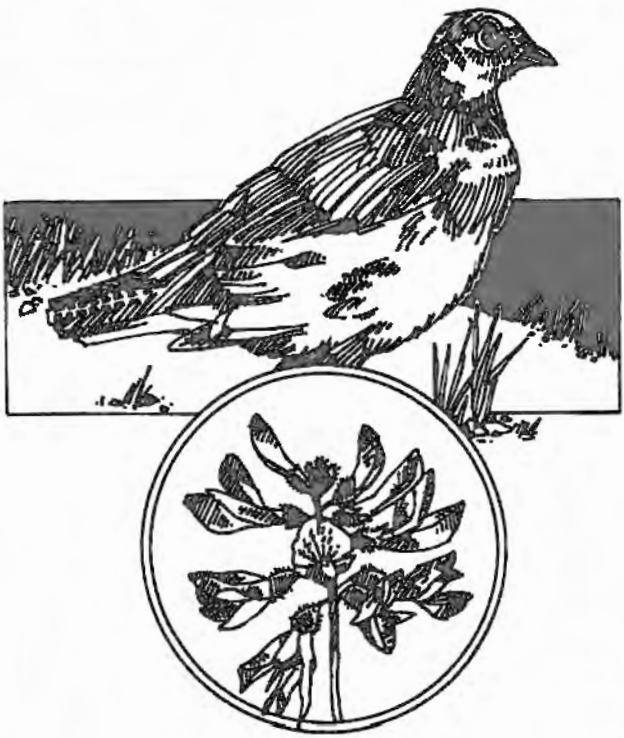
the

Ptarmigan Cirque Trail



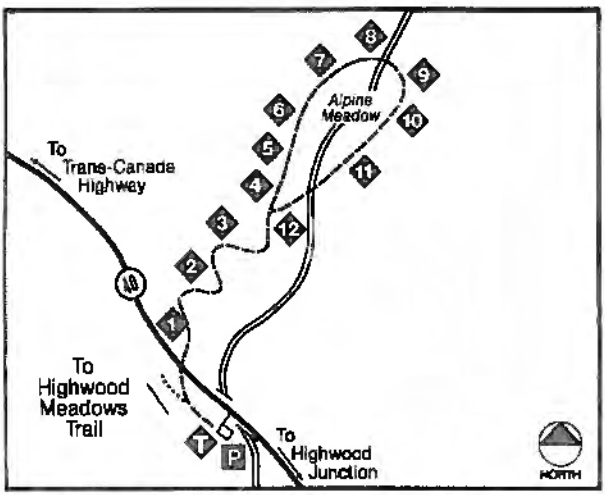
Kananaskis Country

Ptarmigan Cirque Trail

Welcome to Kananaskis Country's Ptarmigan Cirque trail. The numbered sections in this brochure correspond to numbered posts along the trail. Each stop leads to some new discoveries about the highcountry of Peter Lougheed Provincial Park.

In high elevation areas such as this, weather can change dramatically in a short time period. We suggest that you carry a sweater and a rain jacket.

Since this trail is steep and long, it is recommended only for people able to hike at high elevation.■



PTARMIGAN CIRQUE TRAIL
Peter Lougheed Provincial Park
Trail Length 6.0km (1.5 to 3 hours) return

--- Trail Trail Head Trail Stop
····· Other Trails Parking River/Creek

Footsteps

Welcome to the high country wilderness of Peter Lougheed Provincial Park. The sharp hooves of bighorn sheep and mountain goats and the heavy pads of grizzlies have passed this way before you. Follow the Ptarmigan Cirque Trail into the alpine and walk through a land of contrasts: a land that seems barren of life during long, harsh winters

but which, during the brief summers, explode with the colour of wildflowers and a flurry of animal activity.

Living things inhabiting such a harsh landscape may seem indestructible; but, in fact, a single misplaced footstep may destroy a plant that took 20 years to grow a few centimetres. Alpine plants and animals must constantly struggle to survive. Wind, snow, cold and poor soil are all factors that slow plant growth and this, in turn, reduces the amount of food available for animals.

As you climb to the next stop, you may feel short of breath due to the decrease in oxygen at this elevation. You are about 2300 m above sea level, more than 1200 m higher than Calgary.

Take your time as you climb this steep section of the trail. Pause to view the mountain panoramas along the way. For an easier, safer walk and to help protect living things in this environment, please stay on the trail.■

Forest Green and Gold

You have been walking through a subalpine forest made up of alpine larch, Engelmann spruce and subalpine fir. We have provided this short identification key to help you identify the trees around you.

To use this key, compare the descriptions with the tree you are trying to identify.

1. Needles are in clusters growing from short woody projections along the stem. The tree is alpine larch.
2. Needles are attached singly along the stem. The needles are flat and if you place one between your fingers, it will not roll. The tips of the needles are not sharp. The tree is subalpine fir.
3. Needles are attached singly along the stems. The needles are four-sided and will roll when placed between your fingers. The tips of the needles are sharp. The tree is Engelmann spruce.

In the autumn you won't have trouble recognizing the larches because their needles turn a golden color. As winter approaches, the larches lose their needles giving this trail a golden carpet.

Take a closer look at the floor of the subalpine forest. You can see that the plant growth here is sparse and that most of the plants are low-growing types with small leaves. The trees making up this forest shade the ground to such an extent that many types of plants are unable to grow here.

At the next trail stop, you will see a greater variety and abundance of plant life.■

Avalanche!

Imagine a quiet April day after a heavy snowfall. The new carpet of thick snow seems to muffle all sound. Suddenly the silence is shattered by a hissing roar. Thousands of tons of snow and ice thunder down the mountain, ripping up trees or breaking them as if they were mere twigs. In a matter of seconds the roaring avalanche is over. The clouds of turbulent snow settle. Silence returns to the mountain. Avalanches can occur here from November until June.

Open meadow areas like this are created and maintained by the power of moving snow — avalanches. Once the subalpine forest is removed, sunlight can reach the ground and the variety of plants increases.

Compare these plants with those growing on the forest floor at the last trail stop. The meadow plants here are taller, have larger leaves and are generally more abundant than those in forested areas. This abundance and variety attracts bighorn sheep, elk and even grizzly bears.

You will cross several avalanche tracks as you walk this trail. Keep a sharp lookout and you may see one of the large mountain animals. If you do, remember that these animals are wild so please do not approach or disturb them.■

The Changing Forest

You have probably noticed that the trees here are much smaller in diameter

than the trees near the start of the trail. At this altitude, almost 2,430 m, the trees grow extremely slowly due to the short summer.

Some of the larger trees along this trail are over 300 years old. In the Kananaskis Lakes area, a 300-year-old tree would be several times the diameter of these trees.

On the way to the next trail stop you will walk through open areas where the wind has affected growth patterns of the trees. The subalpine forest is left behind as you walk through the timberline.■

Timberline

Imagine for a moment what a winter day would be like here -- minus 30°C, wind screaming in your ears, snow and ice crystals tearing at your skin. . .

The trees growing here must survive these harsh conditions each winter, which can last for nine months!

The drying winds and pelting ice crystals have caused the stunted and deformed patterns along the treeline or timberline. As you can see it is not a definite line, but rather a gradual transition from subalpine forest to alpine meadow.

Take a look across the valley. You can see that avalanches have cut through the timberline and down into the forest. Even on the slopes without avalanche tracks the timberline is higher on the other side of the valley. The slopes across the valley face east. This allows moisture in the form of snow to stay longer in spring providing the trees with much needed water to grow. In addition, some of the slopes are protected from the drying effects of the wind. These physical factors have allowed the trees to grow at a higher

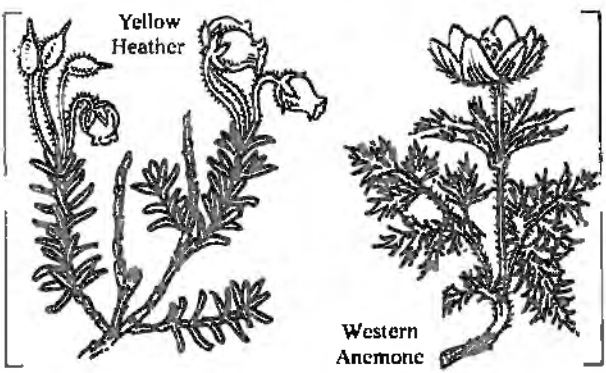
altitude, pushing the timberline a few metres above the treeline on this side of the valley.

The next section of the trail takes you into the "arctic".

Arctic Survival

Relax for a few minutes and enjoy this alpine view.

For nine months of the year this area is covered by snow. Because of buffeting wind, dryness and temperature extremes, the alpine is similar to the arctic tundra. In fact many of the plants around you resemble tundra vegetation in their growth form.



To avoid strong winds most plants are small and grow close to the ground, often in sheltering hollows or on the lee-side of rock outcrops.

Although a large amount of snow and rain falls here, only a small quantity of water is available for plant growth. The rocky soil holds little water and the wind evaporates much of the moisture remaining in the soil.

If you examine the plants you'll notice that most have small leaves and some have scales or needles. These adaptations reduce the surface area of the leaves, which reduces the moisture loss through evaporation by the wind.

Try to locate one of the many different plants near you that has small hair-like projections on its stems or leaves. Please don't pick it, but touch the "hairs".

These small hair-like structures act as insulation, protecting the plant from temperature extremes and water loss.

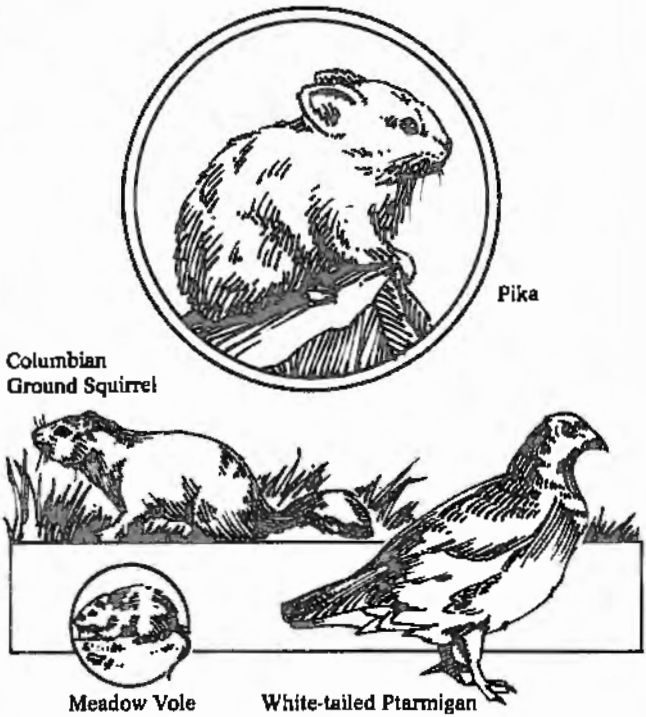
The plants growing here must concentrate their growth into the two or three months of summer. Some of them retain the same leaves for several years. Others store energy in their root systems so that in early spring, this stored energy can be used to produce new leaves. Many of the plants are unable to produce flowers and seeds every year since this requires too much energy.■

On, Under, Above the Meadow

If you've heard shrill squeaks or seen a greyish, rusty-sided squirrel along the trail, you have met a Columbian ground squirrel. These tough little rascals survive the harsh alpine winters by hibernating for nine months of the year deep inside their snug burrows. During the summer months, however, the ground squirrels are busy alpine residents. Their urgency is for good reason. In a brief three months they must eat enough plant food and build up sufficient fat to carry them through the long winter's hibernation. The Columbian ground squirrels must be constantly alert for enemies such as the golden eagles which soar above these slopes in search of food.

Along this path are many small holes and trails through the grasses. These are the haunts of the tiny mouse-like voles which feed on the meadow plants. Unlike ground squirrels the voles stay active during long alpine winters. To do this, voles dig extensive tunnel systems under the snow between their nests and feeding areas.

Look carefully in the low meadow vegetation near rock piles and you may see mottled brown birds with white on their belly, wings and tail. These are the birds for which this area was named — the white-tailed ptarmigan. Ptarmigan are well-camouflaged for the life in the meadow where they feed on alpine plants. In summer they are almost invisible amid the meadow vegetation. In winter, ptarmigan moult to a pure white and only their black eyes and bills contrast with the snow-covered landscape.



As you walk, look for the birds and animals that live on, under and above the meadow. At the next stop you'll see fossils of animals that lived over 350 million years ago.■

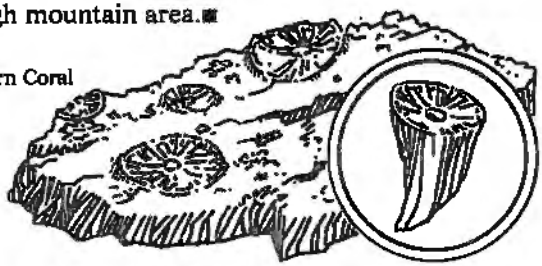
From Ocean to Mountaintop

Many of these bumps are fossil corals which once lived in warm shallow oceans, and their presence reveals a part of the story of these mountains.

When these animals were alive there were no mountains here; instead, this was the floor of a shallow sea. For millions of years, sand, silt, and calcium rich mud slowly piled up forming sediment layers on the ocean floor, covering the corals and other animals living in the sea waters. Through time the layers became rock as they were compressed by the weight of

sediments accumulating above them. Within the rock the remains of plants and animals were slowly fossilized.

This continued for millions of years until tectonic forces raised these rocks above sea level, folding and fracturing them in the process. In the wall of Mt. Arethusa that towers above, you can see layers of rock that were pushed upward into a vertical position. Fossils were carried within most of these rocks to this high mountain area.■



Horn Coral

Carving the Mountain Landscapes

These mountains were in the grip of the crushing, grinding power of the glaciers for thousands of years and the landscape surrounding you shows signs of the glacier's passage.

During the Ice Ages, snow accumulated at the upper end of this valley between the headwalls of Mt. Arethusa and Mt. Rae. As snow continued to accumulate, a glacier was formed. Plucking and grinding by glacial ice, and frost action carved out the bowl-shaped cirque at the head of the valley.

Moisture from melted snow seeped into cracks in the rock and froze, causing pieces of rock to break loose. As the glacial ice moved through the valley, it wore away large amounts of rock from the slope and created the rock steps over which this alpine stream now flows. After the glacier melted, remnant ice was left along the base of the mountain slope. Rock debris, broken from the face of Mt. Arethusa by frost wedging, tumbled down over the ice to pile up next to it. When the ice finally melted, the ridge you are standing on was left isolated between meadow and mountain slope.

Today, wind, rain, snow and ice are continually wearing away the mountains. Rocks are loosened from the cliffs above and the debris accumulates in large rock piles, called talus, along the base of the

slopes. These talus slopes shelter many of the animals that feed in the adjacent meadow. As you hike onto the ridge, look among the rocks for some of these animals: Hoary Marmots with their grizzled coats and black faces; tiny Least Chipmunks, golden-mantled ground squirrels and greyish, guinea-pig-like Pikas.■

Harvesters of the Alpine

The warm days of the short alpine summer fade by late August, ending the brief season of plant growth. For alpine animals this means a dwindling food supply. Marmots, pikas and chipmunks each have their own ways of obtaining the food they require to survive the winter.

Marmots, like their relatives the ground squirrels, spend the summer building up fat which will supply their energy needs during winter hibernation. If you are hiking this trail during July or August you may see a marmot sunning itself on top of a flat boulder, or you may be startled by its shrill whistle — an alarm call that has earned marmots the nickname "whistlers". After late August you probably won't see marmots because they'll be hibernating.

Pikas, the "farmers" of the alpine, cache their winter food supply of dried vegetation under the shelter of boulders and overhanging rocks. Once the snow falls and meadow plants are no longer available, pikas tunnel through the snow to feed on these "haystacks". You will probably hear the pikas, but seeing them is difficult because their nasal "eeps" may seem to come from one place in the rock piles while the pikas are watching you from somewhere else!

If you see a small, striped animal scampering over the boulders, it may be a Least chipmunk. If the chipmunk looks like it has the mumps, its cheek pouches are stuffed full of seeds it is carrying to a winter stockpile. When winter arrives, the chipmunk spends most of its time sleeping in a nest built atop its mound of seeds — handy for snacks when it awakens at intervals throughout the winter.

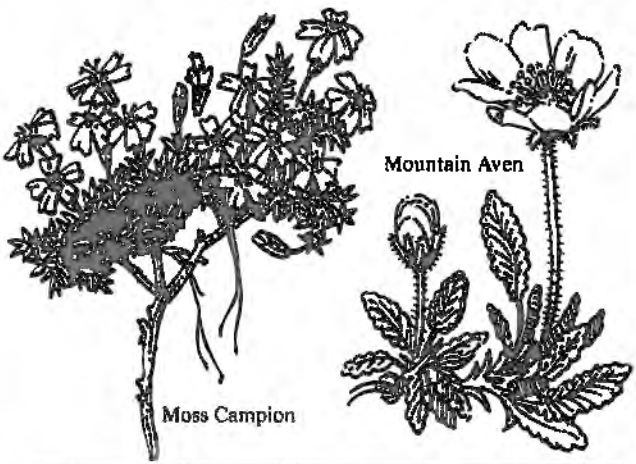
At the next stop are some plants that grow in one of the most severe alpine environments.■

The rock rubble making up this ridge and the talus slope to your left are extremely harsh environments for plants. The rocks are constantly shifting, most of the rain and snow melt trickles away deep into the rock debris and on a sunny day the temperature can go above 40°C and then drop to 0°C at night.

Surprisingly, some plants are able to survive among the shifting rocks on these parched slopes. One of these hardy plants, the moss campion, grows in dense, cushion-shaped mounds. The cushion hugs the ground to avoid wind and its compact growth acts as insulation against temperature extremes. During cold weather, the inside of a cushion may be 10°C warmer than the surrounding air. At night and during cold snaps, insects often seek shelter within the tangled foliage of moss campion.

Each small cushion of moss campion may have a root system extending a metre into the soil. These long roots secure the plant in the sliding rubble. They also absorb moisture from deep within the rock pile. Young plants may take 10 years to become established and produce their first flowers.

Other plants on these slopes grow in thick, ground-covering mats. White mountain avens are the mat-forming plants with the white flowers and wrinkled, leathery leaves. The fuzzy undersides of the leaves help to insulate the plant against extreme heat and cold. The dense, ground hugging mats and leathery leaves reduce water loss to the air. Mountain avens do not have deep roots to obtain water, instead they have shallow, wide-spreading root systems.



The shallow root system allows mountain avens to slide downslopes with the shifting rock. Sometimes the mats are torn apart, but each small section can take root and start a new mat, thus forming several plants from one.

The deep-rooted cushions of moss campion and surface mats of white mountain avens enable these plants to grow where few others could survive.

The trail now returns to the meadow and takes you to the land of crooked wood.■

Crooked Wood

The harshness of the alpine winter is reflected in the timberline trees around you. Wind and windblown ice particles have killed many of their branches, so that growth continues only on the downwind side, forming "flagged" trees. On some trees you can see branches that circle around the tree trunk to the downwind side. These branches are "wind-trained". Many of the trees have been bent to the ground by wind and winter snow accumulation. Their dense, matted growth provides shelter for voles, ptarmigan and other alpine wildlife.

These stunted, deformed trees are called krummholz, a German word for "crooked wood". The crooked wood here at timberline is evidence of cold, wind and short growing seasons at high elevations.

As you follow the trail back down to Highwood Pass, you'll return to the subalpine forest and leave behind the rigorous alpine environment.

If you would like to visit other alpine areas in the Park you can hike the backcountry trails. For more information on these hiking trails visit the Park Visitor Centre.■

"Kananaskis Country"

Alberta
COMMUNITY DEVELOPMENT
Parks & Protected Areas

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