

Briefing Note

Wildfire, Forestry, and Climate Change in Canada

Why we cannot log our way out of the problem

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CANADIAN PARKS & WILDERNESS SOCIETY

Purpose

To summarize current research findings on the interconnections between wildfires, climate change, and forestry practices, and to provide recommendations for decision-makers regarding the role of forest management in mitigating wildfire risk.

Supporting Analysis

This briefing note is based on the findings from an extensive literature review, as well as interviews with nearly a dozen experts, on the intersection between wildfire, forestry, and climate change. The literature review cites over 650 sources; primarily peer-reviewed, scientific literature, as well as government policy documents.

Effective Wildfire Mitigation Strategies

Forestry can play a role in risk reduction, but only when management priorities shift from maximizing timber extraction to focusing on community protection and ecological resilience.

Protect Primary and Old-Growth Forests

Primary forests store 30–50% more carbon than managed forests and often exhibit lower fire severity due to their complex, multi-aged structure. Logging primary and old-growth forests does not reduce fire risk and causes the loss of critically important ecosystem services provided by these forests.



Protect Wetlands and Peatlands

Intact wetlands and peatlands function as natural fire buffers and carbon reservoirs. Drying, draining or fragmentation of these areas due to forestry activities increases landscape-level fire risk and carbon emissions.



Protect Deciduous

Deciduous species (e.g., aspen) are less flammable than conifer species and act as natural fire breaks. Increasing the proportion of deciduous species and reducing the density of conifer species in fire-prone areas are effective methods for reducing fire risk. Policies that suppress deciduous growth through herbicides (e.g., glyphosate) or mechanical clearing should be avoided, particularly near communities. Whitehorse, Yukon's community fireguard is a good example of using the natural fire resistance of deciduous forests to protect a community.



Prioritize the Wildland-Urban Interface (WUI)

Fuel treatments (thinning, fireguards, FireSmarting) provide the greatest direct protection when located within or immediately adjacent to communities. In contrast, broadscale industrial logging is not an effective wildfire mitigation strategy (i.e., removing fuels only in the most profitable stands does not create effective fuel breaks for communities).





Recommendations for Forest Management

1. Community Leadership

- Resistance within the WUI: Focus intensive, costly treatments (mechanical thinning, fireguards) exclusively near high-value assets and communities. Fuel management should prioritize high risk stands and leverage existing fire breaks.
- Resilience outside the WUI: Across the broader landscape, prioritize ecological resilience by promoting species diversity, the use of "beneficial" (planned or prescribed) fire, and the protection of primary and old-growth forests.

2. Shift Management Paradigms

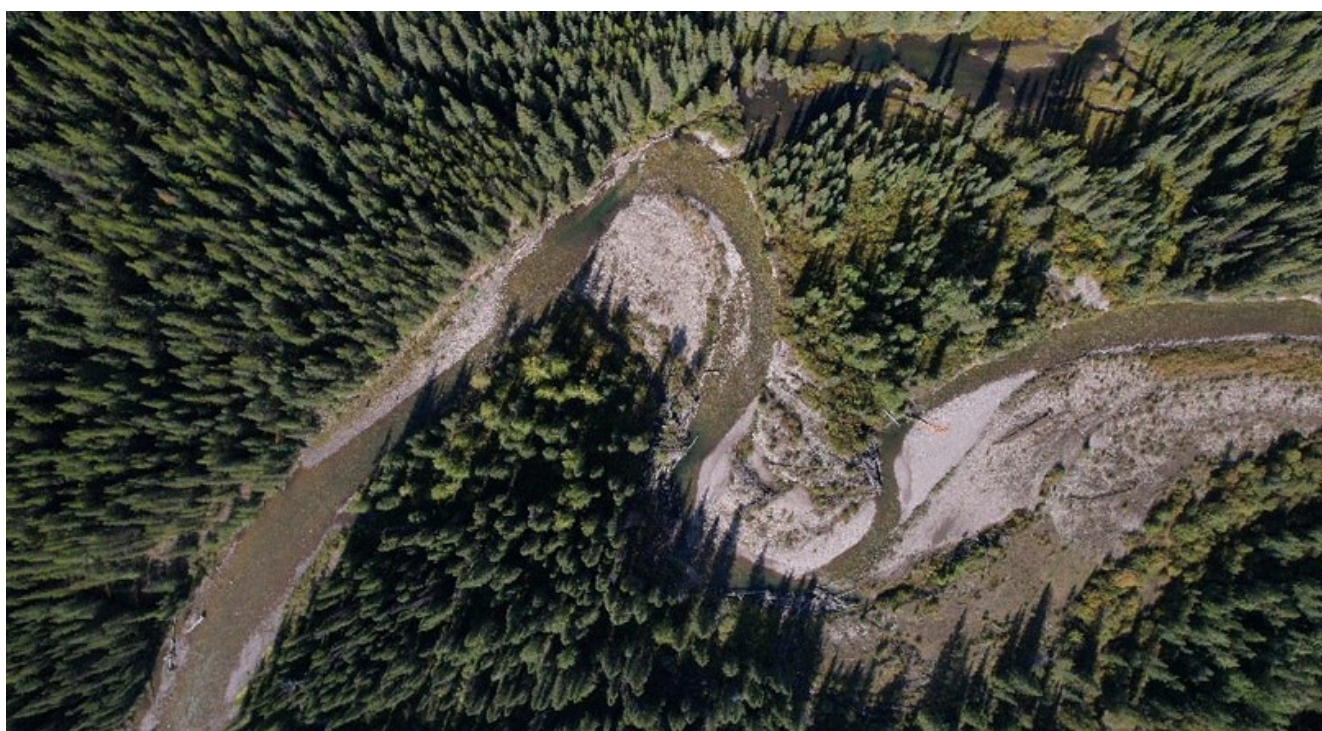
- Move Beyond Clearcutting: Current forestry is dominated by clearcutting, which does not support long-term wildfire resilience. Investments and incentives should prioritize alternative silvicultural systems (e.g., partial cutting, selective harvesting, extended rotations) that maintain structural complexity and forest microclimates.
- Empower Community Forests: Support community-driven forestry models that create well paying local jobs and prioritize local safety, cultural values, and ecological health. Community Forest Agreements in British Columbia support 76% more local jobs than the industry average, while providing re-investments in climate change adaptation and wildfire risk reduction.

3. Revitalize Indigenous Fire Stewardship

- Support Cultural Burning: Recognize Indigenous fire stewardship as a year-round relationship with the land that reduces community fire risk and improves community and ecosystem resilience to climate change.
- Address Governance Barriers: Increase financial support for Indigenous fire stewardship and reduce administrative and policy barriers that currently impede the reintroduction of cultural burning.

3. Modernize Forest Management Planning

- Proactive Forest Management Planning: Current forest management plans do not adequately address climate change scenarios and future fire risk. Annual Allowable Cut (AAC) levels typically assume stable future climate scenarios and only account for fire after it occurs. Forest management planning should be modernized to explicitly include climate change and fire risk, with AAC levels set accordingly.
- Address Data Gaps: Improve the accuracy of data on fuel types and flammability, particularly for young post-harvest stands and eastern Canadian forest types, which are currently underrepresented in fire behavior models.



Context

The Climate-Wildfire Feedback Loop

- **Intensifying Fire Regimes:** Canada is experiencing an increase in wildfire severity, size, and annual area burned. The 2023 fire season was the worst on record, burning 15 million hectares – more than six times the annual average.
- **Climate Drivers:** Anthropogenic climate change is the primary driver, increasing the frequency of extreme fire weather (hot, dry, windy conditions) and lengthening fire seasons. These extreme conditions can overwhelm suppression capabilities and bypass fuel-reduction treatments.
- **Carbon Dynamics:** Wildfires and climate change form a positive feedback loop: fires release massive amounts of greenhouse gases (GHGs), further accelerating warming. In 2023, Canadian wildfires released an estimated 647 Mt of carbon – four times Canada's annual fossil fuel emissions.

The Role of Conventional Forestry In Wildlife Risk

- A substantial body of research indicates that many conventional industrial forestry practices have exacerbated wildfire risk rather than mitigated it.
- **Increased Flammability:** Clearcutting and the subsequent replanting of dense conifer monocultures create structurally uniform young stands that are often more flammable than the primary forests they replaced. These young stands lack the temperature-moderating influence of a mature canopy, leading to drier surface fuels and higher ignition risks.
- **Landscape Homogenization:** Industrial harvesting and practices that discourage deciduous regrowth remove the most economically valuable (and often fire-resistant) stands, leaving behind a homogenized landscape with high fuel continuity.
- **Infrastructure Risks:** The extensive network of resource roads (over 1.5 million km in Canada) increases human-caused ignition points and creates "edge effects" where hotter, windier microclimates enhance fire spread.
- **Ineffectiveness of "Cut to Protect":** In addition to the fact that older forests can be more fire-resistant than young ones, the strategy to "cut trees or they will burn" is also counterproductive as a climate mitigation tool. Clearcutting mature trees can result in carbon emissions 2–8 times higher than those from a wildfire in the same area.

Conclusion

While the forestry industry provides the technical expertise and equipment necessary for fire mitigation, increased industrial logging is not an effective solution for wildfire risk. Effective policy must focus on protecting existing natural buffers (old-growth, wetlands), shifting toward diverse silvicultural systems, and centering community safety and Indigenous stewardship in all management decisions.

Authors

This briefing note was created by Canadian Parks and Wilderness Society (CPAWS). CPAWS is contributing to this work through a literature review and the Wildfire Resilience Over Risk StoryMap, which highlight opportunities to reduce wildfire risk while supporting biodiversity, Indigenous-led stewardship, and climate resilience.