Driving the Fire Belt

North Klondike Highway

A GUIDE TO FIRE HISTORY BETWEEN Whitehorse and Dawson City

Managing fires: a balancing act

Protecting communities from fire, while trying to maintain a healthy forest ecosystem

In an average year, Yukon experiences about 140 fires, burning about 117,000 hectares in total. Half of these fires are caused by lightning, the other half by human carelessness. Lightning-caused fires can ignite, smoulder for a few days, and flare up once the conditions warm up and dry out. Most human-caused forest fires are started by abandoned campfires.

- **Build your campfire in a designated spot**, or clear away all vegetation and build it on mineral soil. Do not build fires on windy days. Keep your fire small. Have a shovel and water close by.
- **Always make sure your fire is completely out.** A poorly extinguished fire can burn in the soil for many days.

Be on the lookout for smoke. If you see a wildfire, call the toll-free reporting line at **1-888-798-FIRE (3473)**.

To learn more about Yukon forest fires, visit the Faro Arboretum in Faro, the Takhini burn interpretive site at kilometre 1487 on the Alaska Highway, the Fox Lake burn interpretive site at kilometre 272 on the North Klondike Highway, or the Kluane Museum of Natural History in Burwash Landing.

FOR MORE INFORMATION CONTACT:

Community Services
Wildland Fire Management
(867) 456-3970

Environment Yukon
Wildlife Viewing Program
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Yukon Government

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Forest fires reset the cycle

The fire belt

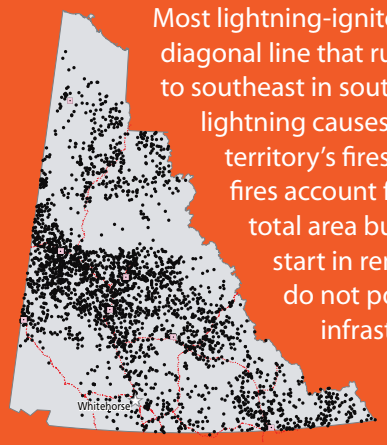
This brochure is a guide to the diverse range of fire ecology found along a 500-kilometre stretch of the North Klondike Highway. Six major fires over the past 50 years have "reset" the forests, allowing travellers today to witness many different stages of forest growth and re-growth.

Fire plays an essential role in the renewal and maintenance of forests. For example, seeds need to reach soil to germinate. If fire is suppressed, twigs, needles and other plant material (humus) form a barrier to the soil. Seeds also need warmth to grow but humus blocks the sun's heat. The forest along the North Klondike Highway naturally burns in a patchwork pattern, every 50 to 200 years. This cycle of fire and re-growth has been occurring since trees established themselves after the last glaciation here 10,000 years ago.

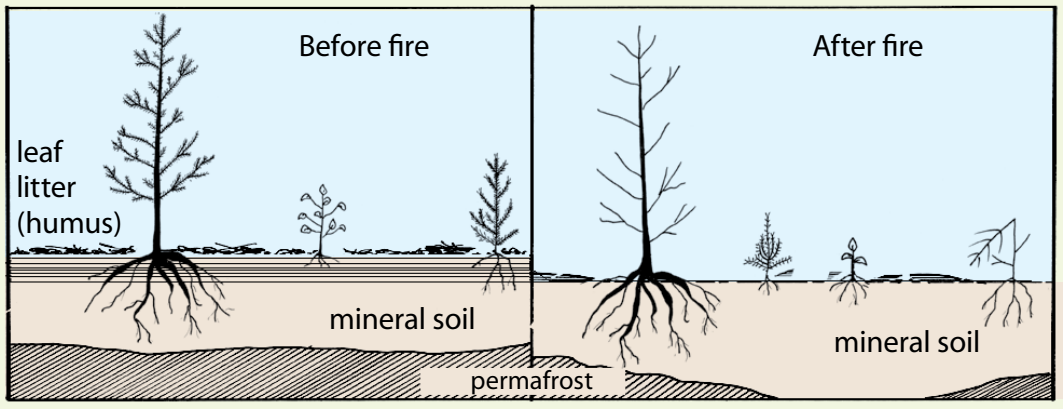
Human

Human-caused fires most often start near communities, roads and rivers. They have the potential to threaten homes and other assets such as power lines.

Lightning



Most lightning-ignited fires start along a diagonal line that runs roughly northwest to southeast in south central Yukon. While lightning causes about half of the territory's fires, lightning-caused fires account for 95 percent of the total area burned. These fires often start in remote areas. Fires that do not pose a risk to homes or infrastructure are monitored but not actively suppressed.



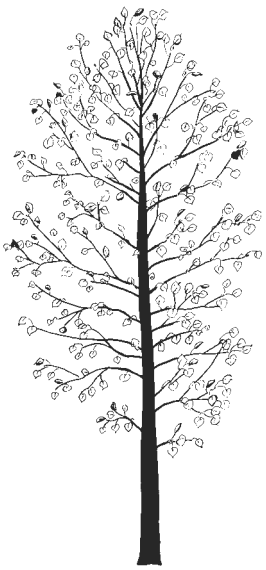
The forest floor is covered with leaf litter. This organic material breaks down and mixes with the top layer of soil. Beneath this is mineral soil, which is composed of sand, silt and clay. Fire often removes these first two layers and exposes the mineral soil.

Living with fire

Yukon forests: dependent on fires

Forests cover approximately 275,000 square kilometres of Yukon — an area larger than Sweden or California. White Spruce and Lodgepole Pine are the most common cone-bearing trees, but you'll also see Black Spruce, Subalpine Fir and Tamarack. Trembling Aspen, Balsam Poplar, Paper Birch and several willow species are Yukon's broadleaf trees.

Since the forest is fire-dependent, many notable plants and animals are adapted to its effects. Fir instance, heat from fire melts the resin that otherwise seals the cone scales of Black Spruce and Lodgepole Pine. This allows the cone scales to open and the enclosed seeds to fall out.



Trembling Aspen suckering

Fire can stimulate Trembling Aspen (*Populus tremuloides*; above), some willow species, and Fireweed to send up new shoots.

A forest mosaic

Single trees, small pockets of vegetation or even large stands may not burn during a forest fire due to moisture levels, winds or other variables. The result is a patchwork of vegetation of different ages and species. This forest mosaic supports a wider variety of wildlife than a forest of uniform age. The patchwork composition can also protect forests from large-scale insect infestations or huge wildfires.

Natural burn patterns

Pioneer plants

Fireweed, Dragonhead and various grasses grow soon after a fire. These pioneer species need direct sunlight, and are often replaced as the forest matures. Although you rarely see Fireweed in mature forests, their root systems are still there and after a fire they will re-appear.

Purple Reed Grass *(Calamagrostis purpurascens)*

W.D. Bakowsky, NHIC Archives photo

Dragonhead *(Dracocephalum parviflorum)*

Fireweed *(Epilobium angustifolium)*

Living with fire

Hairy Woodpecker

Bruce Bennett photo

Meadow Vole

Val Loewen photo

Northern Hawk Owl

Red Squirrel

Wildlife after fire

Woodpeckers and chickadees are some of the birds that hollow out nest cavities in the standing dead trees left after a fire. Heart-rot fungi soften the wood, making it easier for the birds to excavate. Once dead trees fall to the ground, Ermine, Pine Marten and other small mammals will use the logs for shelter or cover from predators.

Blueberries, cranberries and nutrition-filled pioneer plants are sought out by both Black and Grizzly bears. Moose find plenty of shrubs to browse in the five to 20-year-old burns. The nutrient-rich vegetation also lures smaller plant-eating animals, and predators of these herbivores naturally follow over time. Northern Hawk Owls and other birds of prey perch in tree tops watching for Meadow Voles, which thrive on the abundance of grass seeds. Red Fox, Pine Marten, Ermine and Mink also prey on these mouse-like creatures. Similarly, Lynx come after the Snowshoe Hares, which eat bark off the shrubs that are so plentiful in the first years after a fire. Coyotes and Grizzly Bears prey on Ground Squirrels and other small mammals.

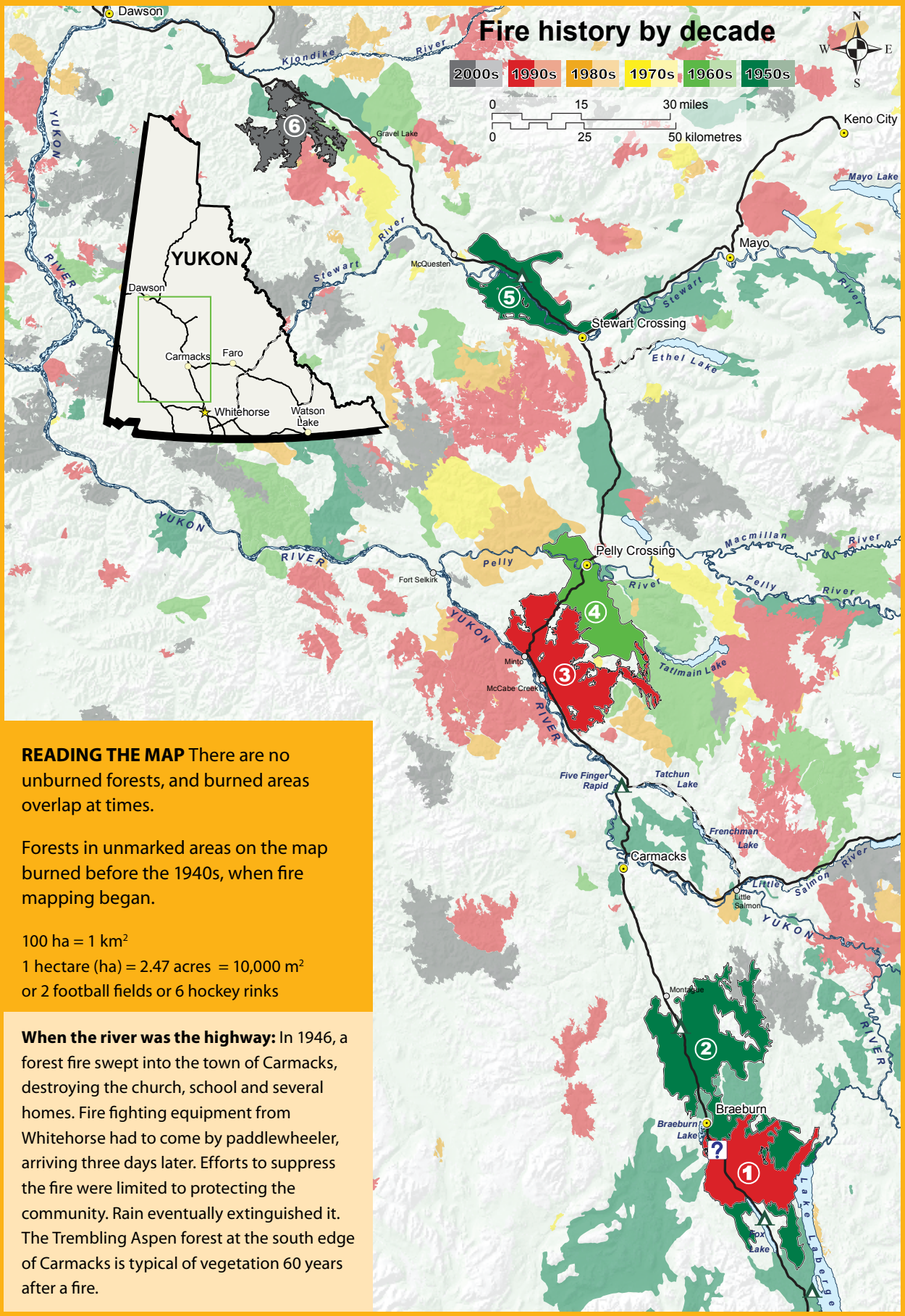
You are more likely to see Common Nighthawks in older burns, especially near open grassy areas, or in sparse pine and Trembling Aspen forests.

Lodgepole Pine *(Pinus contorta)*

The two most common conifers in the Yukon are easily distinguishable. Lodgepole Pine has long needles (up to 7.5 cm) that grow in pairs. The White Spruce's smaller needles (1 to 2 cm) grow singly all around the branch. Chew on a few of either to get your Vitamin C for the day!

White Spruce *(Picea glauca)*

FIRE HISTORY MAP



READING THE MAP There are no unburned forests, and burned areas overlap at times.

Forests in unmarked areas on the map burned before the 1940s, when fire mapping began.

100 ha = 1 km^2
1 hectare (ha) = 2.47 acres = 10,000 m^2
or 2 football fields or 6 hockey rinks

When the river was the highway: In 1946, a forest fire swept into the town of Carmacks, destroying the church, school and several homes. Fire fighting equipment from Whitehorse had to come by paddlewheeler, arriving three days later. Efforts to suppress the fire were limited to protecting the community. Rain eventually extinguished it. The Trembling Aspen forest at the south edge of Carmacks is typical of vegetation 60 years after a fire.

1998 FOX LAKE FIRE

km 254 to km 277

1

Story of the fire

On July 2, 1998, a human-caused fire started at the north end of Fox Lake. The fire burned 45,125 hectares — about 27 times the size of Fox Lake — coming within two kilometres of Braeburn Lodge and causing several road closures. It cost $2.5 million to fight. Small patches of fire smouldered underground through the winter and flared up again the next spring, but soon burned out because of lack of fuel.

What to look for

Young Trembling Aspen and willow are well-established in the exposed mineral soil, growing through the standing fire-killed spruce. Fireweed is the most abundant herb, but Dragonhead and grasses are common, too. In mid-July, the hills turn pink from Fireweed blooms. Mature White Spruce still covers the islands on Little Fox Lake, in striking contrast to the charred hills surrounding the lake.

Watch for Northern Hawk Owls perched on dead trees. These small, slim daytime hunters are likely watching for voles. Hikers will see Moose and Elk droppings throughout the burn and the ragged ends of willow branches that have been browsed by Moose. Watch, too, for shrubs with bark stripped off the base, the work of Snowshoe Hares.

Visit the fire interpretation pullout at kilometre 272. ?

On August 17, 1998, four firefighters (one woman and three men) were forced to take refuge in a pond when flames fanned by strong winds trapped them in the burning woods. From the pond they watched their equipment, including their gasoline-fueled water pumps, burn on shore. Shivering in the cold lake, their radios short-circuited by the water, they were out of contact for four hours. When they could finally leave the pond, they warmed themselves by the burning pumps, then hiked to a helispot. Fortunately, none suffered any serious injury as a result of this human-caused fire.

1958 BRAEBURN FIRE

km 277 to km 316

2

Story of the fire

In 1957, an improperly extinguished campfire spread into the forest, but caused little damage. However, the fire smouldered in the ground through the winter, and on May 19 the following spring, a 40-hectare fire was reported. Firefighters went to work using hand tools, but lost control of the fire on May 23 when winds of up to 65 kilometres per hour fanned a hot spot outside the fire line back to life. Heavy machinery and fire pumps helped stop the fire from burning toward Braeburn Lodge and several cottages. By August 28, the fire had burned approximately 147,000 hectares. (For comparison, Lake Laberge is 20,000 hectares.)

What to look for

This forest looks quite different than the Fox Lake burn that took place 40 years later. Most of the blackened trees are now on the ground and bunchgrass has replaced Fireweed as the common herb. Watch for bright blue patches of Jacob's Ladder in the spring. The Trembling Aspen and Balsam Poplar are still taller than the White Spruce and Lodgepole Pine, but the conifers are catching up. This mixed forest will eventually turn into a mature spruce and pine forest if it does not burn again before reaching maturity.

Dark patches of mature spruce, taller than the bright green of the Trembling Aspen, are trees that survived the 1958 fire. Watch for this example of a forest mosaic near the 302-kilometre marker, and again south of the Twin Lakes campground. Mature spruce covers the island on Twin Lakes, while Trembling Aspen grows on the shore opposite (kilometre 307).

Elk and Grizzly Bear sometimes feed in the ditch along this burn, and on open hillsides, preferring the open space to the maturing forest.

Elk thrive in burned, open forest.

1995 MINTO FIRE

km 407 to km 447

3

Story of the fire

The summer of 1995 was the hottest and driest on record for this area. On June 12, a fire that threatened cabins, houses and the Minto Resort lodge was reported. Alaskan crews were brought in to help Yukon firefighters, and at one point 195 people were working on the fire. On June 23, about 235 Pelly Crossing residents were evacuated to Mayo because of the heavy smoke. The residents were allowed home on June 26, but many did not return immediately because of lingering smoke. The fire engulfed three structures, burned about 59,000 hectares and cost $3.2 million to fight ($4 million in today's dollars).

What to look for

Fireweed is less abundant here than at the Fox Lake burn. Trembling Aspen is the most common tree species, but spruce and pine are poking up beneath them. Near Lhútsäw Lake, watch for White Spruce "veterans" — trees that survived this fire. To the west, the sage-covered slopes harbour some plant species that existed when mammoths roamed the valleys. Wildfire helps to keep the boreal forest from invading these slopes.

The few stands of trees that were missed by this fire are evident along the highway. Between kilometres 423 and 427, a few dead spruce beside the road are orange, the residue of fire retardant dropped by air tankers. Live trees nearby have shed the retardant.

Watch for American Kestrels perched on dead trees. These small falcons often nest in old woodpecker holes in dead spruce trees, and eat small mammals, birds and insects. You might be lucky enough to see Pine Marten, which eat Red-backed and Meadow voles. A more commonly seen predator of voles, and of hares, is the Red Fox. Mule Deer are occasionally seen on the sage-covered slopes.

1969 PELLY FIRE

km 448 to km 468

4

Story of the fire

June of 1969 arrived with record-breaking temperatures and dry weather. Sometime early in the month, lightning struck the north shore of Legar Lake about 17 kilometres northeast of Pelly Crossing. A 160-hectare fire was reported on June 14, but by the time firefighters were dispatched only an hour later, it had already grown to 240 hectares and was burning towards Pelly Crossing. On June 15, the village, population of 160 people, was evacuated. Women and children were taken to Mayo and Elsa, while the men stayed to help helicopters and ground crews fight the fire.

The fire burned to within 1.5 kilometres of Pelly Crossing, before a firebreak and cooperative weather stopped it. (A firebreak is a fuel-free line made by scraping away the humus and plants with heavy equipment.) People were allowed to go home on June 18, although the fire was not declared under control until July 25. By then it had reached 73,000 hectares. By the time the fire was declared out, it had cost half a million dollars to fight ($3 million in today's dollars).

What to look for

As in the Minto fire, Trembling Aspen are coming up among the standing dead trees. The White Spruce that represent a mature forest has not yet begun to take over. You can see several older stands of the many Trembling Aspen that survived the 1969 fire. South of kilometre 458, across the road from Meadow Lake, the fire burned particularly hot, killing the Trembling Aspen roots. Now a thick stand of willow, a favourite food for Moose, dominates. The large willows also provide good cover for Orange-crowned and Yellow warblers, and White-crowned Sparrows. Watch, too, for Ruffed Grouse. Moose, Grizzly and Black bears are among the large mammals you might spot.

A helicopter fills its water bucket.

1951 STEWART RIVER FIRE

5

km 535 to km 570

Story of the fire

On June 27, 1951, a fire was reported near the then Stewart River ferry crossing. The forest was so dry and the wind so strong that no attempt was made to fight the fire until July 12. Fireguards were built to try to protect sawmills and green timber. In the end, 40,000 hectares were burned before the fire was put out by rain in late September.

What to look for

While fire has had a major impact on what you see, surface features, such as mountains, also influence the vegetation. The Stewart River and the highway, for example, act as fireguards. In the strip between them you'll see many trees that did not burn in 1951. The steep southwest-facing slopes dry quickly; the Trembling Aspen, bunchgrass and sage that grow on these sun-warmed hills are in stark contrast to the Black Spruce growing in the river valley.

Animal diversity is often lower in older burns. Willow grows too tall for Moose to reach, or is replaced with Trembling Aspen. Other herbivores move on to younger burns, and carnivores naturally follow. However, in this region, the topography helps maintain forest and animal diversity. Watch for Northern Goshawks, which hunt around wetlands. Male Little Brown Bats roost as far north as Dawson City in the summer, so you may see them at dusk or dawn.

2004 DOMINION FIRE

6

km 643 to 654

Story of the fire

Summer 2004 was unusually hot and dry. In Yukon, fire season records were shattered with over 1.7 million hectares (4.2 million acres) consumed — an area half the size of Lake Superior. That year, 273 fires burned, beating the previous record of 255 in 1994. The Dominion Fire became part of a massive fire complex that made 2004 the most dramatic fire season for both Alaska and Yukon.

A territory-wide ban on all open fires began on June 21. Only a day later, a lightning strike ignited a fire that was to consume more than 29,000 hectares of forest. Although attacked by aircraft within minutes of its report, the Dominion Fire quickly grew in size and intensity. Within hours it was several hundred hectares and growing. A portion of the fire was successfully contained near the highway by crews and equipment, but the remainder burned until winter snow and cold took over.

What to look for

The few years following a fire offer fantastic photographic opportunities. The classic image captures fields of pink Fireweed contrasted by stark black trunks (see cover). After a few years, willows and Trembling Aspen begin to sprout amid the dead trees and the charred bark begins to flake off. The flowers and fresh shoots attract Moose, deer and small mammals, such as Arctic Ground Squirrels and Snowshoe Hares.