



## Tending to Yosemite

Brett Milligan

To cite this article: Brett Milligan (04 Jul 2025): Tending to Yosemite, *Landscape Research*, DOI: [10.1080/01426397.2025.2516013](https://doi.org/10.1080/01426397.2025.2516013)

To link to this article: <https://doi.org/10.1080/01426397.2025.2516013>



© 2025 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 04 Jul 2025.



Submit your article to this journal



Article views: 314



View related articles



View Crossmark data

# Tending to Yosemite

Brett Milligan

Department of Human Ecology, University of California, Davis, Davis, CA, USA

## ABSTRACT

This article is an investigation into the *caring for* landscapes in a time of accelerating change and the context of decolonising efforts. Care—as label, concept or set of practices—is complex, multifaceted, and plays a major role in determining how landscapes look and function across social, aesthetic, material, ecological, and political domains. Synthesising recent cross-disciplinary scholarship of care, I build a conceptual framework for the care of landscapes and apply that framework through a case study of land-fire stewardship and conservation efforts in Yosemite National Park, California, where I have conducted extensive fieldwork, interviews, and archival research. In discussion, I reflect on what was learned from this application, and in conclusion, put forth a set of salient questions, challenges and speculations on what the future of landscape care might become, in attempting to equitably adapt to changing climates and entangled social-ecological-political realities.

## ARTICLE HISTORY

Received 19 July 2024

Accepted 01 June 2025

## KEYWORDS

Wilderness myth; traditional ecological knowledge; landscape stewardship; land-fire stewardship; fire management; decolonisation; climate change adaptation; conservation; restoration; national parks

## Introduction

If you visit Yosemite Valley—the most iconic and heavily visited area in Yosemite National Park—there is a one-way driving loop you will likely traverse to experience it. As one drives the loop, pullouts provide access to hikes into the steep granite formations enclosing the valley or offer vistas and vantage points to observe the landscape.

For example, you might stop at Postage Stamp Point, which provides an impressive view of the sheer walls of El Capitan towering from the other side of the Merced River (Figure 1). The postage stamp name comes from the US stamp issued in 1934, depicting the view from this spot.

In multiple places along the South Side Road, you will see pine forests with noticeably blackened bark—a signature tattoo from fires—with large open meadows scattered between them (Figure 2).

As you work your way around the loop, it is worth a stop at Woski Pond on the north side of the valley. Woski Pond is actually an old oxbow lake within the Merced's floodplain. Here you will have unobstructed views across a broad expanse of the valley. Wetlands and meadows give way to copses of black oak in the distance, with Cathedral Rock and spires looming behind (figure 3).

What you might not know or gather from what you see, is that this *nature*—perhaps one of the most prized, revered, represented, and contested in contemporary US culture—is a product of much convoluted labour and care. As a case in point, just a few years ago, you

## CONTACT

Brett Milligan  [bmilligan@ucdavis.edu](mailto:bmilligan@ucdavis.edu)

© 2025 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.



Figure 1. Photograph of Postage Stamp Point, Yosemite Valley, July 2023.



Figure 2. Photograph of meadows and pine forest after a prescribed burn, Yosemite Valley, July 2023.



Figure 3. Photograph of Woski Pond, Yosemite Valley, July 2023.

would not have been able to see the view of El Capitan from Postage Stamp Point, as it would have been completely obscured by the unchecked growth of trees. Touring this site with Garrett Dickman, Yosemite's Forest Ecologist, informs us that 111 trees were cut and removed by park staff to restore historic views, as part of the Park's Scenic Vista Management Plan. This plan provides the programmatic basis 'for documenting, protecting, and re-establishing Yosemite's important vistas, consistent with the natural processes and human influences that created them' (National Park Service, 2022). If you look closely, you can still see the stumps of some of those trees in the floodplain and terraces (Figure 1).

Most of the soot-covered bark on the ponderosa pines and other trees is not from wildfire. It is from prescribed burns intentionally lit and tended to by park staff to restore and sustain these lands. Before these burns can happen, park staff often need to clear out overgrown vegetation in the understory, and thin out the trees. Without this preparation, the prescribed fires can burn too intensely—which has the potential to harm the trees—and can also burn uncontrollably. Yosemite's meadows have been remade through these kinds of labour.

The views at Woski pond were similarly obscured by conifer trees, and around 80 of them were recently removed. The groves of black oaks seen on the far side of the pond have been actively restored by the removal of the conifers, and by reintroducing prescribed fire to the land.

But not all this care-taking labour is invisible. On the days I was in the valley, I saw the Yosemite Ancestral Stewards (YAS) Indigenous youth program tending to the black oaks. The Yosemite Ancestral Stewards is a youth-based landscape management crew with ties to local tribes, including the Southern Sierra Miwuk Nation, the Tuolumne Band of Me-Wuk Indians, the Bishop Paiute Tribe, Bridgeport Indian Colony, Kutzadika'a Mono Lake Indian Community, North Fork Rancheria of Mono Indians of California, and the Picayune Rancheria of Chukchansi Indians. Members of the YAS program partake in a range of conservation activities like felling trees, chainsawing downed woody debris, and conducting cultural burns to share knowledge, refine land-based skills and open up new career pathways (National Park Foundation, 2023).



Figure 4. Photograph of brush piles waiting to be burned, Yosemite Valley, July 2023.

I also encountered grids of meticulously hand-stacked brush piles near the roadside, waiting for the park's fire management staff to have the opportunity to burn them (figure 4). Looking into the forest next to them, one can see just how dense it was prior to that work. At other locations industrial excavators and other logging machines were seen at rest among stacks of recently felled trees; signs of in-process efforts to thin overcrowded forests (figure 5).

What makes all this caring of the land convoluted is that much of it is an effort to undo past forms of care; undoing what we might call misguided care or care that harms.

With the colonial conquest of North America came the practice of wildfire suppression, or the intentional extinguishing of all wildfires, particularly in the more fire-prone western US. The intentions driving fire suppression were and are complex and manifold, encompassing settler ideology, resource extraction, exurban modes of settlement and public safety (Forest History Society, n.d.; Hankins, 2024; Travis, 2007). Fire protection and suppression became widely implemented in the early 20<sup>th</sup> century, often through policy. The Weeks Act (Southard, 2011) created provisions for the federal government to purchase private land to protect the headwaters of rivers and watersheds (and led to the US Forest Service) and pioneered collaborative fire protection and suppression efforts across federal, state, and private landowners. On National Forest Lands, the U.S. Forest Service's "10 a.m. policy"—an aggressive suppression protocol instituted in 1935 to rapidly extinguish all wildfires by 10 am on the morning after they were spotted—was based on a monetary cost-benefit impact analysis of timber production; of forests primarily understood and instrumentalised for the production of commercial *crops of trees* (Loveridge, 1944). The act was a response to prior 'let burn' policies (primarily in remote or inaccessible areas) that were deemed costly and detrimental. Let burn policies continue to be controversial today, challenged with balancing public safety and increased understanding that attempting to banish fires from fire-dependent landscapes does not work and actually increases risks.

Fire suppression was also motivated by settler interpretations of the colonised Western U.S. landscape and driven by ideological and aesthetic concerns. In the late nineteenth century,



Figure 5. Photograph of logging skidder and piles of downed trees, Yosemite Valley, July 2023.

Yosemite became a touchstone for a colonial vision of *wilderness*, despite being inhabited and stewarded by the Indigenous people of the western slope of California's central Sierra Nevada Mountains for generations, including the Southern and Central Miwok, Northern and Owens Valley Paiute, Chukchansi Yokuts, and Western Mono Tribal communities. White explorers cast the landscape as pristine and untouched, and promoted a preservationist approach for its future management. Landscape architect Frederick Law Olmsted (1952) was a key proponent of this approach, as exemplified in his initial 1865 planning report for Yosemite. This understanding of wilderness put forth static understandings of landscapes and the eradication of wildfire, ironically undermining its own goals. Like many landscapes across the American West, Yosemite is threatened by the very thing that tried to control it: preservation (Schlickman & Milligan, 2023).

When Indigenous people were forced out of Yosemite by Euro-American settlers—a long and contested process beginning around 1850 and lasting until the 1930s (Spence, 1996)—thousands of years of embodied knowledge and intensive tending of these wilds went with them, including their most impactful tool for caring for their homelands: fire. With it, they sculpted the land so seamlessly, and cultivated the plants, foods and materials they needed so sustainably (Anderson, 2005; Spence, 1996), that settlers couldn't even see their craft for what it was. Instead, Yosemite was cast as pristine scenery, and in turn, millennia of human-fire-landscape co-evolution was radically altered, culturally and in the physical landscape itself.

Without Indigenous people tending and shaping them, Yosemite's landscapes transformed. Its vast meadows shrank or disappeared. Its spacious forests and open views became occluded by dense expanses of trees (figure 6). With wildfires proactively suppressed—a totally different way of tending to the land—habitat quality and diversity significantly decreased. And over the longer term, the very nature of what fire is and does in these landscapes has changed too. In precolonial times, it is estimated that at least 6,500 hectares in Yosemite National Park burned each year. From 1930 to 2000, much less burned an average: less than 1,250 hectares per year (Miller & Davis, 2009).



**Figure 6.** Top: Photograph of Yosemite Valley taken by Henry G. Peabody in 1899 (US National Park Service, public domain), and bottom: photograph from the same spot taken in 2024 (by author), showing increased land cover and density of forested areas due to fire suppression.

Fire suppression does not actually stop fires. Rather, it delays and transforms them, with increased fuel loading being a critical factor (Miller & Davis, 2009). When suppressed in

frequency, fires tend to act more intensely and more destructively, due to the altered conditions in which they emerge. Fire scientists and land managers call this the suppression trap, or the firefighting trap (Xanthopoulos et al., 2020), because once one starts suppressing fires, it's hard to come back from that distortion. For example, if land managers or park staff just let a fire-suppressed forest burn or intentionally set fire to it, the increased fuel loading will cause an intense, high severity fire, killing most of what is in it—the trees and the soil—and make it uncontrollable. Thus, land stewards must resort to other techniques to get such landscapes back to a healthier, fire-safe condition before wild or prescribed burning can once again be beneficial, such as by mechanically thinning out trees.

Thus, fire management policies and techniques have changed and unevenly evolved since fire suppression was widely implemented, and its impacts and missteps have been experienced and studied over the past century. Yosemite National Park is a place where these changes can be observed. Yosemite had very robust and well-funded fire suppression operations in place, right up to the 1960s. It was equipped with fire *mitigations* and cooperative agreements with the US Forest Service and the California Department of Forestry that aggressively put out fires (Pyne, 2023). 'Scenic' concerns were primary, followed by public safety. Major shifts began in the 1960s, including the publication of the influential Leopold Report (officially called *Wildlife Management in the National Parks*) which scathingly criticised pervasive fire suppression in Yosemite and other National Parks for its impacts on wildlife and the ecological functioning of the landscape (Pyne, 2023). The recommendations from the Leopold Report were incorporated in the National Park Service's 1968 operational policies (its Green Book) and brought about a paradigm shift from fire control to fire management (Kilgore, 2005; Pyne, 2023). These management policies were soon implemented in Yosemite and other National Parks, allowing some lightning-caused fires to burn and the implementation of prescribed burning. In 1984, the California Wilderness Act designated 95% of Yosemite as legal wilderness, thus further mandating wildfire to be integrated into the stewardship of the Park.

Again, evolution in land-fire management in the western U.S. and elsewhere is highly uneven. Movements from control to stewardship are variable across agencies, organisations and regions. The evolution is also non-linear across time, as progressive stewardship can easily regress back to control-based mandates based on specific circumstances, mishaps, or political action.

Yosemite itself has seen many back-and-forth shifts in how it tends to fire, particularly when its tending methods are more proactive, like mechanical tree thinning. Yosemite Park staff are implementing these practices where they think it is needed and beneficial to address decades of fire suppression, as well as aesthetic concerns. These acts of care are not being implemented without pushback. Most recently in 2022, the Earth Institute, an environmental non-profit based in the Bay Area, filed a lawsuit against Yosemite Superintendent Cicely Muldoon, the larger park service, and the Department of the Interior under the National Environmental Policy Act (NEPA) for failing to conduct a full environmental review of two thinning projects in the park (Justia US Law, 2023). When interviewed by the press, representatives from the Earth Institute compared the work being done to logging and argued that the projects had the potential to increase wildfire risk and negatively impact habitat for endangered species (Kohlruss, 2022).

And while a district court ultimately sided with the defendants, citing that the projects still fell within Yosemite's 2004 Fire Management Plan, the litigation opened up larger questions about the language used to define care in the age of fire and the ways in which these terms can wield power. The projects in Yosemite have been labelled many different things beyond thinning, including biomass removal, fuel reduction, logging, and clearcutting with each of these terms affecting people's perceptions of what is actually happening on the ground, and why.

In this manuscript, I ask and explore, what does it mean to care and tend to Yosemite? What could it mean? What about many other landscapes that face similar types of stewardship challenges in a post-colonial era of accelerated change? Care—as concept or set of practices—is complex, multifaceted, and plays a major role in determining how landscapes look and function

across social, aesthetic, material, ecological and political domains. I am specifically concerned with how we *care for care* in landscapes, and in the following section collate recent, cross-disciplinary scholarship of care to build a conceptual framework for the care of landscapes. I test this framework through the case study of Yosemite National Park, where I conducted fieldwork, interviews and archival research. The paper concludes by speculating on what the future of landscape care might become for Yosemite National Park and other fire-climate altered landscapes.

## Tending to care

One can care about anything. A fish. A beach. One's hair. The impending loss of stable climate. My specific interest here is the care and stewardship of landscapes. I define landscape as a dynamic spatial and temporal medium; one composed of a diverse and shifting assembly of materials and beings. I understand them to always be in a state of emergent becoming, with every landscape being plural and multiple, since it can be reshaped into any number of qualitatively different formations (Milligan, 2015). And perhaps most importantly, landscapes and people have been co-evolving and co-creation on another since humans took form and began sculpting their surroundings.

My approach to landscape care is structured by four interwoven tenants: relationality, temporality, politics and transformability. I have distilled this framework with the help of many care scholars. And to disclose my positionality, as a designer, I seek to care for the *unsettling* of damaging landscape practices and legacies. I seek to shed light on hidden and devalued work of actively caring for land, and to assist in debunking the wilderness myth, which purports that pre-colonised landscapes were devoid of human design and habitation, thus legitimising their exploitation (Denevan, 1992; Dowie, 2011, 2019). I look to retire the thoroughly colonial concept of *nature* as a form of othering, or as phenomena separable from humans, for all the unique and misleading damage and displacements that ontological construct has caused (Cronon 1996; Purdy, 2015).

## *Relationality*

Care is difficult to pinpoint because it is inherently relational and comes about through association and connection. As Sara Jacobs and Taryn Weins state (2023, p.2), 'care is not easily defined as it is always mutually constituted: all relations involve care and all care creates and remakes relations'. With care, there is less emphasis on the individual, since one is typically *caring for, caring with, or being cared for*. The defining questions concern who is caring for whom (or what) and how the person, being or thing being cared for is affected by the care received. In this way, care is a relational practice that can be assessed according to its purpose, particularities and power dynamics (Tronto, 2010).

Care is a pervasive, diverse, and an improvisational part of everyday life (Middleton & Samanani, 2021). It is unavoidable and necessary. The claiming of a *we*, or assuming a shared collective *we*, has been well problematised in political critiques of who speaks for who (for example, problematising the assumed *we* in the Anthropocene or Capitalocene) (Chakrabarty, 2021; Moore, 2016). Relational notions of care—necessarily pulls *us* back into notions of *we*, which Jacobs and Weins define as the 'the relational self who is connected to and shaped by other subjects, spaces, and processes related to almost every aspect of life' and this definition suggests that 'care is reciprocal between people and other-than-human relations' (Jacobs & Wiens, 2023, p. 6).

As relational practices, care can operate across scales and species and material boundaries. As scholars across environmental humanities, science and technology studies, feminism, post-humanities, and critical geography have emphatically expressed, care needs to be extended to the vast majority of phenomena that are not human, but are with us (de La Bellacasa, 2017). In this way, we *care with* (Tronto, 2019) the larger and more diverse worlds and landscapes we inhabit and make.

Reciprocity implies the fostering of mutually beneficial relationships through exchanges, actions and belief systems. It is a kind of relational care that author and botanist Robin Kimmerer and others identify as intrinsic to Indigenous cosmologies and traditional ecological practices (Anderson, 2005; Hankins, 2024; Manning, 2023; Kimmerer, 2011; Whyte, 2020). Care in this sense, is one that assumes inherent kinship between people and land, wherein: 'what we do to the land we do to ourselves...What's good for the land is good for the people' (Kimmerer, 2011, p. 258).

The ethos of reciprocity is the opposite of that of settler colonialism and extractive capitalism. For Kimmerer (2011), what she calls *reciprocal restoration* is the care needed to repair past destructive actions, which 'recognises that it is not just the land that is broken, but our relationship to it,' and which requires 'repair of both ecosystems and cultural services while fostering renewed relationships of respect, responsibility, and reciprocity' (p. 258).

### **Temporality**

Care is always bound to time and how it is experienced. For example, *when* does one perceive that care is needed in a particular situation? When does one actually act on that realisation and *why*? How effectual is the care, based on *when* it occurs and the contingencies of the context at that moment? How long does care need to be provided, or how frequently does it need to be repeated? Care, repair and maintenance practices are 'inescapably timely phenomena, bridging past and future in distinctive and sometimes surprising ways' (Jackson, 2014, p. 223).

Care scholars have critiqued the notion of a singular, standardised conception of time, as well as ideologies of positivism and linear progress (de La Bellacasa, 2015). Many argue for temporal diversity that recognises that time is diversely made through the practices we enact and engage in. This is the notion of temporality, or time as an embodied, political, and situated experience (Adam & Groves, 2007; Rifkin, 2017).

Landscapes contain a multitude of interacting temporalities that are subject to change and manipulation (Milligan, 2022). For example, the impacts of fire suppression policies in California's forested lands have worsened over time in terms of ecological degradation, and the intensity and size of wildfires (MacDonald et al., 2023). This was widely experienced (directly and through media) in the Deadly Camp fire of 2018 that rapidly burned through the town of Paradise, and the massive fires of 2020, such as the LNU complex fire. These fires produced enough smoke to severely degrade air quality over large swaths of the state for weeks. With these events in mind, wildfires have become a shared issue of concern. In turn, the state's government is allocating more funds to fire stewardship and crafting policies to increase prescribed and cultural (Indigenous) burning.

### **Politics**

We tend to care about the things we are attuned to. Or said another way, what we care about determines what we care about, shaped by the specific political, social, cultural, ecological, and technological contexts we inhabit (Mattern, 2018). Differences in life experiences lead to different notions of care, which can be in conflict. For example, Yosemite's fire management staff have, for decades, tried to let wildfires burn, wherever and whenever it is deemed safe enough to do so. Through learned experience, they know that regular burning reduces fire risks and reduces undesirable fire behaviour and its impacts. But if one is a visitor to Yosemite Park, and arrives to find the skies full of smoke, they might question why that should be. Locals who economically depend on servicing and housing visiting tourists, are likely going to have similar opinions about poor air quality in the Park. Similarly, a government official can be swayed to immediate and short-term conditions (i.e. prevent fires and keep the skies clear) at the expense of longer-term safety and landscape ecological health. In this illustration, we see how different the experience and aesthetics of fire can be, depending on how it is encountered. These aesthetic interpretations are inherently political.

A ‘Critical Politics of Care’ focuses on how landscapes are constituted through specific kinds of caring relations (Jacobs & Wiens, 2023, p. 2). Care is not just a normative good thing, but rather a politically entangled act and should be carefully approached as such. Attending to the politics of care requires place-based specificity in landscape care studies, combined with critical reflection on why the need (or perceived need) for care exists and who benefits from it, and assessing if that care reflects systemic historic inequities, or is in pursuit of more just outcomes (Jacobs & Wiens, 2023).

Visibility and legibility of care are strong factors to consider in these critical politics, as invisibility is tightly linked to dynamics of power and control (Jackson, 2014; Mattern, 2018). The same holds for how care is represented and its aesthetic/experiential qualities.

### **Transformability**

If landscapes and society are always in transition, it follows that so is care. The point of critically engaging care is to open transformative possibilities for what care might become, and what it can do. If we live in a ‘broken world’ created by our own designs and design legacies (Cephas et al. 2022; Jackson, 2014), then what we need to study is how worlds can be put back together in new and better ways, through care (Fits and Krazny, 2019; Jackson, 2014; Mattern, 2018). Care can be a practice of possibility that can unsettle the status quo and potentially create new and more just landscapes (Cephas et al., 2022; Jacobs & Wiens, 2023). This is care as active speculation and mode of design investigation entailing a synthesis of the relationality, temporality, and politics of care as a basis for intentional change.

Here, I find Middleton and Samanani’s *Hermeneutics of Care* (2021) useful, as it embraces the active, affective role researchers play in what they study. In their own research interviewing first time parents, it became clear that care was not a *matter of fact* or knowable object distanced from them as researchers. Rather, they were enmeshed in the everyday improvisational workings of care with their subjects, which for them brought about a greater sense of responsibility, efficacy and ethics in care research. This entails ‘staying with the trouble within matters of concern, resisting reducing accounts to familiar “matters of fact” and instead approaching analysis as a situated, inter-subjective form of attention, commitment, and responsiveness’ (Middleton & Samanani, 2021, p. 39).

I approach my work in Yosemite in a similar way. I bring a transformative agenda to stewarding landscapes. I (and others I collaborate with) explore what future possibilities for caring for Yosemite—and other lands in California—might be. I am testing and speculating on what might become (Milligan & Schlickman, forthcoming). My approach is knowingly and intentionally subjective and does not seek finite solutions or answers to the complex challenges of care in this landscape.

In the next two sections, I apply the conceptual tools outlined here to two care examples in Yosemite National Park.

### **An inferno and a grove**

The Washburn Fire started on 7 July 2022 in Yosemite National Park, near the southwest corner of the Mariposa Grove, a park feature famous for its numerous giant sequoias. The fire could have easily spread uphill into this grove, or into the nearby park town of Wawona, but fire crews were able to halt its entry into both areas due to past thinning and prescribed fire treatments. In contrast, they were unable to stop the fire from spreading to untreated lands with over a century of fire suppression. These dense, sub-alpine forests were filled with accumulated fuels, which facilitated rapid fire spread, intense fire behaviour, and high resistance to control efforts (Hankin et al., 2023). The Washburn fire burned through 1,977 hectares of these lands before being contained.

I walked through the Washburn fire’s footprint one year after it occurred. Throughout, I saw vast swaths of closely spaced dead trees (figures 7 and 8). The soil was still almost entirely bare



Figure 7. Photograph of forests within the Washburn Fire (2022) footprint within Yosemite National Park. Image taken roughly one year after the fire, July 2023.



Figure 8. Photograph of forests within the Washburn Fire (2022) footprint within Yosemite National Park. Image taken roughly one year after the fire, July 2023.

of vegetation; likely inert and devoid of life due to the extreme heat generated by the fire. It had a peculiar crunchy sound when walked on. It does not take a scientist to see that much of this burn was of high severity, or exhibiting 80% mortality of vegetation (Keeley, 2009). And the chance for a reburn in scars like this is high, given the many dead trees that remain. How this landscape will recover, or what it might evolve into from this novel condition—in tandem with accelerating climate change impacts (including higher air temperatures, more severe drought conditions, and lengthening fire seasons)—is unknown.

Why were the town of Wawona and the Mariposa Grove spared, even though they were literally in the line of fire? The unequivocal answer is years of active fire stewardship (Hankin et al., 2023). Both areas had received numerous fuel reduction treatments and prescribed burns by park staff prior to the Washburn Fire. Over time, this greatly reduced fuel loads and tree density—two key factors of fire intensity. Thus, when fire staff tried to suppress or hold the line of the fire at these areas, they were able to. In the untreated fire-suppressed areas, feral fire immolated the landscape uncontrollably.

I walked the line between the edge of the Washburn Fire and the Mariposa grove. Along that threshold, you can see two worlds and two temporalities juxtaposed in space: the distorted cadences of fire suppression, emerging as ever-more colonial wreckage on one side, and on the other, laborious care to unmake that legacy (figure 9).

It is clear why the town of Wawona would need preventative fire treatments, but why the Sequoia groves? *Sequoiadendron giganteum* is a fire-adapted species, native to Mediterranean landscapes of California. Why should it need protection? Again, it is the excessive fuel loading in suppressed fire conditions, or being adjacent to those conditions at the time of a burn. Sequoias are extremely tall for a reason. It keeps their crowns out of reach of the fires they evolved with. But not for the higher intensity and higher reaching flames caused by fire suppression combined with a warming climate. Such fires can *ladder* their way up into the canopy of the trees and kill them, which is well understood by those tending to the patterns of change (Shive et al., 2022).



**Figure 9.** Photograph of the untreated edge of the Washburn fire footprint (foreground), and the fire-managed Mariposa grove in the background, Yosemite National Park. Image taken on July 2023.

What does it mean to 'care' for sequoia groves, as an imperilled species? Perhaps it means that the conditions they find themselves in are so 'denatured' by human practices and the effects of those practices, that if not actively tended to, they will likely be extinct in the near future. Recall that one of Frederick Law Olmsted's key design moves for Yosemite Park was to put a ring road around the Mariposa Grove to act as a break to prevent fires from entering it (Olmsted et al., 1952). If colonialism made natures conceived as something other than itself, a projection of sorts, what is such 'nature' now, if it necessitates our action to exist? Should we act/care? Who should be doing that caring and how?

### **Stewarding wilds**

Like the Washburn Fire, the Red Fire occurred in the summer of 2022 in Yosemite National Park. It burned a total of 3,385 hectares of the Illilouette Creek Wilderness. But if you walk through the Red Fire footprint now, it looks nothing like the Washburn's. Here you will experience vast and verdant open meadows, areas of unburned and lightly burned forest, and scattered spots of higher intensity burning ([figures 10](#) and [11](#)). What you see is called pyrodiversity, or variation in spatio-temporal fire patterns (Steel et al., 2021), which in turn generates landscapes of patchy, diverse plant communities.

Bob Barbee, Jan van Wagtendonk, Steve Botti, Harold Biswell, and others were key figures in implementing what was, at the time, a radical act, given decades of fire suppression mandates in the western US. Fire had to be strategically fought for to happen in Yosemite (Pyne, 2023; Van Wagtendonk, 2007). These practices were most advanced in the Illilouette Wilderness, southwest of Yosemite Valley, which is a remote part of the park with slightly less granitic drama and no public roads. Away from the crowds and largely contained by its own topographic bowl, these lands have mostly been allowed to burn when ignited by lightning. In mapping the



Figure 10. Photograph of the Illilouette Basin, July 2023.



Figure 11. Photograph of the Illilouette Basin, within the Red Fire (2022) footprint. Image taken on July 2023.

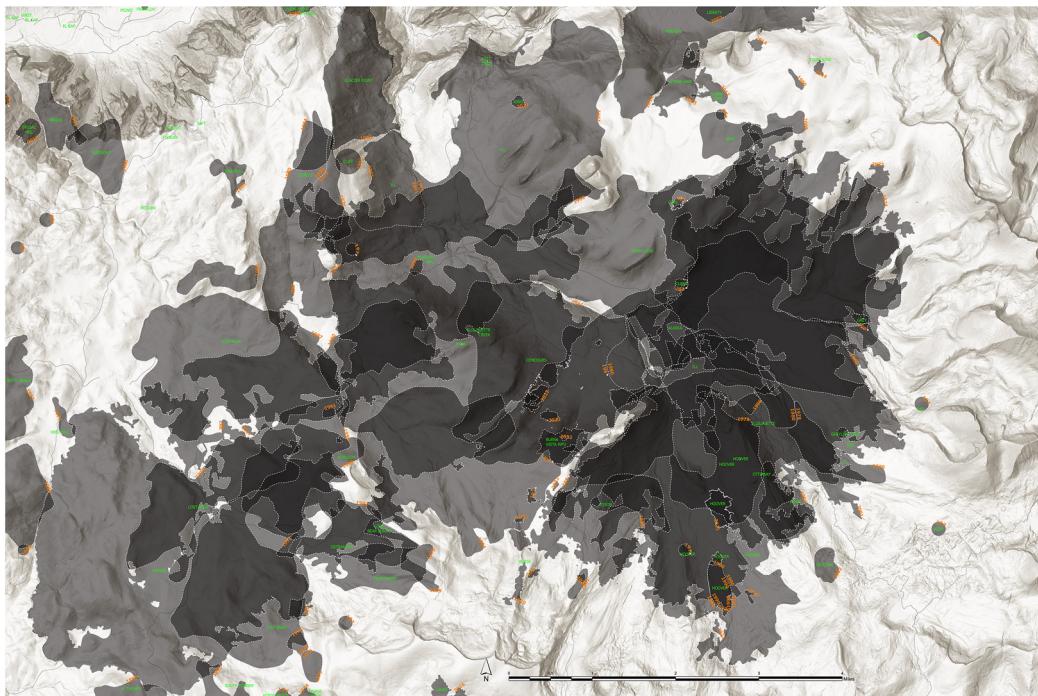
overlapping perimeters of the fires across the last 50 years, there are so many that it is hard to find a symbology that can effectively show them all (figure 12).

The Illilouette Valley is an anomaly in the larger vastness of the Sierra Nevada Mountains. It is a landscape where you can see what more diverse mountain watersheds composed of conifer forests, shrublands, meadows, and aspen groves look like through a different regimen of care. Scientists who have been doing the *care-time* work (de La Bellacasa, 2015) of meticulously monitoring changes in this landscape have observed transformative, beneficial effects (Boisramé et al., 2019; Stephens et al., 2021). Among them, habitat diversity and biodiversity have increased significantly, with forest cover being reduced, and meadows, grasslands, and shrubland increasing in extent. Changes in vegetative communities have changed the basin's hydrology, which has shifted towards increased snowpack, streamflow, and subsurface water storage, which in turn increases drought resiliency. The more frequent fire regimes also reduce high severity, uncontrollable fire risks, and the smoke they generate is significantly less than from more intense fires.

While hiking through the Illilouette with fire scientists Scott Stephens and Brandon Collins, they remarked on how much there is still to learn. From their many years of careful observation of this basin, they find that there is still so much unexplained variance and complexity in the landscape patterns they see (Buckley, 2023). And given that the dynamic phenomena they monitor is emerging from the peculiar legacy of fire suppression, which is unfurling within the context of accelerating global warming and its cascading effects, 'everything is novel' (Buckley, 2023). Historic baselines, which are elusive to define, may have little semblance or use in setting stewardship targets for the present, and even less relevance for future landscapes.

### Tending to what might become

Yosemite Park's pyro experiments in the Illilouette watershed show that fire-dependent landscapes may recover from decades of bad care, if cared for differently. For the Illilouette, this



**Figure 12.** Mapping of historic fire perimeters (courtesy of CalFire geospatial data) within the Illilouette Basin. The darker shades of grey correspond to the number of overlapping fire-perimeters (more fires appear as darker shades), illustrating high pyro-diversity within the basin.

means letting lightning-ignited wildfires happen and intervening only when necessary. To date, no intentional fires have been started by Park staff in the Illilouette and the basin has no prescribed burn unit.

But should there be? In pre-colonial California, scientists think that fire frequency intervals far exceeded what would have been expected from lightning-caused ignitions alone; a strong indication of Indigenous people intentionally and additionally burning the land for desired outcomes (Anderson, 2005), and this almost certainly occurred in the Illilouette. Today, there are areas within the Illilouette where wildfires haven't occurred for more than a decade (the historical record seems to show that fire intervals of 9 years or less was common in pre-colonial times (Buckley, 2023). Should park staff intentionally set fires in these zones as Indigenous people likely would have in the past? And more generally, should fire experiments be conducted in Yosemite to foster greater pyrodiversity and habitat conditions for threatened species? The answer among fire scientists, ecologists and fire managers is an urgent and emphatic yes (Buckley, 2023). But how to make that socially and politically palatable is another question.

Park staff are often directed to contain or put out wildfires in the Illilouette or other areas if it creates high smoke levels in Yosemite Valley, particularly during prime tourist season or when multiple fires happen simultaneously. Should Park staff be allowed to re-start these suppressed fires at more opportune times; a 'relight policy' (Buckley, 2023) to compensate for suppression mandates? Retired Yosemite National Park Fire Chief Dan Buckley thinks so, and for decades tried to institute a 'catch and release' program wherein a wildfire is contained (as needed) until it can become free-ranging. Given that such a wildfire would not have been fully suppressed (extinguished), it would not be considered a prescribed burn and thus would still be considered wild. While in the 'catch' phase, the fire would require tending to keep it burning, which park staff have done in the past, such as when the local Air Pollution Control District

asked them to keep a fire small until after Labour Day. Two days after that holiday weekend, his crew erased the containment lines and ‘the wildfire did its thing—with very little human intervention until winter snows snuffed it out’ (Buckley, 2024).

Wilderness advocates may take issue with some of these hands-on, proactive interventions. Of note, 94% of Yosemite (including all of the Illilouette Basin), falls within a wilderness designation and its management protocols. The park’s most current Wilderness Management plan (1989) acknowledges that *Wilderness management* is a contradiction in terms (with wilderness typically defined as land uncultivated and uninhabited by humans), but necessary, given how wilderness has become increasingly scarce through land use and development. But there are also contradictions in the plan’s guiding principles:

‘Wilderness management should not mold nature to suit people...Rather it should manage human use and influences so that natural processes are not altered. Managers should do only what is necessary to meet wilderness objectives, and use only the minimum tools, force, and regulation required to achieve those objectives.’ These are the principles guiding wilderness management in Yosemite (Yosemite National Park, 1989, p. 9).

In the context of trying to amend colonial mistakes and adapt to an increasingly destabilised climate, how should managers ‘minimally’ act so as leave ‘natural’ processes unaltered? There are profound contradictions here, and ontologically, the assumption that wilderness is unmolded by people is wrong. In the Illilouette, its untenable, as it has been recast by people multiple times: first by thousands of years of Indigenous/traditional ecological practices, and then by settler colonialism, which created the wilderness myth purporting that California’s landscapes were devoid of humans (Cronon, 1996; Dowie, 2011), which provided the rationale to displace those people and their land tending practices. We now seem to be in a third type of recasting: returning fire to the landscape and relearning how best to work with it.

Yosemite National Park staff are currently updating their *Wilderness Management Plan*, now called the *Wilderness Stewardship Plan* (Yosemite National Park, n.d.). At a backpacking retreat in the summer of 2023 in the Illilouette Basin, Park staff and scientists and myself came together to think through many of the stewardship challenges they face, particularly with respect to fire (Buckley, 2023). One proposed idea is to change how wilderness is understood and defined, arguing that protecting wilderness is, above all, about *protecting the processes* that make the landscapes we value (Buckley, 2023). As a case in point, let us briefly return to the threatened sequoia groves.

About 130 kilometres south of Yosemite are Sequoia and Kings Canyon National Parks. In 2020 and 2021, large, forested areas of these parks were burned in high-severity fires due to the combined impact of fire suppression and climate change. Park staff are of the opinion that ‘natural regeneration may not be sufficient to support self-sustaining groves into the future, particularly as the fires killed an unprecedented number of reproductive sequoia trees in the groves themselves’ (National Park Service, n.d.). If the sequoia groves are not able to regenerate, they will convert to shrub-dominated plant communities (rather than forest), which could have a range of detrimental ecological impacts.

Park staff are tending to this concern by planting sequoia seedlings in select areas where post-fire survey data indicates regeneration is unlikely (National Park Service, n.d.). For park staff, this is akin to what the sequoias ‘would have done *naturally* had they not experienced extensive severe fire effects during recent fires’ (National Park Service, n.d., italics added). But not everyone sees it that way. Four environmental groups have since filed a different lawsuit against the National Park Service for planting the seedlings, claiming that ‘*Nature* does not need our help’, and that ‘we should still allow these *natural* ecosystems to respond *as they want to* the changes brought about by the changing climate’ (Park & Vranken, 2023, italics added), based on the minimal to non-intervention mandates of the 1964 Wilderness Act.

When the Wilderness Act was penned in 1964, it is very likely that its authors had minimal awareness of impending human-caused climate change and its impacts. The same is likely true

of the mismeasures of fire suppression policies. Here again we see different temporalities colliding and political genres being torqued in different directions. To be clear, environmentalists are suing to ensure that an imperilled charismatic tree is not actively cared for. They are arguing to just *let it be*. But is this stance unknowingly embroiled in and advancing colonial ideologies of nature and wilderness—of mythical lands in California that do not need, benefit, or rely on human tending, even though they always have since people were around (Anderson, 2005)?

This is the contested, post-colonial *feral wilderness* we live in. It is an anthropogenic age of fire that begets ever more fire (Pyne, 2021). An age of accelerated change for nearly all landscapes, which are poised to morph and migrate into new forms. As park staff and scientists know, without active intervention, there will be wholesale transitions in ecosystems (Buckley, 2023). In this context, what is cared for and how? And what are the limits of what can be cared for if everything is in fast forward transformation?

Yosemite National Park has a goal of beneficially burning 6,475 hectares of the park per year. This goal is not consistently met (and when it is, its typically the large, destructive burns that fill the quota). Park staff face a variety of challenges in meeting these targets, like limited personnel and funding to do the work. Other challenges are political and ideological, as former fire chief Dan Buckley says, ‘putting fires out is always easier than starting them’ (Personal Communication, September 2023). Letting wildfires burn or intentionally starting them comes with liability issues and immediate risks. Politically, it is easier to suppress fire, but that delays and compounds risks and problems into the future for others to deal with.

Yosemite Park staff can prioritise the care of select areas, such as the Mariposa Grove, if they are small and valued enough to do so. But many areas, such as those burned in the Washburn Fire, reveal limits of how much land can be cared for. Park staff must choose where they focus their efforts and share a sense of urgency in making those decisions. As one staff member said, with respect to climate change impacts, ‘I thought we had more time...we don’t’ (Buckley, 2023).

If Yosemite National Park is struggling to meet its fire stewardship goals—a proactive leader in this domain—imagine the rest of the Sierra Nevada Mountains, California as a whole, and much of the western US. What is care in the context of knowing we cannot save all the world as it rapidly becomes something other than what we have known? How are these *triage of care* decisions to be made (Milligan, 2024)?

Care spans scales. As a national park, Yosemite is dependent on the funding it gets from Congress, enmeshing it in Federal governance. The rest it gets through park entrance fees tied to individual people who travel to it from all over the world. How might Yosemite further leverage its multi-scaler social networks to help care for itself, its staff, and perhaps landscapes beyond its defined boundary? We might ask the same question of other organisations—be they Federal and state agencies or NGOs.

What about tending to relations with Indigenous people whose lands were taken from them? In California, there have been recent efforts to acknowledge Indigenous stewardship and sovereignty, particularly with respect to cultural burning and Indigenous sovereignty (Legiscan, n.d.; Wildfire and Forest Resilience Task Force, 2022). How the park addresses past and ongoing legacies of colonialism is a critical care question. In what ways might Indigenous tribes be consulted and integrated in stewardship practices and goals for the park that also benefit them? Are there ways the park might be co-managed? Might more of its staff and leadership positions be assumed by Indigenous people? Might land be given back, and Indigenous sovereignty be acknowledged? As Tiffany Kaewen Dang writes, ‘Land is the most essential aspect of all forms of colonialism’ (Dang, 2021, p. 1004). And ‘If colonialism is about the control of land, then conversely, decolonisation requires the complete subversion of the power(s) controlling that land. Decolonisation starts with land’ (Dang, 2021, p. 1004–1005). Giving land back is potentially the most reparative, transformative acts of care that can be done, but this has historically been politically hard to achieve. But the land back movement is gaining momentum and happening in places across California (Cowan, 2024). Can this happen in Yosemite?

Perhaps the only way to know or thoughtfully explore what is possible and what might be desired, as collective visions for a future Yosemite, is by doing the slow, caring work of making and building new relationships that actively tend to past mistakes.

## Acknowledgements

I would like to thank Yosemite Park staff for all their assistance with this research, and to Dan Buckley and Garrett Dickman in particular for multiple interviews and extensive guided fieldwork within the Park. I would also like to thank Emily Schlickman for initial research we conducted on Yosemite.

## Research ethics and consent

The manuscript was shared with the fieldwork participants identified in the manuscript to verify accuracy and to offer corrections. Participants consented to text content and being identified/named in the text via email correspondence.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Notes on contributor

**Brett Milligan** is a professor of landscape architecture at the University of California, Davis, and is a founding member of the Dredge Research Collaborative. At UC Davis, he is the director of the Metamorphic Landscapes Lab, dedicated to advancing multi-benefit adaptations to accelerated landscape change through design research and transdisciplinary practices. Much of his work is based in California, reworking colonial legacies of land reclamation, water infrastructure and fire suppression. Recent projects include Public Sediment/Unlock Alameda Creek for the Bay Area Resilient by Design Competition, Franks Tract Futures, Delta Island Adaptations, and Just Transitions in the Sacramento-San Joaquin Delta: Drought, Sea-Level Rise and Salinity, funded by the University of California's Multicampus Research Programs and Initiatives grant. He is the co-author of two recent book publications: *Design by Fire: Resistance, Co-Creation and Retreat in the Pyrocene* (Routledge), and *Silt Sand Slurry: Dredging, Sediment, and the Worlds We Are Making* (ORO ARD).

## Data availability statement

No data other than in the manuscript is available.

## References

- Adam, B., & Groves, C. (2007). *Future Matters: Action, Knowledge, Ethics*. Brill.
- Anderson, K. M. (2005). *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources*. University of California Press.
- Boisramé, G. F. S., Thompson, S. E., Tague, C., & Stephens, S. L. (2019). Restoring a natural fire regime alters the water balance of a Sierra Nevada catchment. *Water Resources Research*, 55(7), 5751–5769. <https://doi.org/10.1029/2018WR024098>
- Buckley, D. (2023). Yosemite National Park, Illilouette Basin hiking retreat.
- Buckley, D. (2024). Correspondence with author.
- Cephas, J., Marjanović, I., & Miljački, A. (2022). Pedagogies for a broken world. *Journal of Architectural Education*, 76(2), 2–4. <https://doi.org/10.1080/10464883.2022.2097491>
- Chakrabarty, D. (2021). *The Climate of History in a Planetary Age*. University of Chicago Press.
- Cowan, J. (2024). In California, tribal members are reclaiming the land of the flowing water. *The New York Times*. <https://www.nytimes.com/2024/06/16/us/california-native-american-tribes.html>
- Cronon, W. (1996). The trouble with wilderness: or, getting back to the wrong nature. *Environmental History*, 1(1), 7–28. <https://doi.org/10.2307/3985059>
- Dang, T. K. (2021). Decolonizing landscape. *Landscape Research*, 46(7), 1004–1016. <https://doi.org/10.1080/01426397.2021.1935820>

- de La Bellacasa, M. P. (2015). Making time for soil: Technoscientific futurity and the pace of care. *Social Studies of Science*, 45(5), 691–716. <https://doi.org/10.1177/0306312715599851>
- de La Bellacasa, M. P. (2017). *Matters of care: Speculative ethics in more than human worlds*. University of Minnesota Press.
- Denevan, W. M. (1992). The Pristine Myth: The landscape of the Americas in 1492. *Annals of the Association of American Geographers*, 82(3), 369–385. <https://doi.org/10.1111/j.1467-8306.1992.tb01965.x>
- Dowie, M. (2011). *Conservation refugees: The hundred-year conflict between global conservation and native peoples*. MIT press.
- Dowie, M. (2019). The myth of a wilderness without humans. <https://thereader.mitpress.mit.edu/the-myth-of-a-wilderness-without-humans/>
- Fitz, A., Elke, K., and Architekturzentrum W., eds. (2019). *Critical care: Architecture and urbanism for a broken planet*. MIT Press.
- Forest History Society. (n.d.). *U.S. Forest Service Fire Suppression*. <https://foresthistory.org/research-explore/us-forest-service-history/policy-and-law/fire-u-s-forest-service/u-s-forest-service-fire-suppression/>
- Hankin, L. E., Anderson, C. T., Dickman, G. J., Bevington, P., & Stephens, S. L. (2023). How forest management changed the course of the washburn fire and the fate of Yosemite's Giant Sequoias (*Sequoiadendron giganteum*). *Fire Ecology*, 19(1), 40. <https://doi.org/10.1186/s42408-023-00202-6>
- Hankins, D. L. (2024). Climate resilience through ecocultural stewardship. *Proceedings of the National Academy of Sciences of the United States of America*, 121(32), e2310072121. <https://doi.org/10.1073/pnas.2310072121>
- Jackson, S. J. (2014). Rethinking repair. In *Media technologies: Essays on communication, materiality, and society*. 221–239.
- Jacobs, S., & Wiens, T. (2023). Landscapes of care: Politics, practices, and possibilities. *Landscape Research*, 49(3), 1–17.
- Justia US Law. (2023). Earth Island Institute v. Cicely Muldoon, et al, No. 22-16483 (9th Cir., Justia US Law). <https://law.justia.com/cases/federal/appellate-courts/ca9/22-16483/22-16483-2023-09-12.html>
- Keeley, J. E. (2009). Fire intensity, fire severity and burn severity: A brief review and suggested usage. *International Journal of Wildland Fire*, 18(1), 116–126. <https://doi.org/10.1071/WF07049>
- Kilgore, B. M. (2005). Fire management in parks and protected areas: Introduction and summary. In *The George Wright Forum*, vol. 22, no. 4, pp. 8–11. George Wright Society.
- Kimmerer, R. (2011). Restoration and reciprocity: The contributions of traditional ecological knowledge. *Human Dimensions of Ecological Restoration*. Island Press. 257–276.
- Kohlruss, C. (2022). Yosemite sued for logging, lawsuit by CA conservation group, Fresno Bee, June 16th. <https://www.fresnobee.com/news/california/yosemite/article262477057.html>
- Legiscan. (n.d.). AB642 | 2021–2022 | Regular Session | Amended, <https://legiscan.com/CA/text/AB642/id/2416063>
- Loveridge, E. W. (1944). The Fire Suppression Policy of the US Forest Service. *Journal of Forestry*, 42(8), 549–554.
- MacDonald, G., Wall, T., Enquist, C. A. F., LeRoy, S. R., Bradford, J. B., Breshears, D. D., Brown, T., Cayan, D., Dong, C., Falk, D. A., Fleishman, E., Gershunov, A., Hunter, M., Loehman, R. A., van Mantgem, P. J., Middleton, B. R., Safford, H. D., Schwartz, M. W., & Trouet, V. (2023). Drivers of California's changing wildfires: A state-of-the-knowledge synthesis. *International Journal of Wildland Fire*, 32(7), 1039–1058. <https://doi.org/10.1071/WF22155>
- Manning, B. R. M. (2023). Relationships, respect, and reciprocity: approaches to learning and teaching about Indigenous cultural burning and landscape stewardship. In J Sikina, D Jessie, G Jody, S. F Samara, & E Edward *Teaching Environmental Justice: Practices to Engage Students and Build Community*.
- Mattern, S. (2018). Maintenance and care. *Places Journal* <https://placesjournal.org/article/maintenance-and-care/>. <https://doi.org/10.22269/181120>
- Middleton, J., & Samanani, F. (2021). Accounting for care within human geography. *Transactions of the Institute of British Geographers*, 46(1): 29–43. <https://doi.org/10.1111/tran.12403>
- Miller, C., & Davis, B. (2009). Quantifying the consequences of fire suppression in two California national parks. In *The George Wright Forum*. (vol. 26, no. 1, pp. 76–88). George Wright Society.
- Milligan, B., & Schlickman, E. (forthcoming). Futuring of fire. *Journal of Landscape Architecture, Wildfires Special Issue*, 26–39.
- Milligan, B. (2024). "Triage of Care", in, "Field Notes on Repair: 2. *Places Journal*, <https://placesjournal.org/article/field-notes-on-repair-2/>
- Milligan, B. (2022). Accelerated and decelerated landscapes. *Places Journal* <https://placesjournal.org/article/accelerated-and-decelerated-landscapes/>. <https://doi.org/10.22269/220208>
- Milligan, B. (2015). Landscape migration. *Places Journal*. <https://doi.org/10.22269/150629>
- Moore, J.W. ed., (2016). *Anthropocene Or capitalocene?: Nature, history, and the crisis of capitalism*. Pm Press.
- National Park Service. (n.d.). Re-establish tree seedlings in severely burned giant sequoia groves and adjacent fisher habitat in sequoia and Kings Canyon National Parks. <https://parkplanning.nps.gov/projectHome.cfm?projectID=107200>
- National Park Service. (2022). Scenic Vista Management Plan, Yosemite National Park, <https://www.nps.gov/yose/getinvolved/vista.htm>

- National Park Foundation. (2023). A new generation preserves tribal land and culture in America's national parks, <https://www.nationalparks.org/news-and-updates/media-appearances/new-generation-preserves-Tribal-land-culture-national-parks>
- Olmsted, F. L., et al. (1952). The Yosemite Valley and the Mariposa Grove of Big Trees: A Preliminary Report. *Landscape Architecture Magazine*, 45(1), 12–25.
- Park, J., & V., Vranken, J. (2023). Why environmentalists are suing the National Park Service to prevent it from planting trees, CNN, <https://www.cnn.com/2023/11/27/us/national-park-sequoia-planting-lawsuit-climate>
- Purdy, J. (2015). *After nature: A politics for the Anthropocene*. Harvard University Press.
- Pyne, S. J. (2021). *The Pyrocene: How we created an age of fire, and what happens next*. University of California Press.
- Pyne, S. J. (2023). *Pyrocene Park: A Journey into the Fire History of Yosemite National Park*. University of Arizona Press.
- Rifkin, M. (2017). *Beyond settler time: Temporal sovereignty and Indigenous self-determination*. Duke University Press.
- Schlickman, E., & Milligan, B. (2023). *Design by fire: Resistance, co-creation and retreat in the Pyrocene*. Taylor & Francis.
- Shive, K. L., Wuenschel, A., Hardlund, L. J., Morris, S., Meyer, M. D., & Hood, S. M. (2022). Ancient trees and modern wildfires: Declining resilience to wildfire in the highly fire-adapted giant sequoia. *Forest Ecology and Management*, 511, 120110. <https://doi.org/10.1016/j.foreco.2022.120110>
- Spence, M. (1996). Dispossessing the wilderness: Yosemite Indians and the National Park Ideal, 1864–1930. *Pacific Historical Review*, 65(1), 27–59. <https://doi.org/10.2307/3640826>
- Steel, Z. L., Brandon, M., Collins, D. B., Sapsis., & S. L., Stephens. (2021). Quantifying pyrodiversity and its drivers. *Proceedings. Biological Sciences*, 288(1948), 20203202. <https://doi.org/10.1098/rspb.2020.3202>
- Stephens, S. L., Thompson, S., Boisramé, G., Collins, B. M., Ponisio, L. C., Rakhamatulina, E., Steel, Z. L., Stevens, J. T., van Wagendonk, J. W., & Wilkin, K. (2021). Fire, water, and biodiversity in the Sierra Nevada: A possible triple win. *Environmental Research Communications*, 3(8), 081004. <https://doi.org/10.1088/2515-7620/ac17e2>
- Southard, L. F. (2011). The history of cooperative forest fire control and the Weeks Act. *Forest History Today*, Spring/Fal, 17–20.
- Travis, W. R. (2007). *New geographies of the American West: Land use and the changing patterns of place*. Island Press.
- Tronto, J. C. (2010). Creating caring institutions: Politics, plurality, and purpose. *Ethics and Social Welfare*, 4(2), 158–171. <https://doi.org/10.1080/17496535.2010.484259>
- Tronto, J. C. (2019). Caring architecture. In F Angelika, K Elke, & W Architekturzentrum, eds. *Critical care: Architecture and urbanism for a broken planet*. MIT Press.
- Van Wagendonk, J. W. (2007). The history and evolution of wildland fire use. *Fire Ecology*, 3(2), 3–17. <https://doi.org/10.4996/fireecology.0302003>
- Wildfire and Forest Resilience Task Force. (2022). *California's Strategic Plan for Expanding the Use of Beneficial Fire*, <https://wildfiretaskforce.org/wp-content/uploads/2022/05/californias-strategic-plan-for-expanding-the-use-of-beneficial-fire.pdf>
- Whyte, K. (2020). Against crisis epistemology. In *Routledge handbook of critical Indigenous studies*. (pp. 52–64). Routledge.
- Xanthopoulos, G., Leone, V., & Delogu, G. M. (2020). The suppression model fragilities: The firefighting trap. In *Extreme Wildfire Events and Disasters*, pp. 135–153. Elsevier.
- Yosemite National Park. (1989). *Wilderness management plan*, <https://parkplanning.nps.gov/document.cfm?parkID=347&projectID=47112&documentID=69176>
- Yosemite National Park. (n.d.). *Wilderness Stewardship Plan*, <https://parkplanning.nps.gov/projectHome.cfm?projectID=47112>