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FRONTLINE EXPRESS
Canadian Forest Service – Great Lakes Forestry Centre

Responding to threat of fire on forest sustainability

INTRODUCTION

Forest fires are an important part of a healthy forest environment. On average each year about 9000 forest fires burn in Canada covering 2.6 million hectares – almost half the size of Nova Scotia. Fire agencies must play a delicate balancing act to ensure fire remains an important component of our natural forest ecosystem while at the same time protecting human life, infrastructure and values.

ECOLOGICAL ROLE OF FIRE

Fire is an important cleansing process in the forest reducing the number of pests, the occurrence of disease, and removing dead litter, decaying leaves, logs, and needles from the forest floor. Crown fires burn the top (crown) of the trees, resulting in an increased amount of sunlight reaching the ground stimulating new tree growth from seeds and roots. After a fire, shade-intolerant trees such as aspen, white birch, jack pine and lodgepole pine, will grow. Once these trees mature, shade-tolerant coniferous trees will regenerate under their canopy.

Fire also benefits the forest by causing the cones of some pine and spruce trees to open and disperse their seed in the wind. Fire creates the conditions required for the seeds to germinate by releasing nutrients in the soil, preparing the seedbed, eliminating competing species and increasing the amount of sunlight reaching the forest floor.

FOREST FIRES AND WILDLIFE

Although forest fires can affect wildlife, it is surprising how most populations are able to avoid fire by burrowing, running or flying away. Biodiversity of the forest is reestablished soon after a fire because beetles and insects are attracted by burned timber, and animals that prey on them such as birds, bears, and foxes will return shortly after. Plant growth from the nutrient rich soil will attract grazing animals such as deer and moose.

CONSEQUENCES OF FOREST FIRES

Although forest fires play an important role in forest ecology, they can also be very damaging to trees. When fire threatens timber supply or recreational opportunities, it must be suppressed. Burning forests emit carbon gas into the atmosphere, leading to further global warming.

Natural tree regeneration after a forest fire.

The loss from forest fires can result in both economic and social damage to local communities.

Smoke and pollution from a forest fire can create breathing problems for citizens in nearby communities and may necessitate evacuation of entire towns.

When people are evacuated from their homes due to forest fires, there can be both financial and cultural costs. First Nations people that are removed from their land and flown to larger communities may have difficulty adapting to a new way of life. The psychological damage of losing one's home can create social damage with lasting effects.

The economic loss of useable timber can affect the forest industry forcing companies to shift their operations to another part of the forest. This may require creating new forest management plans and considerably higher harvesting costs. Further loss may occur if saw-mills or other equipment, is destroyed.

THE BALANCING ACT

Two components of the Canadian Forest Fire Danger Rating System, the Canadian Forest Fire Weather Index System and the Canadian Forest Fire Behavior Prediction System, allow researchers to determine the dryness of forest fuel, the intensity of a fire, whether the fire will be a crown fire or a surface fire, and how fast the fire will spread. This system, developed by Natural Resources Canada, is one of the best forest fire danger rating systems in the world. The information it provides is essential to fire management agencies to understand the fire danger and fight fires. Good fire data can help in making decisions on whether a fire should be extinguished based on the delicate need to balance between the positive and negative effects of forest fires.

CONTACT

Mike Flannigan
Canadian Forest Service, Great Lakes Forestry Centre
1219 Queen Street East
Sault Ste. Marie, ON P6A 2E5
705-541-5541
mflannig@nrcan.gc.ca

For more information on Frontline Express Contact:
Canadian Forest Service - Great Lakes Forestry Centre
1219 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
705-949-9461
http://www.glfc.cfs.nrcan.gc.ca