

FORUM:	Environment Commission
ISSUE:	Measures to Protect Forest Environment and Ecosystem from Wildfires
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Introduction

The rapid increase in human activities that harm forested areas, grasslands, and shrublands has contributed to a significant increase in wildfires over the last several decades. A wildfire is an “unplanned fire that burns in a natural area such as a forest, grassland, or prairie.” According to the World Health Organization (WHO), wildfires affected 6.2 million people between 1998-2017 with 2400 attributable deaths worldwide from suffocation, injuries, and burns, but the size and frequency of wildfires are growing due to climate change. Wildfires not only harm people but also have a severe impact on the destruction of forest environment and ecosystems. Wildfires displace wildlife, destroy biodiversity, and release carbon dioxide into the atmosphere, contributing to climate change.

Background

Wildfires can happen naturally during dry weather and droughts. In addition to the dry climate, dry grass, trees, and pine needles facilitate wildfires. Moreover, wildfires can occur due to lightning strikes. When lightning strikes an object, enough heat is released to burn a tree or other fuels. This leads to a colossal wildfire. However, wildfires are mainly caused by human-related events such as campfires, equipment failure, engine malfunctions, debris burning, careless disposal of cigarettes on dry fields, and other purposeful acts of arson. According to government statistics, 40% of wildfires in British Columbia in a typical year are caused by humans. According to National Park Service data, approximately 85% of the nearly 100,000 wildland fires that afflict North America each year are caused by human activity. Between 1992 and 2012, man-made fires tripled the length of North America's fire seasons, from 46 to 154 days. During the 21-year study period, the most common causes were debris



Wildfires in California



burning and arson, with campfires and fireworks accounting for “only 5%” of fires. Furthermore, an examination of more recent California fires revealed that human-caused wildfires are more intense and devastating than natural-caused ones, spreading at a rate of 1.83 kilometers per day.

Problems Raised

Loss of Vegetation

The loss of vegetation can have a considerable impact on an ecosystem by increasing erosion, decreasing nutrient availability in the soil, and increasing the danger of disease and pest infestations. As a result, these may delay recovery or have an impact on what develops in the fire-affected area. Furthermore, vegetation that once acted as a habitat may endanger wildlife survival.

Forest vegetation can absorb 7.6 billion metric tons of CO₂ each year, making it critical to preserve one of the world's major carbon sinks.

Unfortunately, the elimination of vegetation can cause changes in habitat structure and reduced biodiversity, leading to decreased soil nutrients and nesting sites for animal species.

Deterioration of Air Quality

Wildfires emit carbon dioxide, and the amount emitted can be significant. In 2020, wildfires in California emitted 91 million metric tons of carbon dioxide, which is 30 million higher than the state's yearly electricity production.

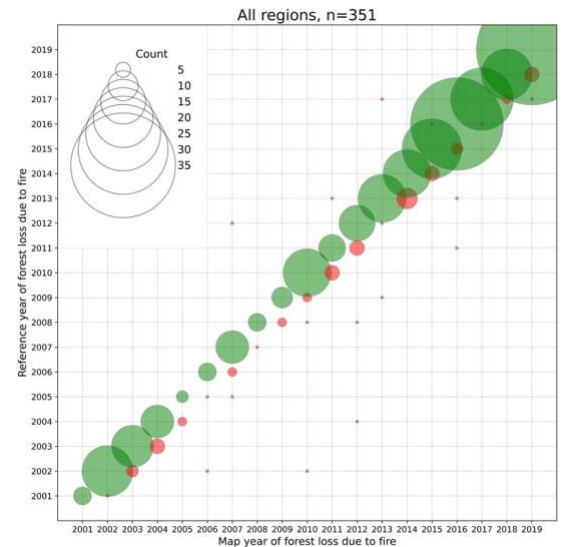
Particles emitted by smoke and the combustion of hazardous chemicals can also travel long distances, degrading air quality and causing a variety of respiratory and cardiovascular illnesses in humans and wildlife. Ultimately, the deterioration of air quality caused by wildfire is a major destruction of the Earth's ecosystem, including plants, animals, and humans.

International Actions

FAO Fire Management



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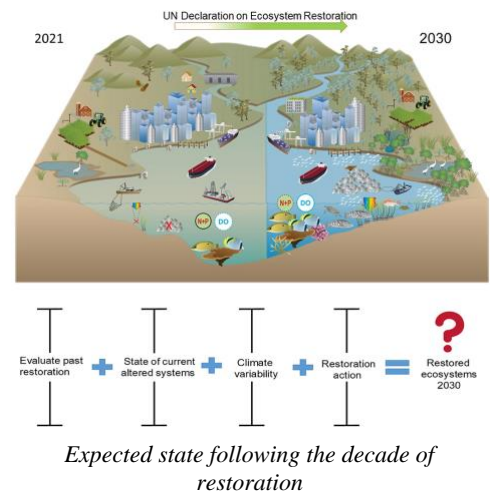


Year of forest loss due to fire from the map

With collaboration with countries and other international partners, FAO has executed more than 80 fire management field projects in over 50 countries throughout the years. FAO has a Strategic Program aimed at demonstrating that preventive (risk reduction) is a more cost-effective strategy than firefighting (reaction). A thorough examination of the effects of wildfires on ecosystem services will add weight to that claim. Therefore, FAO has worked to prevent wildfires by using early warning systems and planned and programmed deliberate fire use for ecosystem health.

United Nations Environment Programme (UNEP)

United Nations Environment Programme (UNEP) is the global authority focusing on environmental issues such as climate, nature, and pollution. The UN Decade on Ecosystem Restoration 2021–2030, led by the UN Environment Programme, the Food and Agriculture Organization of the United Nations, and partners such as the Africa Restoration 100 initiative, the Global Landscapes Forum, and the International Union for the Conservation of Nature covered terrestrial ecosystems that were negatively affected by wildfires.



World Wide Fund for Nature (WWF)

World Wide Fund for Nature (WWF) is an international non-governmental organization that works to “sustain the natural world for the benefit of people and nature.” WWF and its partners are pioneering the implementation and delivery of forest landscape restoration (FLR) at the scale required to meet global commitments. According to WWF, FLR is a deliberate procedure aimed at restoring ecological functionality and improving human well-being in deforested or degraded forest areas caused by various reasons, including wildfires. According to research, more than two billion hectares of land worldwide are suitable for restoration. WWF has been working for several years with partners all over the world to help create and accelerate FLR initiatives. For example, WWF worked to influence and mobilize large-scale investment for FLR, particularly through the Trillion Trees partnership and The International Climate Initiative (IKI), as well as international and bilateral financial instruments such as LDNF, GEF, GCF, and others, and REDD+. Moreover, to unite the worldwide restoration movement, WWF has teamed with Restor, an innovative science-based open data platform. WWF hopes to improve data availability and transparency for FLR projects as part of this collaboration, as well as provide research and information on restoration activities in the field.



Key Players

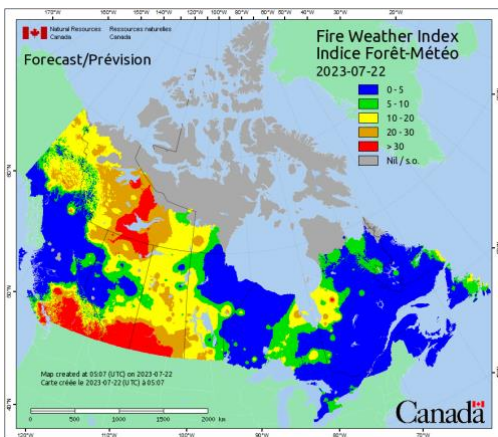
Australia

Every year, particularly during the summer, Australia has a huge number of wildfires, which can be classified as "grass fires" or "forest fires." For months, the Black Summer fires burned over eastern Australia, killing 33 people, and causing an estimated 429 deaths from smoke. Between July 2019 and March 2020, wildfires burned 24 million hectares of land, destroying trees, automobiles, metals, plastics, and thousands of buildings.

Australia, which extremely experiences many forest fires and is severely damaged by them every year, is aware of the seriousness of wildfires and endeavors to solve them. Recognizing fuel reduction is paramount to wildfire minimization, Australia urges various fire and land management agencies to intentionally burn the fuels to reduce the build-up of fuels in forest and grassland areas.

Canada

Over the past few decades, wildfires have devastated large areas of Canada. Canada has already seen more than 2,000 wildfires this year. Currently, more than 400 cover parts of British Columbia and Alberta in the west, Nova Scotia, Quebec, and Ontario in the east. About a third of these fires are burning in the eastern part of the country, which is unfamiliar with large fires. Wildfires in Canada have disrupted the lives of millions and caused many wild animals to die out.



Canadian Wildland Fire Information System

Knowing wildfires in Canada pose a major threat to the entire country, Canada is working in various ways. For example, the Canadian Wildland Fire Information System (CWFIS) tracks fire risks and rates across Canada. Daily meteorological data from around Canada are gathered and used to create fire weather and fire behavior maps. In addition, satellites are utilized to detect fires, and fire management organizations report fire locations.

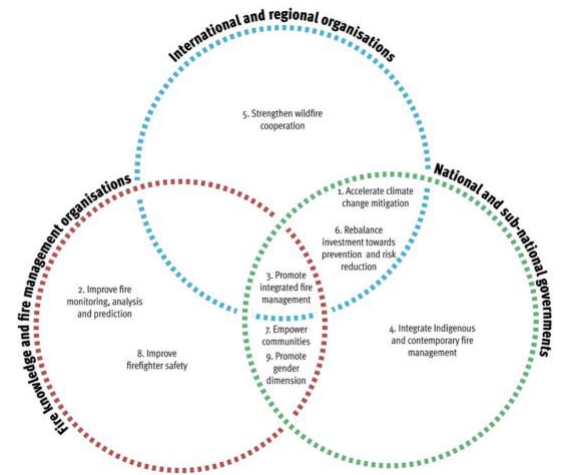
Possible Solutions

Regional and International Cooperation

Many solutions can be proposed to address this problem. One solution is to foster stronger regional and international cooperation. “Current government responses to wildfires are often putting money in the wrong place,” said Inger Andersen, UNEP Executive Director. She added, “We have to



minimize the risk of extreme wildfires by being better prepared: invest more in fire risk reduction, work with local communities, and strengthen global commitment to fight climate change.” There is a need for a legal framework and incentives that encourage appropriate land and fire use. Furthermore, each nation should cooperate and invest in wetlands restoration and the reintroduction of species such as beavers. This restoration of ecosystems is an important way to reduce the risk of wildfires before they happen and to rebuild better in their aftermath.



Regional and International Cooperation for solving wildfires

Data and Science-based Monitoring Systems

Another solution can be further developing and using data and science-based monitoring systems for forest fires. AI algorithms' experimental wildfire predictions have proven extremely accurate with shorter discovery times. By detecting smoke, AI-assisted software-defined cameras (SDCs) can predict forest fires locally. AI technologies also enable a single user to easily operate a large number of patrol cars equipped with video cameras and fire extinguishers, ensuring early identification and effective management of forest fires. Therefore, with more data and science-based monitoring system for wildfires, we can certainly avoid the occurrence and spread of wildfires that damage the forest environment and ecosystem.

Glossary

Ecosystem

A geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life.

Wildfire

An uncontrolled fire that burns in the wildland vegetation, often in rural areas.

Vegetation

Plants considered collectively, especially those found in a particular area or habitat.

A member of the European Forest Fire Information (EFFIS) Network which meets once a year and the Wildland Fire Advisory Group, which brings the existing regional networks and working groups together once a year.

United Nations Environment Programme (UNEP)

The global authority for the environment with programmes focusing on climate, nature, pollution, sustainable development and more.

World Wide Fund for Nature (WWF)

An international non-governmental organization that works in the field of wilderness preservation and to solve environmental challenges for a sustainable future for all life on Earth.

Forest Landscape Restoration (FLR)

A deliberate procedure aimed at restoring ecological functionality and improving human well-being in deforested or degraded forest areas caused by various reasons, including wildfires.

Trillion Trees

The united force of BirdLife International, Wildlife Conservation Society, and WWF that protects and restores forests all over the world — for the people, nature, and climate.

The International Climate Initiative (IKI)

An important part of the German government's international climate finance commitment.



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