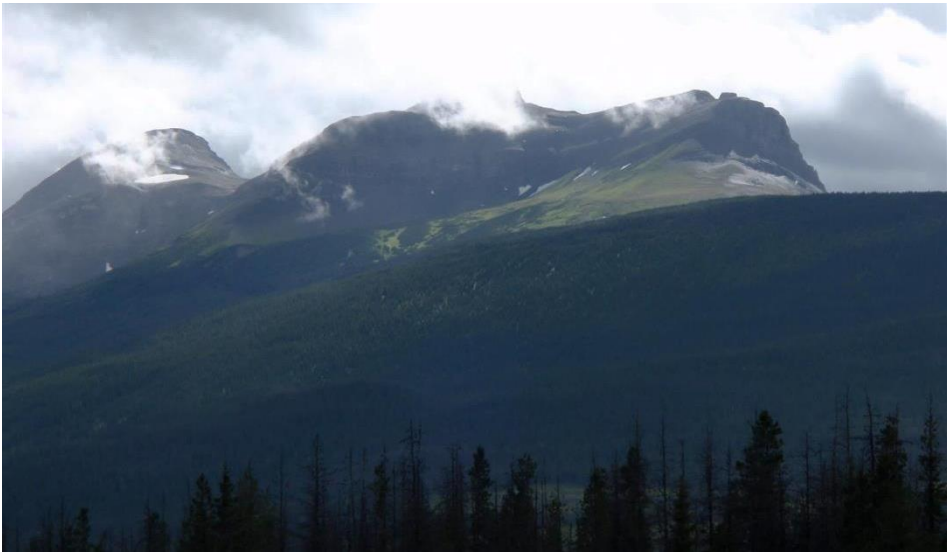
STOP 14: ROCK FOLDING

The slope you have climbed is very different from the lush valley floor. It is south facing and therefore drier, with Lodgepole Pine and Kinnikinnick (Bearberry) predominating. Look at the vertical rock strata contorted into wavy folds. The unusual thing about this feature is that the thicker outermost limestone strata show almost no folding. Note how the softer shale bands in between the thinner limestone layers have therefore been able to absorb the forces of the folding.

STOP 15: MOUNTAIN DEATH CAMAS

Look for the long grass-like leaves of Death Camas, a highly toxic plant and one of the first to appear in spring. In summer a single unbranched stem about 30 centimetres tall ends in a cluster of foul-smelling green flowers. A member of the lily family, it can be confused with the edible Nodding Onion which has a similar bulb, but a characteristic onion odour. The bulb and leaves of Death Camas contain zygadenine, a very powerful poison. Eating as few as two bulbs has killed people. These properties were recognised by First Nations peoples, who took care to distinguish Death Camas from edible bulbs.

STOP 16: FIRST VIEWPOINT



Castle Mountain from First Viewpoint

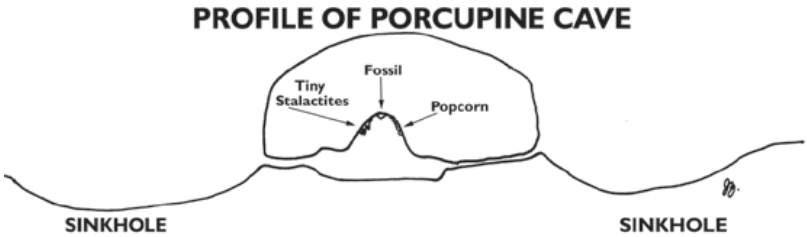
On a clear day a magnificent view extends from the flat area above the vertical cliffs, with much of Monkman Provincial Park spread out before you. This is an ideal picnic location but children need to be well supervised, and kept away from the cliff-edge. In the distance to the left is Mount Watts. Invisible to its right, beyond the valley of the Murray River and Monkman Creek, lies Monkman Lake. The impressive bulk of Castle Mountain looms straight ahead. To its right lies the Imperial Creek valley outside the park. At its head lies a high unnamed peak. Farther to the right lies the Hook Creek valley and then Albright Ridge. Below the cliff nestles the Stone Corral with its tarn.

STOP 17: PORCUPINE CAVE

The trail leads away from the cliff-edge and crosses a gully. Soon it reaches a tiny sinkhole with a small opening in the rock-face, one of the entrances of Porcupine Cave. Do not enter here. Instead, proceed and enter a second sinkhole just over the ridge, where the entrance to the cave from this side is larger. Even small sinkholes like these are identifiable with the use of aerial photos and help cavers locate areas of high potential.

Porcupine Cave, 10 metres long, joins these two sinkholes and is a classic solutional feature created by the dissolving of limestone by slowly moving water. It is fairly narrow at either end but opens up into a chamber in the middle with standing room. Look for a fine coral fossil on the ceiling in this chamber. You can also see cave popcorn, recognized by its knob-like shape, resulting from concentric layering of tiny calcite crystals.

Exit from Porcupine Cave



The cave floor is covered with old porcupine droppings, and quills are a sometimes found. The squeeze through to the far exit is tight. Although it is a favourite for kids and lean adults, larger people are likely to get stuck here. Rescue would be a complicated and expensive process. If there is any doubt as to whether you can fit through this tunnel, do not attempt it.

STOP 18: SECOND VIEWPOINT

A short detour onto the limestone bedrock leads to another viewpoint, including the Murray River valley downstream, the Albright Ridge (named after Bruce Albright, another Monkman Pass pioneer) and the Green Bowl. Note two distinctive types of rock at your feet: the smoother, flatter limestone, and the darker rock which protrudes from it in numerous places. The latter rock is dolomitized, a process whereby calcium carbonate (the main mineral

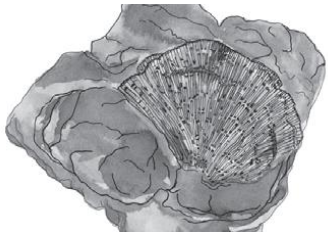
in limestone) is partially replaced by magnesium carbonate to form dolomite, which is more resistant to erosion. The descent from here to complete the circular part of the trail is steep in places.

STOP 19: LIMESTONE WALL

The trail has followed a ledge along the base of a vertical limestone wall. Above you is another small cave in a crack in the wall. In the greater Tumbler Ridge area about twenty caves have been found and explored in the last decade. Most of these are remote, dangerous, or easily damaged. Many more undoubtedly remain to be discovered. The tall spruce tree ahead has grown straight up into an overhanging shelf of limestone where its crown is abruptly truncated.

Limestone Wall

STOP 20: DOLINE



Coral fossil found near Doline

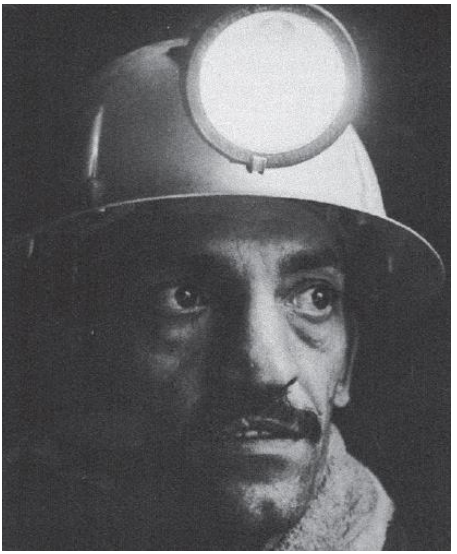
The trail descends through lush vegetation: ferns, mosses and lichens that thrive in the shady microenvironment on the northern side of the limestone wall. By now you will recognise this depression as another doline or sinkhole. This one has no cave entrance, and the bottom is carpeted in moss. For every one cave entrance discovered by locating dolines, perhaps twenty blind pits like this one are found.

From here the trail descends steeply and rejoins the main trail just before the first pond. Turn right to return towards the trailhead. When you reach the bridge at the bottom of Monkeyflower Creek, keep right to return the way you came.

Across the road from the trailhead is a trail that leads past Canary Falls to Lake Joan. Should you hike this trail as well, you will truly have experienced the hydrology of the area: from the drips in Corral Cave through the Stone Corral, past the two ponds to the spring, along the creek and the Green Bowl, down a waterfall and into a beautiful green fish-filled lake.

Lake Joan

After completing the trail, please consider returning this brochure to the box at the trailhead for others to enjoy.



The Stone Corral hiking trail guide is dedicated to Clarence Hronek, the "Father of BC Caving", who inspired the search for caves in the Tumbler Ridge area.

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