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Reducing Wildfire Damage by Encouraging Prescribed and Cultural Burning

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The Canadian Pyrodiversity Association

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The opinions expressed are those of the authors, and any errors and omissions are the responsibility of the authors alone.

Cover Image: Prescribed burning in the Canadian Rockies using aerial ignition. The goal is to restore the natural pattern of stand structure and composition across the landscape. (Photo courtesy of Photo courtesy of Robert W Gray.)

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CONTENTS

Image 1: Fire aftermath, near Quesnel, BC (Photo by Holly Pattison, Environmental Law Centre)

SUMMARY

I. The Problem

Massive wildfires now regularly ravage British Columbia, destroying timber supplies,[1] devastating biodiversity,[2] destabilizing soils and water cycles,[3] and casting a pall of unhealthy smoke pollution

[1] See Government of British Columbia, *Impacts of 2021 Fires on Forests and Timber Supply in British Columbia*, (April 2022), online (pdf): <https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/tsr-annual-allowable-cut/impacts_of_2021_fires_final.pdf?bcgovtm=neckhtml> at pp. 1 & 4. The 2017, 2018 and 2021 wildfires burned across over 1.4 million hectares of the timber harvesting land base in several Interior timber supply areas.

[2] See Ze'ev Gedalof, "Fire and Biodiversity in British Columbia" (2020), online: <https://ibis.geog.ubc.ca/biodiversity/FireandBiodiversityinBritishColumbia.html> [https://perma.cc/S7T5-YKKP]. In particular, see the section on the "intermediate disturbance hypothesis," which stipulates that biodiversity is highest in

across the province.[4] Since 2016, the province experienced three of the worst fire seasons on record,[5] and an area equal to Vancouver Island was burned.[6] The 2017 and 2018 fire seasons alone saw over 2.5 million hectares burned in the province.[7]

Wildfires have cost industries – forestry, tourism, wine, real estate, fishing, *etc.* – billions of dollars.[8] Property damage from recent Lytton and Williams Lake fires amounted to approximately

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areas with a mid-range of fire activity. However, climate change and fire suppression practices have increased the rate of high-severity fires in BC, which negatively impact biodiversity.

[3] See generally Mike Curran *et al.*, *Large-Scale Erosion and Flooding after Wildfires: Understanding the Soil Conditions* (2006), online (pdf): <https://www.for.gov.bc.ca/hfd/pubs/Docs/Tr/Tr030.pdf> [https://perma.cc/YP2L-9QJ3]. See also "Wildfires, Water, and Our Health," online: *Climate Atlas of Canada* <https://climateatlas.ca/wildfires-water-and-our-health> [https://perma.cc/7U6R-WZQQ] that discusses how fire impacts drinking water quality with ash runoff. Finally, for additional impacts on water quality, see David Thurton, "Fort McMurray seeing big spike in water-treatment costs," *CBC News*, (9 February 2017), online: <https://www.cbc.ca/news/canada/edmonton/fort-mcmurray-wildfire-water-treatment-costs-contaminants-1.3973249> [https://perma.cc/8NVQ-X8Z7]. This article discusses how Fort McMurray experienced an immediate and significant increase in water treatment costs following the 2016 wildfire.

[4] See "Wildfire Smoke and Climate Change," online: *Climate Atlas of Canada* <https://climateatlas.ca/wildfire-smoke-and-climate-change? [https://perma.cc/H88W-J7K8] for a brief overview of the negative health impacts of wildfire smoke on human health. Further information on these negative health impacts is found below.

[5] "Even more of BC faces wildfire risk due to climate change, says PICS researchers" (22 March 2022), online: *Pacific Institute for Climate Solutions* <https://pics.uvic.ca/news/even-more-bc-faces-wildfire-risk-due-climate-change-say-pics-researchers> [https://perma.cc/6P67-YWPJ]

[6] BC Wildlife Service has reported **3,709,403** hectares burned across BC since 2016. This includes 100,366 in 2016; 1, 216, 053 in 2017; 1,354,284 in 2018; 21,138 in 2019; 14,536 in 2020, 867, 994 in 2021 and 135,032 in 2022. The 2016-2020 statistics are here: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-statistics/wildfire-averages> [https://perma.cc/T2E6-Q77T]. The 2021 stats are here: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary> [https://perma.cc/45YK-7BD2]. The 2022 stats are here: <http://bcfireinfo.for.gov.bc.ca/hprScripts/WildfireNews/Statistics.asp> [https://perma.cc/2FG2-BK5C] **This approximately 3.7 million hectares burned across the province compares with the total size of Vancouver Island, which is only 3.21 million hectares.** See <https://www.google.com/search?q=what+is+the+area+of+Vancouver+Island+in+hectares%3F&oq=what+is+th&aqs=chrome.0.69i59j69i57j0i433i512j0i512l3j0i131i433i512j69i60.2596j0j4&sourceid=chrome&ie=UTF-8> [https://perma.cc/3BL2-8QWL].

[7] "Wildfire Averages," online: *BC Wildfire Service* <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-statistics/wildfire-averages> [https://perma.cc/T2E6-Q77T].

[8] In addition to the enormous value of lost *timber supply* enumerated above, government estimates that the 2017 wildfire season alone caused $139 million in losses to *tourism* revenue: Wendy Stueck & Matt Lundy, "From forestry to resorts, the economic fallout from B.C.'s devastating wildfires," *The Globe and Mail*, (7 July 2021), online: <https://www.theglobeandmail.com/business/article-devastating-lytton-bc-wildfire-expected-to-take-widespread-toll-on/> [https://perma.cc/3EPB-DXYZ]. *Real estate losses* include such items as $77 million in insurance claims in the 2021 White Rock Lake Fire alone ["Massive B.C. wildfire caused $77M in damage, insurance bureau says" (24 September 2021), *CTV News*, online: <https://bc.ctvnews.ca/massive-b-c-wildfire-caused-77m-in-damage-insurance-bureau-says-1.5598938> [https://perma.cc/647V-5QUP]; the over $100 million in insured property damage from a 2017 fire around Williams Lake [See: "British Columbia wildfires cause more than $127 million in insured damage," (27 September 2017), online: *Insurance Bureau of Canada* <http://www.ibc.ca/bc/resources/media-centre/media-releases/british-columbia-wildfires-cause-more-than-127-million-in-insured-damage> [https://perma.cc/7YWY-E5VP]; and the more than $100 million in damage from the 2021 Lytton fire. (See footnote below.)

Wine production is a 2.8 billion/year industry in BC, and loss of revenue from smoke-tainted grapes and depressed wine tourism caused by wildfires is a growing concern. Data on wildfire economic impact on the BC wine industry is not

one hundred million dollars *each*.[9] Wildfire smoke has become a major health threat to people across the province and beyond – causing "episodes of the worst air quality that most people will ever experience in British Columbia."[10]

The mounting intensity of wildfire seasons costs taxpayers directly, as fire-fighting costs spiral. The 2021 wildfire season cost the province $718.8 million,[11] more than double the province's average cost of wildfire suppression in 2008.[12] In the devastating fire seasons of 2017 and 2018, fire suppression cost the province $649 million and $615 million, respectively.[13]

And entire communities are put at increasing risk. The catastrophic fires at Fort McMurray, Alberta and Paradise, California highlighted the existential risks that forest communities face – in Paradise,

immediately available. However, Wine Australia pegged the cost of smoke taint from its 2003 fires at more than $275 million and in California in 2020, wine producers lost almost half a billion dollars in revenue due to wildfires. See Curt Petrovich, "'Like drinking an ashtray': Why scientists and winemakers are fighting smoke taint from wildfires," *CBC* News, (14 August 2021), online: <https://www.cbc.ca/news/canada/british-columbia/wildfire-smoke-threatens-b-c-wine-1.6139433> [https://perma.cc/H9NC-UF9V].

[9] The insured losses from destroyed and damaged property in the 2021 Lytton fire alone are estimated to be $102 million: "Insured Losses in Lytton, BC, Increase to $102 Million" (13 January 2022), online: *Insurance Bureau of Canada* <http://www.ibc.ca/bc/resources/media-centre/media-releases/insured-losses-in-lytton-bc-increase-to-102-million> [https://perma.cc/HM8R-QN8U]. See footnote above for the damages suffered around Williams Lake.

[10] According to the BC Centre for Disease Control. Wildfire smoke contains harmful fine particulate matter, as well as carbon monoxide, nitrogen oxides and volatile organic compounds. The Centre states: "Wildfire smoke is a form of air pollution that can affect your health. Exposure to air pollution can irritate the lungs, cause inflammation, and alter immune function" – and identifies a host of direct health impacts from wildfire smoke inhalation, including sore throat, cough, headache, eye irritation, chest pain, heart palpitations, and susceptibility to pneumonia and Covid-19. See "Wildfire Smoke" (last updated 5 May 2022): online *BC Centre for Disease Control* <http://www.bccdc.ca/health-info/prevention-public-health/wildfire-smoke> [https://perma.cc/L2U5-862V]**.** Wildfire smoke has had disproportionate impacts on those with asthma and other respiratory conditions, who have to curtail time outside during smoke events. The rates of hospitalization for asthma are projected to rise due to climate change-induced wildfire smoke exposure. See generally Jennifer D. Stowell *et al*, "Asthma exacerbation due to climate change-induced wildfire smoke in the western US" (2021) 17 Environ Res Lett 1, DOI: 10.1088/1748-9326/ac4138. Beyond immediate impacts, smoke inhalation has been correlated with long-term negative health outcomes like cardiovascular, lung disease, and even cancer. See Emily Grant & Jennifer D. Runkle, "Long-term health effects of wildfire exposure: A scoping review" (2022) 6 Journal of Climate Change and Health, DOI: <https://doi.org/10.1016/j.joclim.2021.100110>.

[11] Government of British Columbia, "Wildfire Season Summary," online: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary> [https://perma.cc/45YK-7BD2].

[12] Marc Lee, "Five lessons from BC's horrific wildfire season," *Policynote*, (7 October 2021), online: <https://www.policynote.ca/horrific-wildfires/> [https://perma.cc/2A24-EGNM]

[13] "Wildfire Averages," online: *BC Wildfire Service* <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-statistics/wildfire-averages> [https://perma.cc/T2E6-Q77T]

18,804 structures were destroyed while 85 people perished.[14] In 2021, it was BC's turn to see an entire community leveled – when 90% of the town of Lytton was destroyed.[15]

Ironically, the wildfire smoke itself will exacerbate the long-term problem of climate change – the 2017 wildfire season alone tripled the province's annual carbon footprint.[16]

Of course, climate change is one major cause of wildfire devastation – it has killed off vast pine forests and produced long blazing summers.[17] But the other major cause is decades of agricultural forestry[18] – which has excluded fire and created a volatile tinder box of forest fuels across the province. This report addresses solutions to this latter problem of forest fuels – including preventative burning.

It has become obvious to many BC forest policy experts and Indigenous groups that forest policy reform is needed to combat the annual devastation caused by wildfires. This has spurred a renewed interest in cultural and prescribed burning—the planned and strategic burning of forests and vegetation—in British Columbia and elsewhere.

Fire experts tell us that when industrial forestry abolished Indigenous controlled burning, it set the stage for recent catastrophic wildfires. For centuries, Indigenous burners had used fire to control fire. They regularly burned forests to:

- protect their communities from uncontrolled fire;
- clear land for berries, medicinal plants, bison, moose and elk; and

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[14] The Camp Fire that destroyed nearly the entire town of Paradise, California "consumed more than 150,000 acres, destroyed 18,804 structures and killed 85 people." See Dakin And one, "A wary and traumatized Paradise watches the raging inferno from nearby California fires" *CNN* (10 September 2020), online: <https://www.cnn.com/2020/09/10/us/paradise-california-wildfires-threat/index.html> [https://perma.cc/8D5X-SVVN]. An estimated 85% of the structures in Paradise were destroyed (this is not including structures that were damaged): Alexander Maranghides *et al*., *A Case Study of the Camp Fire – Fire Progression Timeline*, US Department of Commerce National Institute of Standards and Technology, (January 2021), online (pdf): DOI: <https://doi.org/10.6028/NIST.TN.2135> at xvii.
The Fort McMurray fire "burned approximately 579,767 hectares of land… and destroyed 2,400 homes and business [sic], including 530 other buildings that were damaged." This represents destruction or damage of about 10-15% of the city: Carrie Tait, "Nearly 90 per cent of Fort McMurray still intact; 2,400 structures lost," *The Globe and Mail* (9 May 2016), online: <https://www.theglobeandmail.com/news/alberta/about-85-per-cent-of-fort-mcmurray-still-intact-2400-structures-lost/article29945682/> [https://perma.cc/NT2S-YMHE].

[15] Allison Hurst & Alyse Kotyk, "Lytton fire: Residents unaccounted for; most of B.C. village destroyed, officials say," *CTV News* (1 July 2021), online: <https://bc.ctvnews.ca/lytton-fire-90-per-cent-of-b-c-village-has-burned-in-devastating-blaze-local-mp-says-1.5493293> [https://perma.cc/5MC5-82A5]

[16] John Hernandez &Tina Lovgreen, "'It's alarming': Wildfire emissions grow to triple B.C.'s annual carbon footprint," *CBC News* (24 August 2017), online: <https://www.cbc.ca/news/canada/british-columbia/it-s-alarming-wildfire-emissions-grow-to-triple-b-c-s-annual-carbon-footprint-1.4259306> [https://perma.cc/56SK-AHC9]

[17] Climate change has also been a major factor in the spread of mountain pine beetle infestations in BC: see Allan L. Carroll et al., *Effects of Climate Change on Range Expansion by the Mountain Pine Beetle in British Columbia* in T.L. Shore et al., (eds) Mountain Pine Beetle Symposium: Challenges and Solutions, October 30-31, 2003, Pacific Forestry Centre, online (pdf): <https://d1ied5g1xfgpx8.cloudfront.net/pdfs/25051.pdf> [https://perma.cc/C6Z5-ZEAT] at 227. This leaves behind swaths of dead, dry trees that pose additional wildfire dangers.

[18] Industrial monoculture forestry.

- create fire resilient forests, with reduced timber litter, natural meadow firebreaks, and many patches of less-flammable deciduous forest.[19]

This had the effect of reducing the risk of wildfires by reducing the amount of "fuel" on the forest floor, thinning the dense forest canopy, and creating natural firebreaks on the land.[20] However, in the 1900s, cultural burning was largely outlawed by the colonial government, and the diverse patchwork of vegetation was gradually transformed into a landscape of dense and highly flammable monocultural forests. This has provided the perfect powder keg for large mega-fires in British Columbia.

There is a consensus among many experts, including the Canadian Pyrodiversity Association, that British Columbia needs to encourage cultural burning, as well as dramatically increase the area burned by prescribed burns. Such an effort will go far in reducing the severity of wildfires – and will provide British Columbia a base to begin to re-create the diverse ecosystems that once thrived across the province.[21]

Despite this consensus, prescribed burns are not happening at the pace needed to combat mega-fires. British Columbia is not matching the pace of other jurisdictions that have turned to prescribed fire to combat mega-fires. For example, New Jersey, a state less than 1% the size of BC, conducts more prescribed burns than all of BC. The province has launched several individual pilot projects with BC First Nations to conduct cultural burns, however prescribed and cultural burning efforts must expand rapidly to avoid catastrophic future fires.

However, legal barriers impede the necessary expansion of prescribed and cultural burning in the province. In this report, we focus on the two major barriers:

- the large legal and financial liability that prescribed burners face if a prescribed/cultural burn escapes and causes damage; and
- the lack of a comprehensive BC certification and training program for those that carry out prescribed/cultural burns.

Prescribed fire is regulated provincially under s. 23 of the Wildfire Regulation under the BC *Wildfire Act.* The *Wildfire Act* allows individuals to conduct prescribed burns ("resource management open fires") if they follow the circumstances and requirements outlined in the *Act* and BC Wildfire policies.[22] Much of the regime governing prescribed and cultural burning is set out

[19] For example, see Kelly Boutsalis, "The art of fire: reviving the Indigenous craft of cultural burning," *The Narwhal* (20 September 2020), online: <https://thenarwhal.ca/indigenous-cultural-burning/> [https://perma.cc/MP7P-EN25].
[20] Paul Hessberg, "Living (Dangerously) in an Era of Megafires" (6 July 2017), online (video): *Youtube* <https://www.youtube.com/watch?v=edDZNkm8Mas> [https://perma.cc/222B-YJPA]
[21] Robert Gray and Robin Gregory, "Solving B.C.'s wildfire crisis requires us to make hard choices," *The Globe and Mail* (8 September2022), online: <https://www.theglobeandmail.com/opinion/article-solving-bcs-wildfire-crisis-requires-us-to-make-hard-choices/> [https://perma.cc/5HWR-BTWW].
[22] BC Reg. 83/2022, s. 23.

in BC Wildlife Service policies, particularly Policy 9.5, which provides guidance for the preparation of burn plans.[23]

In general, prescribed burns require the submission and approval of a "burn plan," a document outlining the reasoning and plan for the burn. The burn plan must be signed by a registered professional forester, registered forestry technologist, or professional agrologist.[24] However, it is important to note that currently there is no *guarantee* that the signing professional is actually adequately trained in the unique discipline of prescribed burning.

Indeed, there are currently very few experts on prescribed fire outside the government agency, BC Wildfire Service—which is the only entity in British Columbia with a comprehensive and institutional prescribed burning training program. Unlike many jurisdictions, BC Wildfire does not train and certify (licence) non-government people to carry out prescribed burning.[25] This has resulted in a patchwork of wildfire experts, some within BC Wildfire and a few trained in other jurisdictions—but nowhere near the estimated 10,000 trained people needed to undertake the amount of prescribed burning needed in BC.[26] Therefore, British Columbia needs to establish a comprehensive training and certification regime to increase the number of prescribed and cultural burning experts within British Columbia.

In addition to the lack of training, there is enormous potential liability attached to prescribed fire in British Columbia. If a fire escapes and causes damage, the burn boss who manages the burn can be liable for damages caused to property and adjoining land, as well as the cost of fire suppression. The mere potential for enormous liability has resulted in an insurance landscape where it is difficult to obtain insurance for conducting necessary prescribed burns. To undertake an expansive prescribed fire program, it is necessary to reduce the liability – so that those undertaking prescribed and cultural burns can be insured to operate.

The two issues are intimately tied together. Certifiably competent burners are required to ensure the success and safety of prescribed/cultural burns. And a safe track record is necessary to win support for reducing liability and ensuring insurability of prescribed burners.

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[23] Policy 9.5: Prescribed Fire and Resource Management Open Fire (1 April 2018), online: *BC Wildfire* <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prescribed-burning/policy_95_prescribed_fire_and_resource_management_open_fire.pdf> [https://perma.cc/2ZYA-AYML].

[24] Prescribed Fire Burn Plan Signature Page (June 2018), online (pdf): <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prescribed-burning/appendix_1a_-_burn_plan_signature_sheet_fillable.pdf> [https://perma.cc/XV66-GNQP].

[25] Policy 9.5: Prescribed Fire and Resource Management Open Fire, (1 April 2018), online: *BC Wildfire* <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prescribed-burning/policy_95_prescribed_fire_and_resource_management_open_fire.pdf> [https://perma.cc/2ZYA-AYML]

[26] Bob Gray, Certified Wildland Fire Ecologist estimates that this number of burners would be required to reverse the current fire deficit and burn 100,000-200,000 hectares annually.

II. The Issues

To encourage a comprehensive prescribed and cultural burning regime in BC, it is essential to address the twin issues of liability and training and certification. The goal of the report is to provide evidence-based recommendations for law reform on these issues.

The first issue this report addresses is liability, namely how the province can address the issue of liability for escaped prescribed fire to encourage prescribed and cultural burning. It describes the current situation in British Columbia regarding liability for prescribed fire. It then explores options for reducing liability for prescribed burners, including:

- limiting tort claims against burners to situations involving gross negligence, as long as they follow specific requirements to safeguard such burns,
- limiting burners' liability for fire suppression costs, as long as they follow specific requirements when performing such burns, and
- the possibility of a government claims fund to indemnify those who suffer loss from an escaped prescribed fire.

This will include a comparison to liability regimes in certain US States that have undertaken extensive reform in this area.

The second issue this report focuses on is how British Columbia can increase the number of trained and certified burn bosses in the province. We explore the current situation surrounding the training and certification of burn bosses in British Columbia. We then provide recommendations for reform in the areas of training and certification, including a standardized curriculum and a certification regime that can certify prescribed burners. Particular attention will be paid to the need for cultural burners within Indigenous communities – and the potential for prescribed fire to be carried out by Indigenous Guardians. We include an overview of the standardized training regime in the US, as well as the interagency partnerships with Indigenous peoples in Australia.

Image 2: Conducting maintenance burning adjacent to the community of Cranbrook in the East Kootenays of BC. This area was mechanically thinned in 2005, prescribe burned in 2007 and then burned again in the fall of 2022. (Photo courtesy of Robert W. Gray)

III. Summary of Recommendations to the Province of British Columbia

Issue: Liability

Recommendation 1: Adopt a statutory gross negligence standard for prescribed and cultural burns.

Recommendation 2: Adopt a statutory gross negligence standard for fire suppression costs related to prescribed and cultural burns.

Recommendation 3: Establish a prescribed fire claims fund, to cover eligible claims for losses and damages associated with prescribed and cultural burning.

Issue: Training and Certification

Recommendation 4: Develop accessible and standardized burn boss training, including standards for non-governmental instructor led delivery and evaluation.

Recommendation 5: Establish a certifying body to evaluate and certify burn bosses in British Columbia.

Recommendation 6: Encourage the use of cultural burning in British Columbia by providing accessible training and certification opportunities for Indigenous cultural fire practitioners and land management organizations.

Image 3: Using prescribed fire post-thinning to reduce fuel loading and encourage greater plant diversity and health. (Photo courtesy of Robert W. Gray)

1. FIRE IN BRITISH COLUMBIA: AN OVERVIEW

I. Mega-fires in British Columbia

In recent years, large, devastating wildfires have become a common phenomenon across the world. Numerous regions have seen burn areas increase in size and severity.[27] Fire seasons have slowly become longer: in the western United States, the annual wildfire season has increased from

[27] Camille Parmesan *et al*., "Terrestrial and Freshwater Ecosystems and their Services" in *Climate Change 2022: Impacts, Adaptation, and Vulnerability*, Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, IPCC (2022), online (pdf): <https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter02.pdf> [https://perma.cc/26KH-TST7] at 201.

approximately five months in the 1970s to seven months today.[28] The increase in wildfire season length and intensity has led to "mega-fires," which are high-impact wildfires that require more equipment, personnel, and financial resources to combat.[29]

British Columbia is now intimately familiar with mega-fires. Over a five-year span (2016-2021) the province experienced three of the worst fire seasons on record.[30] The 2017 wildfire season was particularly significant: 1.2 million hectares burned across the province, which is "over four times the size of Metro Vancouver, and almost half the size of the lower mainland."[31] During this season, fires emitted 190 million tonnes of greenhouse gases—almost triple the province's annual carbon footprint.[32] The record-setting impact of the 2017 season was soon surpassed the next year and 1.35 million hectares were burned in 2018 season. As noted above, an area larger than Vancouver Island has burned in BC since 2016.

This follows the general trend of wildfires burning ever-larger swaths of British Columbian forests. In their Sixth Assessment report, the Intergovernmental Panel on Climate Change noted that "the higher maximum temperatures of human-caused climate change increased burned area in 2017 to its widest extent in the 1950-2017 record, seven to eleven times the area that would have burned without climate change."[33] [34]

Unfortunately, the increased wildfires do far more than just consume vegetation and destroy timber supply. A few examples of the environmental effects of wildfires include:

- Intense modern wildfires destroy soil layers, resulting in forest floors that are susceptible to erosion. This can cause increased runoff into water systems, affecting the habitats of

[28] "Infographic: Western wildfires and climate change," online: *Union of Concerned Scientists* <https://www.ucsusa.org/resources/infographic-wildfires-and-climate-change> [https://perma.cc/RH3T-Y2B7].
[29] Jerry Williams, "Exploring the onset of high-impact mega-fires through a forest land management prism" (2013) 294 Forest Ecology and Management 4 at 5, DOI: <https://doi.org/10.1016/j.foreco.2012.06.030>.
[30] "Even more of BC faces wildfire risk due to climate change, says PICS researchers" (22 March 2022) online: *Pacific Institute for Climate Solutions* <https://pics.uvic.ca/news/even-more-bc-faces-wildfire-risk-due-climate-change-say-pics-researchers> [https://perma.cc/6P67-YWPJ].
[31] Robin Hadac, "BC Wildfires in the Context of Climate Change," online (blog): *Society Promoting Environmental Conservation* <https://spec.bc.ca/bc-wildfires-in-the-context-of-climate-change/> [https://perma.cc/XT6K-M2U5].
[32] John Hernandez & Tina Lovgreen, "'It's alarming': Wildfire emissions grow to triple B.C.'s annual carbon footprint" *CBC News* (24 August 2017), online: <https://www.cbc.ca/news/canada/british-columbia/it-s-alarming-wildfire-emissions-grow-to-triple-b-c-s-annual-carbon-footprint-1.4259306> [https://perma.cc/56SK-AHC9].
[33] Camille Parmesan *et al*, "Terrestrial and Freshwater Ecosystems and their Services" in *Climate Change 2022: Impacts, Adaptation, and Vulnerability*, Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, IPCC (2022), online (pdf): <https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter02.pdf> [https://perma.cc/26KH-TST7] at 247.
[34] Area burned by wildfires is also predicted to increase in the future: a 2003 study that observed both historical and current wildfire trends found that by the end of the 21st century we could see an estimated increase of 74-118% across Canada. See M.D. Flannigan et al "Future Area Burned in Canada" (2005) 72 Climatic Change 1, DOI: <https://doi.org/10.1007/s10584-005-5935-y>.

aquatic species such as salmon by disturbing natural water systems. Runoff also impacts drinking water quality.[35]

- Wildfire season is often followed by seasons of heavy rain. The damaged soil layers may be unable to handle the increased precipitation, causing overland runoffs and sometimes devastating floods.36
- Wildfires affect air quality, and many health problems are caused by the inhalation of severe wildfire smoke pollution.[37]
- Wildfires can disturb and shift vegetative cover – and can permanently alter biodiversity by facilitating rapid transition to monocultural ecosystems and destroying wildlife habitats.[38]

Wildfires have had significant socio-cultural and economic impacts, destroying properties across the province and costing residents. The 2017 wildfire season displaced 65,000 British Columbians from their homes and resulted in a 10-week state of emergency—the longest in the province's

[35] Xinyao Li, *Impacts of Wildfires on Environmental and Human Health in British Columbia* (Masters Major Project, University of British Columbia Faculty of Land and Food Systems, 2019) [unpublished], online (pdf): <https://lfs-mlws-2020.sites.olt.ubc.ca/files/2019/09/Li-2019-Impacts-of-Wildfires-on-Selected-Indicators-of-Environmental-and-Human-Health-in-BC.pdf> [https://perma.cc/RQ9Z-LJWA] at 11-18.

[36] Xinyao Li, *Impacts of Wildfires on Environmental and Human Health in British Columbia* (Masters Major Project, University of British Columbia Faculty of Land and Food Systems, 2019) [unpublished], online (pdf): <https://lfs-mlws-2020.sites.olt.ubc.ca/files/2019/09/Li-2019-Impacts-of-Wildfires-on-Selected-Indicators-of-Environmental-and-Human-Health-in-BC.pdf> [https://perma.cc/RQ9Z-LJWA] at 11.

[37] Xinyao Li, *Impacts of Wildfires on Environmental and Human Health in British Columbia* (Masters Major Project, University of British Columbia Faculty of Land and Food Systems, 2019) [unpublished], online (pdf): <https://lfs-mlws-2020.sites.olt.ubc.ca/files/2019/09/Li-2019-Impacts-of-Wildfires-on-Selected-Indicators-of-Environmental-and-Human-Health-in-BC.pdf> [https://perma.cc/RQ9Z-LJWA] at 18.

Wildfire smoke contains harmful fine particulate matter, as well as carbon monoxide, nitrogen oxides and volatile organic compounds. The BC Centre for Disease Control states: "Wildfire smoke is a form of air pollution that can affect your health. Exposure to air pollution can irritate the lungs, cause inflammation, and alter immune function" – and identifies a host of direct health impacts from wildfire smoke inhalation, including sore throat, cough, headache, eye irritation, chest pain, heart palpitations, and susceptibility to pneumonia and Covid-19. See "Wildfire Smoke" (last updated 5 May 2022): online BC Centre for Disease Control <http://www.bccdc.ca/health-info/prevention-public-health/wildfire-smoke> [https://perma.cc/L2U5-862V]. Wildfire smoke has had disproportionate impacts on those with asthma and other respiratory conditions, who have to curtail time outside during smoke events. The rates of hospitalization for asthma are projected to rise due to climate change-induced wildfire smoke exposure. See generally Jennifer D. Stowell et al, "Asthma exacerbation due to climate change-induced wildfire smoke in the western US" (2021) 17 Environ Res Lett 1, DOI: 10.1088/1748-9326/ac4138. Beyond immediate impacts, smoke inhalation has been correlated with long-term negative health outcomes like cardiovascular, lung disease, and even cancer. See Emily Grant & Jennifer D. Runkle, "Long-term health effects of wildfire exposure: A scoping review" (2022) 6 Journal of Climate Change and Health, DOI: <https://doi.org/10.1016/j.joclim.2021.100110>.

[38] Sean C.P. Coogan *et al*, "Scientists' warning on wildfire — a Canadian perspective" (2019) 49:9 Canadian Journal of Forest Research 1015 at 1018. DOI: <https://doi.org/10.1139/cjfr-2019-0094>. To draw on an example from Alberta, "wildfire could speed the transition of approximately half of the mixed wood and conifer forests in Alberta to deciduous woodland and grassland over the next century". While some species may be able to weather this change, species such as Alberta's boreal woodland caribou face a devastating loss of habitat.

history.[39] In 2021, approximately 90% of the small town of Lytton was destroyed by wildfire. Wildfires returned to the already devastated town in 2022, further displacing residents.[40]

As previously discussed, the intensity of recent wildfire seasons comes at enormous economic cost to BC residents. For example, the Lytton fire caused $102 million in insured damages alone, a number that does not account for the untold uninsured losses, lost income, and expenses residents incurred.[41] Similar losses were suffered in 2017 around Williams Lake.[42] The BC government has also had to dedicate increasing resources to combatting wildfires. In 2008, the average cost of wildfire suppression in BC was $301 million per year, which can be contrasted with the $718.8 million spent in the 2021 fire season.[43]

Yet climate change creates ever-more-optimal conditions for mega-fires – fostering extreme weather events, drought conditions, hotter temperatures, and drier wildfire fuel.[44] Extreme weather events are projected to become more common, creating "fire weather" that can trigger mega-fires.[45] (Ironically, increased wildfires themselves contribute to climate change – mega-fires release extraordinarily high amounts of carbon.[46] The 2017 fire season tripled British Columbia's annual greenhouse gas emissions for that year.[47])

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[39] Estefania Duran, "B.C. year in review 2017: wildfires devastate the province like never before" *Global News* (25 December 2017), online: <https://globalnews.ca/news/3921710/b-c-year-in-review-2017-wildfires> [https://perma.cc/PU3K-YYJA]

[40] "6 homes destroyed as out-of-control wildfire burns near Lytton, B.C., at least 80 residents evacuated" *CBC News* (15 July 2022), online: <https://www.cbc.ca/news/canada/british-columbia/lytton-wildifre-2022-nohomin-creek-1.6521622> [https://perma.cc/TZ7L-AADW]

[41] Marc Lee, "Five lessons from BC's horrific wildfire season," *Policynote* (7 October 2021), online: <https://www.policynote.ca/horrific-wildfires/> [https://perma.cc/2A24-EGNM]. The insured losses from destroyed and damaged property in the 2021 Lytton fire alone are estimated to be $102 million: "Insured Losses in Lytton, BC, Increase to $102 Million" (13 January 2022), online: *Insurance Bureau of Canada* <http://www.ibc.ca/bc/resources/media-centre/media-releases/insured-losses-in-lytton-bc-increase-to-102-million> [https://perma.cc/HM8R-QN8U].

[42] About $100 million in insured property damage was incurred from a 2017 fire around Williams Lake [See: "British Columbia wildfires cause more than $127 million in insured damage," (27 September 2017), online: *Insurance Bureau of Canada* <http://www.ibc.ca/bc/resources/media-centre/media-releases/british-columbia-wildfires-cause-more-than-127-million-in-insured-damage> [https://perma.cc/7YWY-E5VP].

[43] See: Marc Lee, "Five lessons from BC's horrific wildfire season," Policynote (7 October 2021), online: <https://www.policynote.ca/horrific-wildfires/> [https://perma.cc/2A24-EGNM]. And see: "Wildfire Season Summary," online https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary [https://perma.cc/45YK-7BD2].

[44] Hina Alam, "Climate change expected to bring longer wildfire seasons and more area burned: Expert" *Global News* (25 July 2021) online: <https://globalnews.ca/news/8058810/bc-wildfires-climate-change/> [https://perma.cc/S6AF-NZKD].

[45] Sean C.P. Coogan *et al*, "Scientists' warning on wildfire — a Canadian perspective" (2019) 49:9 Canadian Journal of Forest Research 1015. DOI: <https://doi.org/10.1139/cjfr-2019-0094>.

[46] And also destroy the forests needed for carbon capture. See interview with Carly Phillips, researcher with the University of Victoria Pacific Institute for Climate Change Solutions, by Gregor Craigie (1 March 2022) on *On the Island with Gregor Craigie*, CBC Radio, online: <https://www.cbc.ca/listen/live-radio/1-48-on-the-island/clip/15897906-a-grim-warning-report-international-panel-climate-change> [https://perma.cc/2QUR-LUQY].

[47] John Hernandez &Tina Lovgreen, "'It's alarming': Wildfire emissions grow to triple B.C.'s annual carbon footprint," *CBC News* (24 August 2017), online: <https://www.cbc.ca/news/canada/british-columbia/it-s-alarming-wildfire-emissions-grow-to-triple-b-c-s-annual-carbon-footprint-1.4259306> [https://perma.cc/56SK-AHC9].

However, the other major cause of mega-fires is the century-long build-up of fuels in BC forests – a build-up caused by the exclusion of cultural and prescribed burning. More than a century ago, laws were passed to outlaw Indigenous cultural burning. After World War II, Smokey Bear's philosophy of "suppress all fire all the time" dominated BC forest management.

Unfortunately, this near-total exclusion of fire has combined with monoculture forestry to create today's crisis. A monumental accumulation of dead needles, leaves, branches and logs; dense brush and thickets; and unbroken expanses of highly flammable coniferous trees form the megafire powder keg. Super-charged by climate change, these fires burn far hotter than ever – sterilizing soil, creating flood conditions, and imperilling long-term ecosystem resilience.

We submit that BC must restore periodic, preventative burning if we want to avoid a future of mega-fires. We must learn to fight fire with fire.

II. What is Prescribed and Cultural Burning?

> *Prescribed fire is the planned and controlled application of fire to a specific land area and is one of the most ecologically appropriate and relatively efficient means for achieving planned public safety and resource management objectives… [It can] contribute to achieving air quality and climate action targets by* ***preventing large, intense wildfires and replacing them with more frequent, well-timed, well-planned low-intensity fires.***[48]

Prescribed fires can be effective at reducing the spread of high-impact mega-fires. Prescribed fires are of far less size and intensity than uncontrolled wildfires and are deliberately and carefully ignited in favorable weather conditions, producing less smoke than uncontrolled fires.[49] A primary goal of prescribed fire is to reduce the amount of biomass and fuel available to burn in an uncontrolled wildfire.[50] Prescribed fire can be used strategically to create meadows and firebreaks[51]—which can prevent mega-fires from "running away." It is important to note that prescribed fires facilitate ecological resilience and encourage biodiversity.[52]

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[48] British Columbia, British Columbia Wildfire, *Prescribed Burning*, online: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/prescribed-burning> [https://perma.cc/RS5P-5M9A].

[49] British Columbia FireSmart, "Factsheet: Prescribed Fire" (2019), online: *FireSmart BC* <https://firesmartbc.ca/wp-content/uploads/2019/05/Factsheet_Prescribed-Fire-1.pdf> [https://perma.cc/A2K8-DZTE].

[50] "Fuel loads consist of combustible materials such as underbrush, dead wood and accumulations of tree needles." British Columbia FireSmart, "Factsheet: Prescribed Fire" (2019), online (pdf): *FireSmart BC* <https://firesmartbc.ca/wp-content/uploads/2019/05/Factsheet_Prescribed-Fire-1.pdf> [https://perma.cc/3S44-TNXJ].

[51] Paul Hessberg, "Living (Dangerously) in an Era of Megafires" (July 6, 2017), online (video): *Youtube* <https://www.youtube.com/watch?v=edDZNkm8Mas> [https://perma.cc/222B-YJPA].

[52] See: Crystal A. Kolden, "We're Not Doing Enough Prescribed Fire in the Western United States to Mitigate Wildfire Risk" (2019) 2:2 Fire. DOI: <https://doi.org/10.3390/fire2020030> "…'resilience' is the capacity of an ecosystem to

Since time immemorial, many Indigenous groups practiced cultural burning as a significant land stewardship practice. Cultural burning is similar to the modern practice of prescribed fire: both are planned and controlled applications of fire. However, cultural burning is often practiced for a wider array of reasons, with the primary goal of fortifying the land.[53] Cultural fire promotes the growth of vegetation for medicines, berries and other foods; creates habitat for elk, bison, moose, other game and fish; and maintains the landscape for all species, strengthening the relationship between Indigenous peoples and non-human relations.[54]

> *The whole idea of this is to activate landscapes to bring it back to life, to connect people back to that and to show that interrelationship and responsible role that people have inherited over thousands of years.*[55]

Cultural burning also reduced the wildfire risk around homes and communities. Like prescribed fire, cultural burning reduced both the amount of forest fuel and the area burned.[56] In Australia, many Aboriginal tribes are now working with state governments to use cultural burning techniques and traditional knowledge to manage wildfire risks.[57] These efforts have been extraordinarily effective at reducing uncontrolled wildfires: Northern Australia efforts cut the area of destructive wildfires in half – and reduced green-house gas emissions from wildfires by 40%.[58]

The use of prescribed and cultural fire as a critical tool for wildfire management is widely supported by the scientific community. A recent journal article summarized:

> *Prescribed fire is one of the most widely advocated management practices for reducing wildfire hazard and has a long and rich tradition rooted in indigenous and local ecological knowledge. The scientific literature has repeatedly reported that prescribed fire is often the most effective means of achieving such goals by reducing fuels and wildfire*

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respond to a disturbance (such as a wildfire) by resisting damage and recovering quickly. Increasing the biodiversity of a forest (via prescribed fire) can have a positive effect on the forest's resilience capacity and productivity, including carbon storage." British Columbia FireSmart, "Factsheet: Prescribed Fire" (2019), online: *FireSmart BC* <https://firesmartbc.ca/wp-content/uploads/2019/05/Factsheet_Prescribed-Fire-1.pdf> [https://perma.cc/A2K8-DZTE].

[53] Kelly Boutsalis, "The art of fire: reviving the Indigenous craft of cultural burning," *The Narwhal* (20 September 2020), online: <https://thenarwhal.ca/indigenous-cultural-burning/> [https://perma.cc/MP7P-EN25].

[54] Kelly Boutsalis, "The art of fire: reviving the Indigenous craft of cultural burning," *The Narwhal* (20 September 2020), online: <https://thenarwhal.ca/indigenous-cultural-burning/> [https://perma.cc/MP7P-EN25].

[55] Kelly Boutsalis, "The art of fire: reviving the Indigenous craft of cultural burning," *The Narwhal* (20 September2020), online: <https://thenarwhal.ca/indigenous-cultural-burning/> [https://perma.cc/MP7P-EN25].

[56] Paul Hessberg, "Living (Dangerously) in an Era of Megafires" (July 6, 2017), online (video): *Youtube* <https://www.youtube.com/watch?v=edDZNkm8Mas> [https://perma.cc/222B-YJPA].

[57] Corbin Greening, Lauren Mar, Ruben Tillman, and Calvin Sandborn, "The Case for a Guardian Network Initiative" *Environmental Law Centre* (June 2020) at 100, online: <https://elc.uvic.ca/publications/guardian-network-initiative/> [https://perma.cc/3DPG-WBAN].

[58] Thomas Fuller, "Reducing Fire, and Cutting Carbon Emissions, the Aboriginal Way" *The New York Times* (January 16 2020) online: <https://www.nytimes.com/2020/01/16/world/australia/aboriginal-fire-management.html> [https://perma.cc/5X6W-VDRT].

hazard and restoring ecological function to fire-adapted ecosystems in the United States (US) following a century of fire exclusion.[59]

When the University of Washington and the Nature Conservancy convened a group of 60 experts to discuss wildfire management in 2022, more than two dozen of the experts published a paper that recommended cultural and prescribed fire *as an essential tool for forest restoration.*[60] It is important to note that global reviews of land management practices have found that areas managed by Indigenous peoples often have higher levels of biodiversity, which researchers have largely attributed to cultural burning.[61]

Though prescribed and cultural fire is an essential land management tool, it does present risks. Controlled fires can escape if burning is not undertaken carefully and with effective safeguards. For example, the 2000 Cerro Grande fire in New Mexico—which damaged 235 homes and 19,000 hectares of forest—started as a prescribed fire.[62] However, escaped prescribed fires, especially of this scale, are *extremely rare*. A 2020 study surveyed 23,050 prescribed fires conducted in the Southern US by six entities (including federal agencies) over a 24-year period and found that only 0.9% of prescribed fires escaped. This means that 99.1% of these fires were conducted with no escapes.[63] Among these escaped fires, only one resulted in an insurance claim (under $5,000) and only one minor injury was recorded.[64] Additionally, when prescribed fires do escape, they rarely cause significant damage. Of the 1,530 prescribed burns conducted across 16 states from 2016-2019 and recorded by the Oklahoma Prescribed Burn Society, only 3.1% resulted in an escaped fire; 49% of the escapes were small, resulting in burning of less than one acre.[65]

Despite its low actual risk, many individuals perceive prescribed fire as a high-risk land management tool. In spite of the expert consensus that prescribed fire[66] is an essential fire

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[59] Crystal A. Kolden, "We're Not Doing Enough Prescribed Fire in the Western United States to Mitigate Wildfire Risk" (2019) 2:2 Fire. DOI, A*bstract*: <https://doi.org/10.3390/fire2020030>.

[60] Jake Ellison, "Consensus approach proposed to protect human health from intentional and wild forest fires" *UW News* (7 May 2022) online: <https://www.washington.edu/news/2022/05/07/consensus-approach-proposed-to-protect-human-health-from-intentional-and-wild-forest-fires/> [https://perma.cc/28KH-CT55]; S.M. D'Evelynet al, "Wildfire, Smoke Exposure, Human Health, and Environmental Justice Need to be Integrated into Forest Restoration and Management" (2022) 9 Current Environmental Health Report 366, DOI: <https://doi.org/10.1007/s40572-022-00355-7>.

[61] Kira M. Hoffman, Emma L. Davis, Sara B. Wickham, *et al*. "Conservation of Earth's biodiversity is embedded in Indigenous fire stewardship" (2021) 118:32 Proceedings of the National Academy of Sciences at 3, DOI: <https://doi.org/10.1073/pnas.2105073118>.

[62] Crystal A. Kolden, "We're Not Doing Enough Prescribed Fire in the Western United States to Mitigate Wildfire Risk" (2019) 2:2 Fire. DOI: <https://doi.org/10.3390/fire2020030>.

[63] John R. Weir, *et al.*, "Prescribed Fire: Understanding Liability, Laws and Risk," (2005) OSU Extension <https://extension.okstate.edu/fact-sheets/prescribed-fire-understanding-liability-laws-and-risk.html> [https://perma.cc/9FW9-XEHJ].

[64] John R. Weir, *et al.*, "Prescribed Fire: Understanding Liability, Laws and Risk," (2005) OSU Extension, https://extension.okstate.edu/fact-sheets/prescribed-fire-understanding-liability-laws-and-risk.html [https://perma.cc/9FW9-XEHJ].

[65] John R. Weir, *et al.*, "Prescribed Fire: Understanding Liability, Laws and Risk," (2005) OSU Extension, https://extension.okstate.edu/fact-sheets/prescribed-fire-understanding-liability-laws-and-risk.html [https://perma.cc/9FW9-XEHJ].

[66] With proper training and safeguards.

management tool, the increase of prescribed fire has not kept up with this expert consensus.[67] While there are many reasons for this discrepancy, it may be traced to a misplaced focus on fire suppression rather than prevention – and to the long history of prohibitions against prescribed and cultural burning.

III. Cultural Burning: A Historical Perspective

> *Some communities would burn up a mountain in soil left moist by a retreating snowline, the charred earth stimulating the growth of berry patches or medicinal plants. Others would set fire to the land to open up clogged waterways for spawning salmon or clear foraging areas for moose and deer. The net effect, agree oral histories and forest ecologists, was to suppress mega-fires with low-intensity burns.*[68]
>
> *Those [low-intensity] fires stopped in the late 1800s. We see the timing when they stopped is when European settlers arrived. Also, when Europeans made it illegal for people to burn…*
>
> *– Professor Lori Daniels, UBC Department of Forest and Conservation Sciences*[69]

Indigenous peoples have been engaging in cultural burning since time immemorial. Fire was a key land management tool – used for various purposes, such as improving the quality and quantity of plants foraged for food and medicine, cultivating forest gardens, clearing trails, and encouraging a thriving, diverse landscape.[70] For example, the Karok Tribe has historically used fire to cultivate healthy patches of oak trees, ridding them of disease and burning fuel on the forest floor to make acorn collection easier.[71]

The evidence of this burning can be found within various oral histories and recorded practices of Indigenous peoples in North America—evidence that was often marginalized by Western scientists

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[67] See generally: Crystal A. Kolden, "We're Not Doing Enough Prescribed Fire in the Western United States to Mitigate Wildfire Risk" (2019) 2:2 Fire. DOI: <https://doi.org/10.3390/fire2020030>.

[68] Stefan Labbé, "B.C. forests are 'bonfires waiting to go off' — are more fires the solution?" *Pique News Magazine* (26 July 2021) online: <https://www.piquenewsmagazine.com/must-reads/bc-forests-are-bonfires-waiting-to-go-off-are-more-fires-the-solution-3938400> [https://perma.cc/5AMA-Z973].

[69] Stefan Labbé, "B.C. forests are 'bonfires waiting to go off' — are more fires the solution?" *Pique News Magazine* (26 July 2021) online: <https://www.piquenewsmagazine.com/must-reads/bc-forests-are-bonfires-waiting-to-go-off-are-more-fires-the-solution-3938400> [https://perma.cc/5AMA-Z973].

[70] John Parminter, "Burning Alternatives Panel: A Review of Fire Ecology, Fire History and Prescribed Burning in Southern British Columbia" (Paper delivered at the Sixth Annual Fire Management Symposium, Kelowna, 29-30 May 1991) [unpublished], online (pdf): <https://www.for.gov.bc.ca/hre/pubs/docs/sifmc.pdf> [https://perma.cc/5ZZZ-KRUE]; Stefan Labbé, "B.C. forests are 'bonfires waiting to go off' — are more fires the solution?" *Pique News Magazine* (26 July 2021) online: <https://www.piquenewsmagazine.com/must-reads/bc-forests-are-bonfires-waiting-to-go-off-are-more-fires-the-solution-3938400> [https://perma.cc/5AMA-Z973].

[71] Sara M. Schenck and E. W. Gifford, "Karok Ethnobotany" (1952) 13:6 *Anthropological Records* 377 at 382, online (pdf): <https://www.dotycoyote.com/pdfs/sources/schenck_karok_ethnobotony.pdf> [https://perma.cc/CYV2-WXQA].

and policymakers.[72] However, there is increasing evidence from the Western scientific method that supports the oral histories of fire and land management. Professor Lori Daniels, a forest ecologist at the University of British Columbia, has found that "pre-colonial forest fires would burn more often, but at low intensities and rarely in the summer months when they were at their most destructive."[73] These kinds of low-intensity fires declined after the 1800s – which coincides with movements by colonial governments to ban burning and focus their efforts on fire suppression.[74]

Famed ethnobotanist Professor Nancy Turner OC has noted:

> *It is ironic that the landscapes so appreciated by the early explorers and colonists actually were created by the very fires they feared and disliked.*[75]

A number of large wildfires caused by improper colonial land management and fire practices swept through North America in the 1800s, creating an anti-fire sentiment across North America. British Columbia passed the *Bush Fire Act* in 1874, which "…provided for fines or imprisonment if an unattended fire escaped and resulted in damage to private or Crown land, during the period from June to September."[76] While there was no organization to enforce the *Act*, it reflected a growing anti-fire sentiment in the province.[77]

Prohibiting cultural burning was a particular focus, and Indigenous peoples were accused of carelessly leaving fires burning in the forest and causing large wildfires.[78] Government agents

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[72] See generally: Robin Wall Kimmerer and Frank Kanawha Lake, "The Role of Indigenous Burning in Land Management" (2001) 99:11 Journal of Forestry 36, DOI: <https://doi.org/10.1093/jof/99.11.36>. Also see Omer Call Stewart *et al*, *Forgotten Fires - Native Americans and the transient wilderness* (University of Oklahoma Press, 2002) and Thomas R. Vale, *Fire, Native Peoples, and the Natural Landscape*(Island Press, 2002). The authors in this compendium present this argument.

[73] Stefan Labbé, "B.C. forests are 'bonfires waiting to go off' — are more fires the solution?" *Pique News Magazine* (26 July 2021) online: <https://www.piquenewsmagazine.com/must-reads/bc-forests-are-bonfires-waiting-to-go-off-are-more-fires-the-solution-3938400> [https://perma.cc/5AMA-Z973].

[74] Stefan Labbé, "B.C. forests are 'bonfires waiting to go off' — are more fires the solution?" *Pique News Magazine* (26 July 2021) online: <https://www.piquenewsmagazine.com/must-reads/bc-forests-are-bonfires-waiting-to-go-off-are-more-fires-the-solution-3938400> [https://perma.cc/5AMA-Z973]; Robin Wall Kimmerer and Frank Kanawha Lake, "The Role of Indigenous Burning in Land Management" (2001) 99:11 Journal of Forestry 36, DOI: <https://doi.org/10.1093/jof/99.11.36>; Wesley Brookes *et al.* "A Disrupted Historical Fire Regime in Central British Columbia" (2021) 9 Frontiers in Ecology and Evolution, DOI: <https://doi.org/10.3389/fevo.2021.676961>.

[75] Nancy Turner, "'Time to Burn': Traditional Use of Fire to Enhance Resource Production by Aboriginal Peoples in British Columbia" in Robert Boyd, ed, *Indians, Fire, and Land in the Pacific Northwest* (Oregon University Press, 1999).

[76] John Parminter, "Burning Alternatives Panel: A Review of Fire Ecology, Fire History and Prescribed Burning in Southern British Columbia" (Paper delivered at the Sixth Annual Fire Management Symposium, Kelowna, May 29-30, 1991) [unpublished], online (pdf): <https://www.for.gov.bc.ca/hre/pubs/docs/sifmc.pdf> [https://perma.cc/5ZZZ-KRUE].

[77] John Parminter, "Burning Alternatives Panel: A Review of Fire Ecology, Fire History and Prescribed Burning in Southern British Columbia" (Paper delivered at the Sixth Annual Fire Management Symposium, Kelowna, May 29-30 1991) [unpublished], online (pdf): <https://www.for.gov.bc.ca/hre/pubs/docs/sifmc.pdf> [https://perma.cc/5ZZZ-KRUE].

[78] Report of the Superintendent of Forestry and Irrigation 1910, November 25, 1911, at 9, online (pdf): *Canadian Forest Service Publications* <https://cfs.nrcan.gc.ca/publications?id=30798&lang=en_CA> [https://perma.cc/CL6M-DLXD]; John Parminter, "Burning Alternatives Panel: A Review of Fire Ecology, Fire History and Prescribed Burning in Southern British

attended band council meetings and residential schools to spread the message that "…it was to the interest of the Indians to prevent and extinguish all fires."[79] Residential schools, land theft, and displacement also played a significant role in halting cultural burning, interrupting the transmission of knowledge regarding stewardship practices.[80]

Lil'wat Elder Baptiste Richie has described the results:

> *If you go to burn then you get into trouble because the white men want to grow trees. Because they changed our ways they do good for us and we eat the food that the white men use. Then we forget the good food of our earliest forefathers. … Now they have all disappeared because the hills grew weedy and no one seems to tend them, no one clears them as our forefathers did so thoroughly.*[81]

Under the 20th century industrial forestry legal regime, controlled burning was primarily focused on disposing waste from forestry and encouraging industrial growth and safety—and was conducted by individuals with little experience in controlled burning.[82] There was a generally negative attitude to using fire as a forest management tool, and land management practices shifted towards profitability. The focus was placed not on the management of heathy, diverse forests, but on planting large numbers of commercially profitable trees on clearcut land.[83]

The *Forest Act* of 1912 incorporated the fire regime imposed by the *Bush Fire Act* and its successors. It created the BC Wildfire Service, which received financial support to equip and maintain a fire suppression force.[84] Policies focused on fire suppression, and short-term economic returns dominated attitudes towards fire throughout much of the 1900s.[85] For example, in the

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Columbia" (Paper delivered at the Sixth Annual Fire Management Symposium, Kelowna, May 29-30 1991) [unpublished], online (pdf): <https://www.for.gov.bc.ca/hre/pubs/docs/sifmc.pdf> [https://perma.cc/5ZZZ-KRUE].

[79] Report of the Superintendent of Forestry and Irrigation 1910, November 25, 1911, at 10, online (pdf): *Canadian Forest Service Publications* <https://cfs.nrcan.gc.ca/publications?id=30798&lang=en_CA> [https://perma.cc/CL6M-DLXD];

[80] Kira M. Hoffman, et al., "The right to burn: barriers and opportunities for Indigenous-led fire stewardship in Canada" (2022) FACETS 7 464. DOI: <https://doi.org/10.1139/facets-2021-0062>.

[81] Kelly Boutsalis, "The art of fire: reviving the Indigenous craft of cultural burning," *The Narwhal* (20 September 2020), online: <https://thenarwhal.ca/indigenous-cultural-burning/> [https://perma.cc/MP7P-EN25]; Nancy Turner, "'Time to Burn': Traditional Use of Fire to Enhance Resource Production by Aboriginal Peoples in British Columbia" in Robert Boyd, ed, *Indians, Fire, and Land in the Pacific Northwest* (Oregon University Press, 1999).

[82] John Parminter, "Burning Alternatives Panel: A Review of Fire Ecology, Fire History and Prescribed Burning in Southern British Columbia" (Paper delivered at the Sixth Annual Fire Management Symposium, Kelowna, May 29-30 1991) [unpublished], online (pdf): <https://www.for.gov.bc.ca/hre/pubs/docs/sifmc.pdf> [https://perma.cc/5ZZZ-KRUE].

[83] Sean Atrim, "A Brief History of Wildfire in British Columbia" (October 22, 2020) online (blog): *Fire Season* <https://fireseason.org/journal/a-brief-history-of-wildfire-in-british-columbia-by-sean-antrim> [https://perma.cc/A7NM-6HKU].

[84] John Parminter, "Burning Alternatives Panel: A Review of Fire Ecology, Fire History and Prescribed Burning in Southern British Columbia" (Paper delivered at the Sixth Annual Fire Management Symposium, Kelowna, May 29-30 1991) [unpublished], online (pdf): <https://www.for.gov.bc.ca/hre/pubs/docs/sifmc.pdf> [https://perma.cc/5ZZZ-KRUE].

[85] Sean Atrim, "A Brief History of Wildfire in British Columbia" (October 22 2020) online (blog): *Fire Season* <https://fireseason.org/journal/a-brief-history-of-wildfire-in-british-columbia-by-sean-antrim> [https://perma.cc/A7NM-6HKU].

1944 commission on Forest Resources, Gordon McGregor Sloan identified fire protection as a primary means to accomplish the objective of managing "our forests that all our forest land is sustaining a perpetual yield of timber to the fullest extent of its productive capacity."[86] While BC Wildfire was largely successful at suppressing fires, the budget for fire suppression steadily increased throughout the 1900s, as did the messaging surrounding fire suppression.[87] Smokey Bear, the iconic mascot created by the U.S. Forest Service, could be seen throughout the province along with his omnipresent message: "Only YOU can prevent forest fires."[88] Additionally, environmental movements, which began to gain influence in the mid-1900s, often focused on the preservation of natural environments and "wilderness" untouched by both humans and fire.[89]

The focus on total fire suppression has created the perfect conditions for mega-wildfires to thrive. Perpetual fire suppression has vastly increased forest fuel loads—fuel that would previously have been reduced by periodic Indigenous cultural burning.[90] The cultivation of vast monocultures of trees has led to increasingly dense forests that have not been thinned out by regular burning.[91] The absence of cultural fire from the landscape has allowed invasive species and disease to spread in our forests.[92] These factors, in combination with climate change, have contributed to the increase in mega-fires.

It has become obvious that current policies of fire suppression are unable to address the rapid growth of mega-fires. As a result, there has been rising interest in exploring other options for forest management – including prescribed and cultural burning.[93]

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[86] John W. Gilmour, "Review of the Sloan Commission Report" (1946) 25:1 *Empire Forestrt Review* 86 at 90.
[87] Sean Atrim, "A Brief History of Wildfire in British Columbia" (October 22, 2020) online (blog): *Fire Season* <https://fireseason.org/journal/a-brief-history-of-wildfire-in-british-columbia-by-sean-antrim> [https://perma.cc/A7NM-6HKU].
[88] Sean Atrim, "A Brief History of Wildfire in British Columbia" (October 22, 2020) online (blog): *Fire Season* <https://fireseason.org/journal/a-brief-history-of-wildfire-in-british-columbia-by-sean-antrim> [https://perma.cc/A7NM-6HKU].
[89] Sean Atrim, "A Brief History of Wildfire in British Columbia" (October 22, 2020) online (blog): *Fire Season* <https://fireseason.org/journal/a-brief-history-of-wildfire-in-british-columbia-by-sean-antrim> [https://perma.cc/A7NM-6HKU].
[90] Lori Daniels, Robert Gray, and David Bowman, Opinion, *The Globe and Mail* (July 13, 2017) online: <https://www.theglobeandmail.com/opinion/we-created-bcs-wildfire-problem-and-we-can-fix-it/article35686104/> [https://perma.cc/69D9-XHQT].
[91] Lori Daniels, Robert Gray, and David Bowman, Opinion, *The Globe and Mail* (July 13 2017) online: <https://www.theglobeandmail.com/opinion/we-created-bcs-wildfire-problem-and-we-can-fix-it/article35686104/> [https://perma.cc/69D9-XHQT]; Wesley Brookes, Lori D. Daniels, Kelsey Copes-Gerbitz, *et al.* "A Disrupted Historical Fire Regime in Central British Columbia" (2021) 9 Frontiers in Ecology and Evolution.
[92] Nancy Turner, "'Time to Burn': Traditional Use of Fire to Enhance Resource Production by Aboriginal Peoples in British Columbia" in Robert Boyd, ed, *Indians, Fire, and Land in the Pacific Northwest* (Oregon University Press, 1999; Kelly Boutsalis, "The art of fire: reviving the Indigenous craft of cultural burning," *The Narwhal* (20 September2020), online: <https://thenarwhal.ca/indigenous-cultural-burning/> [https://perma.cc/MP7P-EN25].
[93] Lori Daniels, Robert Gray, and David Bowman, Opinion, *The Globe and Mail* (July 13 2017) online: <https://www.theglobeandmail.com/opinion/we-created-bcs-wildfire-problem-and-we-can-fix-it/article35686104/> [https://perma.cc/69D9-XHQT].

Image 4: Applying prescribed fire in an open, western larch, ponderosa pine, Douglas-fir forest in the east Kootenay's of BC. The objective is to improve the health of important elk and deer browse and to reduce surface fuels. (Photo courtesy of Robert W. Gray)

2. ENCOURAGING PRESCRIBED AND CULTURAL BURNING IN BRITISH COLUMBIA

As discussed above, experts have increasingly identified prescribed and cultural fires as an essential tool to combatting mega-fires and improving biodiversity. Therefore, it is imperative that the provincial government take action to encourage and increase the pace of prescribed fire in British Columbia. However, there are significant barriers standing in the way of a comprehensive prescribed fire program. Two of these legal and policy barriers have been identified by the Canadian Pyrodiversity Association and the Environmental Law Centre:

- the current standard of legal liability for prescribed and cultural burns that escape; and
- the absence of accessible training and certification pathways for burn bosses and other key members of burn teams.[94]

I. Liability

A number of jurisdictions now recognize that the use of prescribed fire is in the public interest and have adjusted legal liability rules accordingly.[95]

Potential legal liability is one of the major barriers to full implementation of prescribed and cultural burning in BC. Burn bosses and other fire practitioners face potential legal liability for damage to the Crown or third parties caused by prescribed fire escapes. While escaped fires are incredibly rare—and escaped fires that cause significant damage or harm even rarer—the risk of an escaped fire creating liability is often cited by practitioners as the most significant barrier to undertaking prescribed and cultural burning projects.[96] This situation is exacerbated by the reluctance of insurers to protect burn bosses from potential losses due to the perceived risk and potential cost of an escaped burn. Burn bosses have often faced difficulty when attempting to

[94] While these two issues present significant challenges for both cultural and prescribed fire practitioners, the challenges for cultural fire practitioners are compounded by histories of colonialism and the elevation of Western science over Indigenous knowledge. Therefore, many recommendations impact both prescribed burning and cultural burning, while some recommendations may relate solely to cultural burning.

[95] See the discussion below, for the details of how such states as Michigan, California, Florida, Georgia, South Carolina and others have changed their liability regimes.

[96] J.M. Varner *et al*, "Increasing Pace and Scale of Prescribed Fire via Catastrophe Funds for Liability Relief" (2021) 4 Fire; Bill Cary & Jamey Lowdermilk, "Prescribed Fire Liability Report for the Southern United States: A Summary of Statutes and Cases" (2022) University of North Carolina School of Law.

acquire general liability insurance for prescribed burns, which often stalls prescribed burns before they even start.[97]

Therefore, if we hope to see an increase in prescribed and cultural burning in British Columbia, the law governing liability for burn bosses must be reformed. Other jurisdictions have used a range of methods to address this issue, and there are a number of successful models that British Columbia can consider.

RECOMMENDATION 1: ADOPT A GROSS NEGLIGENCE STANDARD FOR DAMAGE CAUSED BY PRESCRIBED FIRE ESCAPES

In general, for a burn boss to be held liable for third-party property damage in British Columbia, the plaintiff need only prove that the burn boss was "negligent," and that the negligence caused or contributed to the plaintiff's property damage.[98]

The "simple negligence" standard differs from that in a number of jurisdictions that have relaxed this liability rule in order to encourage prescribed burning—and replaced it with other safeguards and indemnification. A number of US states have reduced burner liability to situations where the burner was "grossly negligent."

Negligence, also known as simple negligence, is defined as "the failure to exercise the standard of care that a reasonably prudent person would have exercised in a similar situation."[99] For example, in *British Columbia v. Canadian Forest Products Ltd.,* the defendant forestry company was found to be negligent when the defendant did not take sufficient efforts and failed to locate a holdover fire from an earlier prescribed burn.[100]

In contrast to simple negligence, gross negligence is conduct that shows "very great negligence"[101] or "a very marked departure from the standards by which responsible and competent people […] habitually govern themselves."[102] Gross negligence limits the liability of potential defendants – because demonstrating gross negligence requires a higher bar of negligent misconduct than simple negligence.[103]

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[97] California Senate Committee on Insurance, Informational Hearing, *Wildfires and Insurance: Emerging* Issues (11 March 2021) (Chair: Susan Rubio).

[98] *British Columbia v. Canadian Forest Products Ltd.,* [1999] B.C.J. No. 1945, 1999 CarswellBC 1871 at paras 79-83, rev'd on other grounds 2002 BCCA 217.

[99] Bryan A. Garner, ed, *Black's Law Dictionary* (11th ed. 2019) sub verbo "negligence".

[100] *British Columbia v. Canadian Forest Products Ltd.,* [1999] B.C.J. No. 1945, 1999 CarswellBC 1871, rev'd on other grounds 2002 BCCA 217.

[101] *Kingston (City) v. Drennan*, 1897 CarswellOnt 21, 27 S.C.R. 46 at para 33.

[102] *McCulloch v. Murray*, 1942 CarswellNS 15 [1942] S.C.R. 141.

[103] *Horizon Resource Management Ltd. v. Blaze Energy Ltd*., 2011 ABQB 658 at para 989.

In order to encourage prescribed burning, several US states – including Georgia, Michigan, Nevada, and Florida – have adopted "Prescribed Burning" statutes that establish a gross negligence standard for property damage caused by prescribed fire and smoke.[104] **It is important to note that states that have adopted such "right to burn" laws see significantly more prescribed burning activity than states with simple negligence standards.**[105] The gross negligence standard likely encourages insurance companies to provide general liability insurance for prescribed and cultural burns – due to the reduced chance of burners facing lawsuits and having to pay damages.[106]

In adopting gross negligence standards, states have been careful to adopt companion legal requirements that promote safety and training.[107] Although the legislation in the above states prescribes a gross negligence standard for escapes, it is important to note that in order to take advantage of the reduced liability, burners must follow several prescribed safeguarding requirements.[108] For example, Florida's prescribed burning laws require compliance with several standards, including:

1. A certified burn manager with a copy of the prescription must be on site to directly supervise the prescribed burn.
2. The preparation of a written prescription must be prepared before receiving authorization.

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[104] See: Nevada Revised Statutes § 475.040; Michigan Compiled Laws 2022, §324.51503b and see: Bill Cary and Jamey Lowdermilk, "Prescribed Fire Liability Report for the Southern United States: A Summary of Statutes and Cases" (2022) University of North Carolina School of Law at 10-11 , online (pdf):<https://nri.tamu.edu/media/3472/rx-fire-liability-report-final_may-update.pdf> [https://perma.cc/QJ62-DPD5]. For further context, see: Carissa L. Wonkka, William E. Rogers & Urs P. Kreuter, "Legal barriers to effective ecosystem management: exploring linkages between liability, regulations, and prescribed fire" (2015) 25:8 Ecological Applications 2382, DOI: <https://doi.org/10.1890/14-1791.1>. Note that in addition to the named states, South Carolina has adopted a relaxed gross negligence standard for resulting damage caused by smoke from prescribed fire – however damage caused by fire is still subject to standards of simple negligence. See: *South Carolina Code* §48-34-50. Attempts have been made in other jurisdictions to create a modified simple negligence standard to encourage prescribed burning. In 2018, California's Senate Bill 1260 modified the standard to include a prima facie due diligence standard—meaning that if the burner followed a CAL FIRE permit, they would be assumed not to be liable. This made it easier for burners to defend themselves in a potential lawsuit. While it was hoped that this legislation would reduce barriers in the state and increase the number of prescribed burns, it did not have the intended effect. Steeped in the technical language of lawyers, it did not address the concerns of burners and landowners and applied only if a permit was acquired; permits are not required or difficult to obtain in some areas and many tribes undertake burning without permits as part of their exercising their tribal sovereignty. See: Memoranda for State Senator Bill Dodd CA-3, Liability/Criminal Penalties.

[105] Carissa L. Wonkka, William E. Rogers and Urs P. Kreuter, "Legal barriers to effective ecosystem management: exploring linkages between liability, regulations, and prescribed fire" (2015) 25:8 Ecological Applications 2382 at 2390, DOI: <https://doi.org/10.1890/14-1791.1>.

[106] Note that the challenge of encouraging insurance for prescribed burners is also addressed by the proposals made in Recommendation 3, below.

[107] See below, and Carissa L. Wonkka, William E. Rogers and Urs P. Kreuter, "Legal barriers to effective ecosystem management: exploring linkages between liability, regulations, and prescribed fire" (2015) 25:8 Ecological Applications 2382 at 2390, DOI: <https://doi.org/10.1890/14-1791.1>.

[108] See: *Georgia Code* 2020 §12-6-148; *Oklahoma Statutes* 2016, Title 2, §16-28.2; *Nevada Revised Statutes* § 475.040; *Michigan Compiled Laws* 2022, §324.51503b.

3. The landowner or their designee must consent before requesting an authorization.
4. An authorization must be obtained from Florida Forest Service prior to ignition.
5. There must be adequate firebreaks at the burn site, as well as sufficient personnel and equipment to contain the burn. The statute also qualifies this requirement, stating that:
    a. escape is not sufficient to conclusively prove this requirement was not met,
    b. there is a rebuttable presumption that this requirement was met if the burn was contained within the authorized area during the authorized period, and
    c. continued smoldering resulting in an escaped fire does not prove this requirement was not met.
6. Certified prescribed burning fire is considered to be in the public interest and does not constitute a public or private nuisance, when carried out according to the state rules.
7. Certified prescribed burning is the property right of property owners if vegetative fuels are burned according to the state rules.[109]

These reforms have created a more fire-positive culture, with landowners responding to the increase in prescribed fire by fortifying their land against fire generally.[110]

Note that while jurisdictions with gross negligence standards do see more escapes than those with simple negligence standards—an increase that may simply be due to the increased number of fires overall—*data does not show a corresponding increase in damage and suppression costs in these jurisdictions.*[111]

It is also worth noting that while "gross negligence" rules enhance the ability of safe and responsible burners to obtain insurance, they do not prevent all litigation for damages caused by escaped fires. Prescribed burners that do not follow the safeguarding requirements of the statute (*e.g.*, trained personnel, burn plan, firebreaks, etc.) will potentially be subject to liability – as will those grossly negligent.[112]

Recommendation: Adopt a statutory gross negligence standard for prescribed and cultural burns in BC.

- Prescribed and cultural burners would not be held liable for property damage unless they are found to be grossly negligent.

[109] *Florida Statutes* 2022 §590.125(3)(b)(1)-(7).
[110] Carissa L. Wonkka, William E. Rogers and Urs P. Kreuter, "Legal barriers to effective ecosystem management: exploring linkages between liability, regulations, and prescribed fire" (2015) 25:8 Ecological Applications 2382 at 2390, DOI: <https://doi.org/10.1890/14-1791.1>.
[111] Carissa L. Wonkka, William E. Rogers & Urs P. Kreuter, "Legal barriers to effective ecosystem management: exploring linkages between liability, regulations, and prescribed fire" (2015) 25:8 Ecological Applications 2382 at 2390, DOI: <https://doi.org/10.1890/14-1791.1>.
[112] Memoranda for State Senator Bill Dodd CA-3, Liability/Criminal Penalties. (For example, in 2018 an escaped prescribed fire set by the Nevada Division of Forestry resulting in multiple lawsuits; the division did not follow its own standards and was found to be grossly negligent, and the lawsuits were settled for $25 million dollars).

- Legislation should set standards that prescribed and cultural burners must follow to be protected by the reduced liability rule. This will ensure that burns that are subject to a gross negligence standard are also conducted safely and responsibly.
    - These standards may include that a certified burn boss be present at the site of the prescribed burn[113]; that a written burn prescription be prepared, that the burn be authorized by government and landowners, etc.
- The law should provide that prescribed fires that comply with the legislation should not constitute a private or public nuisance.[114]
- The law should provide special consideration for cultural burners, especially regarding traditional burning practices and training and certification requirements. Exemptions for cultural burners may need to be made to comply with the *Declaration on The Rights of Indigenous Peoples Act*, section 35 of the *Constitution Act*, 1982, and treaty rights, both historic and modern.
    - See below for an example of exemptions that may be considered for cultural burners.

RECOMMENDATION 2: APPLY A GROSS NEGLIGENCE STANDARD FOR FIRE SUPPRESSION COST LIABILITY

Another possible way to encourage prescribed burns is to adopt a "gross negligence" standard for liability to pay *costs of suppressing* an escaped prescribed fire. Under common law tort rules, burners are not only potentially liable for property and smoke damages – but can potentially be held liable for additional *fire suppression costs* related to an escaped prescribed burn.[115]

Fire suppression costs can be considerable. For example, Canadian Forest Products Ltd. was obligated to pay damages of $3.575 million for the costs of fire suppression and restoration for one escaped fire.[116] This potential civil liability is seen as an important disincentive to prescribed

[113] See Section II below for discussion of certification and training.

[114] While nuisance is not the focus of this report, states with gross negligence standards have also eliminated liability for public or private nuisance within the same provisions of those establishing a gross negligence standard. See: *Georgia Code* 2020 §12-6-148; *Oklahoma Statutes* 2016, Title 2, §16-28.2; *Nevada Revised Statutes* § 475.040; *Michigan Compiled Laws* 2022, §324.51503b.

[115] For example, see *British Columbia v. Canadian Forest Products Ltd.*, [1999] B.C.J. No. 1945, 1999 CarswellBC 1871 at 109-110, rev'd on other grounds 2002 BCCA 217. Note that even in Florida – which significantly protects burn bosses from liability for civil damages if a prescribed escapes the authorized burn area – there is not similar protection from the costs of fire suppression. See *Florida Statutes* 2022 §590.14(2).

[116] *British Columbia v. Canadian Forest Products Ltd.,* [1999] B.C.J. No. 1945, 1999 CarswellBC 1871 at 110, rev'd on other grounds 2002 BCCA 217. Note that such fire suppression costs could be in addition to the costs of fire suppression equipment and personnel already present at a prescribed fire – and equipment is already significantly costly to acquire, especially for small communities and organizations. See: Kira M. Hoffman, *et al.*, "The right to burn: barriers and opportunities for Indigenous-led fire stewardship in Canada" (2022) FACETS 7 464 at 474. DOI: <https://doi.org/10.1139/facets-2021-0062>.

burning. In order to encourage prescribed burning, California recently enacted Senate Bill-332, which limits liability for fire suppression costs. While SB-332 originally sought to follow the examples set by Georgia, Michigan, Nevada, and Florida regarding general liability for escaped prescribed fires, that proposal fell short.[117] Instead, the Bill was amended to provide liability protection for costs related to *fire suppression*. The resulting legislation was an improvement over the *status quo,* as it addressed concerns voiced by many burn bosses and cultural fire practitioners.[118] While results remain to be seen, it is hoped that this legislation – in combination with the compensation fund established by companion legislation[119] – will encourage increased cultural and prescribed burning to reduce the dangerous build-up of forest fuels.[120]

SB-332's structure is similar to the laws that established gross negligence standards for property damage in states discussed above. Unless there is a finding of gross negligence, burn bosses and cultural fire practitioners are exempt from damages related to fire suppression – provided they follow the statutory requirements of the legislation.[121]

Recommendation: Adopt a statutory gross negligence standard for fire suppression costs related to prescribed and cultural burns in British Columbia.

- Prescribed and cultural burners would not be held liable for fire suppression and related costs unless they are found to be grossly negligent.
- The legislation should simultaneously set minimum standards that prescribed and cultural burners must follow in order to be protected by this reduced liability. This will ensure that burns that are subject to a gross negligence standard are also conducted safely and responsibly.
    - For example, these standards may include that a legally certified burn boss was present at the site of the prescribed burn, that a written prescription was prepared for the burn, that adequate fire safety measures were in place, etc.[122]
- This legislative reform should be accompanied by a gross negligence standard for property damage, as proposed in Recommendation 1. A gross negligence standard for both fire suppression costs and property damage will significantly encourage prescribed burning

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[117] Personal correspondence from Les Spahnn, Legislative Director to Senator Bill Dodd, to Calvin Sandborn and Layne Clarke (October 19, 2022).

[118] Personal correspondence from Les Spahnn, Legislative Director to Senator Bill Dodd, to Calvin Sandborn and Layne Clarke (19 October 2022); Elizabeth Larson, "Dodd bill to address control burn liability signed into law" *Lake County News* (7 October 2021) online: <https://www.lakeconews.com/news/70574-dodd-bill-to-address-control-burn-liability-signed-into-law> [https://perma.cc/Y2RA-26JX].

[119] See discussion of the companion law, Senate Bill 926, in Recommendation 3 below.

[120] Elizabeth Larson, "Dodd bill to address control burn liability signed into law" *Lake County News* (7 October 2021), online: <https://www.lakeconews.com/news/70574-dodd-bill-to-address-control-burn-liability-signed-into-law> [https://perma.cc/Y2RA-26JX].

[121] Note that cultural burners are exempt from the requirements to: (1) have a burn boss review and approve a written prescription and (2) conduct the burn in compliance with a written prescription. Additionally, permission to burn can be given by a Native American Tribe instead of a state governing body. These allowances are ostensibly designed to prevent infringement on tribal sovereignty and US federal jurisdiction.

[122] See Part II below for discussion of certification of burn bosses.

and serve the public interest in preventing mega-fires. At the same time, measures should be taken to compensate affected property owners for damage caused by an escaped prescribed fire. (See below.)

- Considerations should be made with respect to cultural burners. Exemptions for cultural burners may need to be made to comply with the *Declaration on The Rights of Indigenous Peoples Act*, section 35 of the *Constitution Act*, 1982, and treaty rights, both historic and modern.

RECOMMENDATION 3: ESTABLISH A PRESCRIBED FIRE CLAIMS FUND

Prescribed fire claims funds can be a way to compensate innocent property owners –and address the barrier presented by a lack of insurance coverage for prescribed fire and prescribed fire practitioners. Insurance is one of the ways that prescribed fire practitioners can mitigate risk, by providing coverage in the rare event of a damaging escaped prescribed fire. However, burn bosses often struggle to find insurance companies that will cover prescribed burns, resulting in fewer prescribed burns.[123] Absent a robust private insurance market, "prescribed fire claims funds" can encourage prescribed burners by acting as a form of "public insurance"—and support coverage for potential losses incurred by prescribed and cultural burning.

Prescribed fire claims funds can encourage public trust in prescribed and cultural burning because "a catastrophe fund would focus less on the burner […] and could instead foster more public support for prescribed fire, because there would be a mechanism for covering losses from burning even if the burner was acting within the bounds of the law."[124] If combined holistically with stronger liability protections for burners, prescribed liability funds have the potential to significantly increase the scale of prescribed and cultural burns – while encouraging public support for an increased pace and scale of prescribed fire.[125]

In 2021, California passed Senate Bill-926, which set aside $20 million dollars within the state's budget to establish a Prescribed Fire Claims Fund to cover eligible claims for damages associated with prescribed fire and cultural burning. Under the legislation, claims may be submitted to cover damages from a prescribed or cultural burn. Eligible claims must meet the criteria set out in the legislation[126] and are limited at $2 million dollars of losses for a single prescribed or cultural fire event. While the outcome of this 5-year pilot project is yet to be seen, the prescribed fire claim fund is intended to "backstop the private insurance market and facilitate the re-entry of private

[123] Interview with Robert Gray by Layne Clarke and Calvin Sandborn.
[124] J.M. Varner *et al,* "Increasing Pace and Scale of Prescribed Fire via Catastrophe Funds for Liability Relief" (2021) 4 Fire at 6. DOI: <https://doi.org/10.3390/fire4040077>.
[125] J.M. Varner *et al*, "Increasing Pace and Scale of Prescribed Fire via Catastrophe Funds for Liability Relief" (2021) 4 Fire at 8. DOI: <https://doi.org/10.3390/fire4040077>.
[126] SB-926, *Prescribed Fire Liability Pilot Program: Prescribed Fire Claims Fund*, §4500(e).

insurers into the market"[127] – while simultaneously encouraging non-government entities to undertake more prescribed burns.[128]

Recommendation: Establish a prescribed fire claims fund to cover eligible claims for losses and damages associated with prescribed and cultural burning.

- Eligible prescribed and cultural burners who follow the minimum statutory requirements would be able to claim damages up to a certain amount related to prescribed burns, including damages suffered by third-party landowners.
- When combined with liability protections or reduced fire suppression costs for prescribed and cultural burners (see: Recommendations 1 and 2), prescribed claim funds have the potential to rapidly increase the pace of prescribed burning while improving public confidence and certainty.[129]

[127] Senate Committee on Governmental Organization, *Prescribed Fire Liability Pilot Program: Prescribed Fire Claims Fund* (April 2022) (Chair: Bill Dodd).
[128] Oklahoma has created a similar "Controlled Burn Indemnity Fund" for landowners; however it has not received any funding. See: Bill Cary and Jamey Lowdermilk, "Prescribed Fire Liability Report for the Southern United States: A Summary of Statutes and Cases" (2022) University of North Carolina School of Law at 33, online (pdf): <https://nri.tamu.edu/media/3472/rx-fire-liability-report-final_may-update.pdf> [https://perma.cc/QJ62-DPD5].
[129] J.M. Varner, J.K, Hiers, S.B. Wheeler, et al. "Increasing Pace and Scale of Prescribed Fire via Catastrophe Funds for Liability Relief" (2021) 4 Fire. DOI: <https://doi.org/10.3390/fire4040077>.

II. Training and Certification

British Columbia lacks an accessible, standardized training and certification program for those who wish to train in prescribed and cultural burning. This presents a major barrier to implementing the scale of prescribed burning needed.

Internal to government, BC Wildfire Service (BCWS) maintains the documentation of training and certification levels for BC Government staff. BCWS has a number of training requirements used to qualify staff as burn bosses. (Indeed, the training matrix used by BCWS can also be used to assess those with equivalent training or skills.)[130] **However, this BCWS training is limited to BC Government staff, and they do not currently have the capacity to train the number of burn bosses needed to scale up prescribed fire. Similarly, BCWS does not certify industry staff or contractors for prescribed fire skills.**[131] The responsibility to evaluate skill level and experience falls upon industry to make individual subjective judgments that their private burn bosses meet qualifications equivalent to burn bosses in BCWS.[132] Ultimately, government just requires that burn plans be signed by a designated registered professional forester, registered forestry technologist, or professional agrologist – people who may not be trained in prescribed fire skills at all.[133]

As a result, training, and certification for prescribed burning in British Columbia is inaccessible to the general public. If we hope to see an increase in prescribed burning to combat mega-fires, there must be a way for those who wish to undertake prescribed and cultural burning to access the appropriate training and certification. The expansion of training and certification must be implemented in tandem with relaxed liability rules. We must ensure that burn bosses exempted from liability are skilled and competent – because inappropriately trained burn bosses would erode public confidence and place at risk the entire project of expanding prescribed and cultural burning.

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[130] "Prescribed Fire Burn Boss Training & Certification" (12 October 2012), online (pdf): *BC Wildfire* <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prescribed-burning/bcws_prescribed_fire_burn_boss_certification_matrix_final.pdf> [https://perma.cc/MW3Q-4A6D].

[131] Policy 9.5: Prescribed Fire and Resource Management Open Fire" (1 April 2018) at 2, online (pdf): BC Wildfire <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prescribed-burning/policy_95_prescribed_fire_and_resource_management_open_fire.pdf> [https://perma.cc/2ZYA-AYML].

[132] See the discussion below of sign-off requirements contained in Policy 9.5. Also see: "Policy 9.5: Prescribed Fire and Resource Management Open Fire" (1 April 2018) at 2, online: BC Wildfire <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prescribed-burning/policy_95_prescribed_fire_and_resource_management_open_fire.pdf> [https://perma.cc/2ZYA-AYML].

[133] Prescribed Fire Burn Plan Signature Page (June 2018), online (pdf): <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prescribed-burning/appendix_1a_-_burn_plan_signature_sheet_fillable.pdf> [https://perma.cc/XV66-GNQP].

RECOMMENDATION 4: DEVELOP ACCESSIBLE AND STANDARDIZED TRAINING TO TRAIN MORE BURN BOSSES

Developing an accessible and standardized training program is essential to expanding the use of prescribed and cultural burns in BC. While BCWS has training standards set up for training new government burn bosses, that single organization will not have the capacity to train the number of people needed for a comprehensive prescribed fire program.

The issue of training has been addressed in jurisdictions such as the United States. The National Wildfire Coordinating Group (NWCG) is a US federal body that establishes national standards for wildland fire operations, including through developing qualifications requirements and training standards that enable the implementation of national standards. Multiple governmental agencies are members of the NWCG, forming common practices that allow for interagency partnerships and standards developed by wildfire experts.[134] The national standards developed by the NWCG include the training of burn bosses and other wildfire professionals.

The guidelines set by the NWCG form a benchmark for training. They provide the training base and minimum standards that instructors and trainees must adhere to. However, they also work with instructors and allow excess training as required to meet local needs.[135] To maintain the integrity of the decentralized process, instructors must satisfy their local agency that they meet instructor qualification standards outlined by the *NWCG Standards for Course Delivery*.[136] Individual states use NWCG standards in developing their own burn boss curriculum, but they may also require additional training to be certified at a state level. For example, the burn boss curriculum by California's CAL FIRE complies with the minimum national standards for NWCG burn bosses – but it also includes additional training courses and qualifications.[137]

NWCG provides some guidance for the implementation of courses. In addition, the base training for instructors is easily accessible and can be accessed online through the NWCG training catalogue.[138]

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[134] National Wildfire Coordinating Group, online: *NWCG.gov* <https://www.nwcg.gov/> [https://perma.cc/A4BY-KEKT].
[135] National Wildfire Coordinating Group, "NWCG Standards For Course Delivery, PMS 901-1" (27 September 2022), online: *NWCG.gov* <https://www.nwcg.gov/publications/pms901-1> [https://perma.cc/X9X6-UG5W].
[136] National Wildfire Coordinating Group, "NWCG Standards For Course Delivery, PMS 901-1" (27 September 2022), online: *NWCG.gov* <https://www.nwcg.gov/publications/pms901-1> [https://perma.cc/X9X6-UG5W].
[137] Chris Fowley & Mark Bisbee, "State Certified Prescribed Fire Burn Boss Curriculum" (20 February, 2020), online (pdf): *Office of the State Fire Marshal* <https://osfm.fire.ca.gov/media/10683/state-certified-prescribed-fire-burn-boss-curriculum.pdf> [https://perma.cc/M8QQ-6YVC].
[138] National Wildfire Coordinating Group, "NWCG Standards For Course Delivery, PMS 901-1" (27 September 2022), online: *NWCG.gov* <https://www.nwcg.gov/publications/pms901-1> [https://perma.cc/X9X6-UG5W].

The key part of NWCG training is the completion of a position task book (PTB). PTBs are designed for the evaluation of individual performance and/or a base for skills-based training.[139] They provide different tasks a trainee must complete to satisfy the standards of certification for the position. For a trainee to complete a training task book, several individuals may be involved including: a coach to provide instruction, a training specialist to initiate and document a PTB, an evaluator to observe the tasks, and a final evaluator trained in the equivalent position (with some individuals fulfilling multiple roles).[140] The key takeaway of this model is that anyone can train or evaluate a trainee *if they have the relevant qualifications*; they do not necessarily need to belong to a government agency. This allows for expanded capacity to train burn bosses, whereas a centralized model like BC's may be limited to the number of government instructors, funding, or other limitations.

NWCG training follows a ladder approach – to be qualified as a burn boss, you must be qualified in the prerequisite positions.[141] However, NWCG also allows for alternative pathways to qualification through either Recognition of Prior Learning (RPL), endorsement from other national organizations, or courses for individuals with prior qualifications in structural firefighting.[142] (The RPL process will be explored further in Recommendation 6 below.)

It is important to note that BCWS already operates a decentralized training delivery model similar to that of the NWCG for *basic wildfire suppression*. BCWS allows several of their training courses for Wildfire Training to be delivered by non-government personnel. The training material is copyrighted by BCWS and is provided to non-governmental bodies when they have signed a contract with BCWS.[143] Instructors interested in using BCWS material must send a request and resume outlining "the training provider's background and experience in instruction and fire suppression specific training, as well as any experience in operational fire control."[144] If approved,

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[139] National Wildfire Coordinating Group, "NWCG Standards for Wildland Fire Position Qualifications, PMS 310-1" (26 April 2022), online: *NWCG.gov* <https://www.nwcg.gov/publications/310-1> [https://perma.cc/X5FX-CLEX].

[140] National Wildfire Coordinating Group, "NWCG Standards for Wildland Fire Position Qualifications, PMS 310-1" (October 2018) at 8-13, online (pdf): *NWCG.gov* <https://www.nwcg.gov/sites/default/files/publications/historical/hist-pms310-1-2018.pdf> [https://perma.cc/C63R-NLVX].

[141] For example, to qualify as a Type 2 Prescribed Fire Burn Boss, you must first show satisfactory performance as a Single Resource Firing Boss (FIRB) and as a Type 4 Incident Commander Type 4 (ICT4), along with completing the requisite training and PTB to become a Type 2 Prescribed Fire Burn Boss. National Wildfire Coordinating Group, "Prescribed Fire Burn Boss Type 2: Position Qualification Requirements" (18 January 2022), online: *NWCG.gov* <https://www.nwcg.gov/positions/rxb2/position-qualification-requirements> [https://perma.cc/5D8A-AG7L].

[142] National Wildfire Coordinating Group, "NWCG Standards for Recognition of Prior Learning (RPL)" (January 2022), online (pdf): *NWCG.gov* <https://www.nwcg.gov/sites/default/files/publications/pms309.pdf> [https://perma.cc/ZJM3-FHXJ].

[143] "Information on Wildfire Training," online: *Gov.bc.ca* <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/employment-and-contracts/wildfire-training> [https://perma.cc/NNX5-NNY4].

[144] "Information on Wildfire Training," online: *Gov.bc.ca* <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/employment-and-contracts/wildfire-training> [https://perma.cc/NNX5-NNY4].

individual instructors receive an endorsement letter from BCWS which allows them to deliver courses.[145]

Recommendation: Develop accessible and standardized burn boss training, including standards for non-governmental instructor lead delivery and evaluation.

- To expand training delivery, the training should be easily accessible to instructors who wish to lead courses. Certain minimum qualifications standards should be developed for instructors and evaluators. This may be satisfied by expanding BCWS' current delivery model for basic fire suppression training.
- Training—especially skills-based training—should be developed in collaboration with BCWS professionals, experts in prescribed fire, and other agencies and stakeholders, such as forestry and First Nations. This may involve an adoption or modification of BCWS current training matrix for burn bosses.
- Consideration should be given to local concerns and differences in prescribed fire landscape in British Columbia. The training model developed should form a base for prescribed fire training. However, instructors may opt for additional training based on local landscape or cultural fire practices. BCWS and local organizations may need to collaborate on training that meets local needs.
- A similar model to the Position Task Book (PTB) model should be adopted, allowing for current non-government burn bosses to perform and evaluate skills-based training for prescribed fire trainees. This would allow for a decentralized network of trainers who can rapidly increase the training of more prescribed and cultural burners.
- Provision should be made for appropriate recognition of prior learning (See: Recommendation 6 below).

RECOMMENDATION 5: CREATE A CERTIFYING BODY FOR BURN BOSSES

BCWS maintains the documentation of training and certification for government staff. However, they do not certify industry staff or contractors. The responsibility of ensuring staff or contractors meet equivalent qualifications rests on the employer – in a system where there is no guarantee that a burn plan will actually be monitored by a qualified and experienced burn boss.

The current burn plan approval system – which just requires that a registered professional forester, registered forestry technologist or a professional agrologist "sign off" on a burn plan – is flawed.[146] The problem is that many of those professionals have no particular expertise in

[145] "Information on Wildfire Training," online: *Gov.bc.ca* <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/employment-and-contracts/wildfire-training> [https://perma.cc/NNX5-NNY4].

[146] In general, prescribed burns require the submission and approval of a "burn plan," a document outlining the reasoning and plan for the burn. The burn plan must be signed by a registered professional forester, registered forestry technologist, or professional agrologist. See: Prescribed Fire Burn Plan Signature Page (June 2018), online (pdf):

conducting prescribed burns. The current "sign-off" requirement is not only an extension of a much-criticized BC "professional reliance" system.[147] Worse, under the current regime there is no guarantee that the sign-off professional that evaluates and signs burn plans actually has expertise in prescribed fire.

British Columbia requires that people are educated and tested on specific driving skills before they are licensed to drive a car. The same principle should apply to people who plan and set prescribed fires. They should be specifically trained and licensed in burning practices.

The flawed current burn plan sign-off requirement is incompatible with reducing civil liability for prescribed burners. Indeed, US states that have adopted a relaxed "gross negligence" standard for damage caused by prescribed burns simultaneously *require* that burners be trained and certified by the responsible state agency and/or have an equivalent certification.[148] Such certification requirements help increase public confidence and political viability for their Prescribed Fire laws. Such requirements inherently reduce risk, ensuring that prescribed fires are undertaken by specialists who have in-depth knowledge in how to control a prescribed burn and suppress escapes. **Proper certification of burners is essential to ensure that prescribed fire is low risk – and to maintain the credibility of an expanded prescribed burning program.**

In the US, while anyone can train and evaluate prescribed burn trainees under the NWCG's federal training and certification system, *certification* can only be undertaken by the home unit or agency.[149] Certification is based upon the trainee's demonstrated competencies, the *Position Task Book*, and the final evaluator's verification. However, home units and agencies[150] have the final say in certifying an individual.[151] It is important to note that in states requiring certification in order to

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<https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prescribed-burning/appendix_1a_-_burn_plan_signature_sheet_fillable.pdf> [https://perma.cc/XV66-GNQP].

[147] This system has allowed government responsibility to be outsourced wholesale to independent contractors and industry, through registered professional foresters registered forest technologists, professional agrologists and other professionals. Mark Haddock, "The Final Report of the Review of Professional Reliance in Natural Resource Decision-Making" (May 18, 2018), online (pdf): <https://www2.gov.bc.ca/assets/gov/environment/natural-resource-policy-legislation/professional-reliance/professional_reliance_review_final_report.pdf> [https://perma.cc/937N-S37F]; and Sewerage System Regulation Improvement Coalition "Reforming the Regulation of BC's Sewerage Systems: An Urgent Need to Protect Public Health" (March 2009), online (pdf): <https://elc.uvic.ca/wordpress/wp-content/uploads/2014/08/SSR-Reform-Submission-Mar4.09-FINAL.pdf> [https://perma.cc/2N4F-9KLZ]. There are a multitude of issues with a professional reliance model including conflict of interest: "[i]ndustry is responsible for hiring qualified professionals, which also means they can shop around for a biologist, engineer, forester or other professional that will tell them what they want to hear.": Devon Page, "What you need to know about the rule changes that could overhaul B.C.'s environmental laws" (20 July 2018), online: *Ecojustice* <https://ecojustice.ca/professional-reliance-faq/> [https://perma.cc/6YRN-BJ87]. The Final Report of the Review of Professional Reliance in Natural Resource Decision-Making found that the current model of professional reliance—like that used for burn bosses—does not work in public or environmental interest. [Devon Page, *op. cit.* and Mark Haddock, *op. cit*].

[148] See Recommendation 1 for more information.

[149] National Wildfire Coordinating Group, "NWCG Standards For Course Delivery, PMS 901-1" (2022), online: *NWCG.gov* <https://www.nwcg.gov/publications/pms901-1> [https://perma.cc/X9X6-UG5W].

[150] Sponsored by the NWCG or who meet the conditions of the NWCG.

[151] National Wildfire Coordinating Group, "NWCG Standards For Course Delivery, PMS 901-1," (2022), online: *NWCG.gov* <https://www.nwcg.gov/publications/pms901-1> [https://perma.cc/X9X6-UG5W].

qualify for reduced "gross negligence" liability, an individual may be required to obtain certification *from the state fire service* in order to enjoy protection from reduced liability.[152]

Recommendation: Establish a certifying body to evaluate and certify burn bosses in British Columbia.

- The certifying body should either be centralized within BCWS or an associated governmental ministry.
- Establishing a certifying body would require consultation with other organizations, such as the NWCG, and prescribed fire professionals to develop best practices for evaluation.
- When evaluating candidates for certification, appropriate consideration should be given to those with qualifications and prior certifications from other jurisdictions. Appropriate consideration should also be given to the experience and knowledge of cultural fire practitioners.
- A publicly accessible database of certified prescribed fire burn bosses should be established to encourage employment of experienced burn bosses.

RECOMMENDATION 6: PROVIDE OPPORTUNITIES AND PATHWAYS FOR CULTURAL FIRE PRACTITIONERS TO OBTAIN TRAINING AND BC CERTIFICATION

British Columbia's *Declaration on The Rights of Indigenous Peoples Act* Action Plan calls upon the Ministry of Forests and Emergency Management BC to "[i]ntegrate traditional practices and cultural uses of fire into wildfire prevention and land management practices and support the reintroduction of strategized burning."[153] This Action Plan goal is perfectly consistent with the need to dramatically increase prescribed burning. An expansion of prescribed burning will require an increase in cultural burning.

Cultural fire remains a key forest management tool amongst Indigenous peoples. Knowledge holders and practitioners should play a key role in combatting the increase in mega-fires – and in implementing forest stewardship and management strategies that include cultural burning. Encouraging cultural fire has the potential to increase inter-generational knowledge transfer, provide employment opportunities for Indigenous communities, and improve the health and

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[152] *Florida Statutes* 2022 §590.125(3)(b)(1)-(7). However, NWCG courses are recognized as training courses in Florida: "Certified Prescribed Burn Manager - Approved Training Courses," online (pdf): *FDACS.gov* <https://www.fdacs.gov/content/download/7676/file/CBMrequired_ed.pdf> [https://perma.cc/86EG-S3N3]; National Wildfire Coordinating Group, "Prescribed Fire Burn Boss Type 2: Position Qualification Requirements"(18 January 2022), online: *NWCG.gov* <https://www.nwcg.gov/positions/rxb2/position-qualification-requirements> [https://perma.cc/5D8A-AG7L].

[153] "*Declaration on The Rights of Indigenous Peoples Act* Action Plan" (2022) at 15, online (pdf): <https://www2.gov.bc.ca/assets/gov/government/ministries-organizations/ministries/indigenous-relations-reconciliation/declaration_act_action_plan.pdf> [https://perma.cc/JFP5-GTG3].

wellbeing of both ecosystems and people.[154] Replacing misguided colonial fire management practices with revived traditional ecological knowledge will be ecologically and socially salutary.

It would be a serious error to exclude cultural burning from legal reform of the current prescribed burning regime. Not only would it exclude Indigenous peoples' implementation of their rights, title, and governance regarding forest management, but the future comprehensive prescribed burning program would lose out on learning from oral histories and practices that can bring valuable knowledge and guidance to the fight against mega-fires. This can be adeptly addressed through appropriate training and certification – which identifies a pathway through which Indigenous peoples may teach, learn, and practice cultural burning.

As explored in Recommendation 4, training is currently inaccessible for members of the public who wish to be trained in prescribed burning, and by default, this includes cultural fire practitioners. The implementation of Recommendation 4 must include pathways for cultural fire practitioners to acquire training and certification not only in prescribed fire, but also in cultural burning relevant to their nation or territory.

We can learn from Australia. Cultural fire in Australia has become a key part of Indigenous rangers programs. Similar to Canada, cultural fire was a key part of Australian Indigenous land management before colonization. Indigenous land management practices in Australia have been incredibly effective at preserving biodiversity, with areas managed by Aboriginal peoples being least affected by wildfires.[155] For example, the Banbai Rangers—rangers working for the Banbai Aboriginal Nation, who manage the Wattleridge Indigenous Protected Area in New South Wales—have found that the reintroduction of cultural fire has improved habitats and food sources for animal species important to the Banbai Nation.[156]

The success of cultural and prescribed burning in Australia is in-part due to strong interagency partnerships between multiple governmental agencies, parks and wildlife services, local governments, private property orders, non-governmental Aboriginal organizations, and Aboriginal communities. An example of these strong interagency partnerships is Western Australia's Aboriginal Ranger Program, which empowers "[…] Aboriginal people to learn and share knowledge about cultural fire management practices and participate in contemporary prescribed burning."[157]

The Western Australia state government continues to work with Aboriginal communities and land councils to accredit cultural burning programs and facilitate training and employment opportunities for Aboriginal cultural fire practitioners. Toni Buti, the Minister of Aboriginal Affairs

[154] Corbin Greening, Lauren Mar, Ruben Tillman, and Calvin Sandborn, "The Case for a Guardian Network Initiative" *Environmental Law Centre* (June 2020) at 59, online: <https://elc.uvic.ca/publications/guardian-network-initiative/> [https://perma.cc/3DPG-WBAN].
[155] Corbin Greening, Lauren Mar, Ruben Tillman, and Calvin Sandborn, "The Case for a Guardian Network Initiative" *Environmental Law Centre* (June 2020) at 97, online: <https://elc.uvic.ca/publications/guardian-network-initiative/> [https://perma.cc/3DPG-WBAN].
[156] Corbin Greening, Lauren Mar, Ruben Tillman, and Calvin Sandborn, "The Case for a Guardian Network Initiative" *Environmental Law Centre* (June 2020) at 100, online: <https://elc.uvic.ca/publications/guardian-network-initiative/> [https://perma.cc/3DPG-WBAN].
[157] Cultural and contemporary burning in Western Australia

in Western Australia, has identified training and accreditation as the key part of the continued success of cultural fire in Australia:

> *Getting prescribed burning right requires clear and set objectives, the right conditions and most importantly trained and experienced land managers and fire practitioners […] Training and accreditation is the key to ensure cultural burning and traditional owner groups have the necessary systems in place to minimise future reputational risk resulting from any escaped prescribed burns.*[158]

One way to meet the challenges posed by the current absence of training and accreditation programs for cultural fire practitioners in British Columbia is through Indigenous-led courses and programs that focus on cultural fire. Current training in wildfire management often leaves out Indigenous ecological knowledge, practices, and oral histories.[159] In order to respond to this, First Nations have undertaken their own cultural burning and fire management programs. One example of this is the Indigenous Fire Management Program developed by the Yunesit'in Government and Xeni Gwet'in in partnership with the Gathering Voices Society.

The pilot project took place on Tŝilhqot'in Title lands and Dasiqox Tribal Park. It was set up to train and employ community members in cultural fire. Ten community members were trained under the guidance of Victor Steffenson, an Indigenous fire expert from Australia, who trained them in Indigenous fire methodologies from Australia – and assisted them in reconnecting with local landscapes, seasonal movements, and ecological indictors through experiential and practice-based approaches to cultural fire. This enabled the Yunesit'in and Xeni Gwet'in to conduct pilot burns and facilitate fire management through cultural burns on title lands.[160]

A number of other Indigenous prescribed burning programs have also been undertaken on various scales, including initiatives by the Okanagan Nation Alliance, the ʔaq̓am community, and the Fort Nelson First Nation.[161]

An important way that a colonial government accreditation process can recognize experience in cultural burning is demonstrated in the Recognition of Prior Learning (RPL) process used in the US. RPL is a competency-based process endorsed by the US National Wildfire Coordinating Group to evaluate individual competencies in wildfire – and provide an alternative pathway to credentialing fire practitioners with prior experience. As stated by the NWCG:

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[158] Private correspondence from Toni Buti to Calvin Sandborn (27 November 2022).

[159] Kira M. Hoffman, *et al*., "The right to burn: barriers and opportunities for Indigenous-led fire stewardship in Canada" (2022) FACETS 7 464 at 472. DOI: <https://doi.org/10.1139/facets-2021-0062>.

[160] Unfortunately, as of 2022 the expansion of this program was stalled. See: Kira M. Hoffman, et al., "The right to burn: barriers and opportunities for Indigenous-led fire stewardship in Canada" (2022) FACETS 7 464 at 473. DOI: <https://doi.org/10.1139/facets-2021-0062>.

[161] Corbin Greening, Lauren Mar, Ruben Tillman, and Calvin Sandborn, "The Case for a Guardian Network Initiative" *Environmental Law Centre* (June 2020) at 100-103, online: <https://elc.uvic.ca/publications/guardian-network-initiative/> [https://perma.cc/3DPG-WBAN].

> *[i]t is widely recognized that a standardized NWCG RPL process will reduce redundant training, support efforts to increase speed and time to competency, and support efforts to boost national resource surge capacity.*[162]

In the case of prescribed fire, RPL focuses not on how an individual learned to practice prescribed fire, but whether they are able to perform the job adequately and according to the national accreditation standard.[163] Candidates must follow the RPL process established by their home agency, which includes submitting a portfolio that documents their knowledge and skills, appearing in front of an evaluator, and providing references speaking to their experience.[164] Implementing a certification model that uses RPL would allow cultural fire practitioners who have previous experience with cultural fire or knowledge of fire behavior in the area to advance quickly in their training – by satisfying certain course requirements through experience or achieving certification through RPL alone.

Implementing and encouraging *cultural burning* as a complementary practice to *prescribed fire* will require significant consultation and strong interagency partnerships with Indigenous nations, BCWS, and both the federal and provincial government. It may require the development of alternative training and certification pathways, or different requirements for liability or burn permits[165] (See Section 1, above). However, providing space for cultural fire to thrive will contribute to a comprehensive, thriving fire culture and encourage healthy forests.

Some of the infrastructure needed may already be in place: Indigenous Guardian programs and Indigenous nations currently implement a variety of comprehensive training programs for other land and environmental management activities.[166] If the appropriate instructors are available—either fire practitioners inside the nation or non-Indigenous burn bosses in partnership with traditional knowledge keepers and fire practitioners—Guardian programs may provide the appropriate venue to provide training opportunities. The key thing is that any training program developed for prescribed fire must integrate cultural fire and make cultural fire complementary to

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[162] National Wildfire Coordinating Group, "NWCG Standards for Recognition of Prior Learning (RPL)" (January 2022), online (pdf): *NWCG.gov* <https://www.nwcg.gov/sites/default/files/publications/pms309.pdf> [https://perma.cc/ZJM3-FHXJ].

[163] National Wildfire Coordinating Group, "NWCG Standards for Recognition of Prior Learning (RPL)" (January 2022) at 2, online (pdf): *NWCG.gov* <https://www.nwcg.gov/sites/default/files/publications/pms309.pdf> [https://perma.cc/ZJM3-FHXJ].

[164] National Wildfire Coordinating Group, "NWCG Standards for Recognition of Prior Learning (RPL)" (January 2022) at 4-6, online (pdf): *NWCG.gov* <https://www.nwcg.gov/sites/default/files/publications/pms309.pdf> [https://perma.cc/ZJM3-FHXJ].

[165] Hoffman et al. suggest a cultural burning approval process managed by Indigenous peoples. It may mirror standard burning permits; however, permits would also integrate Indigenous ecological knowledge and using Indigenous fire science. They may also be aimed at achieving cultural objectives beyond preventing wildfires. An alternative measure could also involve widening the burn period for cultural burning to better follow seasonal patterns observed by cultural fire practitioners. Kira M. Hoffman, *et al*., "The right to burn: barriers and opportunities for Indigenous-led fire stewardship in Canada" (2022) FACETS 7 464 at 472. DOI: <https://doi.org/10.1139/facets-2021-0062>.

[166] Corbin Greening *et al*, "The Case for a Guardian Network Initiative" *Environmental Law Centre* (June 2020) at 59, online: <https://elc.uvic.ca/publications/guardian-network-initiative/> [https://perma.cc/3DPG-WBAN].

the prescribed fire training program. Additionally, training materials must be accessible to Indigenous cultural fire practitioners and Guardians. Clearly, British Columbia should work in partnership with nations and other educational institutions to implement such programs.

Recommendation: Encourage the use of cultural burning in British Columbia by providing accessible training and certification opportunities for Indigenous cultural fire practitioners and land management organizations.

- Further to Recommendation 4 above, training should be made accessible to Indigenous organizations and cultural fire practitioners.
    - Training programs should provide room for the addition of cultural fire practices in tandem with the base curriculum. Alternatively, Nations may wish to work with the government to develop training programs that further integrate cultural fire and meet the requirements of the base training.
    - BCWS or the BC Government should work in partnership with Indigenous communities and Nations to support the implementation of training programs focusing on – or delivered by – cultural fire practitioners. Various Indigenous Guardian programs are strong contenders to provide training for cultural fire practitioners, as is the First Nations Emergency Services Society, which presently provides firefighter training to First Nations individuals in BC.[167]
- Further to Recommendation 5 above, alternative pathways to certification must be developed to account for prior Indigenous ecological knowledge and practices. This would allow for practitioners to "complete" courses through an evaluation of their skill set or achieve accreditation through competency-based evaluations.
    - If alternative pathways are developed, evaluators must not devalue cultural fire and ecological knowledge. Multiple evaluators may be needed—such as an expert in prescribed burns and a knowledge keeper—to ensure fairness when evaluating the competency of cultural fire practitioners.
    - Some Indigenous cultural fire practitioners may be reluctant to engage in a provincial certification program, refusing "validation" or "certification" of colonial institutions to be able to carry out their traditional responsibilities."[168] This may be addressed in part by adopting a certification mechanism that encourages Nations to certify their own cultural burners (see: Recommendation 5) or by excluding some cultural burners from certain requirements in order to be protected by reduced liability, similar to California's SB-332 (see: Recommendation 2).

[167] First Nations Emergency Services Society, "Fire Services" (2022), online: <https://www.fness.bc.ca/core-programs/fire-services> [https://perma.cc/XTM2-VERY].
[168] Kira M. Hoffman, et al., "The right to burn: barriers and opportunities for Indigenous-led fire stewardship in Canada" (2022) FACETS 7 464 at 472. DOI: <https://doi.org/10.1139/facets-2021-0062>.

Image 5: Underburning an open ponderosa pine forest. The tactic of "strip" ignition is used to control the intensity of the fire and help maintain a live overstory of trees. (Photo courtesy of Robert W. Gray)

3. CONCLUSION

Cultural burning has been an essential part of British Columbia's ecosystems since time immemorial, and is one of many Indigenous land management practices proven to increase biodiversity globally. Modern experts in wildland fire have now identified cultural and prescribed fire as essential tools to combat the ever-increasing scale of mega-fires that ravage the province each year. Legal reform around the issues of liability, training, and certification for prescribed fire practitioners must be addressed in order to effectively increase the number of prescribed and cultural fires. Such an increase in prescribed and cultural burning is needed to reduce mega-fires – and encourage healthy, resilient forests.

Through cross-jurisdictional inquiries into prescribed and cultural fire programs in the United States and Australia, the Environmental Law Centre has provided a number of recommendations that will assist in tackling significant barriers to prescribed fire. These recommendations include:

1. Adopt a statutory gross negligence standard for prescribed and cultural burns in BC.
2. Adopt a statutory gross negligence standard for fire suppression costs related to prescribed and cultural burns in BC.

3. Establish a prescribed fire claims fund to cover eligible claims for losses and damages associated with prescribed and cultural burning.
4. Develop accessible and standardized burn boss training, including standards for non-governmental instructor lead delivery and evaluation.
5. Establish a certifying body to evaluate and certify burn bosses in British Columbia.
6. Encourage the use of cultural burning in British Columbia – by providing accessible training and certification opportunities for Indigenous cultural fire practitioners and land management organizations.