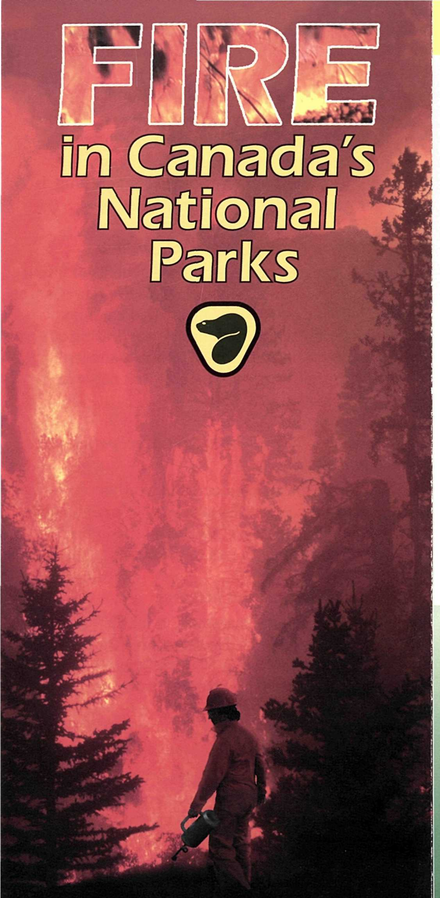
FIRE in Canada's National Parks



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The Challenge:

A bolt of lightning shatters a pine and sends ribbons of fire spreading through the undergrowth. Dry brush explodes into a wall of flame that races through the forest, throwing sparks and smoke hundreds of metres into the air...

Fire fascinates yet frightens us. At times it has been an ally, at others, an enemy. In national parks, we have grappled with the issue of fire for over 100 years. For most of that time, park managers – and our society – have viewed fire as a destructive force and extinguished it.

More recently, the science of ecology is telling us something completely different. Fire is an essential part of nature. Eliminating fire from ecosystems is like shutting out the wind or the rain. Yet this is exactly what has happened.

What is the best way to reunite fire and the landscape? How do we reconcile this new view of fire with protecting life and property — both inside and outside national parks? This is the challenge of fire management.

Flames in the grass

Fire plays a vital role in grassland ecosystems. Frequent fires promote the growth of herbs and grasses, as well as prevent trees and shrubs from invading.

The Ecology of Fire

Renewer, Recycler and Rearranger....

Fire is old. It has been part of grassland, brush and forest ecosystems for as long as they have existed. Like storms, avalanches and floods it is a powerful force of change in nature. Fire has shaped landscapes across Canada and around the world.

Many ecosystems have evolved with fire and depend on it for renewal. A recent burn may seem dead but many forms of life survive, giving rise to a new forest. Fire kick-starts regeneration by providing ideal growing conditions.

In cool temperate areas, decay is slow and logs, leaves and needles pile up on the forest floor. Fire reduces this material to mineral-rich ash, releasing and recycling nutrients. Fire also creates openings in the forest. Sunlight penetrates these gaps, warming the soil and stimulating new growth from seeds and roots.

Over time, periodic fires create a vegetation mosaic of different ages and types. This provides a rich variety of habitats that supports many species of insects, mammals and birds. This is biodiversity — it indicates a thriving ecosystem that is likely to persist in the future. So fire not only renews and recycles, but rearranges vegetation in a continual cycle of change.

Living with Fire

Many plants and animals are adapted to fires and the conditions they create.

After a fire, woodpecker populations may increase fifty times! They come to feast on bark beetles and other insects that colonize the newly burned trees.

Aspen, raspberry, and rose sprout vigorously from underground roots after a fire passes. Moose and elk feed on this new growth.

Both lodgepole pine and jack pine have resin-sealed cones that can stay on the tree for many years. The heat of a fire melts the resin and the cones pop open. Thousands of seeds scatter onto the ground and grow into solid stands of pine.

The Canada lynx benefits from fires that maintain the forest mosaic. It uses mature conifers for cover and hunts in recently burned areas that support large populations of its favorite prey — the snowshoe hare.

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On Parks and Ecosystems...

" The task is to think of ourselves as within ecosystems..." (Stan Rowe)

National parks protect examples of Canada's natural regions. Our goal is to maintain whole ecosystems and the diversity of life within them. Parks cannot survive alone; they depend on the sustainable use of surrounding lands. Humans are part of this picture and our actions, both inside and outside parks, will determine the future of our wild lands.

Fires of the Past

Dwindling Flames

"It has been a long time since my father and my uncles used to burn each spring. But we were told to stop. The country has changed from what it used to be ...brush and trees where there used to be lots of meadows and not so many animals as there were before..."

(76 year old Cree elder)

Since the retreat of the glaciers about 10,000 years ago, both lightning and humans ignited the landscape. Across North America, Aboriginal peoples set fires to herd game, create grazing areas and keep travel routes open. In many areas they influenced vegetation patterns. When Europeans arrived, Aboriginal populations declined and the fires set by them ceased.

Europeans brought different attitudes about fire and land-use. At first they used fire to clear land. Later, they regarded fire as a danger to permanent settlement and controlled it. As wilderness was tamed, so was wildfire.

Even in parks, fire was viewed as a destroyer of wildlife and scenic beauty. "Only you can prevent forest fires" cautioned Smokey Bear, who first appeared in 1950. Smokey's message, as well as the development of modern fire-fighting equipment and techniques, shut fire out of most ecosystems. For example, over the last 65 years, the area burned in the Rocky Mountain national parks has dwindled to less than 10% of historic levels.

Losing the Mosaic

Most researchers agree that fire suppression is altering many ecosystems. Forests are becoming older and more closed-in. The open habitats favoured by many species of wildlife are getting rarer. We are losing the vegetation mosaic and the biodiversity it sustains. These effects are far-reaching, for they affect not only parks but surrounding lands as well.

Fire Management

Striking a Balance

In 1909, the first national park wardens were hired — primarily to put out fires. Today's fire managers are working to sustain fire-dependent ecosystems while still providing fire protection.

Restoring the Flame

What is the best way to restore fire? In most parks, we cannot simply let nature take its course. There is too much risk to life and property inside and outside parks. Remote parks may permit lightning strikes to burn with little interference, but no fire is left unattended.

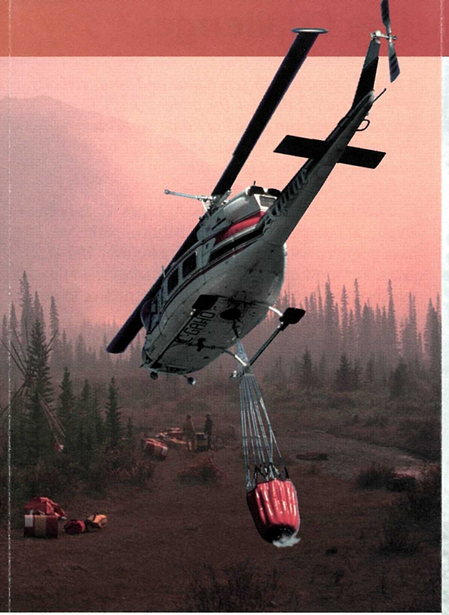
Instead, a program of 'prescribed' fire is used. These fires may be started by lightning or by park staff. How they are managed is planned before-hand. Trained specialists decide when, where, and under what limits such fires will be permitted to burn. They consider weather, type of vegetation, fire behavior, and terrain in order to burn safely and meet ecological goals.

Prescribed fire involves some risk. However, it is less than the risk of letting wildfire burn unchecked or trying to exclude all fire. Decades of fire suppression have created a build-up of dead wood (fuel) in the forest. This can result in an extremely intense fire. We can lower this hazard by prescribed burning or thinning trees to reduce fuels around facilities and towns.

Parks Canada is studying the effects of fire on ecosystem integrity and biodiversity. Research underway in many parks is revealing the complex connections between fire, humans and the environment. As new information arises, it is used to modify the next stage of the fire program.

Working Together

Fire management is everyone's business. Parks Canada is working with other groups to share ideas and to ensure that fire management planning addresses local and regional concerns.



Fire Protection

Some fires must always be extinguished. Parks Canada will continue to protect people, property, neighbouring lands and rare natural resources from wildfire.

From May to September, the fire hazard is monitored. If it rises, fire-fighters get ready for action. Small initial attack crews quickly extinguish most fires. Fires that continue burning are assessed and plans made to contain them.

To make fire fighting more effective and reduce costs, Parks Canada shares crews and equipment with other agencies.

Burning Questions

Isn't setting fires interfering with nature?

Landscapes untouched by humans are rare. Even in parks, we have interfered with natural processes. For example, we have suppressed fire for many years. Planned fire, whether lit by humans or lightning, is the safest way to restore fire's ecological role.

Why not log instead of prescribed burning?

Logging offers few of the ecological benefits of fire. It removes trees and nutrients, whereas fire recycles them. In many regions, the plants that colonize logged sites are different from those appearing after a fire. Economical logging requires roads and landings, severely disrupting the ecosystems that national parks are mandated to protect.

How does smoke from forest fires affect park visitors and communities.

Prescribed burns are conducted in weather conditions that disperse smoke away from developed areas as much as possible. Studies of fire fighters indicate that the health risk to the public is low.

What happens to animals in a fire?

Fire rarely traps large mammals. It may kill some small animals and birds. However, over the long term, most species benefit from the habitats created by fire. This can also improve wildlife viewing opportunities.

How much does the fire management program cost?

The cost of prescribed fire ranges from $10 to $1,000 per hectare depending on the size and nature of the burn. The average cost is $80.00 per hectare. Fighting fires costs over ten times as much and is not always successful.

For more information on fire management, contact the fire and vegetation specialist at your nearest national park.