CANADIAN WILDLAND FIRE & SMOKE

NEWSLETTER

FALL 2021

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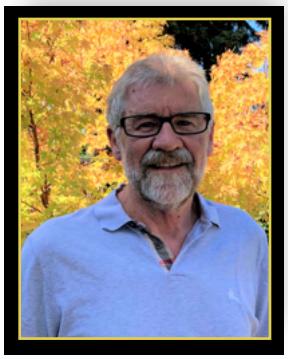
Photo: BC Wildfire Service - Firefighters from Mexico helping at Okanagan fire complex.

Picea Mariana Award

Over the last year, Canada Wildfire created the Picea Mariana Award to recognize individuals who have provided exemplary service to the organization. We had the pleasure of collaborating with Kelly Wiens (www.kellyartworks.ca) on the design of this one-of-a-kind pin (shown above).

This year, we honour Sarah Gooding and Cordy Tymstra as the inaugural recipients of the Picea Mariana Award. They have been involved from the start and have remained critical contributors over the last decade. Their unwavering support, effort, and devotion were essential in the inception of the Western Partnership for Wildland Fire Science and the expansion to Canada Wildfire. We appreciate all the time they have taken away from their own work and busy schedules to ensure that we have voice, procedures, and tools to succeed.

From the whole Canada Wildfire team, congratulations and many thanks!



Supporting Indigenous-led fire stewardship can help conserve global biodiversity

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Last summer, as our wildfire research team worked in record temperatures near Fraser Lake, B.C., I watched anxiously as lightning strikes flashed red on my weather tracking app. Elsewhere in our province's interior, thousands of lightning strikes were produced by pyro-convective storms, generating many of the over a hundred new wildfires that started in a matter of hours. Though it was only the first few days of July, the fire risk was extreme; first responders were already stretched thin—and tragically, lives, homes and the community of Lytton had been lost.

Canada urgently needs improved methods to reduce wildfire risk, as the climate warms and large and uncontrollable wildfires now commonly exceed our capacities for fire suppression. We've been extinguishing fires in Canada for over 100 years, and though these efforts save lives, protect property and reduce damage in the short term, many of Canada's forested areas are now stuck in what fire scientists call a 'wildfire suppression trap' (M. A. Parisien et al. 2020). The past century of intensive firefighting has broken crucial natural and cultural fire cycles, leaving too much fuel on the land. Unsurprisingly, we're now facing more destructive wildfires than ever before—affirming that full containment fire suppression tactics are often impractical, unsustainable, and ecologically

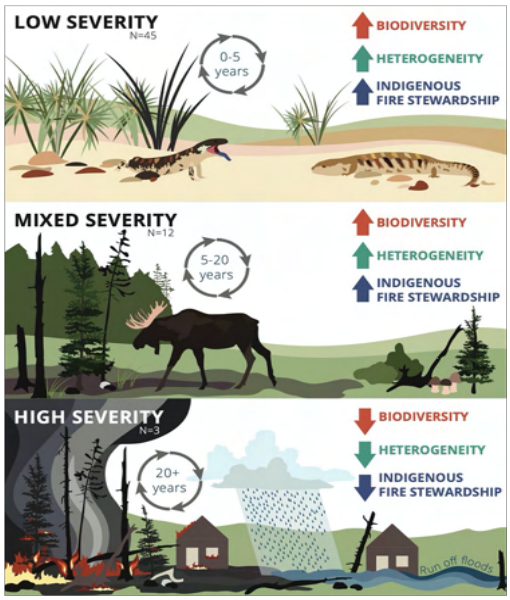

Figure 1. A global review of publications on Indigenous fire stewardship demonstrated widespread increases in biodiversity forms (woody and non-woody plants, animals, and microbes) and habitat heterogeneity related to the frequent application of cultural fire within low- and mixed-severity fire cycles. Declines in biodiversity and habitat heterogeneity were related to the introduction of high-severity fire to ecosystems and human communities that had experienced decades of fire suppression and exclusion of Indigenous fire stewardship practices. Infographic conceptualized by KM Hoffman, EL Davis, and AJ Trant and designed by Align Illustration.

detrimental in fire-prone landscapes (D. B. McWethy, et al. 2019).

Extreme wildfires are becoming increasingly common worldwide and are having extraordinary impacts on people and the species and ecosystems on which they depend (D. B. McWethy, et al 2019). Although Indigenous peoples comprise only 5% of the world's population, they protect approximately 85% of the world's biodiversity through stewardship of Indigenous-managed lands (L. T. Kelly, et al., 2020; S. T. Garnett, et al.2018,). Much of this is attributed to long-term and widespread relationships with, and dependence on, fire which has been applied as a tool for managing landscapes for millennia (R. W. Kimmerer, F. K. Lake, 2001).

To better understand the impacts of Indigenous fire stewardship on biodiversity and species function across Earth's major terrestrial biomes, our research team conducted a review of relevant primary data papers published from 1900 to present. We examined how the frequency, seasonality, and severity of human-ignited fires can improve or reduce reported metrics of biodiversity and habitat heterogeneity, as well as changes to species composition across a range of taxa and spatial and temporal scales.

We reviewed over 800 articles and found that almost all applicable studies (N=53) reported increases in biodiversity as a result of the application of repeated low severity fire as a component of Indigenous fire stewardship (Fig. 1). More than half of the studies concluded that habitat heterogeneity was increased by the use of fire. All studies reported that fire stewardship occurred outside of the window of uncontrollable fire activity, and plants (woody and non-woody vegetation) were the most intensively studied life forms. Unfortunately, the displacement of Indigenous peoples and place-based societies that rely on and routinely practice fire stewardship has resulted in significant declines in biodiversity and the functional roles of people in shaping pyrodiverse systems.

As more fires burn out of control, it's clear that we need to evolve approaches to wildfire management. In Canada, this will mean more prescribed fire and Indigenous-led cultural burning, which has long been used to reduce fire impacts and enhance the overall health of the land (F. K. Lake, A. C. Christianson, 2019). It will also mean recognizing the expertise of Indigenous fire practitioners, reducing barriers to access technical training, educating the public on wildfire risk reduction techniques, and collaborating with communities and regional districts on wildfire mitigation plans. Canada has an opportunity to evolve fire suppression policies that reflect the best available science and millennia of Indigenous knowledge. Given the vulnerability of Indigenous peoples to the impacts of wildfire and the consequences of uncontrolled wildfire on Indigenous lands, it is more important than ever to support Indigenous-led fire stewardship that revives essential cultural practices, protects human communities, and enhances biodiversity.

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