



FIRE MANAGEMENT

Natural Processes

Forces of change shape our natural landscapes. Some forces, like the gradual uplift of the mountains, act slowly. Others such as fire, flood, windstorms, avalanches and insect outbreaks can rapidly restructure ecosystems. Although we often view natural disturbances as destructive, they play a crucial role in keeping ecosystems healthy.

The Three Rs

Natural processes act as nature's recycler, rejuvenator and rearranger. Vegetation killed by a natural disturbance decays, releasing and recycling nutrients to other plants. Surviving plants are reinvigorated, while the open spaces that natural processes create are quickly rejuvenated by new or recolonizing plant life. On a landscape level, natural processes rearrange plant communities by creating a patchwork of different ages and species. This patchwork creates habitat for more species of wildlife. This brings variety to the ecosystem, making it more resilient.



The Fire Mosaic – areas where vegetation is completely consumed by fire are interspersed by unburned and lightly burned patches.

Fire As A Force Of Change

Through time, fire has acted in synergy with other natural processes to shape ecosystems on many levels. Humans, too, have used fire for millenia to improve habitat for game animals or to stimulate food production. Here are a few ways fire continues to affect the landscape:

Creating Mosaics and Diversity

Fire produces a mosaic of different ages and types of plants. Fires typically burn across the land with varying intensities and effects on vegetation due to differences in terrain, winds and the amount of fuel present. This creates a range of habitats that support diverse wildlife.

Reducing Fuels

Periodic fire reduces the buildup of dead wood, branches and plant litter. This lessens the risk of extremely large, hot fires that can damage soil fertility and result in erosion.

Nourishing Soil

The high mineral content in ash improves soil nutrients. This flush of nutrients, along with warm soil conditions, can increase soil's microbial activity and plant regrowth.

Plant Survival

Where wildfires occur regularly (as in Canada's boreal forests and much of the Rocky Mountain forests), plants have evolved successful adaptations for surviving fire. Some plants actually need fire to reproduce. Plant adaptations to fire include increased seed release, increased flowering and fruiting, fire resistant bark and buds, and resprouting from underground root systems.

Wildlife Survival

In the short term, wildlife can die, be displaced or even be attracted to fire. The responses to fire are as different as the animals themselves. Some animals survive by outrunning fire or by going underground. Some may perish, usually by suffocation.

In the long term, fire increases the variety of habitats across a landscape. It also increases the abundance of habitats and food sources for animals like moose, grizzly bears, warblers, woodpeckers, and meadow voles. In some grassland areas, fire restores habitat by pushing back invading brush and trees.

Disease & Insects

Natural processes rarely act independently of each other. Disease and insects – Dwarf mistletoe, blister rust, mountain pine beetle and spruce budworm, to name a few – create patches of dead and dying plants, setting the stage for future fire.

Where fire is absent, disease and insects often take over the process of death and renewal. Plants resistant to these disturbances often revegetate newly created openings, increasing the variety of plant life.

No Natural Disturbances? That's Disturbing!

It is easy to think of a landscape of solid mature trees as healthy, but that isn't always the case. Just as a doctor needs to know a person's medical history to make a diagnosis, we need to understand the history of the processes that shaped an ecosystem to understand if it is healthy.

Without change, forests and grasslands lose diversity, producing plants of uniform age, species, and composition. Resistance to fire, disease, and insects weakens. Habitats vanish as younger forests give way to mature ones, and trees and shrubs invade grasslands.

We once viewed fire suppression as a tool to protect ecosystems. We now realize that keeping fire off landscapes is like keeping away rain or sun. Prescribed burns (planned, intentional fires) are used in many national parks to maintain the vital role of change.



Keeping the Processes Working

A critical role of national parks is to maintain healthy ecosystems, including all of their parts and processes. Parks Canada works with other agencies and neighbouring communities to safely keep natural processes on the landscape.

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