

Revaluations of ‘Paiute Forestry’: Prescribed Burning as Traditional and Scientific Ecological Knowledge

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I live in Chicago, at the historic portage of Lake Michigan and the Chicago and Des Plaines rivers, on the traditional homelands of the Ojibwe, Odawa, and Potawatomi Nations, also known as the Council of the Three Fires. For centuries these and other indigenous groups have used fire for various social-ecological purposes across the Great Lakes region.

Putting fire on the ground can feel new and risky, especially for those of us raised by Smokey the Bear to see all forest or prairie fire as bad fire. But the use of fire is a time-tested practice across the continent: as Robin Kimmerer and Frank Lake argue, ‘Every ecosystem in North America has been affected in some way by a fire regime manipulated by Indigenous people’ (2001). Consider for example uninterrupted annual burning by Walpole Island First Nation in the St. Clair River delta between Ontario and Michigan, which both restorationist Dennis Martinez (1998) and naturalist Gerould Wilhelm (2023) recognize for its ecological value, in large part because the people there resisted forced removal and the degradation of their traditional ecological knowledge.

Here I want to discuss some of the epistemic injustices in how settler institutions like the US Forest Service ignored, misunderstood, and undermined indigenous knowledge of fire. I also want to consider the prospects for renewed prescribed burning as both ecologically and relationally reparative. How can fire stewardship today be meaningfully, substantively *restorative* in the aftermath of environmental and epistemic injustices? To that end, I find Kyle Whyte’s account of epistemologies of crisis and epistemologies of coordination to be quite helpful, especially in tracing the similarities and differences between the timber crisis of the early 20th Century and the wildfire crisis across much of North America today.

I should note that by *aftermath* of environmental and epistemic harms, I do not mean they are over and done with, but that amelioration is called for. Like Margaret Urban Walker (2006; 2010) and Robin Kimmerer (2011; 2013), my own focus is repairing relationships: between perpetrators and victims, but also relationships to self, to other people, and to nonhuman members of biotic communities. For her part, Kimmerer describes how ecological care can be restorative for relationships between humans and our environments and between indigenous and settler communities. As she says, ‘it is not the land that is broken, but our relationship to it’ (2011). Reciprocity is at the center of Kimmerer’s ecological ethic, not only in ideal times but in the aftermath of suffering, degradation, and disrespect. These opportunities for care, for reciprocity and renewed relationality extend to include the fraught histories of traditional and scientific ecological knowledge (2002).

The relationship between scientific and traditional ecological knowledge is course disputed. Some see the distinction itself as misleading and counterproductive – good knowledge is good knowledge (Agarwal 1995). For others, these are totally distinct incommensurable knowledge systems. For her part, Kimmerer sees real potential for exchange and cross-pollination between traditional and scientific ecological knowledge, and a fruitful role for both in biological education (2002). Kimmerer envisions a world in which native students participate fully in collective scientific inquiry without being forced to give up connection to and participation in indigenous knowledge practices.

Contemporary work on indigenous burning is one such context for integrating scientific and traditional ecological knowledge. Both indigenous and settler scholars have documented via multi-disciplinary methods such as oral history, archeology, tree-ring analysis, and aerial photography that people in North America for millennia have burned to modify their environments for cultural and ecological purposes. How or why burns are conducted varies with their uses in forests, prairies, wetlands, and other ecosystems across California, the Northwest, Northern Rockies, Great Plains, Great Lakes, Southeast, and Southwest regions (cf. Boyd 1999; Stewart 2002; Anderson 2005; Lake et al. 2017; Lake & Christiansen 2019; Larson et al. 2021.) Regular burning can reduce threats of wildfire near villages; stimulate growth of seeds and bulbs for food and straighter stems and roots for basketry; drive game directly and indirectly by increasing forage; promote berry production and other flora that thrive in edge ecologies; facilitate easier travel and enable communication, etc. ‘An ethic of reciprocal responsibility underlies the indigenous use of fire,’ Kimmerer and Lake argue, ‘an adaptive symbiosis in which humans and nonhumans both benefit from burning’ (2001, 28). For example: regular burning of a prairie may promote seed growth. The people burn, seeds germinate, plants grow, people harvest, the prairie is all the more fire resistant and adaptive, the people live there benefiting from grass and berry growth and some sense of safety from larger wildfires devastating their community, and so the people stay and keep burning. Both humans and nonhumans play active roles, adjust their behaviors iteratively in response to the other, and in this way enjoy mutual and overlapping benefit.

Many land-management agencies now celebrate the benefits of fire, and even acknowledge their own responsibility for its historical suppression, while eliding their role in dismissing traditional burning as ecological knowledge. Kirsten Vinyeta provides a nice illustration of how the USFS webpage “Managing Fire” does this:

When we see a wildfire, our first response is to put it out. For decades, the Forest Service had done just that when it came to wildland fires. But science has changed the way we think about wildland fire and the way we manage it. [Vinyeta 2002, 144]

Reflecting on the shift in conservationist thinking, fire historian Stephen Pyne (2015) wrote ‘Reclaiming fire was less a radical innovation than a restorative act, even a penitential one.’ Yet penance requires more than just changing one’s ways, as important as that might be (Walker 2010; Almassi 2020). Apologies and amends are also crucial reparative steps, steps

that we sometimes but do not always see in settler-led burn projects, policies, and rhetoric today.

It is instructive to compare the US Forest Service’s 10-year plan launched in January 2022 called ‘Confronting the Wildfire Crisis’ (USFS 2022) to its campaign against light-burning in the 1910s and 1920s. At that time, the newly established Forest Service declared fire – whether wild or anthropogenic – to be a luxury the nation could no longer afford, not after the extensive logging of the 19th Century and the continuing, indeed ever-growing demand for timber. Chief Forester Henry Graves called fire ‘the archenemy of the forest... We shall not murder the patient,’ he wrote, ‘in order to the free of the disease’ (1920). But if the crisis was urgent, the proposed solution was at once novel and familiar – at least on a settler-colonial view – by bringing established European forestry principles to the New World. ‘We can have real forests full of growth and promise for the future,’ wrote Assistant Forester William Greeley, ‘if all interests get behind a real program of fire protection’ (1920).

In opposition, white landowners like Stewart White argued that fire had a constructive role to play in land management. Of European forestry, White wrote, “It is a good system for them but not applicable to us...The result is that we are painstakingly building a firetrap that will piecemeal, but in the long run completely defeat the very aim of fire protection itself” (1920, 108). By contrast, White cited the historical precedent of California Indians deliberate burning the land to protect themselves from more serious wildfires. This was not an unfamiliar idea. As early as 1911, FE Olmsted can be found writing dismissively of the suggestion that ‘we should follow the savage’s example of burning up the woods to a small extent in order that they may not be burnt up to a greater extent bye and bye.’ His skepticism was not about whether indigenous people used fire, but whether there was any *knowledge* involved in doing so. ‘The is not forestry; not conservation; it is simple destruction,’ wrote Olmsted (1911).

For their part, Graves, Greeley, and fellow Assistant Forester Aldo Leopold conducted a coordinated campaign across multiple popular publications characterizing light-burning as ‘Paiute Forestry.’ This label was likely used because botanist David Douglas’s account of his encounters with the Paiute in Oregon was how many whites first learned of indigenous uses of fire (Struzik 2017, 86). But Graves and his lieutenants Greeley and Leopold were not interested in giving the Paiute *credit*. They presumed to know the real – which is to say, short-sighted and narrowly instrumentalist – reasons why native people set fires. They rejected burns for purposes of environmental care as ‘far from consistent with the relatively low stage of cultural development’ of California tribes (Graves 1920b, 39). They positioned burning as a cautionary tale of what *not* to do, with indigenous use of fire in California and eastern states as ‘of the most injurious characters’ (*ibid*) and positioned European methods as the real, credible ecological knowledge to bring to North America.

In *Braiding Sweetgrass*, Kimmerer (2013) tells a story of white settler encounters with Ojibwe harvesting of wild rice in the lakes and wetlands of Minnesota, and these settlers’

reading of harvesters gathering only half the available crop as a sign of their indolence and inefficiency rather than of reciprocity and sustainability. This is hermeneutical ignorance (Pohlhaus 2012): lacking the conceptual resources to understand what's going on and the humility to learn, they misread the knowledge production before them. Similarly, while Leopold grants that California Indians used fire, he dismisses as 'absurd' the notion that they did so as form of conservation. "As is well known to all old-timers, the Indian fired the forests with the deliberate intent of confusing and concentrating the game so as to make hunting easier," he writes; "it was this fact, and not any desire for fancies forest conservation, which caused the Indians to burn the forests" (1920). Here Leopold cites white old-timer impressions of Indian fire practices as credible testimony. He presumes that using fire for hunting thereby precludes its deliberate use for other ends – although if things were reversed and someone offered such a narrow reading of US foresters' own reasons for conservation, he would surely spot the fallacy at work. What comes across in these publications from 1920 is recognition that indigenous peoples regularly, deliberately set fires across California and elsewhere in North America, but that this is both irrelevant and counterproductive when it comes to *conservation*.

Interestingly, Leopold did revise his position on the ecological value of fire a few years later in a paper in the *Journal of Forestry*, where he finds that "fires started by lightning and Indians" promoted grasslands and reduced erosion. "Until very recently we have administered the southern Arizona forests on the assumption that while overgrazing was bad for erosion, fire was worse," (1924, 6), which he now sees as a mistake. Yet even as he cautions against uncritically using European traditions in American forestry and recognizes the value of wild and anthropogenic fires, Leopold still doesn't give *credit* to those who set these fires any more than he does to the lightning.

One recurring theme in early 20th C debates over burning is that foresters were concerned with white landowners *appealing* to indigenous burning to justify their own practices than actually existing Paiute forestry. When Graves insisted "most advocates of forest burning really want freedom to fire the woods without regard to the effect upon the future forest, for the supposed benefit of the present stand" (1920b) and Greeley said "let us recognize frankly that light burning is simply part of the game of timber mining" (1920), they meant timbermen like Stewart White prioritizing their short-term profits over long-term national need for timber. Indigenous people are left to history, not participants in a contemporary debate on the wisdom of intentional burning.

The irony is that actually existing contemporary indigenous ecological knowledge was then actively, systematically undercut by federal fire suppression policies for decades to come. Throughout the US and Canada, even recognized tribal governments like the Karuk and Yorak in northern California were stopped from burning; those who did were jailed, often for the length of burn season. Elders could not demonstrate safe use of fire to teach the next generation. In the absence of regular burns, the land changed, and as a result other parts of indigenous ecological knowledge such as berry cultivation and basket-weaving were

endangered. The issue was at once political and epistemic, given that effective governance requires dynamic, ecologically responsive ways of knowing. As Karuk elder Ron Reed put it, “Criminalization of cultural practices matters for sovereignty because it directly prohibits the enactment of practices needed for the generation of knowledge” (in Norgaard 2014; cf. Norgaard 2019).

The USFS response to the early 20th Century timber crisis and subsequent fire suppression aligns with what Kyle Whyte (2020) calls an *epistemology of crisis*: focused on the urgency and unprecedentedness of the matter, uninterested in interpreting the present crisis in terms of a deeper history. Indeed, as Graves, Greeley, and Leopold worked to frame the story, North America had no relevant history, lessons to be learned. Not only is the forced removal of indigenous people from their traditional lands ignored as irrelevant to this land management crisis, but their ecological knowledge is interpreted as irrelevant. Apparently, any real program of fire protection must be newly imported from European forestry. Contrast this with what Whyte calls an *epistemology of coordination*: “ways of knowing the world that emphasize the importance of moral bonds—or kinship relations—for generating the (responsible) capacity to respond to constant change” (2020).

Today the US Forest Service’s 10-Year plan ‘Confronting the Wildfire Crisis’ outlines the agency’s aim to ‘work with states, Tribes, and other partners to address wildfire risks to critical infrastructure, protect communities, and make forests more resilient’ (USFS 2022). There are some signs of crisis epistemology to be found here, including repeated emphasis on the urgency and unprecedentedness of the situation facing us. Illustrating Whyte’s point about “willful forgetting” histories and prior lessons related to the crisis, Leopold is named as a great ecologist who started his career with the Forest Service, and his land ethic cited as justification for returning wildland fire to the land, a “new land management paradigm” in the American West – but with no acknowledgement of Leopold’s role in making the case for fire suppression and against indigenous burning as ecological knowledge.

To its credit, the USFS plan to confront the wildfire crisis repeatedly underlines the need for collaboration and coordination with partnerships including states, tribes, and other federal agencies. It recognizes fuel buildups along with climate change and wild-urban interfaces as primary drivers of this crisis, and acknowledges responsibility in the federal government and Forest Service itself creating fuel buildup through a century of intense fire suppression policies and practices. It also acknowledges indigenous burning as a credible form of ecological knowledge, and not just lost to history but continuing still today. On an epistemology of coordination that sees the world in terms kinship relations, it is notable for wildfire not to be described antagonistically, as something to stamp out or go to war against. “At the core of the Cohesive Strategy is the vision of learning to *live with* wildland fire... In caring for the land, there is no substitute for wildland fire in fire-adapted forests” (2022).

This all seems encouraging! And yet I am mindful of Whyte’s note of caution, that it is one thing for scientists to finally come to appreciate long marginalized indigenous knowledge,

but specifically for its instrumental value, how it can be useful for scientists' own projects, and still not take seriously its governance value for tribal environmental decision-making (Whyte 2018). What does the expressed commitment to "honor tribal sovereignty" (USFS 2022) really look like, if and when a tribal government's burn practices conflict with Forest Service mandates, even in something as small but vital as a decision to start or delay a burn and on what basis? What does it look like for federal land management agencies to decenter themselves, to do the work of settler-indigenous relational repair?

Epistemic repair in the aftermath of injustices against traditional ecological knowledge cannot just be settlers gaining better understanding of indigenous burning as historically practiced. Epistemic repair means not just overcoming ignorance, but actively supporting indigenous peoples' abilities to adapt, revise, and revitalize their own knowledge practices. As Kira Hoffman and coauthors note, "Indigenous fire stewardship is not something of the past but a dynamic knowledge system that adapts to changing environmental conditions" (2022). Amends for epistemic injustice must be dynamic as well. Individually this includes the skills, experiences, and certifications to serve on and lead burn teams; collectively this includes tribal sovereignty on ecological governance to plan, conduct, and learn from burn projects for their own ends. This is one criticism that Hoffman and her coauthors make against contemporary Canadian burn policies, that they make room for indigenous fire stewardship only in a supplemental capacity. "Currently, the only way to acquire training in applied wildfire science and management in Canada is through employment with the federal or provincial governments or through privately-owned fire suppression crews," Hoffman (2002) notes. "This policy forms a barrier preventing Indigenous fire practitioners from becoming certified to gain accreditation to burn and communities from developing capacity for cultural burning."

By contrast, a more encouraging example of social-ecological repair as capacity-building is the Prescribed Fire Training Exchange (TREX), a joint initiative of federal agencies and the Nature Conservancy. TREX funds and facilitates burn trainings and certifications for indigenous and settler communities alike, expanding the pool of authorized practitioners beyond state and federal agencies (Terence 2016). The Nature Conservancy also underwrites staffing and coordination for the Indigenous Peoples Burning Network (IPBN) including "strategic planning for revitalization of fire culture, fire training including both federal qualifications and culturally-based controlled burning, and intergenerational learning" (IPBN 2021). These trainings, certifications, and networks increase capacity for tribes to not only partner with non-tribal governments but carry out independent projects. For example, Karuk and Yurok renewed capacity to conduct biannual prescribed burns fosters growth and harvest of California hazelnut for basket-weaving (Marks-Block 2021). "The goal of the network is to get back to the true traditional burning," Robbins says, "where the average person can go out and burn their gathering spot or burn around their home to keep their homes safe" (Cagle 2019). The Nature Conservancy, US Forest Service, and Department of Interior need not conduct and control all burn projects themselves, but also facilitate skill-sharing and help remove barriers to tribal ecological governance.

Finally, consider also recent partnerships where indigenous groups take lead on designing and implementing burns on traditional homelands currently under non-indigenous control. One such project in the Great Lakes region is renewed burning on Stockton Island in the Apostle Islands National Lakeshore, first in 2019 and again last year. Red Cliff and Bad River Bands burned across the lakeshore and throughout the islands for thousands of years to promote blueberry harvests. In just these last few years, wild blueberry has grown more abundant on Stockton Island. For Melanee Montano, member of the Red Cliff and TEK Outreach Specialist for the Great Lakes Indian Fish & Wildlife Commission, bringing regular burns back to the islands shows younger generations what a positive connection to fire can look like. As Montano puts it, “We want to get our younger generation on the right path that we’ve been forced off of” (in Averett 2023).

Also noteworthy is the return of fire for the first time in 100 years to the Cloquet Forestry Center, a 3000-acre parcel within the Fond du Lac reservation managed since 1909 by the University of Minnesota. This initiative brings the university together with multiple tribal groups with ecological-cultural ties to the land, including the Fond du Lac and Leech Lake Bands of Ojibwe. Among those leading this project is Damon Panek: member of the White Earth Ojibwe, former Apostle Islands park ranger, now wildfire operation specialist for the Fond du Lac. “Burning is the perfect land acknowledgement,” Panek says. “We’re not just talking about the fact that we burned here; we’re actually doing it” (in Boerigter 2022).

As I conclude, I do not mean to suggest that rebuilding trust or integrating traditional and scientific ecological knowledge are easy. If indigenous peoples are welcomed to the table, what ecological knowledge are they welcome to bring with them? Are indigenous peoples there as equal participants in joint decision-making or to have their knowledge extracted by settler institutions? Bill Tripp, deputy director of Karuk eco-cultural revitalization and chair of the National Cohesive Wildland Fire Strategy, put his apprehension this way. “We don’t have a problem teaching about our principles behind our practice and where, when, why, how. But we’re not interested in doing that if five years down the line they say OK, we’ll do it for you now, and you can just stay in poverty” (in Cagle 2019).

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