Justin Dowdall

Pyrological Rhetorical Ecologies: Contested Discourse in the Redwood Forest

PLANT PERSPECTIVES
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ABSTRACT

This essay employs a critical rhetorical ecologies framework to examine forest fire management and post-fire restoration discourse in the context of *Wilderness Watch, Sequoia Forest Keeper, Tule River Conservancy, and John Muir Project v. National Park Service*. The case uniquely positions environmental advocacy groups in active litigation against the National Park Service (NPS) over post-wildfire replanting initiatives in the Giant Sequoia groves of Kings Canyon National Park. By analysing this legal and ecological conflict, the essay explores the rhetorical situation of science communication within contested environmental policy. Drawing on the scientific work of Gilles Deleuze and Félix Guattari, the analysis reveals how dominant strands of scientific reasoning – shaped by legal and institutional rhetorics – systematically marginalise alternative ecological perspectives in favor of judicial logics aligned with 'royal' scientific discourse. Deleuze and Guattari were chosen because of their foundational contributions to science communication. The essay raises critical questions about how forest management is communicated and contested among diverse public stakeholders.

KEYWORDS

Forest fire, critical rhetoric, California wildfire, environmental law, Gilles Deleuze, Félix Guattari

1. FRAMEWORK

In recent years, the intensifying ecological crisis – exemplified by increasingly frequent megafires, biodiversity loss and the degradation of forest ecosystems – has prompted renewed scrutiny of dominant conservation discourses and management strategies in the Western United States. The realities of the crisis have been felt deeply, specifically in the southern California Sierra Mountains – home to some of the United States' most beloved trees, the Giant Sequoias. These trees, brought to the edge of extinction as a result of over-harvesting, are again at threat from climate change that has left the area subject to increased and persistent risk of high intensity fires.[1] According to the National Park Service, the fires are not only more intense but more rapidly occurring with only ten to

1 Brendan Byrne, Junjie Liu, Kevin Bowman et al., 'Carbon emissions from the 2023 Canadian wildfires', *Nature* 633 (2024): 835–39.

fifteen per cent of wildfires starting on their own, and 85 to ninety per cent deemed to be the result of human activity.[2] In the wake of these fires, in a historically fire sensitive region, both environmental groups and government organisations have sought to understand and set in place policy to protect the forests from future devastating burns that impact both the broader ecological diversity and human life in the area.

This article centres the broader question of ecological intervention from the perspective of the trees, specifically focusing on how interventions such as controlled burning, cutting and replanting are a part of a larger biosocial matrix of care. In this regard, the arguments addressed in the article are situated primarily alongside the foundational work of Tema Milstein et al., specifically critiques of nature/culture binaries as a matter of communication/rhetorical theory and highlighting how humans define nature and how rhetoric can trouble supposed binaries.[3] Building on the eco-rhetorical turn, science communication can consider plant perspectives when operationalising empirical data in public discourse – precisely, how industrial science informs legal decisions and the ways in which evidentiary claims uphold or exclude alternative perspectives in ecological debates.[4]

As a primary case study this paper operationalises the ongoing (at the time of writing) litigation between the National Park Service (NPS) and a coalition of environmental groups that, despite receiving local attention, has thus far avoided the national spotlight.[5] The lawsuit was filed

2 'Wildfire causes and evaluations', National Park Service, effective 15 April 2025: https://www.nps.gov/articles/wildfire-causes-and-evaluation.htm; Claire Wolters, 'Wildfires can move shockingly fast. Here's how they start—and how to stop them', *National Geographic*, 10 Aug. 2023: https://www.nationalgeographic.com/environment/article/wildfires#:~:text=How%20wildfires%20start,%2C%20discarded%20cigarettes%2C%20and%20arson

3 Tema Milstein, Mariko Oyama Thomas, Jeff Hoffmann and John Carr, '"Even I am a part of Nature": Unraveling the human/nature binary to enable systems change', *Environmental Communication* 17 (2023): 421–36. http://dx.doi.org/10.1080/17524032.2023.2199946

4 C.M. Condit, J. Lynch and E. Winderman, 'Recent rhetorical studies in public understanding of science: Multiple purposes and strengths', *Public Understanding of Science* **21** (4) (2012): 386–400.

5 United States District Court Eastern District of California Fresno Division Wilderness Watch, Sequoia Forestkeeper, Tule River Conservancy and John Muir Project v. National Park Service Case 1:23-cv-01398-ADA-BAM

in response to the 2020–2021 fire season, which caused unprecedented damage to and heightened the extinction risk of the local Giant Sequoia population. The suit emerged via the publishing of an Environmental Assessment entitled *Re-establish Tree Seedlings in Severely Burned Giant Sequoia Groves and Adjacent Fisher Habitat* in which the NPS proposed thinning and replanting of Redwood seedlings in the area. This action was publicly and legally contested by environmental groups who have accused the park system of violating the 1964 Wilderness Act due to a lack of thorough Environmental Assessment (EA) or Environmental Impact Statement (EIS) justifications. Claims by the environmental groups accused the NPS of using drought emergency as a cover to justify its logging practices in designated wilderness areas.[6]

As a result of this contention, the nonprofit environmental coalition constructed of Wilderness Watch, Sequoia Forest Keepers and Tule River Conservancy and John Muir Project (the conservation groups involved in the suit) take issue with the fact that the NPS

> plans to use chainsaws and helicopters and other associated equipment to cut down trees and conduct extensive burning across thousands of acres of designated Wilderness illustrate the agency's fundamental disregard for the important strictures of Wilderness protection under federal law. The fuzzy concepts of 'fuels reduction' and forest 'treatment' have for decades masked extensive and impactful commercial timber activity – particularly across the non-Wilderness portions of the National Forest System.[7]

In essence, the case above highlights the plaintiff's belief that the NPS is undermining wilderness protections and ecological processes that have historically sustained these forests by seeking to exclude human intervention, including an amendment against a post-fire reseeding of the Redwood trees. The Amendment to the case 1:23-cv-01398-ADA-BAM is significant, as preventing NPS from completing the tree replanting could have broader implications for wilderness management across US Forest Management culture and

6 Wilderness Watch, Sequoia Forestkeeper and Tule River Conservancy and John Muir v. National Park Service Case 1:23-at-00823: https://wildernesswatch.org/wp-content/uploads/2024/09/SEKI-Complaint-9-25-2023.pdf

7 Ibid., p. 2.

for the ways in which human-forest interactions are imagined.[8] As a result, this judicial decision will not only shape ecological policy but also how nature-culture interactions are understood.[9]

The plaintiffs also contend that natural regeneration should be allowed to take its course and that fires are crucial for sequoia reproduction. As George Nickas, Executive Director of Wilderness Watch (one of the groups involved in the suits) notes, the 'Giant Sequoias evolved with fire and without the Park Service since time immemorial'.[10] As forest management and other environmental policy areas increasingly rely on the judiciary to resolve internal conflicts, it is necessary to examine how the intersections between ecological science and legal frameworks shape public policy and how limited accounts of alternative ecological epistemologies are reproduced or excluded from public discourse[11] – specifically when both parties involved in the case lay claim to empiricism and data driven decision making processes. The complexity of the case is valuable to rhetorical study as it is unexpected for environmental groups to sue the park service over what are seemingly ecologically friendly acts (specifically the amendment blocking native tree planting) when the park service ethos is so grounded in protecting environmental areas.

The essay recognises the case as taking part in 'ambulant science', following Deleuze and Guattari's concept of minoritarian knowledge production – where novel problems are invented outside dominant scientific paradigms yet remain entangled with their classificatory systems.[12] An exploration of the needs of trees and their biosocial re-

8 Wilderness Watch, Sequoia Forestkeeper, Tule River Conservancy and John Muir Project, v. National Park Service Amended Complaint for Declaratory and Injunctive relief Case 1:23-cv-01398-ADA-BAM: https://wildernesswatch.org/wp-content/uploads/2024/09/Amended-SEKI-Complaint-11-17-2023.pdf

9 Madison Jones, 'A counter history of rhetorical ecologies', *Rhetoric Society Quarterly* **51** (4) (2021): 336–52.

10 George Nickas, Ara Marderosian and Carla Cloer, 'Tule River Conservancy conservation groups sue National Park Service to protect wilderness in Sequoia and Kings Canyon National Parks': https://www.wildernesswatch.org/images/wild-issues/2023/SEKI_Lawsuit_Press_Release_9-25-2023.pdf (accessed 1 July 2025).

11 Susanna Nocentini, Orazio Ciancio, Luigi Portoghesi and Piermaria Corona, 'Historical roots and the evolving science of forest management under a systemic perspective', *Canadian Journal of Forest Research* **51** (2) (2021): 163–71.

12 Gilles Deleuze and Felix Guattari, *Nomadology: The War Machine* (Semiotext (e), 1986), p. 351.

lational dynamic with fire is necessary to combat the aforementioned rhetorical erasure. This builds on a critical rhetorical orientation[13] and a rhetorical ecologies approach[14] as a valuable addition to their insight. In this instance, the function of the two perspectives allows this analysis to interrogate how conservation discourses – particularly those related to fire management and habitat restoration – construct legitimacy through industrialised scientific frameworks. That is, exclusion of alternative perspectives within eco-legal discourse is evidentiary of how dominant paradigms of forest management are upheld in public policy and brought forth in contemporary circulation rhetorically.[15]

Critical rhetorical literature is limited on the rhetorical construction of fire management. However, STS scholar Cynthia Twyford Fowler has contributed to this line of argumentation, centring her reading of forest fire on what she dubs 'Pyrosociality', in which power and vulnerability are mapped onto multispecies encounters mediated by fire and wherein she ultimately recommends 'turning to' the needs of fire-adapted species.[16] Fowler's exploration into fire as critical to ecological thinking is grounded within her identification of fire as exhibiting a biosocial power that makes and unmakes life itself in ways that highlight the critical intersection of minoritarian and ecological thinking. Pyrologic or pyrological thinking is useful to identify uneven relationships as some species benefit from fire's presence while some do not. Fowler's call for a 'mixing of contradictions' and 'juxtaposition' of fire also provides conceptual shifts in point of view concerning the ways in which we understand fire and human influence as shaping the landscapes in line with multispecies alliances.[17] Pyrosocial inclusions challenge overly simplified views of human nonhuman sociality, recategorising an inherent positive

13 Raymie E. McKerrow, 'Critical rhetoric: Theory and praxis', *Communications Monographs* **56** (2) (1989): 91–111.

14 Jenny Edbauer, 'Unframing models of public distribution: From rhetorical situation to rhetorical ecologies', *Rhetoric Society Quarterly* **35** (4) (2005): 5–24. https://doi.org/10.1080/02773940509391320

15 Elizabeth Dickinson, 'Ecocultural conversations: Bridging the human-nature divide through connective communication practices', *Southern Communication Journal* **81** (1) (2016): 32–48.

16 Cynthia Twyford Fowler, 'Pyrosociality: The power of fire in transforming the Blue Ridge Mountain ecoregion', Special Issue on Flood and Fire, *Environment and Society* **14** (1) (2023): 84–103. https://doi.org/10.3167/ares.2023.140106

17 Ibid., 87.

relationality or multispecies arrangements as beneficial – nodding to the always partial perspective of human modalities of care.[18]

To understand the full usefulness of Fowler's contribution to forest management, her work must be placed within the broader discussion of ecological communication that can serve as a toolbox for unpacking contemporary ecological logics in contested rhetorical spaces. Additionally, classical work addressing ruin and the possibility of life in ruined landscapes evokes scholarship by significant critical researchers including Connie Barlow's study of environmental ghosts, Kate Brown's exploration of Chernobyl and Eben Kirksey, Nicholas Shapiro and Maria Broadline's challenge to environmental purity models in their essay *Hope in Blasted Landscapes*.[19]

Considering the literature above, the ways in which forest management is being considered depend heavily on our concepts of nature and wilderness that go unmarked or get dissolved by conceptual frameworks. These frameworks inform public scientific debate and legal processes that drive policy without mention or critique of industrialised scientific logic or prioritisation of data rather than critical or minoritarian perspectives. The emergence of new knowledge is then highlighted as entering the discourse after a reconfiguration of what is paradigmatically understood as empirically grounded. As a result, this essay provides an exploratory approach in line with recent gains in other-than-human scholarship.

II. CASE STUDY

The case of Wilderness Watch, Sequoia Forestkeeper, and Tule River Conservancy v. National Park Service is first and foremost a response to

18 Rosi Braidotti, 'A theoretical framework for the critical posthumanities', *Theory, Culture & Society* **36** (6) (2019): 20.

19 Connie Barlow, *The Ghosts of Evolution: Nonsensical Fruit, Missing Partner, and Other Ecological Anachronisms* (New York: Basic Books, 2000); Kate Brown, 'Marie Curie's finder prints: Nuclear spelunking in the Chernobyl Zone', in Anna Lowenhaupt Tsing, Nils Bubandt, Elaine Gan and Heather Anne Swanson (eds), *Arts of Living on a Damaged Planet* (Minneapolis: University of Minnesota Press, 2017), G33; Eben Kirksey, Nicholas Shapiro and Maria Brodine, 'Hope in blasted landscapes', in Kirksey (ed.), *The Multispecies Salon* (Durham NC: Duke University Press, 2014), pp. 29–63.

three major fires of 2020–2021, now identified as KNP Complex – the Cabin, Colony, and Paradise Fires – all of which significantly impacted the Sierra Nevada region of the Western United States.[20] According to initial reports, the KNP Complex fires caused the deaths of an estimated thirteen to nineteen per cent of the world's large Sequoias, equating to approximately 8,431–11,897 trees.[21] These numbers are significant as the Giant Sequoia is not only a tree that is rhetorically an icon in the United States, but also considered endangered, with an estimated 80,000 trees remaining.[22] These numbers are directly correlated to climate change which is increasing the length and severity of the California fire seasons due to hotter temperatures and more severe droughts.[23]

NPS's response to the fires is situated within a policy-driven debate between action and nonaction, predicated on questions of the artificial and natural as demonstrated by the plan to 'intensively reconfigure the forest structure in and around sequoia groves deep within the Wilderness areas'.[24] The lawsuit is driven by the plaintiffs' goal to prohibit human interference in 'natural'[25] ecosystems, including tree planting; arguing that replanting trees in designated wilderness areas violates the 1964 Wilderness Act (Public Law 88-577) which was set up to protect wild spaces from human impact in the Sequoia and Kings Canyon National Parks.[26] The plaintiffs argue that the damage to the

20 Wilderness Watch, Sequoia Forestkeeper, Tule River Conservancy and John Muir v. National Park Service Case 1:23-at-00823.

21 Kristen Shive, Christy Brigham, Tony Caprio and Paul Hardwick, 'Fire Season impacts to Giant Sequoias', *National Park Service, Sequoia and Kings Canyon National Parks* (2021): https://www.nps.gov/articles/000/giant-sequoias-face-new-threats.htm

22 This number is contested, a fact that is addressed later in the essay.

23 National Park Service, 'Wildfires kill unprecedented numbers of large Sequoia trees', 2023: https://www.nps.gov/articles/000/wildfires-kill-unprecedented-numbers-of-large-sequoia-trees.htm#:~:text=Lightning%20started%20the%20Castle%20Fire,where%20giant%20sequoias%20occur%20naturally

24 Nickas, Marderosian and Cloer, 'Tule River Conservancy'.

25 This term is in quote marks to allude to the necessity of troubling the term natural while equally addressing the stubbornness of its use.

26 The Wilderness Act of 1964 is a significant piece of US environmental legislation that established the legal framework for the protection of wilderness areas in the United States.

forest would be greater as a result of human intervention than it would be via non-action. The NPS proposes that the risk of not planting is valid, as the fires reduced the trees' number to a potential extinction event, where if intervention did not take place the Redwoods would be at risk of extinction. That is, doing nothing would put the species at risk.

Not only were these fires high-intensity, but they also occurred at greater frequency than is considered historically average. As noted by the National Park Service, 'Over 85 percent of all giant sequoia grove acreage across the Sierra Nevada has burned in wildfires between 2015 and 2021, compared to only a quarter of this area in the preceding century.'[27] The rise in frequency of high intensity fires has necessitated reimagining, and debates surround prescribed burning, seedling replanting and forest floor management as ecosystems have not been given time to recover from previous fire events as a result of human action.[28] The more these events take place, the more likely it is that fires will happen again, creating an ecologically devastating feedback loop. That is, the NPS claims that the frequency of high-intensity fires has been correlated to reduced ecosystem regeneration.[29]

As the Public communications by the NPS argue that 'natural regeneration is likely insufficient to support a self-sustaining population of Sequoias'[30] and that 'areas where these forests are otherwise unlikely to naturally recover following the impacts of high-severity fire'.[31] The

27 Shiveet al., 'Fire season impacts to Giant Sequoias'.

28 NPS's actions challenged here include its 'Fuels Reduction Efforts to Protect Sequoia Groves in Sequoia and Kings Canyon National Parks from the Devastating Effects of High-Intensity Fire' (hereafter, the 'Fuels Reduction Project'), authorised in October 2022; and its 'Re-establish Tree Seedlings in Severely Burned Giant Sequoia Groves and Adjacent Fisher Habitat' (hereafter, the 'Wilderness Planting Project), authorised in October 2023.

29 Kristen L. Shive, Amarina Wuenschel, Linnea J. Hardlund, Sonia Morris, Marc D. Meyer and Sharon M. Hood, 'Ancient trees and modern wildfires: Declining resilience to wildfire in the highly fire-adapted Giant Sequoia', *Forest Ecology and Management* 511 (2022): 120110.

30 National Park Service (PEPC) Planning, Environment & Public Comment, 'Re-establish Tree Seedlings in Severely Burned Giant Sequoia Groves and Adjacent Fisher Habitat in Sequoia and Kings Canyon National Parks', 2023: https://parkplanning.nps.gov/projectHome.cfm?ProjectID=107200

31 National Park Service (PEPC) Planning, Environment & Public. Revised Environmental Assessment (EA) and Decision (FONSI), Oct. 2023: https://parkplanning.nps.gov/document.cfm?documentID=131953

park service, highlighting the rapid pace at which anthropogenic fire takes place, argues that there is insufficient forest resilience; 'to successfully re-establish – pointing these groves and proposed critical habitat toward forest recovery – as they would have done naturally had they not experienced extensive severe fire effects during recent fires'.[32] Here the NPS justifies its actions in terms of what it understands as a climate change and anthropogenic emergency predicated on both the frequency and intensity of fires as outlined by its public address, specifically 'fire season' preparedness publications.[33] The fear is that, without human intervention, the species will face extinction as the trees are not able to keep up with the human-caused high intensity fires.

The plaintiffs have also voiced concerns over the validity of the NPS's handling of the post-fire tree casualty rates. In some estimates, the loss of trees is somewhere between thirteen and nineteen per cent of the remaining species numbers.[34] The plaintiffs dispute the NPS's post-fire tree mortality estimates and the need for a reseeding programme, arguing that the actual number of seedlings in affected areas is far higher than reported, suggesting that natural regeneration may be more viable than the NPS claims. Additionally, the outcomes of the case rest on the little-known phenomenon of bud tracing where trees counted as dead were in fact still alive – meaning that trees that were counted as dead in the assessment, serving to justify actions in the forest by the NPS, were in fact not so: the trees were able to resprout because of the carbon reserves deep in their system and the seedlings resprouted because of their symbiosis with fire.

After the Castle fires, many Redwood trees managed to survive and grow new shoots and leaves through a process called *epicormic resprouting* – meaning they sprouted new growth from beneath the bark. Since the fire destroyed their entire canopy (leafy tops), they couldn't complete photosynthesis, so the new growth had to rely on energy reserves already stored inside the tree. But the resilience of these trees goes even further. The new shoots seem to come from old tissues called *meristems* – regions

32 National Park Service (PEPC) Planning, Environment & Public Comment, 'Re-establish Tree Seedlings in Severely Burned Giant Sequoia Groves'.

33 Shive et al., 'Fire season impacts to Giant Sequoias'.

34 David Soderberg, Adrian J. Das, Nathan L. Stephenson, Marc D. Meyer, Christy A. Brigham and Joshua Flickinger, 'Assessing Giant Sequoia mortality and regeneration following high-severity wildfire', *Ecosphere* **15** (3) (2024): e4789.

where growth can happen. In the cross-sections of fallen trunks, researchers found traces of old buds (called *axillary bud traces*) beneath every sprout they studied. These traces show that the buds have been slowly moving outward each year, staying just under the bark (beneath the phloem) and not being buried in the wood. In one case, they found a shoot came from a bud more than 600 years old. In another, they saw new growth from a tree more than 1,000 years old, meaning the bud had stayed dormant and functional through centuries of growth. While dormant buds are common in younger trees, finding such long-living buds in old trees is rare and shows an extraordinary mechanism of resilience and pyrosociality.[35]

Despite these claims being in alignment with the plaintiff's agenda, the language in the suit more directly responds to the reseeding efforts of the NPS in the post-fire region. Suggesting that no intervention is needed, environmental scholar/lawyer Chad Hanson, current director of the John Muir Project and a plaintiff in the lawsuit, claims the seedlings per acre occurring post-fire is typical in Redwood Mountain Grove – one of the six groves being considered for reseeding in Sequoia and Kings Canyon parks.[36] Hanson added that his group's seedling count, conducted throughout this summer and fall, saw the number of seedlings reach as high as 150,000 to 200,000 per acre in some areas – far more than reported by the NPS.[37] The fact that environmentalists were against planting trees was headline grabbing and situated the case in broader activism associated with forest management debates in which Chad Hanson was public-facing. Although there was evidence that the studies the NPS offered were flawed, the impact of reseeding, even if the numbers were higher, was unclear in terms of proposed harm. Moreover, Hanson's comments did not elucidate how the bud tracing issue and reseeding issues were fully connected.

35 I am building on and paraphrasing the work of David Peltier, Mariah Carbone, Melissa Enright et al.: 'Old reserves and ancient buds fuel regrowth of Coast Redwood after catastrophic fire', *Nature Plants* 9 (2023): 1978–85. https://doi.org/10.1038/s41477-023-01581-z

36 Andrew J. Campa, 'NPS Wants to plant Sequoias. Environmentalists sue, say there's no need to butt in', *LA Times*, 2023: https://www.latimes.com/california/story/2023-11-28/ecologist-helps-lead-lawsuit-against-national-park-service

37 Ibid.

Hanson is one of the central figures associated with the case, and has a Ph.D. in Ecology and a J.D; he uses his platform to advocate against the US Forest Service's logging practices. Hanson is public about his challenges to governmental alignment with commercial interests and his name appears in multiple public interviews and articles about the case. Hanson's role in this essay is significant for understanding the core issues at stake concerning how wilderness is imagined and the ways that industrial science is deployed, although Hanson's broader work takes a 'pro prescribed burning' stance. However, his public comments are significantly informed by the work of John Muir of whose foundation Hanson is head.[38] The identification of issues within Muir's understanding of 'nature' inherited by Hanson is critical to unlocking the details of the rhetorical position that Hanson posits. That is, the rhetorical situation of nonaction and action as being a dialectic is informed by Muir's proclamations of ecological nonaction (foundational to the Wilderness Act) as informed by his commitments, rejecting human interaction in the forest as negative – predicated on separating 'human' and 'nature' as distinct (an antiquated binary).[39]

A similar line of argument is also present in the work of environmental scholar M. Kat Anderson, in their text *Tending the Wild*, a core text in restoration ecology that looks at indigenous practices in the region.[40] In the extensive book Anderson describes the impact of Muir on ecological thinking in the US and situates him as a complex figure. Anderson is critical of Muir as exhibiting a 'shallow understanding' – an idea tied to restoration ecology narratives in which Anderson critiques the ways in which European settlers, at the time of Muir's early ecological work imagined the land as 'wild' and thus claimable but also in need

38 Chad Hanson, *Smokescreen: Debunking Wildfire Myths to Save Our Forests and Our Climate* (Lexington: The University Press of Kentucky, 2021).

39 Benjamin R. Cohen, 'Escaping the false binary of nature and culture through connection', *Organization & Environment* **18** (4) (2005): 445–57; Donna J. Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2008); Christian M. Billing, 'Eroding the human/non-human binary in between two tides: Site-specific eco-arts performance as an exploration of changing climate in a Latourian "critical zone"', *Theatre and Performance Design* **10** (3) (2024): 183–210.

40 M. Kat Anderson, *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources* (Berkeley, CA: University of California Press, 2005).

of protection.[41] This again emphasises the idea of 'nonuse of nature' – a notion that Anderson points out is both problematic and originates in John Muir's ecological thinking.

The intersection of nonaction as outlined in the case and the core assumptions of Muir's environment, which the suit replicates, elucidates core issues in the case within rhetorics surrounding the nature/culture distinction in contemporary ecological discourse as they so often replicate Muir's antiquated conceptual model. Moreover, it is clear from the case that the question of nonaction has become a theoretical false binary informed by ideology rather than knowledge application. The fact that both plaintiff and defendant were unaware of the capacity of the Redwood to bud trace is emblematic of Anderson's accusation of 'shallowness' by the royal scientific community that also seeks to use data-informed decision making with good intent. By 'royal' I am referring to Gilles Deleuze and Félix Guattari's parsing out of how authoritative science is rhetorically constructed. The distinction and proposed contrast between the royal, and what Deleuze and Guattari propose as the nomadic, or minoritarian, sciences, will be elucidated in the theoretical discussion section.

III. INTENT AND EMERGENCY

Wildfires are deeply associated with 'ecological exigency' (emergency) as they are both destructive and a force for ecological renewal. The plaintiffs argue that, not only are the death tolls and reseeding numbers proposed by the NPS incorrect, but the NPS is operating 'Under the guise of "emergency", and its actions will 'forever change the very nature of untrammeled Wilderness yet sidestep the scientific scrutiny and public participation required by NEPA' (National Environmental Protection Act).[42] They suggest that this emergency action presents a slippery-slope wherein the deployment of emergency measures will result in unilateral decision making by the Park Service, silencing alternative perspectives in the future. The plaintiffs note in the briefing that 'the agency has foregone legally required public processes and evaded important statutory restrictions that apply to its actions, and the agency

41 Ibid., p. 6.

42 Nickas et al., 'Tule River Conservancy conservation groups'.

has improperly raised the banner of "emergency" to circumvent legal compliance'.[43] Yet, the NPS claims to have done its due diligence working in good faith via community input and scientific rigour.

The goal of the agency to address the emergency and save the trees is strained not only by intent but by perspective. The different parties invoke the term 'science' as an appeal to authority to back their own positions on nature/culture distinction with no nuance or specificity. That is, rather than addressing cultural practices or other alternatives, the plaintiffs attack at the level of method and validity of the post-fire study performed by the NPS, in terms of empirical data that are on the surface warranted. Hanson has claimed publicly, 'much of the National Park Service's data come from "anecdotal sets collected by non-scientists"'.[44] Hanson describes what he calls 'lay people' as unqualified practitioners who mistakenly marked trees dead that were still alive, only badly burned.[45] The plaintiffs argue that the study's findings are fundamentally flawed, with trees that were initially counted as dead beginning to show signs of rejuvenation (bud tracing). Speaking to the field work teams' findings, in Hanson's words, 'They're well-intentioned, for sure ... but wrong'.[46] Attempting to defend the validity of the study, NPS spokesperson Sintia Kawasaki-Yee operationalised the ethos of the participants' educational backgrounds, pointing to their educational credentials to suggest they were suitably qualified. 'Looking at participants involved in the research', she said, 'they're from USGS, UC Berkeley and various experts in the field of Sequoias. This was well-researched.'[47]

This is where the bud tracing issue as a matter of erasing plant perspectives takes centre stage.[48] The most recent 'scientific' research flies in the face of Kawasaki's claim.[49] The fact that Sequoia trees have a natural immunity to high-intensity fire not only speaks to the resilience of the species but highlights a deeper relational dynamic between the Sequoias and fire that pushes back on human understanding. Not only are the

43 Ibid.
44 Campa, 'NPS wants to plant Sequoias'.
45 Ibid.
46 Ibid.
47 Ibid.
48 Peltier et al., 'Old reserves and ancient buds fuel regrowth'.
49 Ibid.

Sequoias pyropropagators, they seem to also be uniquely adapted to fire in ways that suggest a type of symbiosis with fire or pyro-sociality. The potential for thinking about fire and the desire for fire from the tree's perspective challenges human-centred logics. The superimposing of 'good intent' informs both the plaintiffs and the defendant – with both falling short of truly embracing the trees' point of view concerning fire and also of suggesting policy to reduce fires caused by human impact (culture).

The emergence of bud tracing data is significant in that it highlights the limits of human knowledge, as the extent of the phenomenon was unknown prior to fires. The fact that the Redwoods exhibited such resilience begs the question of what they want if they could be asked. The fact that human impact is testing the limits of recovery, while exposing emergent scientific phenomena, provides space for such speculative considerations. Ecologists Monica Gagliano and Suzanne Simard, for example, famously highlight the possibility of thinking in terms of plant communication and the challenges that science discourse faces when confronted with its own cultural practices that exclude these claims. Still, as research scientist David Peltier suggests in an interview with ABC about survival rates and epistemic failure of accounting for the phenomenon of bud tracing, 'the trees themselves were more prepared for the fire than we were in ways yet unknown/imagined'.[50] Peltier noted publicly, 'some of the results of this study suggest many of the Redwoods at Big Basin were actually well prepared for this fire event'.[51] As such, the disagreement between the NPS and the plaintiffs over the validity of post-fire data illustrates key concerns in science studies about the epistemological authority of scientific knowledge in-and-of-itself. Here the plaintiffs challenge the data collected by the NPS, arguing that it may be flawed or incomplete, but the real evidence – such as the regrowth of trees – contradicts the NPS's claims while simultaneously

50 Dustin Dorsey, 'Study shows why CA Redwoods are so resilient in wake of damaging wildfires', ABC 7 News, 6 Dec. 2023: https://abc7news.com/california-redwoods-wildfires-czu-lightning-complex-fire-big-basin-state-park/14148863/

51 Kyle Cooper, 'New discovery shows how Redwoods regrow after extreme fires: Trees resprout from ancient buds and use decades-old carbon reserves', Save the Redwoods, 2024: https://www.savetheredwoods.org/redwoods-magazine/how-redwoods-regrow-after-extreme-fires/

allowing for the emergence of new data in the form of bud tracing to be considered in this contested discursive space.

IV. THEORETICAL DISCUSSION

In their now classic text *A Thousand Plateaus: Capitalism and Schizophrenia*, Deleuze and Guattari illuminate the contested nature of scientific knowledge-creation as a matter of power and ideology. For this case in particular, their identification of the 'royal sciences', which they describe as 'rigid, authoritative forms of knowledge within conservation efforts', can be challenged as significant to the pyrologics of the case. Deleuze and Guattari purport the empirical nature of justifications via the royal sciences where biological intervention is marked as necessitated by fact and evoked via perceived authority.[52] They argue, by contrast, for the importance of what they call 'nomadic' or 'minor' knowledge, which is more fluid, creative and decentralised.[53] Nomadic knowledges are not geographical metaphors but epistemic formations without clear borders (predicated on what they call 'fuzzy aggerates') that allow for traversals or intersecting lines of thought.[54] By embracing multiplicity and diversity rather than singular ways of seeing environmental intervention, nomadic practices offer a multiplicity of concurrent allied, non-allied collaborative, competitive, contradictory or aligned practices seeking alliances with other nomadic practices, specifically those that challenge a privileging of human values and perceptions.[55] Here we can ask how the fires and the trees relate, and our interaction within that network emphasises the need to break free from the constraints of the royal sciences (in this case traditional modalities of care), calling on stakeholders

52 Deleuze and Guattari, *Nomadology*, p. 351.

53 Ibid., pp. 351–23.

54 Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. by Brian Massumi, (Minneapolis: University of Minnesota Press, 1987), p. 380.

55 Ron Wakkary, 'Nomadic practices: A posthuman theory for knowing design', *International Journal of Design* **14** (3) (2020). https://www.ijdesign.org/index.php/IJDesign/article/view/4039/928

seeking new forms of knowledge that are more open, diverse and experimental even within the limits of partial perspective.[56]

This attention to marginalised scientific perspectives is pivotal in questioning the role of the NPS in fire management and the ways in which environmentalists have criticised the study and proposed actions. The NPS's fieldwork and the mortality data they produced are central to the suit's argument, challenging the necessity of their actions, which are aligned with the state apparatus. The identity positionality of forest 'managers' falls within the framework of royal sciences, which operates to maintain authority rather than to open new possibilities for understanding alternative multispecies arrangements. That is, the research process itself is subjected to human knowledge systems that transform natural phenomena into data for scientific analysis as a matter of ideological rather than procedural logic.

Responding to the question above, Deleuze and Guattari further nuance the distinction between royal science and minoritarian science via the concept of the ambulant sciences. Deleuze and Guattari's focus on ambulant sciences emphasises how royal science invents problems and provides solutions based on its own frameworks, which often fail to acknowledge alternative, 'non-scientific' ways of understanding and interacting with the world. Here, the role of the NPS in fire management reflects the policed nature of fieldwork, where state apparatuses serve the needs of legal and institutional frameworks. In these terms, the NPS and environmentalists can both be seen as participating in, never departing from or reimagining, royal ecological epistemological configurations.[57] These policies are driven by human-centred/occidental legal frameworks, which shape how fire and forest dynamics are understood and managed by the state, backed by the authority of natural sciences that historically erased alternatives. That is, the erasure of fire is based in models that favour a specific type of detached conservation at all costs. Still, the biosocial intersection between practice and buffering

56 Michelle B. McKemey, Banbai Rangers, Yugul Mangi Rangers, Oliver Costello, John T. Hunter and Emilie J. Ens, '"Right-way"science: Reflections on co-developing Indigenous and western cross-cultural knowledge to support Indigenous cultural fire management', *Ecosal Management & Restoration* 23 (2022): 75–82.

57 James S. Camac, Richard J. Williams, Carl-Henrik Wahren, William K. Morris and John W. Morgan. 'Post-fire regeneration in Alpine heathland: Does fire severity matter?' *Austral Ecology* **38** (2) (2013): 199–207.

crisis highlights a reality that must be continually readdressed in forest management discourse.[58]

Finally, the conception of nature that the lawsuit rests on is the result of there being no third space between explanation and idealisation within royal sciences. Identifying this legacy allows us to draw correlations between the Muir Society's well-intentioned ideology and the case itself. Here, Anderson's work is again pivotal where she notes,

> Muir's view of California was a necessary counterweight to the view that had prevailed before – that nature was there to be used, exploited and commodified – but it left us with a **schizophrenic approach to the natural world** [my emphasis]: humans either conquer nature and destroy its integrity, or they visit it as an outsider idealizing its beauty and largely leaving it alone. These seemingly contradictory attitudes – to idealize nature or commodify it – are really two sides of the same coin, what the restoration ecologist William Jordan terms the 'coin of alienation' (pers. Comm. 2002). Both positions treat nature as an abstraction – seperate from humans and not understood, not real.[59]

Anderson is correct in identifying the legacy of the 'schizophrenic approach', yet new possibilities are afforded by allowing alternative knowledge formation.

One example of such inquiry can be found in the Karuk Aboriginal territory of Northern California, where fire functions not merely as a tool but as a relational agent embedded within multispecies ecological and cultural networks. Karuk ecological fire management practices such as hand-pile, jackpot and broadcast burns demonstrate an intimate, temporally attuned engagement with landscape and species, in particular by enhancing elk habitat through selective and seasonally responsive burning.[60] These burns, deeply informed by Karuk traditional laws, oral traditions and kin-based ecological knowledge, are structured around ecological indicators and population dynamics, forming what might be called a 'seasonal knowledge' system within a broader socio-ecological cosmology. This tradition of intentional burning, once criminalised under early twentieth-century US Forest Service policies,

58 Jim Cheney, 'Postmodern environmental ethics: Ethics of bioregional narrative', *Environmental Ethics* **11** (2) (1989): 129.

59 Anderson, *Tending the Wild*, p. 110.

60 Thomas Connor, Emilio Tripp, Bill Tripp, B.J. Saxon et al., 'Karuk ecological fire management practices promote elk habitat in northern California', *Journal of Applied Ecology* **59** (7) (2022): 1874–83.

reflects a minoritarian ethic wherein fire, plants, animals and humans co-constitute the landscape through interdependent agency and ritual practice.

The above is simply one of many epistemological formations of the nature/culture imaginative that highlights the importance of the 'nomadic' or 'minor' knowledge(s) that seep in from the margins because of public scientific debate to account for alternatives.[61] As Milstein notes, upholding the nature/human binary 'culminates in a fractured and fractious sense of self divested from the more-than-human, and results in actual death of planetary systems and human and nonhuman lives that in fact are interrelated parts of, and depend upon, these systems'. It is, then, not simply that alternatives should be offered but that alternatives are foundational to flexible sense-making processes.

These excluded knowledge domains challenging dominant epistemologies about forest management depend on ambulant logic and reaffirm imagined ontological divisions.[62] These findings suggests that the case against the NPS reinstalls the primacy of single story sciences, found in multiple political responses, and public opinions, while disregarding the broader call of multispecies theory to collapse nature-culture distinctions at the level of policy and decision making informed by non-industrial eco-cultural practices.[63] This includes cultural practices that challenge asymmetrical rhetorical conceptions of 'well-researched', a term never challenged in writing within the case brief or media, to converge beyond the assumption of occidental empiricism.

The above provides a challenge to the plaintiffs' second claim which suggests that both the replanting and thinning of the forest 'is unnecessary and artificial'.[64] Here, the distinction between the two slips into the ambulatory, in that what is marked as artificial becomes cultural and discursive with multiple point of erasure. This is exemplified by Hanson's public comment that, 'We are not supposed to be getting involved with tending [our forests] like a garden'; that is at best unresolved and at

61 Micheal DeLanda, *Assemblage Theory* (Edinburgh: Edinburgh University Press, 2016).

62 McKemey et al., '"Right-way" science'.

63 Cheney, 'Postmodern environmental ethics',129.

64 Campa, 'The National Park Service wants to plant Sequoias'.

worst an erasure of alternatives.[65] Additionally, conceptual distinction between what is necessary or not in terms of ecological action requires awareness when policy is being determined by human-nonhuman ontological distinctions that are also at best unresolved. What at first seems like a call for nonhuman-centred approaches by Hanson, reinscribes instrumental paternalism. In contrast, nomadic configurations alternatively inform multispecies reading of systems interactions that fall outside of the royal sciences and equally hold the NPS to account.[66] Here, relational ecological models of interspecies alliance provide the desired third space of interaction beyond the binaries proposed above that are excluded by the state.

V. CONCLUSION

The public discourse of the case reveals how human, and nonhuman interactions are imagined, enclosed, and reimagined within social legal, cultural and technoscientific contexts in the Redwood Forest. Specifically, there is bias implicit in denoting nature and humans as existing within a conceptual framework of artificial/natural binary predicated on epistemic assumptions asserting dominant industrial scientific methods yet ignoring cultural or emerging knowledge(s).[67] Additionally, by marking assumptions and the circulation of specific conceptual frameworks, the study highlights how forest management discourse struggles to balance human needs and the broader pyrosociality of the forest. Both the intervention by the NPS and the arguments proposed by the plaintiffs reflect a limited view about the role of science in addressing ecological emergencies via homogenous logics.

Within environmental communication, the rhetorical deployment of conventional (royal) science can overlook the resilience and wisdom

65 Jonathan Park and Janna Van Vranken, 'Why environmentalists are suing the National Park Service to prevent it from planting trees', CNN News, 27 Nov. 2023: https://www.cnn.com/2023/11/27/us/national-park-sequoia-planting-lawsuit-climate/index.html

66 Here a diversity of alternative positions could be proposed, including posthumanism, traditional ecological knowledge, ecofeminist perspectives, deep ecology, queer ecologies and even spiritual approaches.

67 Paco Calvo, Monica Gagliano, Gustavo M. Souza and Anthony Trewavas, 'Plants are intelligent, here's how', *Annals of Botany* **125** (1) (2020): 11–28.

inherent in alternative systems that do not conform to rigid scientific frameworks, ignoring alternative ontological and epistemological frameworks including minoritarian positions and cultural practices. The rejection of the primacy of such claims toward legal barring cultural practices is then situated, as Deleuze and Guattari note, within nomad science that is 'continually "barred" – inhibited or banned by the demands and conditions of State science'.[68] Hinging this case on claims of science, as the plaintiffs and defendants both suggest, requires understanding the historical and cultural context that these claims emerge within rather than simply an imagined science left undefined, prioritising a single story about validity and environmental knowledge production.[69]

Justin A. Dowdall is a Lecturer in the department of Communication and Media, specialising in emergent theories of design. He has presented his work internationally, seeking to promote criticality in science communication. In that regard, his research focuses on a diversity of issues within ecology, technology and theory building, exploring the ways that we use design to share ideas. At Rensselaer Polytechnic Institute, he teaches graduate and undergraduate courses exploring interactive technologies and advanced social theory. He is currently a 2025–26 Rubin Fellow for community engagement.

Email: dowdaj2@gmail.com

68 Deleuze and Guatarri, *Nomadology*, p. 19.

69 Susanna Nocentini, Orazio Ciancio, Luigi Portoghesi and Piermaria Corona, 'Historical roots and the evolving science of forest management under a systemic perspective', *Canadian Journal of Forest Research* **51** (2) (2021): 163–71.