


UN DECADE ON ECOSYSTEM RESTORATION

STRATEGIC ISSUES ARTICLE

# Walking on two legs: a pathway of Indigenous restoration and reconciliation in fire-adapted landscapes

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Worldwide, Indigenous peoples are leading the revitalization of their/our cultures through the restoration of ecosystems in which they are embedded, including in response to increasing “megafires.” Concurrently, growing Indigenous-led movements are calling for governments to implement Indigenous rights, titles and treaties, and many settler-colonial governments are committing to reconciliation with Indigenous peoples and to implementing the United Nations Declaration on the Rights of Indigenous Peoples. Yet, despite growing recognition that just and effective conservation is only possible through partnerships with, or led by, Indigenous peoples, decolonizing approaches to restoration have received insufficient attention. However, reconciliation will be incomplete without Indigenous-led restoration of Indigenous lands, knowledges, and cultures. In this article, we introduce the concept of “walking on two legs” to guide restoration scientists and practitioners in advancing the interconnected processes of Indigenous-led restoration and reconciliation in Indigenous territories. As an action-oriented framework articulated by Secwépemc Elder Ronald E. Ignace, “walking on two legs” seeks to bring Indigenous knowledges into balance with western scientific knowledge in service of upholding an Indigenous stewardship ethic that is embedded in Indigenous ways of relating to land and embodies principles of respect, reciprocity, and responsibility. Grounding this discussion in the context of fire-adapted ecosystems of western Canada and unceded and traditional Secwépemc territory, Secwepemcúlecw, we argue that walking on two legs, along with principles of reconciliation, offers a pathway to uphold respectful relationships with Indigenous peoples, knowledges, and territories through Indigenous-led restoration.

**Key words:** ecocultural restoration, Indigenous fire stewardship, Indigenous knowledge, Indigenous restoration, reconciliation, wildfire

## Implications for Practice

- The United Nations (UN) Decade on Ecosystem Restoration presents a timely opportunity to strengthen the critical and active roles of Indigenous peoples in ecological restoration, particularly in fire-adapted landscapes shaped by Indigenous fire stewardship.
- Indigenous-led restoration of Indigenous lands and land-based knowledges and stewardship systems is a critical part of reconciliation with Indigenous peoples.
- The Indigenous framework of “walking on two legs” can guide restoration scientists and practitioners in upholding reciprocal and respectful relationships with Indigenous peoples and knowledges while advancing Indigenous-led restoration and reconciliation in Indigenous territories.
- Together, “walking on two legs” and reconciliation offer guiding principles for restoration through elevating Indigenous rights and stewardship systems in their/our homelands.

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## Prologue

*We have an important word x7ensqt. And that word means that if you don't respect the land, look after the land properly, the land will turn on you. And we see that today, that people are not honouring the land, and respecting the land. So we're seeing great fires burning ... the land is turning on us. Kukwpi7 Stsmél'qen (Ronald E. Ignace)*

In the summer of 2017, megafires burned a record-breaking 1.2 million hectares in British Columbia (BC), Canada, driven by climate change combined with the legacies of a century of fire suppression and forest management. The Elephant Hill megafire was among the largest, burning 192,000 ha in the heartland of the Indigenous Secwépemc Nation. This fire caused widespread evacuations and ongoing impacts to ecosystems and human wellbeing. In 2021, Secwépemc communities and territories were once again devastated by widespread wildfires. While Secwépemc people witnessed the devastation to their/our territories, Indigenous communities worldwide were already starkly aware of how colonial forest management, informed by western state and scientific knowledge systems that are deeply connected to the colonization of lands and minds, had failed. With accelerating impacts of climate change altering fire regimes and compounding the ongoing impacts of colonization on Indigenous communities, there is a critical need to restore relationships of respect and reciprocity with the land through the interconnected processes of Indigenous-led restoration and reconciliation.

## Drivers of Change in the United Nations Decade on Ecosystem Restoration

Worldwide, Indigenous peoples are leading the revitalization of their/our cultures through the restoration of ecosystems in which they are embedded, including in response to megafires like Elephant Hill. Simultaneously, international policy communities are increasingly promoting restoration alongside conservation to achieve multiple ecological and social objectives (Aronson & Alexander 2013), reflected in the declaration of 2021–2030 as the United Nations Decade on Ecosystem Restoration (UN Decade). While there is growing recognition that just and effective conservation is only possible through partnerships with, or led by, Indigenous peoples (Artelle et al. 2019), decolonizing approaches to restoration have received insufficient attention (Reyes-García et al. 2020). The UN Decade presents a timely opportunity to strengthen the critical and active roles of Indigenous peoples in ecological restoration to advance the theory and practice of the field and restore biodiversity and human wellbeing throughout Indigenous territories.

The UN Decade also comes at a time when growing Indigenous-led movements are calling for governments to uphold Indigenous rights, titles, and treaties (Wong et al. 2020; UN 2021). Concurrently, many settler-colonial governments are committing to reconciliation with Indigenous peoples and to implementing the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). UNDRIP recognizes the urgent need to respect and

promote the rights of Indigenous peoples, including rights to self-determination (Article 3); maintain traditional knowledge and cultural expressions (31.1); and determine and develop priorities and strategies for the use of their lands or territories (32.1) including, we argue, restoration.

The Canadian Truth and Reconciliation Commission (TRC) identifies UNDRIP as the framework for reconciliation across all levels and sectors of Canadian society. The TRC outlines key principles for reconciliation including respecting Indigenous rights, taking action to address ongoing legacies of colonialism, and supporting cultural revitalization (TRC 2015). However, while reconciliation has been broadly described as an ongoing process of “restoring and rebuilding relationships” (Short 2005, p 268) through truth-telling and restorative justice, Indigenous conceptualizations of reconciliation extend beyond relationships with humans to include reconciliation with the natural world (Elder Reg Crowshoe, TRC 2015; Finegan 2018; McGregor 2018). Beyond reconciliation, decolonization “specifically requires the repatriation of Indigenous land and life” (Tuck & Yang 2012, p 21). Decolonizing restoration requires creating space within institutions and processes for Indigenous peoples, communities, and governments to “do things their own way” (Fox et al. 2017, p 531), and explicitly addressing the continuation of governments and industries asserting control over Indigenous lands.

As one of myriad pathways of reconciliation, restoration carries the potential to address the impacts of colonial, state-driven conservation that frequently and often violently dispossessed Indigenous peoples from their/our traditional lands (Finegan 2018; Artelle et al. 2019). We build on the recent calls to action for natural scientists (Wong et al. 2020) by advocating that restoration scientists and practitioners must better understand the socio-cultural and political contexts in which restoration occurs, and that restoration and reconciliation must be guided by the Indigenous peoples in whose territories these processes are taking place. However, as Indigenous and non-Indigenous scholars and practitioners, we acknowledge that many non-Indigenous, western-trained scientists are uncertain as to their individual and collective roles in advancing reconciliation, or how to respectfully engage with Indigenous communities. Here, we introduce the concept of “walking on two legs” to guide readers in upholding respectful relationships with Indigenous peoples—relationships that “are contingent upon the cessation of colonial harms ... [and] restoring Indigenous governance of our territories” (McCoy et al. 2020)—and to support Indigenous-led restoration and reconciliation.

We ground this discussion in the fire-adapted ecosystems of western Canada and draw on our experiences working with and for Secwépemc communities in ceded and traditional Secwépemc territory (Secwepemcúlcw). R.E.I. is an Elder from the Secwépemc Nation who has long advocated for the empowerment of Indigenous peoples through education and training based on Indigenous knowledge (IK) and stewardship; M.B.I. is a resident of the Skeetchestn community in the Secwépemc Nation who for decades has conducted community-based research in language revitalization and ethnoecology, based at Simon Fraser University; S.D.-H. and K.C.-G. are early career

settler scholars at the University of British Columbia (UBC) working with and for Secwépemc communities on fire histories, wildfire recovery and restoration; and L.D.D. and S.M.H. are non-Indigenous faculty at UBC leading research in forest ecology and dendrochronology, and human dimensions of conservation, respectively.

After tracing the emergence of Indigenous-centered approaches to restoration and describing the concept of walking on two legs, we illustrate its potential for bringing together diverse ways of knowing and transforming approaches to restoration research and practice. Finally, we consider how commitments to reconciliation with Indigenous peoples, and increasing occurrences of megafires, offer an opportunity to advance Indigenous-led restoration in fire-adapted landscapes.

### **Evolving Ideas in Restoration Ecology and the Emergence of Indigenous-Centered Restoration**

Restoration ecology has evolved from its earlier mechanistic approach focused on returning ecosystems to a defined historical state that theoretically existed prior to human disturbance, to restoring ecological function and processes in dynamic systems (Higgs et al. 2014; Krievins et al. 2019). However, the persistent framing of restoration as recovery of an ecosystem to a self-sustaining state (SER 2004), free from human disturbance or intervention, erases the historical and ongoing role of Indigenous stewardship practices and knowledge systems inherent to these ecosystems. This is particularly problematic in the context of restoring fire-adapted ecosystems throughout western North America, where fire scientists and land managers are advocating for restoration of fire-resilient landscapes, including restoring historical fire regimes and related ecological processes that confer ecosystem resilience (Hessburg et al. 2015). It is also increasingly acknowledged that many of these landscapes were shaped by a long history of Indigenous fire stewardship (Lake & Christianson 2019; Hoffman et al. 2021). For example, burning was a common form of vegetation management by Indigenous peoples, including the Secwépemc, across the dry forests and grasslands of BC. Fire stimulated the growth of important food and medicine plants and ungulate forage and created the “well-kept park-like” appearance noted by nineteenth-century surveyors (Turner 1999; Lepofsky et al. 2005; Peacock et al. 2016). Indigenous burning was outlawed in BC in the late 19th century, followed by more than a century of colonial fire suppression that further disrupted historical fire regimes (Heyerdahl et al. 2012; Marcoux et al. 2013). Future restoration of such fire-adapted ecosystems must therefore support Indigenous peoples in reclaiming fire and land stewardship practices and be informed by diverse knowledges of the ecological and cultural histories of place.

The growing attention in both research and policy on Indigenous fire stewardship follows decades of western scientists, policymakers, and practitioners seeking to integrate IK (including “traditional ecological knowledge” or TEK) into natural resource management. Recently, the *International Principles and Standards for the Practice of Ecological Restoration* (Gann et al. 2019) recognized the need to draw on multiple types of

knowledge, including TEK, to guide restoration. Indigenous Elders, activists, and scholars emphasize that IK is inseparably connected to and embedded within long-standing interrelationships between Indigenous peoples and ancestral landscapes and languages (Cajete 2000; Turner et al. 2000; Whyte et al. 2016). However, land and natural resource management in settler-colonial countries is still largely framed in a western scientific worldview (Bohensky & Maru 2011), with restoration projects organized around top-down, “expert” driven processes (Fox & Cundill 2018). IK is often viewed as discrete information that can “fill gaps in scientific understanding” (Popp et al. 2019, p 163) and fit within existing management institutions without ceding power to Indigenous peoples (Spak 2005). Within this power imbalance and simplified binary between “IK” and “science,” IK is often only accepted when “verified” or “validated” by western science. These extractivist approaches maintain the (perceived) dominance of western science over IK and perpetuate the linked processes of ecological and epistemological degradation (Lake et al. 2018; Vásquez-Fernández & Ahenakew pii tai poo taa 2020).

To mitigate these risks to IK and counter the western worldview that places humans outside of nature, Indigenous-centered models of restoration instead highlight the interdependencies between ecological and cultural systems and the importance of land, biodiversity, and ecosystem health for Indigenous wellbeing, identities and knowledge systems (Kimmerer 2011; Martinez 2018). Ecocultural restoration explicitly includes humans as active participants in restored landscapes through recovering “ecosystem structure, composition, processes, and function, along with traditional, time-tested, ecologically appropriate and sustainable Indigenous cultural practices that helped shape ecosystems ... in a way that ensures the survival of both Indigenous ecosystems and culture” (Martinez 2018, p 170–171). Similarly, Kimmerer (2011) describes reciprocal restoration as an approach grounded in an Indigenous worldview and associated principles of reciprocity, kincentric relationships, respect, and responsibility. Guided by the cultures and knowledges of Indigenous peoples, and led by Indigenous communities, these approaches often focus on revitalizing values such as cultural keystone species and places and traditional food systems, and encompass language and knowledge revitalization goals (Garibaldi & Turner 2004; Pilgrim et al. 2009; Tipa & Nelson 2017). Kimmerer highlights the potential of reciprocal restoration to support non-Indigenous societies in re-engaging with their responsibilities to, and participating in the wellbeing of, land. However, ensuring the ability of Indigenous peoples to exercise these stewardship roles and rights to land is critical. Just as IK and stewardship systems must be reclaimed in and by Indigenous communities, Indigenous communities need to be physically, intellectually, spiritually, and politically present throughout the restoration process, from project design through implementation (Fox et al. 2017). Restoration, therefore, must move beyond a technical or commodified practice to bridge science and culture (Higgs 2005) and form part of broader political movements of reconciliation, decolonization, and Indigenous self-determination.

## Walking on Two Legs: An Indigenous Framework to Guide Restoration and Reconciliation

Advancing reconciliation and the field of restoration ecology requires (re)building relationships of reciprocity and respect between Indigenous and non-Indigenous peoples, knowledge systems, and the land. Here, we offer an Indigenous-centered framework to guide readers in navigating this complex pathway in both research and practice, drawing on IK and western science while guided by the worldview and wisdom of Indigenous peoples.

Similar models have arisen from diverse Indigenous cultures and territories, including two-eyed seeing, *Etuaptmunk* (Bartlett et al. 2012; Reid et al. 2021) and both-ways management (Hoffmann et al. 2012). Through a Secwépemc practitioner's lens, our co-author kúkwpi7 (Chief) R.E.I. terms it walking on two legs: one leg of IK and Indigenous science and the other of western science. Like two-eyed seeing, walking on two legs is practice and action oriented, with the joint walking—guided by an Indigenous mind—compelling movement forward. This draws on Indigenous conceptualizations of IK as not a “reified noun, but ... action and the ability to act, based on relationships, on experience, living and doing on the land” (Ignace et al. 2016, p 408). The metaphor of walking implies balance between co-existing knowledges, addressing power relations that privilege western science.

While not limited to research, walking on two legs also builds on traditions of Indigenous research (Wilson 2008; Smith 2013), as well as other transformative or action-oriented paradigms that emphasize the agency of community members in driving change and often draw on transdisciplinary or mixed-methods approaches to strengthen analysis and support culturally appropriate methods (Cram & Mertens 2015). Like Indigenous research paradigms, walking on two legs is explicit in being guided by an Indigenous—in our case, a Secwépemc—worldview: a moral compass that ensures both knowledges work together in service of upholding an Indigenous land care ethic that is embedded in specific Indigenous territories, languages, and ways of relating to land and embodies principles of respect, reciprocity, and responsibility.

In describing walking on two legs below, the “we” voice employed is that of R.E.I. and M.B.I. Addressing both Indigenous and non-Indigenous readers, we do this to center Secwépemc voices and an Indigenous perspective as we outline the principles that guide us moving forward.

*As a strategy of reclaiming IK and stewardship practices, walking on two legs addresses how Indigenous practitioners and thinkers, connected to our specific ancestral territories, resume taking care of our homelands by reclaiming and reinvigorating our IK as we engage with western scientific knowledges. As we do this, we must protect the moral and ethical integrity of our own IK and be mindful that it never stands in the shadow of western knowledge(s), nor should we uncritically embrace and copy the knowledge and practices of non-Indigenous colonizers on our land. The*

*Secwépemc stsptekwll (oral tradition) of Coyote and His Hosts reminds us to not copy the ways of others lest we lose our life, our health and identity: our trickster-transformer Coyote tried to copy the behaviour of other creatures as he sought to elevate his social standing, getting scorched, burnt and nearly drowning in the process. We are admonished to carefully and cautiously view other sources of knowledge through the lens of our own IK, ensuring that they will not cause us harm. Our Elders also remind us that, after more than a century of colonial western science-based, capitalist profit-oriented exploitation of our Secwépemc homeland, it is in a state of qwempúlecw: the land, in its holistic dimension of landscape, ecology and all its living beings, has become barren due to human activity, impoverishing our wellbeing and existence. As we walk on two legs, we face the dual task of reconstructing and practicing our IK, while undoing the harm done by ongoing colonial practice and exploitation. As we do this, ethical and reciprocal western science that advances Indigenous stewardship and restoration can be our ally.*

Below, we share two stories: of Secwépemc-led restoration of cultural keystone species and of centering Indigenous perspectives in collaborative research. The first story (*Bringing back tšewéwye and qweq̓wile*) highlights the importance of Indigenous peoples actively leading the restoration of their/our territories. Beyond restoring native plants, this place-based experiment shows how revitalization of stewardship practices is intimately connected to the revitalization of IK and language; revitalization that can only occur through Indigenous peoples reclaiming stewardship of the land. The second (*Two-legged fire histories*) illustrates the process of learning to walk on two legs from a western science perspective, and the potential for transforming approaches to both research and restoration to upscale Indigenous restoration throughout Indigenous territories.

### **Bringing Back Tšewéwye and Qweq̓wile: Restoring Cultural Keystone Species at Skeetchestn**

Like other cultural landscapes in western North America, Secwepemcúlecw was shaped for generations by Indigenous fire stewardship to manage plant habitats by clearing dead plants, enhancing soil nutrients, and controlling invasive species (Peacock et al. 2016). R.E.I. remembers riding on the land with his great-grandfather Edward Eneas in the 1950s, when a western focus on timber value had led to criminalization of Indigenous burning. Defying these prohibitions, Edward Eneas stubbornly continued burning in mountain meadows and at forest edges to renew grassland habitat for ungulate forage, enhance berry patches, and keep meadows open. Elders in our community of Skeetchestn, who were interviewed over the past 10 years regarding their memories of burning and land stewardship practices, remembered that the optimal time for burning in the valley bottom is after the snow has melted, but while the soil



Figure 1. Ronald Ignace burning the hillside by their home at Skeetchestn Reserve.

is still moist, coinciding in time with the migration of sandhill cranes through the valley. This time is currently mid-March, however, over time we have observed the snowpacks in the valley decreasing; it is likely that in the past this timing would have been early April. Another period is late September to early October. During these short 2–3-week windows of time, we work with localized wind conditions in our valley: wind directions are usually from the south in the morning, but as temperatures rise during the day and provide up-drafts, the wind direction shifts to blowing north to south, thus, providing a natural fire break. Fires set before noon will move north, to be driven back by the shifting northerly wind in the afternoon, eventually dying by dusk.

After fencing our ranch to keep cattle and horses out, in about 2005, we began an experiment of annually or biennially burning meadows and a hillside on our ranch at Skeetchestn Reserve (Fig. 1). After a few seasons, we noticed how burning controlled knapweed and other invasive species. Around 2010, we saw the return of *t̓sew̓éw̓ye*, *Fritillaria pudica* (yellowbells, Fig. 2), and *qwe̓q̓wile*, *Lomatium macrocarpum* (large-fruited desert parsley). Both had previously disappeared from the hillside for decades, due to years of cattle and horse grazing and lack of burning. Both plants are cultural keystone species for the Secwépemc: yellowbells are harbingers of spring arriving, and their bulbs were valued by our ancestors as the first delicious fresh root plant to emerge after months of subsistence on stored provisions. The taproot of large-fruited desert parsley is known for its medicinal properties and was also a significant early season root plant. In his song, the Meadowlark warned Coyote not to waste his large-fruited desert parsley, singing in “meadowlarkese” but with Secwépemc words “*tucíctsemc ten qwe̓q̓wile*” (“you wasted my large-fruited desert parsley on me”). This reminds us to harvest it early in the season, since it turns bitter as the plant matures. Annual spring counts of yellowbells between 2011 and 2019 initially showed about 50 plants, steadily increasing to more than 200 and in the record year 2017 to more than 300. In 2018, following a season of not burning, yellowbells



Figure 2. Yellowbells (*Fritillaria pudica*) emerging as the snow melts in early spring at Skeetchestn.

decreased to just over 200. The fragility of the plants was seen when cattle broke into the area in early spring 2019 and all but destroyed the crop, although by 2020 about 75 plants had returned. Our community field lab demonstrates how over a 10 + year cycle, cultural keystone plant species can be successfully restored into local grasslands through the reintroduction of fire. More significantly, it shows how we continue to revitalize and adapt the knowledge and wisdom of our Elders and ancestors, and reclaim traditional stewardship roles as *yecwm̓ínmen*, through the practice of restoration. Looking forward, this will form the foundation for further collaborative research in fire histories and ecologies to promote the revitalization of Secwépemc fire stewardship: the second leg of western science guided by our Secwépemc knowledge and visions for Secwépemc-led restoration.

#### Two-Legged Fire Histories: Where Tree Rings and Indigenous Knowledge Meet

Tree-ring fire history research (dendrochronology) is one of many western science approaches used to inform restoration by

providing quantitative evidence of historical fire frequency, severity, and seasonality. Dendrochronology also aims to understand the drivers of historical fire regimes, from climate and topography to fuels and ignition sources (Daniels et al. 2017).

For almost two decades, our research team has been using dendrochronology to inform restoration and management of mixed-conifer forests adapted to frequent, low- to mixed-severity fire regimes in BC's valleys and mountains. At the Vaseux-Bighorn National Wildlife Area in southern BC, in the unceded territory of the Syilx (Okanagan) peoples, the Canadian Wildlife Service aims to restore the native bunchgrass-ponderosa pine habitats for endangered species through prescribed burning. Our intensive reconstruction of fire history at 43 sites across 400 ha revealed the historical fire regime was driven primarily by Indigenous ignitions, characterized by frequent small fires, often in spring (Pogue 2017). These results aligned with Syilx oral histories and stories of their modern firekeepers, with a frequent fire regime persisting under Syilx stewardship until the 1860s when colonialism actively decimated and displaced the local Syilx people through the smallpox epidemic, pre-emption, reserve system, and residential schools—colonial impacts that were pervasive across Canada. In the absence of Syilx fire stewardship, the forest became denser and fires were more likely to occur under warmer and drier climatic conditions, potentially shifting the fire regime toward a greater component of high-severity fire (Pogue 2017). This research—quantifying the size, seasonality, and shift in climatic influences on past fires in addition to frequency, and situating this in the context of strongly documented IKs and histories of this area—signaled a turning point in our understanding of the key role of Indigenous peoples in BC's historical fire regimes and a shift in our approach to more meaningful collaboration with Indigenous communities.

Our most recent collaborative fire history project has been ongoing since 2016 and is guided by the knowledge and needs of the *T'exelc* (Williams Lake First Nation, a Secwémpc community). This project is taking place at the *Ne SEXTSINE* (Flat Rock) block of the Williams Lake Community Forest, which is co-managed by the *T'exelc* and the City of Williams Lake. For *T'exelc* Elders, respectfully restoring ecocultural values is central to management of *Ne SEXTSINE*, as is protection from uncharacteristic high-severity fires, like those that burned surrounding forests in 2017 (Copes-Gerbitz unpublished data; Copes-Gerbitz et al. in press). Together we are centering IK systems by engaging in place-based learning while walking through the forest with *T'exelc* Elders, archeologists, community forest managers, and researchers (Fig. 3). During these forest walks, we collectively learned that the diversity of ecocultural practices of camping, fishing, berry-picking, and plant harvesting across *Ne SEXTSINE* mirrored the diversity of fire frequency and severity reconstructed from tree-rings (Fig. 4). For example, the areas that were frequently occupied by *T'exelc* people, including summer fishing campsites and winter village sites and the travel corridors between them, were more likely to have tree-ring



Figure 3. *T'exelc* Elder showing Kelsey Copes-Gerbitz pitch (resin) from a culturally modified tree at *Ne SEXTSINE*.

evidence of frequent, low-severity fires from that time. Colonial impacts from the 1860s and 1870s displaced the *T'exelc* from their traditional territory and the low-severity fires ceased (Fig. 4).



Figure 4. Cross-section of a lodgepole pine (*Pinus contorta* var. *latifolia*) from *Ne SEXTSINE* showing fire scars from fires in 1833, 1848, and 1863.

As non-Indigenous researchers, learning to walk on two legs is transforming our research approach in two key ways. First, we shifted our focus from comparing Indigenous oral histories to tree-ring fire histories at the Vaseux-Bighorn National Wildlife Area to collaborative research with the *T'exelc* that centers Indigenous ways of knowing from the outset and supports Indigenous peoples to (re)connect both physically and culturally with their territories and (hi)stories. Second, we moved away from solely analyzing quantitative metrics of fire frequency and severity (often presented as mean values such as mean fire return interval) and from filtering out potential signals of localized Indigenous burning (such as fires that only burned at a single site) that are often removed for fire-climate analyses (Roos et al. 2019). Instead, our collaborative research explicitly sought to identify these localized fires and situate these in the context of the ecocultural histories of these landscapes. These collaborative dendroprochronology studies are continuing to reveal the nuanced interconnections between Indigenous stewardship and fire in dry forest ecosystems where the contribution of Indigenous fire use is underrepresented or discounted in modern management practices. By walking on two legs, *T'exelc*-led restoration at *Ne Sextsine* and Secwépemc-led restoration throughout Secwepemcúlecw can be guided by this more holistic focus on restoring the appropriate kinds of fire associated with *T'exelc* stewardship practices and values that were disrupted by colonization and the dynamic relationships among people, fire and place.

### Advancing Restoration and Reconciliation in the UN Decade

Restoring relationships between humans and non-human nature and upholding Indigenous rights are key to the vision and strategy for the UN Decade (UN undated). Revitalizing “relationships of mutual obligation between land and people” (Burow et al. 2018, p 60) can also be part of Indigenous efforts to unsettle settler-colonial modes of relating to land as property and resource for capitalist development. However, this needs to go beyond “integrating Indigenous knowledge and traditional practices into ecosystem restoration” (UN undated, p 6) or including Indigenous communities as “stakeholders.” We argue that advancing reconciliation and upholding Indigenous rights and sovereignty that they/we have held since time immemorial is central to the science and practice of restoration, particularly in landscapes shaped by long histories of Indigenous fire stewardship. This means acknowledging and addressing the harms done to Indigenous peoples and territories through colonial practices (including fire suppression and exclusion); supporting Indigenous determination of restoration goals and governance; and creating space for Indigenous peoples to reclaim traditional stewardship roles and practices within their/our territories.

Throughout Secwepemcúlecw and many other landscapes worldwide, catastrophic wildfires are creating opportunities for Indigenous peoples to (re)assert their/our sovereignty through leading the restoration of their/our fire-affected and fire-adapted territories. As Ryan Day, then-Chief of the Secwépemc community Stuxwtéws, wrote in the immediate wake of the Elephant Hill fire:

*We see the process of rehabilitation and regeneration as an immense opportunity to learn from the errors of the past; it is an opportunity to use Indigenous TEK and the wealth of research in forest science to restore the forest ... as a source of wealth in cultural heritage, ecological diversity, and the education of young people of how to live as a member of an ecosystem ... there can be no greater opportunity to action this commitment [to reconciliation] than by supporting Secwépemc Peoples' leadership in the regeneration of the ecosystem affected by the Elephant Hill fire over the months, years and decades to come.*

Rather than perpetuating colonial approaches of seeking to integrate IK and practices *into* ecological restoration, we challenge readers to take up the framework of walking on two legs and reimagine the role of western science: as a leg to balance and be guided by IK and wisdom as articulated and enacted by Indigenous peoples, in service of elevating Indigenous stewardship systems through Indigenous-led restoration. Reconciliation offers guiding principles to advance Indigenous-led restoration in the UN Decade by re-envisioning the past, present and future roles of humans in restored ecosystems, revitalizing Indigenous cultures and interconnected biodiversity, and upholding Indigenous rights and self-determination in their/our homelands. At the same time, reconciliation will be incomplete without not only the restoration of land *to* Indigenous peoples, but also the restoration of land and Indigenous systems of land-based knowledges and stewardship *by* Indigenous peoples.

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