

Arrowhead

Self Guiding Trail

Riding Mountain National Park



The Arrowhead Nature Trail begins at a parking lot on the south side of # 19 Highway, 4 miles east of the Interpretive Centre in Wasagaming and 0.5 miles east of the Riding Mountain Parkway. This trail is 1.7 miles in length. It forms roughly the shape of an arrowhead, hence its name. The points of interest described in this brochure are indicated by numbered posts. While exploring this trail with its diverse features, please keep it as wild as you found it.

Variety in Nature

Ranks of white-coated aspen and green spruce marching down the hillsides, meadows bright with flowers, pine-covered ridges, ponds noisy with blackbirds and frogs, bubbling springs, signs of bear and beaver — these are but a few of the many features waiting to be discovered along the Arrowhead Nature Trail. Diversity of plant and animal life is one of the outstanding characteristics of Riding Mountain National Park.



Wood Lily, one of the more common flowers along the trail.

1. Remnants of the Ice Age

Some 12,500 years ago, jagged broken ice extended northward from here. This marked the last advance of the massive continental glacier which, during the past thousands of years, had advanced and retreated over the land.

Glaciers were formed then (as they are today) when the rate of snowfall exceeded the rate of snow melt. This great mass, compacting into ice and under the great pressure of its own weight, flowed and spread southward. It gouged and rasped over the land like a gigantic bulldozer, bringing about drastic changes in the plant and animal life. Eventually warmer temperatures and lesser snowfalls caused the ice to melt back and release its accumulated debris of rocks and sand, soil and clay. Some of these deposits of debris are called “moraines,” and this vantage point rests on one of these.

This trail rises and falls as it tells us what has happened to the highland of Riding Mountain since the glaciers left. One or two of these hills may even make you puff as you climb them! Take your time and consider, “what is time to a glacier.”

2. Wanderers From Distant Places

Further evidence of the glacial history of this area is found in the rocks strewn generously across this meadow. These Ice Age wanderers were brought here by a giant conveyor belt, the continental glacier. This ice-sheet was switched on, controlled and switched off by the changing climate.

Feel the texture and examine the colour of these rocks. One type, granite, is easily identified by its sparkling crystals of biotite mica (blackish), quartz (clear or white) and feldspar (reddish, gray or white). If you could have visited this area before the time of the glaciers, you would not have seen any granite. Where did these rocks come from? The nearest source is the Canadian Shield, 125 miles to the east and 300 miles to the north.

The gray rock with the rough, pitted surface is limestone. It often contains the fossilized remains of sea creatures. In Manitoba, limestone deposits occur mainly between Lakes Manitoba and Winnipeg — 100 miles to the east. Taken together, this collection of granite and limestone rocks tells us the general direction from which the glaciers came.

3. The Pattern of the Plants

As the great ice-sheet retreated, plant life returned to this desolate land. First came lichens and mosses, then sedges, grasses and herbs, and finally shrubs and trees. Can you find examples of these plants?

This area demonstrates the interaction between plants and the land. Each species is adapted to survive with different amounts of the vital elements — sunlight, water and minerals. Each species occurs in its own special place or niche where these elements occur at acceptable levels.

The jack pine on the side trail is an outstanding example of its kind. In this semi-open meadow it has grown under very favourable conditions. This pine's spreading branches and dense needles welcome you to its shade on hot days when its resin scents the air.

When you pause beneath this tree, you and it become neighbours in the great community we call the "ecosystem." The oxygen you breathe is produced as the tree manufactures food (photosynthesis). Your breath, in turn, provides carbon dioxide which the tree uses as a raw material in order to produce its food — sugar. This is but one example of how living things are tied together in a "web-of-life."



Porcupine.

4. Mysterious Markings

The scarred jack pine to your left displays one of the more mysterious animal signs to be seen along this trail. What bark eating animal can reach

heights greater than 20 feet and yet chew off patches down to ground level? The size of the wood chips at the base of the tree provides some clues as to who this hungry fellow is.

Stout chisel-teeth chip away the outer bark to reach succulent inner layers, the porcupine's favourite food. Porky also chews anything salty (sweaty saddles, axe handles, plywood) and anything stained with tannin (leather, oak and birch bark).

Even if we are unable to see some of the more secretive animals, tracks and other signs will tell us much of their habits. The scats or droppings along the trail tell us of the wapiti (elk), moose, white-tailed deer, coyote and black bear which have walked this trail before us. These seldom-seen night travellers also leave tracks which show up best the morning after a light rain or after a fresh snowfall.

5. Spring of the Black Spruce

Water is vital for all life. Too much can be deadly, not enough is a limiting factor for plant and animal life. You will be able to see the effects of too much and too little water further along the trail.

This is a south-facing slope with a difference! While most are dried by the sun, this slope has a natural spring. This combination of sunlight and water is ideal for the growth of a rich stand of black spruce and tamarack. Without a constant supply of water throughout the hot summer days these moisture-loving trees could not survive here.

6. Kettles Created by Ice

Buried beneath the gravels of the moraine left by the glacier were ice blocks which melted slowly, thus creating depressions to pockmark the landscape. These steep sided and undrained depressions are known as kettles. They are popular haunts for waterfowl and other aquatic life.

At this kettle, known as Teal Pond, the most subtle agent of nature has begun to eliminate the efforts of the mighty glacier. That agent, time, has permitted sediments to collect in the basin and vegetation to invade the shallows. Ever since its original formation, the pond has been slowly filling.

The natural world is thus ever changing. Some recent occupants of the pond, including blue-winged teal, green winged teal, and beaver, have been forced to move elsewhere to find the conditions which are right for them and their offspring.

Semi-aquatic plants continue to advance outward into the pond. One of the most adaptable plants of the pond is the water smartweed, whose flowers project upward in bright pink spikes. In deep water this plant has leaves floating on the surface, on mud flats it creeps and crawls. If the pond becomes dry, the water smartweed stands upright.



Beaver evidence: Felled trees and dug canals.

7. Engineers in the Wilds

What has happened to all these trees lying on the ground? A quick look at their stumps tells us the beaver have been gnawing at them. Even a healthy fifty pound beaver would have difficulty hauling logs and sticks to the nearest pond from here. Look for his clever system of canals. Man is not the only “engineer” in this world!

8. Beavers and Loons

Pudge Lake is actually a kettle pond enlarged by beavers. Two lodges can be seen from the end of the boardwalk. They were constructed by beavers years ago from the branches of aspen

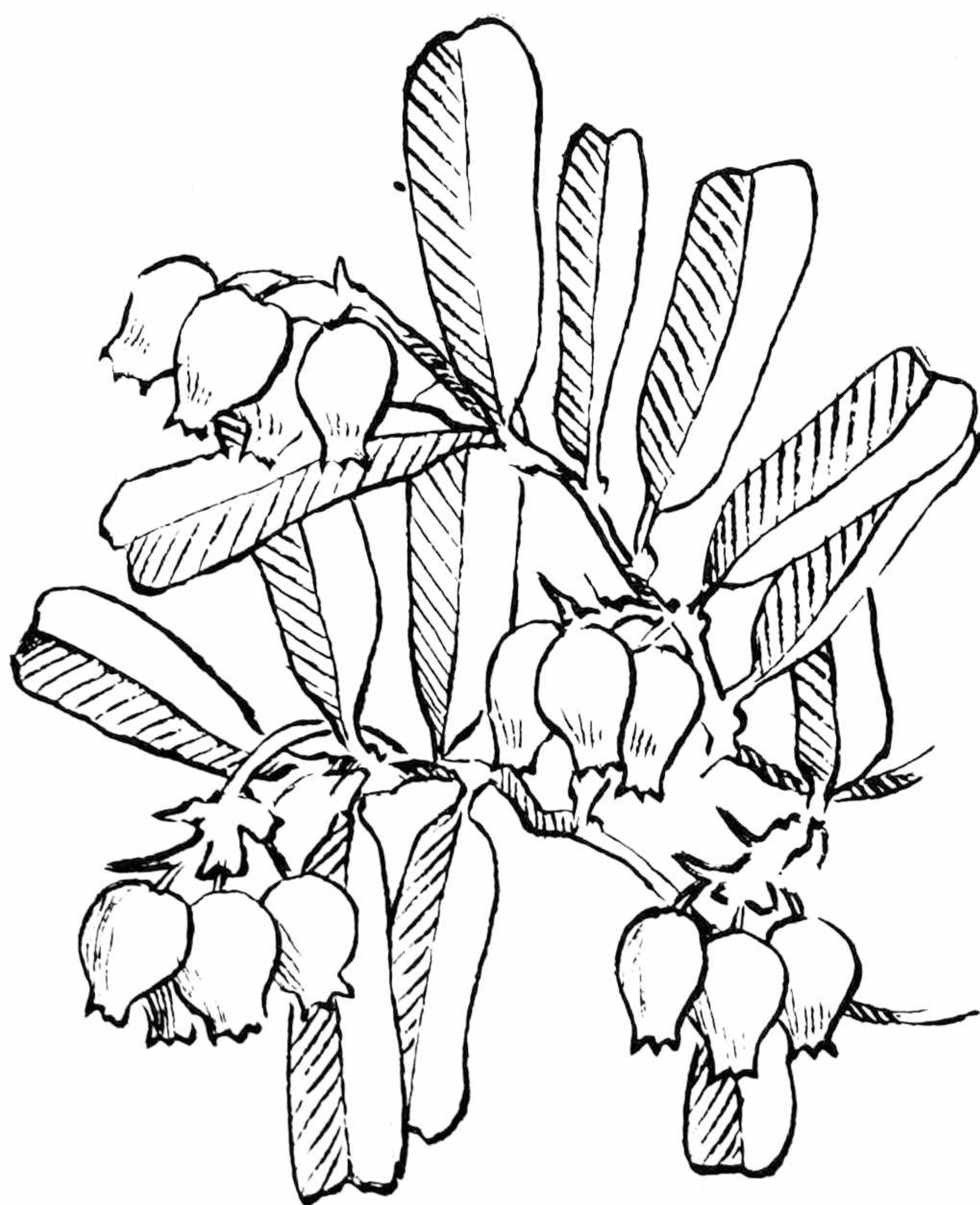
trees which once covered the surrounding slopes. Most of the aspen are gone now. In order to find more food and building material, the beavers dug their canals around the hill.

This small lake is the centre of the beavers' world. They use it to store their winter food supply beneath the ice. The pond protects their lodge, much like a huge moat protects an ancient castle. These lodges are abandoned now.

The beavers' pond has a great effect on its surroundings. Notice the dead black spruce, killed when water drowned their roots. The abandoned beaver lodges, however, provide an area for a family of loons to nest each year. The water also provides a home for many small fish such as the five-spined stickleback. These in turn provide food for the loons. Can you find examples of other things which are here because of the beaver?

9. South and North Facing Slopes

Can you detect any differences between this side of the hill and the one across the hollow? This side, a south-facing slope, has a distinctly different type of vegetation from that of the north-facing slope. The most typical plant on this side is the bearberry which forms a low dense growth with thickened waxy leaves; leaves which conserve moisture and protect the food factories of the leaf from the intense heat. The north-facing side has less sunlight and more moisture. It can support an abundance of trees such as the aspen and spruce.



Bearberry.

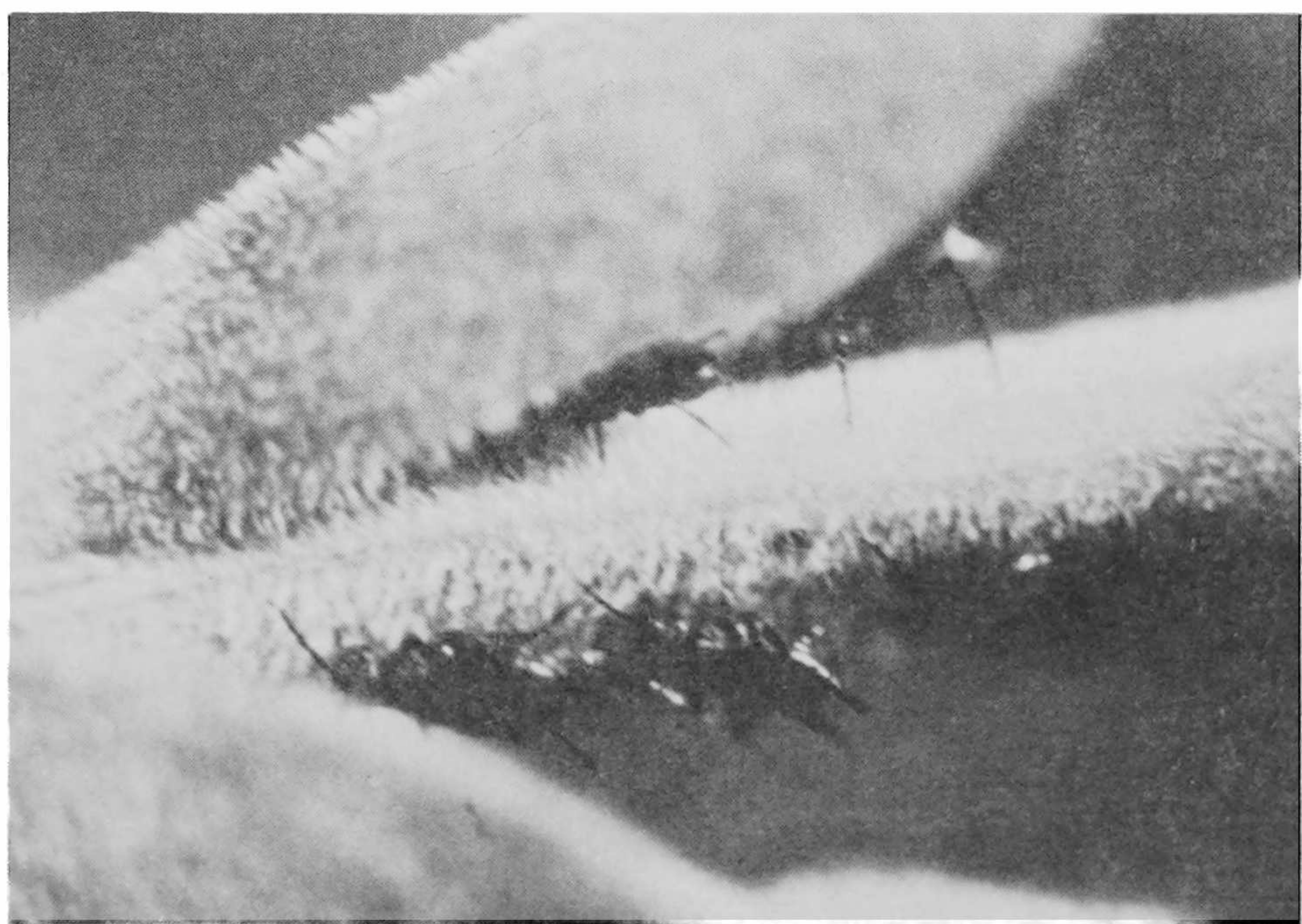
10. Ant Cities

Ants have been on earth for tens of millions of years longer than man. During these years their cities have developed to a point where perhaps they are more efficiently organized than man's.

These massive mounds are the home of thousands of red wood ants. These ants are found around the Northern Hemisphere in pine and spruce forests. Ant communities, like man's cities, vary greatly in size. As in pioneer human communities, new ant colonies often suffer from famine and enemy attacks before becoming well established. Once a secure site has been obtained a wood ant colony may increase to half-a-million in population.

Surrounding this ant city is an area of countryside intertwined with highways. Small legions of ants are moving back and forth from the jack pines to the mounds. No, they are not gathering wood for construction. They are tending their dairy herds — hundreds of aphids! These tiny, soft-bodied insects suck the pine sap and then excrete some of it as honeydew, the main item in a red wood ant's diet.

The aphid herds, just like domestic animals, depend on the ants to guard them constantly from their predators — mostly spiders. As well as tending herds in pastures (the jack pines) near the city, wood ants also keep herds of aphids in barns (underground chambers), where they are able to suck juice from roots. Here the aphids are completely protected from the weather and from predators, and the ants in turn are able to visit them even if it is rainy and cold.



Aphids.

What do you think would happen to the others if one element in this system (ants, aphids and pines) was removed?

11. Windfall

This aspen and others like it have been blown over by the wind. If you examine the base of the fallen tree, you will see that it has been weakened by fungus rot.

Waste is not possible in a balanced natural community. The death and fall of the aspen provided food for rabbits, which in turn provided food for larger animals. Once the log is on the ground, a multitude of insects, worms and millipedes attack it, breaking it down into smaller and smaller pieces. These are invaded by fungi, which convert the complex chemicals of the wood into simpler forms. Eventually everything is returned to the soil and air — the original sources.

12. Aspen vs. Spruce: Struggle for Survival

Notice the white-barked aspen — their leaves and live branches are restricted to the highest portion of the tree. The branches along the trunk are all dead. Why? Aspens can't tolerate shade. They require direct light to survive. Each tree pushes its crown or upper branches upward in an attempt to maintain its place in the canopy while lower branches and lesser trees are shaded and die. For each surviving aspen, probably fifty have died!

Other species such as the hazel, which constitutes the greater part of the under-brush, can tolerate low light intensities. In fact, the hazel grows best here, in the shade of the aspen.

The young white spruce you see growing on the west side of the trail is actually about thirty years old. It is slow growing compared to the taller aspens which are about the same age. The spruce, however, is able to grow in the shade of other trees. In this way, the spruce will eventually become dominant over the aspens and, unless a fire strikes the area, will eliminate them.

13. Clear Waters

In the distance are the waters of Clear Lake. The colour and clarity of the lake are caused by a number of factors: the deep water which prevents all colours but blue and green from being reflected, the cold temperature of the water which inhibits plant life, and the lack of streams which would carry in material and stir up the sediments. As a result, Clear Lake looks today much as it did after being formed by the melting glaciers.

As you continue along the Arrowhead Trail you will encounter more of the mysteries of our National Park. The discovery of these wonders will be left for your personal interpretation and enjoyment.



Eventually everything is returned to the soil and air.



Indian and
Northern Affairs

Affaires indiennes
et du Nord

Parks Canada

Parcs Canada

Published by Parks Canada under authority of
the Hon. Judd Buchanan, PC, MP,
Minister of Indian and Northern Affairs.

©Information Canada, Ottawa, 1975

INA Publication No. QS-R039-000-BB-A1

Printed on recycled post-consumer waste paper



**LEGEND
LÉGENDE**

- | | |
|--|--|
| Lake
Lac | |
| Marsh
Marais | |
| Grassland
Prairie | |
| Aspen, Birch
Tremble, bouleau | |
| Interpretive Trail
Sentier d'interprétation | |
| Aspen, White Spruce, Pine
Tremble, épinette blanche et épinette noire | |
| Aspen, White Spruce, Black Spruce
Tremble, épinette blanche et pin gris | |
| White Spruce, Black Spruce, Tamarack
Épinette blanche, épinette noire et mélèze | |

Scale in feet 0 50 100 Échelle en pieds