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Realignment of federal environmental policies to recognize fire's role

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Abstract

Background Enactment of the Clean Air Act (CAA), Endangered Species Act (ESA), and National Environmental Policy Act (NEPA), three of the primary federal environmental laws, all coincided with the height of fire suppression and exclusion in the United States. These laws fail to acknowledge or account for the importance of fire in many fire-adapted and fire-dependent ecosystems, particularly in the American west, or the imperative for fire restoration to improve resiliency and reduce wildfire risk as identified by western science and Indigenous knowledge. We review the statutory and regulatory provisions of these federal laws to identify how the existing policy framework misaligns with the unique role of fire in ecosystems and with Tribal sovereignty, identify specific barriers and disincentives to beneficial fire use, and propose specific policy reforms.

Results The CAA, the ESA, and NEPA inhibit the use of beneficial fire as they are founded in a policy framework that treats fire restoration and maintenance as a federal action or human activity, rather than as a natural, baseline, or keystone process. The emergency exceptions in these policies reduce accountability and incentivize the wrong kind of fire, and compliance creates a perverse outcome by disincentivizing fire restoration. Further, these federal policies impede Tribal sovereignty.

Conclusions Modifications to these laws would better enable fire restoration in fire-dependent and fire-adapted ecosystems, reduce wildfire risk, and ultimately meet the statutes' core purposes. Federal agencies and Congress should reform regulatory frameworks to explicitly recognize fire as a baseline, natural, or keystone process, such that restoring fire in fire-dependent and fire-adapted ecosystems at levels not significantly exceeding pre-1800 fire return intervals is not treated as a federal or agency action. Further, non-Tribal governments should not attempt to regulate cultural burning, as it is a retained right of Indigenous peoples.

Keywords Prescribed fire, Cultural burning, Clean Air Act, National Environmental Policy Act, Endangered Species Act, Federal policy

Resumen

Antecedentes La promulgación de las leyes del Aire Limpio (CAA), de las Especies en Peligro de Extinción (ESA), y de la Política Ambiental Nacional (NEPA), tres de las primeras leyes federales relacionadas con el ambiente, todas coinciden con la supresión y exclusión de los fuegos de vegetación en los Estados Unidos. Estas leyes fallan en reconocer, o tener en cuenta, la importancia del fuego en los muchos ecosistemas dependientes del fuego o adaptados al fuego, particularmente en el oeste de los EEUU, o el imperativo de restaurar el fuego par mejorar la resiliencia y reducir el riesgo de incendios como fue identificado por estudios científicos en el oeste de EEUU y el conocimiento indígena

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tradicional. Revisamos las provisiones estatutarias y regulatorias de esas leyes federales para identificar cómo el marco de esas políticas está desalineado del rol irremplazable del fuego en los ecosistemas y también con la soberanía de las tribus indígenas, identificamos barreras específicas y la desincentivación del uso beneficioso del fuego, y proponemos reformas específicas a esta política.

Resultados Las leyes de CAA, de ESA, y de NEPA inhiben el uso de fuegos beneficiosos dado que están basadas en un marco conceptual-político que trata a la restauración del fuego y su mantenimiento como si fuese una acción federal o una actividad humana en vez de considerarlos como un disturbio natural, de base y proceso clave en el funcionamiento de ecosistemas vegetales. Las excepciones de emergencia a esas políticas reducen la responsabilidad e incentivan el uso de tipos de fuegos no deseados, y ese cumplimiento crea un resultado perverso mediante la desincentivación de la restauración del fuego. Además, esas políticas federales impiden el ejercicio de la soberanía tribal.

Conclusiones La modificación de esas leyes permitirá una mejora en la restauración del fuego en ecosistemas dependientes o adaptados al fuego, reducirá el riesgo de incendios, y finalmente podrá lograr los objetivos principales propuestos en esas leyes. Las agencias federales y el Congreso deberían reformar los marcos regulatorios para reconocer explícitamente a los fuegos de vegetación como un disturbio natural, de base y proceso clave, como restaurar el fuego en muchos ecosistemas que son fuego-dependientes o adaptados al fuego a niveles que no excedan significativamente los intervalos de retorno del fuego previos a los años 1800, y que no fueron tratados por acciones de las agencias o por el gobierno federal. Además, los gobiernos no tribales, no deberían tentarse en regular los fuegos culturales, dado que es un derecho adquirido por los pueblos indígenas.

Introduction

As wildfires burn throughout the United States, there is a growing consensus and sense of urgency among policymakers that active stewardship of frequent-fire-adapted forests and woodlands (those that once burned every 35 years or less) is imperative in order to protect both these ecosystems and nearby communities (Hessburg et al. 2015; Stephens et al. 2020). In particular, use of beneficial fire is seen as critical to restore resilience to ecosystems affected by more than a century of fire exclusion (Franklin and Agee 2003; Dellasala et al. 2004; Dombeck et al. 2004; Hessburg et al. 2021; Stephens et al. 2021). Beneficial fire encompasses prescribed fire, cultural burning, and wildfire managed for resource benefit. Prescribed fire, also known as controlled burning, is the application of fire for resource management objectives. Cultural burning is the intentional application of fire to land by a Native American Tribe, organization, or Tribal members experienced in cultural burning to achieve goals including traditional cultural and ceremonial activities, sustenance, stewarding ecosystems, and other benefits. So, while the individual modes of beneficial fire may have overlapping characteristics and goals, cultural burning is a distinct practice (Eriksen and Hankins 2014, 2015) intertwined with Tribal sovereignty and the exercise of unceded Tribal rights. Wildfire managed for resource benefit is management of unintentional ignitions to allow a fire to burn, rather than prioritizing full suppression, in order to achieve specific management goals. North et al. (2024) exemplify a combined approach integrative of wildfire via strategic fire zones. Though beneficial fire is crucial to restoring ecosystem health and

mitigating wildfire risk, existing federal statutes and regulatory systems meant to protect the environment unintentionally pose barriers to its implementation. These barriers arise in large part because environmental policies fail to account for the unique role of fire and other natural disturbances in maintaining ecological integrity.

Western science and Indigenous knowledge alike provide evidence that forests and other ecosystems co-evolved with fire, including frequent low to moderate intensity fire (Stephens et al. 2007; Hankins 2013, 2015; Eisenberg et al. 2024). This historical use of fire included burning by Indigenous peoples since time immemorial as well as ignitions from lightning (Stephens et al. 2007; Goode et al. 2022; Hankins et al: Indigenous stewardship rights and opportunities to recenter Indigenous fire, forthcoming). As a result, ecosystems across the United States are both fire-adapted (with species tolerant of certain fire intervals and severities) and fire-dependent (with species dependent on fire for reproduction or other effects) (van Wagtendonk et al. 2018; Hagmann et al. 2021). But instead of recognizing beneficial fire as a baseline condition integral to the health of forests, federal statutes and regulations treat beneficial fire use as an agency or human act.

Reforms to United States federal fire policy have been proposed in several independent articles over the last 20 years. Stephens and Ruth (2005) provided a general overview of historical United States fire policies and provided some general recommendations to improve outcomes. Later papers focused on more specific areas that needed reform (Calkin et al. 2011; North et al. 2015; Stephens et al. 2016; Ager et al. 2017) but none of these

previous works provides specific recommendations on how to actually change federal laws and statutes.

This article identifies specific barriers federal environmental statutes and regulations can pose to reintroducing and maintaining beneficial fire in fire-adapted landscapes and proposes specific policy reforms to promote the use of beneficial fire. It specifically examines the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and Clean Air Act (CAA), three foundational environmental laws that are the focus of a significant body of legal scholarship and hotly debated among policymakers in the context of fire policy and beyond. Compliance with these policies can contribute to delays and strain resources, which literature suggests can delay implementation of beneficial fire projects, especially in concert with intersecting issues such as lack of funding and human resource capacity. The magnitude and pace of reintroduction of beneficial fire is falling far short of what is necessary to address the current wildfire crisis in the western US. Though compliance with these policies is by no means the only barrier to expanding the use of beneficial fire, any delays can have a significant impact on the ground. Moreover, these policies' treatment of beneficial fire does not appear to align with the underlying purposes of the statutes.

First, this article lays out the unique role of fire as a natural process in ecosystems, the federal environmental policy framework that governs federal agency actions regarding fire and forest management, and how that policy framework creates barriers to restoring beneficial fire. It identifies how under these policies, agencies often treat restoration and maintenance of fire as a federal action or human activity, and how compliance with these laws creates perverse outcomes; for example, active stewardship through beneficial fire use is more difficult than waiting until emergencies arise to suppress fires, furthering a policy of fire exclusion.

Second, it proposes realigning environmental policies to explicitly recognize fire as a baseline, natural, or keystone process in order to remove these barriers and disincentives to beneficial fire use. These targeted policy changes would be based on fire's unique role, so they would not undermine the broader purpose and function of environmental protections under existing policies. Further, given the long history of cultural fire use and modern efforts to right historical wrongs, these reforms would recognize Tribal sovereignty and the Indigenous right to cultural burning (Hankins et al: Indigenous stewardship rights and opportunities to recenter Indigenous fire, forthcoming).

Discussion

Fire is a natural process

Indigenous knowledge and western science both make clear that fire is a natural process. Ecosystems throughout what is now known as the United States have co-evolved with fire—from both lightning ignitions and Indigenous burning—for at least thousands of years (Hagmann et al. 2021; Stephens et al. 2007; Wu et al. 2023). A century of a federal policy of fire exclusion has disrupted these ecosystems, leading to an unprecedented fuel buildup which, combined with the impacts of climate change, has led to the current surge in severity and frequency of wildfires (Parks et al. 2018; Parks and Abatzoglou 2020). Ecosystems in the southern Cascade Range and Sierra Nevada, for example, are now in near extreme departure from the historic fire regimes, leading to increased stand density and fuel load, and higher severity fires (Safford and Van de Water 2014; Steel et al. 2015; Stevens et al. 2017). Excluding fire from these ecosystems is not and has never been natural: these landscapes in their “natural” state have always been shaped by fire and active stewardship by Indigenous peoples (Vasquez 2019; Klimaszewski-Patterson et al. 2024).

Since time immemorial, Indigenous knowledge and practices have recognized active stewardship as an inherent right afforded by natural law and the law of the land (Eriksen and Hankins 2014, 2015; Hankins et al: Indigenous stewardship rights and opportunities to recenter Indigenous fire, forthcoming). Indigenous worldviews “do[] not differentiate or separate ontological spaces beyond and between the human and non-human worlds” (Romero-Briones et al. 2020, p. 5; Marks-Block and Tripp 2021). For example, Yurok epistemology conceptualizes an interactive and reciprocal relationship between humans and the rest of the natural world, including forests (Middleton Manning and Reed 2019). Fire history confirms the use of fire in this relationship: tree ring studies reveal fires every 6 years in the Prairie Creek area of Yurok Territory in the early 1700s to late 1800s, which stabilized redwood groves (Huntsinger and McCaffrey 1995). Similarly, the Karuk Tribe has managed their lands for millennia through methods including periodic cultural burning, as part of the Karuk worldview and spiritual practices (Romero-Briones et al. 2020).

This reciprocity contrasts with dominant western views, which dichotomize human society and nature (Carle 2002; Marks-Block and Tripp 2021). Federal policy and land management practices of fire exclusion reflect views of conservation that “sought to ‘save’ [natural] spaces from all humanity” (World Economic Forum 2023, p. 9). For example, in addition to the three keystone environmental statutes evaluated in this article, the Wilderness Act defines “wilderness” in part as “an area

where the earth and its community of life are untrammelled by man” (16 U.S.C. § 1131 et seq.). This raises the question of what constitutes an “untrammelled” space. Boerigter et al. *Untrammeling the wilderness: restoring natural conditions through the return of human-ignited fire*, forthcoming, suggest that though a century of fire exclusion policies—including both fire suppression and removal of cultural burning—were intended to “protect” the wilderness, we should reframe fire exclusion policies as “trammeling”: they removed a critical ecosystem function. Policies that fail to consider intentional application of fire as integral to natural conditions also erase the role of Indigenous stewards, who the federal and state governments forcibly removed as part of the colonial campaign of violence against Indigenous peoples (Wolfley 2016). This conception fails to recognize that “leaving nature alone also creates harm,” as landscapes “have always relied on the intervention and care of Indigenous peoples, acting in relationship with nature” (World Economic Forum 2023, p. 9). Indeed, “human communities could be keystone species in some ecological systems” (Romero-Briones et al. 2020, p. 5).

Western science is now catching up to Indigenous knowledge (Jessen et al. 2022) and shows unequivocally that active stewardship is required to maintain healthy ecosystems (Hagmann et al. 2021, Stephens et al. 2023), and that beneficial fire plays a unique and important role.

Policymakers are also aligned on the importance of beneficial fire. For example, the Biden Administration’s Wildland Fire Mitigation and Management Commission Final Report found that a dramatic increase of the amount of beneficial fire is necessary to meet the current wildfire crisis. Likewise, the Forest Service’s “Confronting the Wildfire Crisis” 10-year strategic plan also establishes the goal of completing fuel reduction treatments, including prescribed fire and mechanical thinning, on up to an additional 8 million ha (20 million acres) of National Forest lands, and up to 12 million ha (30 million acres) of other federal, Tribal, state, and private lands (Wildland Fire Mitigation and Management Commission 2023; United States Forest Service 2022a, b). At the state level, California’s Strategic Plan for Expanding the Use of Beneficial Fire set a target of burning 160,000 ha (400,000 acres) per year by 2025 (California Wildfire and Forest Resilience Task Force 2022). But many barriers stand in the way of accomplishing these targets, including the current application of federal environmental policy to beneficial fire use (Schultz et al. 2019; Clark et al. 2024).

We recognize that beneficial fire surrogates—such as restoration thinning, with or without prescribed fire—are also necessary and appropriate stewardship activities to restore wildland resilience and forest health (Stephens et al. 2012, 2023; Wu et al. 2023). Research has found that

mechanical thinning followed by prescribed fire is the most effective treatment to reduce fire hazards in certain ecosystems and can do so more quickly than other treatments (Kalies and Kent 2016; Davis et al. 2024). A recent study that summarized 20 years of research on forest restoration treatments found several different pathways for achieving success in Sierra Nevada mixed conifer forests including restoration thinning alone (Stephens et al. 2023). It is important to note that restoration thinning focuses on what trees to leave versus what could be harvested and also concentrates on surface fuel loads that are critical for successful fire hazard reduction treatments (Agee and Skinner 2005). However, given that restoration thinning has not been a keystone process like fire, it is not the focus of the suggestions herein.

The policy frameworks of NEPA, the ESA, and the CAA

Three statutes at the core of federal environmental protections are NEPA, the ESA, and the CAA. Congress conceptualized and ultimately enacted these laws in the early 1970s, when wildland acres burned were at their lowest, timber yields were at their highest (Littell et al. 2009), and the role of fire and Indigenous stewardship as a keystone process was not well-recognized. Policymakers operated under the ultimately incorrect assumption that fire exclusion could be permanently maintained to “protect” the nation’s timber supply.

As such, these landmark federal statutes do not account for the role of fire or other natural processes in ecosystems and can run counter to the laws of nature and Indigenous peoples (Hankins et al. *Indigenous stewardship rights and opportunities to recenter Indigenous fire*, forthcoming). Indeed, the statutory text of NEPA and the ESA make no mention of smoke or fire, and the CAA only makes passing references to wildfire events and their impacts (CAA §§ 7438, 7545). Because these statutes do not explicitly address fire, federal agencies have been forced to treat fire as an exogenous action rather than a fundamental ecosystem process (North et al. 2012, 2015).

To be sure, environmental laws are key to ensuring public trust and involvement in federal agency systems (Boling 2010; Keiter 2006). NEPA and the ESA require government agencies to conduct extensive environmental analysis of the potential impacts of proposed agency actions before decisions are made. They also promote transparency and accountability: NEPA requires public comment periods, while the ESA requires consultation with other federal agencies with relevant expertise. Though the structure of the CAA diverges from NEPA and the ESA, it also requires environmental analysis and holds air agencies accountable for meeting air quality standards. These laws are based on the idea that humans can and should fully understand the consequences of

their actions before they are undertaken. However, the last decade has been a stark reminder that fire in wildland ecosystems is not fully within human control.

Federal environmental policies treat fire restoration and maintenance as a federal action or human activity

Given that policymakers in the 1970s did not contemplate the increase in severe wildfire activity or fully understand the important role of beneficial fire use in many ecosystems, environmental statutes from the era provide no guidance to agency officials about their application to fire. Though the 1963 Leopold Wildlife Management report (Leopold et al. 1963) for the National Parks marked a significant shift in the federal approach to habitat management, by recognizing the important role of fire in ecosystems and recommending the use of prescribed fire as a management tool, NEPA, the ESA, and the CAA were not drafted to include language that specifically addresses application of beneficial fire. Perhaps it is unsurprising that agencies, without clear direction in these statutes, have generally treated fire restoration and maintenance activities as federal action, or human activity, rather than a natural baseline condition in fire-adapted ecosystems (see Leopold et al. 1963). Courts generally hold that agencies should apply NEPA, the ESA, and the CAA to a broad range of actions in order for the laws to effectively fulfill their environmental purposes (Calvert Cliffs' Coordinating Committee, Inc. v. United States Atomic Energy Commission 1971; Center for Biological Diversity v. United States Bureau of Land Management 2012; Whitman v. American Trucking Associations 2001).

National Environmental Policy Act

NEPA requires federal agencies to evaluate environmental impacts of proposed actions, as well as potential alternative actions, before committing to any major federal action that could have a significant impact on the environment (42 U.S.C. § 4336e, 40 C.F.R. § 1508.1(q); League of Wilderness Defenders-Blue Mountains Biodiversity Project v. United States Forest Service 2012; Barnes v. United States Department of Transportation 2011). Federal actions subject to NEPA include actions carried out directly by federal agencies, such as land management programs, as well as federal approvals of non-federal activities, including issuing permits and granting federal funding.

NEPA review generally involves three tiers of potential analysis. First, the reviewing agency determines if a “categorical exclusion” applies. Categorical exclusions are entire categories of actions that federal agency regulations have previously determined generally do not significantly impact the human environment. If a categorical

exclusion applies to the proposed action, an agency must only document its application; no further review is required. If no categorical exclusion applies, the federal agency will conduct an Environmental Assessment (EA), a relatively short study, to determine if there will be a significant impact. When the agency finds there will be a significant impact, it must prepare an Environmental Impact Statement (EIS), a comprehensive study of the environmental impacts of the proposed action as well as reasonable alternatives, including a “no action” alternative. Preparing an EIS is a long process and imposes significant procedural hurdles, including a public comment period. Regardless of whether an agency relies on a categorical exclusion, EA, or EIS, the application of NEPA opens the agency to litigation challenging the sufficiency of the agency's review, which may further delay an agency's ability to take actions and implement programs. Though NEPA review for smaller projects can be conducted in a fairly reasonable time frame (averaging 6 months), review for large-scale fuel reduction projects can take several years (Collins et al. 2010; Edwards and Sutherland 2022; Morgan et al. 2021).

NEPA established the Council on Environmental Quality (CEQ), the administrative agency responsible for issuing regulations on NEPA compliance and overseeing agency implementation of NEPA (42 U.S.C. §§ 4342–4347). CEQ adopted regulations implementing NEPA in 1978, with comprehensive updates in the last 4 years, and has issued numerous guidance documents (40 C.F.R. §§ 1500–1508; Update to the regulations implementing the procedural provisions of the National Environmental Policy Act, 85 Federal Register 43, 304–01, 2020). Individual federal agencies also adopt their own policies, procedures, and regulations for implementing CEQ guidance (40 C.F.R. §§ 1500.6 (Agency authority), 1507.3 (Agency NEPA procedures)). In 2022, CEQ recognized Indigenous knowledge, and opened inclusion of such knowledge in decision-making (Council on Environmental Quality 2022).

Under these current agency interpretations, planning and implementing beneficial fire programs constitute a federal action under NEPA. Agencies have taken some steps to hasten compliance for beneficial fire projects, including the development of specific categorical exclusions:

- Department of Interior: hazardous fuel reduction projects of up to 1800 ha (4500 acres) of burning and 400 ha (1000 acres) of mechanical treatments (43 C.F.R. § 46.210(k)).
- Forest Service: certain forest and grassland management for restoration and resilience, including

prescribed burning, limited to 1120 ha (2800 acres) (36 C.F.R. § 220.6).

- Forest Service: timber stand or wildlife habitat improvement that does not involve herbicides or over 1.6 km (1 mile) of road construction, including prescribed burning to control understory in southern pine stands, reduce fuel buildup, and improve ecosystem health (36 C.F.R. § 220.6(e)(6)(iii)–(iv)).

However, beneficial fire projects undertaken pursuant to a categorical exclusion are still subject to challenge if there is a potential impact, subjecting them to the same risk of litigation and delay as other projects. Moreover, existing categorical exclusions are not sufficiently expansive to encourage the scope and scale of beneficial fire called for in both state and federal strategies, particularly as it relates to “cumulative impacts” over space and time.

Some literature suggests that compliance with NEPA contributes to delays and strains resources, negatively impacting the reintroduction of beneficial fire (Keiter 2006; Miller et al. 2020). The cost of NEPA compliance can be high, and the review process requires significant investments of staff time and expertise, especially for larger or more complex projects (Collins et al. 2010). For example, in Schultz et al.’s 2019 study of policy barriers to prescribed fire, some interviewees—which included state and federal land managers and air quality regulators—identified NEPA as a barrier to getting more fire on the ground, largely due to lack of capacity to undertake the NEPA review process (Schultz et al. 2019). Interviewees noted that environmental review and required wildlife and archaeological surveys slowed down projects (Schultz et al. 2019). The challenges posed by NEPA thus intersect with the two barriers interviewees identified most frequently: lack of funding and human resource capacity (Schultz et al. 2019).

Forest Service data on NEPA implementation from 2006 through 2020 indicated that it took an estimated average of 193 days to complete a categorical exclusion review, 519 days for an EA, and 1082 days for an EIS (Morgan et al. 2021). Though the number of NEPA analyses for fuel management projects declined to some extent over the 15-year period, the budget allocated for NEPA analysis stayed stable or increased, suggesting a decline in efficiency (Morgan et al. 2021). A single NEPA strike team costed between \$500,000 and \$1,000,000 annually (Morgan et al. 2021). Reducing review time would result in significant decreases in costs and allocation of staff time for agencies, in an environment where funding and capacity are two critical concerns. Though overall NEPA litigation was low, risk of litigation varied depending on the land management purpose of the project under

review, and fuel management projects were one of the most frequently litigated (Morgan et al. 2021).

Endangered Species Act

The purpose of the ESA is focused on the conservation of ecosystems upon which endangered and threatened species depend. Despite fire being a natural ecosystem process, beneficial fire has been subject to regulatory action via consultation and permitting requirements. Similar to NEPA, the ESA requires that federal agencies funding, authorizing, or carrying out any action evaluate the effects of the action on species, and where effects may result in adverse impacts, determine if the action may “jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species” (16 U.S.C. § 1536(a)(2)). Current ESA regulations broadly define actions to include promulgating regulations; granting licenses, contracts, or permits; and undertaking actions that directly or indirectly cause modifications to land or water (50 C.F.R. § 402.02). The ESA also regulates private actions, by requiring an incidental take permit for any “take” of an endangered or threatened species incidental to, and not the purpose of, an otherwise lawful activity (16 U.S.C. §§ 1538–1539). These broad regulations can impact beneficial fire projects on multiple fronts, as they encompass federal agencies taking direct action implementing prescribed fire as well as any non-federal entities seeking to plan or implement beneficial fire use that either requires a federal permit or other approval or involves potential take of an endangered or threatened species.

The consultation process requires the federal agency consult with the National Marine Fisheries Service (NMFS) or United States Fish and Wildlife Services (FWS) to determine if a species that NMFS or FWS has listed as endangered or threatened or their critical habitat may be present in the area impacted by the action and likely adversely affected by the proposed action (United States Fish and Wildlife Service, and National Marine Fisheries Service 1998). If so, the agency must then engage in a formal consultation process, in which it provides the best available scientific and commercial data on the proposed action to NMFS or FWS. NMFS or FWS must then issue a written biological opinion based on its findings. If NMFS or FWS determines the action may jeopardize a threatened or endangered species or destroy or adversely modify critical habitat, the NMFS or FWS must suggest “reasonably prudent alternatives.” If there is no alternative which would avoid the negative result, the agency action cannot proceed without an exemption from the Endangered Species Committee, a particularly onerous process. Alternately, some agencies

use enhancement of survival permits or recovery permits under Section 10(a)(1)(A) to facilitate beneficial fire programs, though these also require significant time and resources.

In sum, federal agency actions to fund, authorize, or carry out beneficial fire programs and many private actions are thus subject to the ESA, even when those projects are carried out in fire-adapted ecosystems where species may not only tolerate but require fire, and even when the actions are intended to conserve endangered species or their habitats. In contrast, wildfire impacts on species of concern, which have been considerable over the last decade (Jones et al. 2016; Steel et al. 2023), are not explicitly considered under the ESA. Because the ESA applies to federal action, but not inaction, agencies are not scrutinized for the negative impacts on endangered or threatened species when they increase wildfire severity and otherwise fail to actively steward the land.

For example, a cultural burn on approximately 11 ha in Lockeford, California, was subject to over a year delay while awaiting a response from FWS to a request for informal consultation under the ESA. The project was subject to the ESA's consultation process as habitat of the federally listed valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) existed in the area of the burn. Tribal members and cultural fire practitioners, in collaboration with the Natural Resources Conservation Service (NRCS), sought to conduct a cultural burn in order to protect and stimulate the growth of elderberry shrubs and other culturally significant plants with well-recognized Indigenous knowledge of fire effects, and mitigate risk in the event of wildfire by reducing fuel load, in an area largely dominated by invasive blackberry (*Rubus discolor*) and annual grasses. The site had been culturally burned (Hankins 2009, 2013) without interagency consultation, but with verbal communication with FWS staff nearly 20 years prior. FWS's informal consultation letter noted that the burn could ultimately benefit the beetles by protecting existing habitat and providing new habitat for the beetles. But even this acknowledgement frames the benefit as only to the protected species at issue, rather than concern for holistic ecosystem health, which include many other culturally important protected species including spring run Chinook salmon (*Oncorhynchus tshawytscha*). This interpretation treats reintroduction of beneficial fire, rather than exclusion of beneficial fire, as disrupting and threatening the ecosystem.

Interviewees in Schultz et al. also identified the ESA as a concern in states where listed species are present (Schultz et al. 2019). For example, in regions with northern spotted owl (*Strix occidentalis caurina*) habitat, the ESA alongside fragmented ownership of land led to a "Swiss cheese" of land management areas (Schultz et al.

2019, p. 879). And in an analysis of barriers to prescribed fire in 2021, the Forest Service noted that though the average ESA consultation was under 90 days, shortages in staffing could lead to delays that could prevent a project from occurring entirely, as they can result in missing burn windows (United States Forest Service 2022a, b).

Clean Air Act

Air regulators implementing the CAA also treat beneficial fire use as a human activity to be controlled and regulated. Unlike NEPA and the ESA, which are administered at the federal level, the CAA is administered by both federal and state agencies. Under the CAA, the United States Environmental Protection Agency (EPA) sets National Ambient Air Quality Standards (NAAQS) for certain pollutants, such as particulate matter and ozone. NAAQS look only to the concentration of pollutants in the air at regulatory monitors and are indifferent to the source of the measured pollutants or the mechanisms through which air districts attain the requisite standards. So NAAQS—and the regulatory consequences of not attaining them—do not distinguish between particulate matter emissions from industrial facilities, wildfire, or beneficial fire. The CAA then tasks the states with adopting State Implementation Plans (SIPs), under which states regulate emissions from various sources in order to meet the NAAQS. If states fail to meet the NAAQS, they are subject to regulatory action by the federal government, including penalties such as withholding federal highway funding. Though agencies could seek a determination from the EPA that emissions constituted an "exceptional event," these demonstrations are onerous and time consuming (United States Government Accountability Office 2023). Though an exceptional event demonstration was intended to be the mechanism to allow prescribed burns to proceed, it has failed to live up to its purpose and has rarely been used.

Under this framework, it is unsurprising that existing SIPs attempt to regulate smoke. For instance, California Smoke Management Guidelines require permits for prescribed fire use. Because beneficial fires cause emissions, including particulate matter, they may contribute to exceedances or violations of NAAQS, which creates a disincentive for agencies to approve permits and allow prescribed fires to proceed.

In sum, NEPA, the ESA, and the CAA—as well as other cornerstone environmental statutes such as the Clean Water Act and the National Forest Management Act (NFMA)—all require federal agencies to focus on how human activities may impact a particular resource or species (Stephens and Ruth 2005; Stephens et al. 2016). This focus can be implemented in a dysfunctional way, leading agencies to look only at how a specific action might

have negative impacts on individual resources. It discourages holistic views of ecosystem health or fully considering natural processes that are and have been baseline conditions throughout these ecosystems' evolution. In this way, even if NEPA, the ESA, and the CAA are not the most significant barriers in expanding the use of beneficial fire, it is not clear whether their applications are even serving their intended purpose of protecting the environment and the plants, animals, and humans that rely on it.

Emergency exceptions reduce accountability and incentivize the wrong kind of fire

Without careful consideration of how fire should be handled by environmental statutes, policymakers unintentionally created a regulatory system that favors both the conditions and types of fire that have exacerbated the wildfire crisis. In particular, NEPA, the ESA, and the CAA all include emergency exceptions that clearly apply to wildfires. These exemptions create perverse incentives: it is easier for agencies to engage in the passive land management practices (i.e., no action and monitoring) and continued fire suppression, both of which are at the root of the wildfire crisis, as opposed to proactively stewarding the land through reintroduction of beneficial fire.

Under NEPA, when emergency circumstances require action before an EA/EIS could be completed, federal agencies may forgo the NEPA review process. They can instead use "alternative arrangements" for NEPA compliance in consultation with the CEQ (40 C.F.R. § 1506.12). Fire suppression activities, for example, may be exempt from NEPA analysis under this exception (Wishnie 2008) (though some agencies will evaluate fire suppression in specific Forest Plans under NFMA). As a result, it is more burdensome for agencies to create and implement programs to reintroduce beneficial fire than it is for them to forgo proactive stewardship (Jensen 2006). In turn, failure to proactively steward the land leaves dangerously high levels of fuels in frequent-fire-adapted forests and woodlands and increases the risk of catastrophic wildfire and its attendant emissions. This results in more environmental harm and impacts on community health and wellbeing, both through the destruction of ecosystems and communities, and through the health impacts of high levels of harmful pollutants such as particulate matter. These results undercut the ultimate goals of NEPA: to reduce environmental harm and improve public health through reasoned analysis and planning with public oversight and input (42 U.S.C. § 4321).

The ESA similarly includes an emergency exception, which allows for an abbreviated emergency consultation process when prompt federal action is required to protect human life or property (50 C.F.R. § 402.05, Endangered Species Consultation Handbook 1998). The

emergency exception applies to circumstances including disasters or acts of God, including wildfires (50 C.F.R. § 402.05(a)). An agency can initiate the emergency consultation by contacting FWS or NMFS by a brief telephone call. After the initial contact, the agency has complied with its obligations under the ESA until the emergency has subsided. FWS and NMFS provide recommendations for minimizing adverse effects on protected species and habitats during the emergency response, but do not stop or delay the emergency response, even if they determine adverse effects to protected species or habitats may occur as a result of emergency response decisions. Instead, they conduct an after-the-fact biological opinion, and if necessary, provide recommendations for remediation. Just like NEPA, this difference in regulatory requirements—wherein beneficial fire projects are subject to extensive ESA analysis and the fire exclusion paradigm is only briefly evaluated after emergencies—is tilting the scales toward the types of fire that harm wildlands and human communities.

The CAA's Exceptional Events Rule similarly disincentivizes beneficial fire use. The Rule allows agencies to request that the EPA exclude emissions data when taking regulatory actions by demonstrating an exceptional event—such as a wildfire—caused those emissions (40 C.F.R. §§ 50.1, 50.14, 51.930). An exceptional events demonstration requires the agency to show the event affected air quality, was "not reasonably controllable or preventable," and was caused either by a natural event, or by human activity "unlikely to recur at a particular location" (40 C.F.R. § 50.1). Under existing regulations and EPA guidance documents, prescribed fire can qualify as an exceptional event in theory, but in practice, the rule has created barriers to prescribed fire use. The EPA's most recent modification of the rule in 2016 purported to clarify and streamline its use for prescribed fire, but it failed to achieve this goal (81 Fed. Reg. 68, 216, 223, 250–56 (2016)). According to EPA officials in 2023, no Tribe, state, or local agency had successfully used an exceptional events demonstration for prescribed fire since EPA adopted the 2016 rule (United States Government Accountability Office 2023); one recent demonstration in California was predominantly for exploratory purposes (Northern Sierra Air Quality Management District 2024). Three reasons explain this failure. First, making an exceptional events demonstration requires extensive technical analysis, which is expensive and time consuming for agencies (see California Air Resources Board 2021, Arizona Department of Environmental Quality 2015–2019). This cost is often not manageable for prescribed fires, especially if the costs are imposed on individuals or non-governmental organizations conducting prescribed fires. Second, the structure of the rule disincentivizes air

agencies from allowing prescribed burns that may cause an exceedance or violation of a NAAQS. When wildfires cause unplanned NAAQS exceedances, air agencies have no choice but to prepare an exceptional events demonstration after the fact. But with prescribed fires or wildland fires managed for ecological benefit, air agencies can avoid a potential need for an exceptional events filing altogether by disallowing the burn in the first place (Long et al. 2017). Third, effective wildland fire stewardship requires ecosystem maintenance to provide the beneficial outcomes of the stewardship and is likely to re-occur at the same location at some temporal interval with perhaps lesser emissions impacts due to reduced fuel loads.

Even beyond these practical challenges, the Exceptional Events Rule is fundamentally ill-suited to address wildland fire, as it is by nature an event that recurs on a periodic basis. But the CAA has no mechanism beyond the Exceptional Events Rule to address wildfire or beneficial fire emissions.

Compliance creates a perverse outcome by disincentivizing fire restoration

Beneficial fire practitioners report regulatory compliance as a significant barrier to implementing more prescribed fire (Jensen 2006; Collins et al. 2010; Quinn-Davidson and Varner 2012; Stephens et al. 2016; Schultz et al. 2019; Fowler 2019). NEPA review for large-scale prescribed burns, or the forest plan amendments necessary to allow them, for example, can take years (Collins et al. 2010). ESA compliance has stalled progress on projects intended to restore habitat for endangered species. And air regulators have delayed, conditioned, or refused to issue burn permits for beneficial fire projects, even when such projects are intended to reduce wildfire risk.

This problem goes to the very core of how these regulatory schemes are structured, and ultimately, how federal statutory and regulatory frameworks conceptualize fire and its role in the natural world. Under the existing framework, beneficial fire is not treated as an integral component of healthy ecosystems in the many fire-adapted and fire-dependent landscapes across the country. Instead, this framework defaults into agency inaction, perpetuating the legacy of prior views about land management, under which agencies considered the best course of action to be “protecting” forests from wildfire via suppression. Alternatively, agencies could see wildfire as the only means by which fire restoration can occur at meaningful scales, and “use” wildfire as a de facto treatment (Pyne 2015), while also conducting suppression activities on the same fires (North et al. 2024).

NEPA and the ESA require analysis of the potential harm caused by each federal action to promote beneficial fire use, but not the potential harm of federal agencies’

failure to proactively steward the land and continue relying on fire suppression, as part of the longstanding policy and practice of fire exclusion. But failure to reintroduce beneficial fire will result in more frequent, severe wildfires with disastrous consequences for the habitats and human communities that these laws purport to protect (Jones et al. 2016; Steel et al. 2023). For example, the ESA “is often seen as unnecessarily hindering mechanical and fire treatments because the act does not explicitly recognize that avoiding these management activities out of fear of harming listed species and their critical habitat, could lead to even higher mortality of an endangered species and devastation of broader ecosystems by creating more severe fire conditions in the future” (Jensen 2006, p. 992). The regulatory framework does not hold agencies accountable for failure to engage in active stewardship, instead giving them an “out” by exempting emergency responses and fire suppression from environmental review and public accountability (Bradshaw 2010).

The federal policy framework impedes Tribal sovereignty

This regulatory framework also impedes Tribal sovereignty. Indigenous peoples have been engaged in cultural burning since time immemorial. Most Tribes never ceded sovereignty over the right to steward their ancestral territories, including the right to engage in cultural burning (Hankins et al: Indigenous stewardship rights and opportunities to recenter Indigenous fire, forthcoming). Cultural burning—the intentional application of fire to land pursuant to Tribal or Indigenous law for purposes including sustenance, biodiversity, ceremonial, or other benefits—is an unextinguished right of Tribes and Indigenous people. The prohibition of cultural burning is a part of the colonial project that attempted to stamp out Indigenous peoples, stole their lands, and denied their inherent and unceded sovereignty (Clark et al. 2024; Clark 2021; Marks-Block and Tripp 2021; Hankins et al: Indigenous stewardship rights and opportunities to recenter Indigenous fire, forthcoming). Early twentieth century advocates for fire exclusion viewed Indigenous peoples’ use of beneficial fire as a savage and harmful practice (Carle 2002). In California, for example, cultural burning was explicitly criminalized (Clark et al. 2024; Meyer 2022).

Though Tribes and Indigenous peoples retain sovereignty, including the right to engage in cultural burning pursuant to their traditions and laws, federal, state, and local agencies often fail to acknowledge and accommodate this sovereignty (Clark et al. 2024). Federal environmental regulations that purport to restrict Tribes’ use and management of resources on their ancestral lands, such as Bureau of Indian Affairs (BIA) oversight of Tribal fire management programs on Tribal trust lands, infringe on this sovereignty (Huntsinger and McCaffrey 1995).

For example, in an analysis of forest management in the Yurok Reservation from 1850 to 1994, Huntsinger and McCaffrey note how the BIA imposed federal forest management practices on the Yurok Reservation and allotments, displacing traditional Yurok stewardship practices (Huntsinger and McCaffrey 1995). The BIA's jurisdiction over the Yurok Reservation and allotments is a legacy of the history of the violent displacement of Indigenous people from their lands, and the federal government establishment of reservations and allotments, which restored some land ownership to Tribes but failed to recognize their inherent sovereign rights, instead imposing high levels of federal control. And Tribes working under co-management agreements with federal agencies also find their ability to engage in traditional practices impeded by difficulties navigating these policies (Fowler 2019; Meyer 2022). Recently, the federal government has made steps to acknowledge this history and the ongoing impact of genocide of Indigenous peoples, forced removal, and rejection of Indigenous knowledge, and to recognize that changes in federal administrative processes are necessary in order to respect the sovereignty of Indigenous peoples (Executive Office of the President, Office of Science and Technology Policy 2022). Such proposed changes include directing agencies to incorporate Indigenous knowledge as part of federal decision-making processes and to consider co-management and co-stewardship agreements. But directives to consult and collaborate with Tribes fall short of enabling all Tribes and Indigenous peoples to exercise unceded sovereign authority over their lands, including but not limited to traditional land stewardship practices.

Recommendations

In order to meet the challenges posed by the wildfire crisis, federal agencies and Congress should reform environmental laws and policies to explicitly recognize fire as a baseline, natural, or keystone process, such that fire restoration is not treated as an agency or human action. Such changes would be consistent with existing statutory intent and language. Reforms are possible at both the administrative level—by individual departments or agencies, or CEQ—or the Congressional level, with varying advantages and disadvantages associated with each.

Such reforms are not unprecedented. For example, some air agencies have already recognized cultural burning and prescribed fire for maintenance purposes as “natural.” The Fire Emissions Joint Forum of the Western Regional Air Partnership, in its 2005 Guidance for Categorizing Natural vs Anthropogenic Fire Emissions under the Regional Haze Rule, recognized that “fire established by [a] tribal government for a traditional, religious, or ceremonial purpose” is a “natural” source, and should not

be regulated for Regional Haze Rule compliance (Natural vs Anthropogenic Task Team of the Fire Emissions Joint Forum 2005). The Guidance says nothing, however, about classification for other CAA compliance requirements, such as the NAAQS.

The EA for the Somes Bar Integrated Fire Management Project also reexamined the treatment of fire in regulatory documents (United States Department of Agriculture 2018). The Western Klamath Restoration Partnership (WKRK), a partnership between the Karuk Tribe, non-profits, the University of California, and federal agencies, developed the Somes Bar I Project to return beneficial fire on public lands to meet the goals of the National Cohesive Wildland Fire Management Strategy. The Somes Bar EA noted that fire suppression is disruptive of natural cycles, and that reestablishment of beneficial fire is needed to restore natural fire intervals and resilient ecosystems. The WKRK designed the Project to integrate Traditional Ecological Knowledge and customs as “a framework for living with fire” in northern California's Klamath Mountains. This EA flipped the typical treatment of fire on its head, classifying periodic fires as the natural baseline, and the century of active fire suppression as the agency/human action. It pointed to the fact that all natural vegetation types in the region evolved to a fire-disturbance regime, and many not only tolerate fire, but depend on fire for their health and persistence. Fire exclusion and clearcutting, on the other hand, altered vegetation types in the region. These examples point the way forward for avenues of reform of existing federal policies to account for the role of beneficial fire as a natural part of landscapes and remove barriers to this natural process.

Reforming federal policy

Federal agencies and Congress should reform existing regulatory frameworks to explicitly recognize fire as a baseline, natural, or keystone process, such that restoring fire in fire-dependent and fire-adapted ecosystems at levels not significantly exceeding natural fire return intervals is not treated as an agency or human action. We focus herein on four topics: cultural burning, NEPA, the ESA, and the CAA.

Cultural burning

Non-tribal governments should not attempt to regulate cultural burning at all, as it is a retained right of Indigenous peoples. Cultural burning is distinct from prescribed fire, but until recently, federal and state policies have not recognized these differences and have tried to impose the same requirements and regulations on both practices (Clark et al. 2024). Cultural burning is integral to Indigenous traditions and culture, and part of the

ongoing efforts by Indigenous peoples to revitalize their cultures and assert sovereignty (Marks-Block and Tripp 2021). The Biden Administration's Wildland Fire Mitigation and Management Commission's Final Report echoes this recommendation, suggesting that Congress should acknowledge the Indigenous right to cultural burning under federal law as an unceded right (Recommendation 16) (Wildland Fire Mitigation and Management Commission 2023). The Commission also recommends empowering Tribes to steward their lands, by granting federal agencies authority to coordinate with Tribes to conduct cultural burning on federal lands, as well as requiring the BIA to acknowledge that federally recognized Tribes may create and implement fire programs on trust lands pursuant to Tribal laws, regulations, and policies (Recommendations 15 and 16). Further, Hankins et al: Indigenous stewardship rights and opportunities to recenter Indigenous fire, forthcoming recommend additionally removing BIA oversight to enable self-determination and application of stewardship on trust lands. The Karuk Tribe's Good Fire II report similarly proposes deregulation of cultural burning, including by allowing federally recognized Tribes to conduct cultural burning without BIA oversight and approval, so long as the Tribe has developed a fire program (Clark et al. 2024). Good Fire II further proposes ensuring that Tribes retain decision-making authority over cultural burning without requiring federal approval, while facilitating the ability of Tribes to work in partnership with federal agencies (Clark et al. 2024).

Such recommendations are fully consistent with the goal of recognizing Indigenous burning as a keystone process in many fire-dependent and fire-adapted ecosystems.

NEPA

Ensuring that NEPA analysis appropriately addresses both beneficial fire and wildfire requires two adjustments: clarifying that restoration of beneficial fire in fire-dependent and fire-adapted landscapes is not an agency action under NEPA, and ensuring that NEPA analysis, especially for land management plans, adequately discusses the risk of foregoing active stewardship by continuing the fire exclusion paradigm.

Congress's purpose in adopting NEPA was to "promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony" (42 U.S.C. § 4331(a)). NEPA recognized the "profound influences of population growth, high-density urbanization, industrial expansion, [and] resource exploitation on the natural environment" (42 U.S.C. § 4331(a)). Current CEQ regulations also identify reducing unnecessary burdens, paperwork, and delay as one purpose of

NEPA regulations (40 C.F.R. §§ 1500.1, 1500.4–1500.5). Federal agencies—including but not limited to CEQ—can and should adopt rules and policies that recognize fire as a natural process in order to realign regulations and procedures with the purposes of NEPA and better serve its goals.

First, CEQ should modify NEPA regulations to clarify that reintroduction of beneficial fire into fire-adapted and fire-dependent landscapes is not a "federal action" for purposes of NEPA, and thus not subject to NEPA review, as fire use in these ecosystems operates as a natural process provided it is ecologically or culturally informed. As a result, beneficial fire projects that federal agencies undertake or fund would not require a categorical exclusion, EA, or EIS.

Specifically, CEQ should revise the definition of "Major Federal action" in its NEPA Implementing Regulations (40 C.F.R. § 1508.1(q)) to expressly state that Major Federal action does not include reintroduction of beneficial fire, which is a natural process. In addition, CEQ should revise its NEPA and Agency Planning regulations on evaluating NEPA thresholds (40 C.F.R. § 1501.1), which provide criteria federal agencies should consider when assessing whether NEPA applies to a proposed decision or activity, to specify that NEPA does not apply to beneficial fire projects. This regulation further includes assessing whether another statute expressly exempts the proposed activity or decision from NEPA. It also requires assessing whether NEPA compliance would conflict with requirements of or Congressional intent expressed in another statute (40 C.F.R. § 1501.1(a)(2)–(3)).

Further, CEQ's NEPA Implementing Regulations (40 C.F.R. Section 1501.1(b)) allow federal agencies to make determinations under the agency's own NEPA procedures on an individual basis. Because agencies adopt individual procedures, other federal agencies should also adopt NEPA policies and procedures that recognize beneficial fire as a natural process rather than a federal action, and not subject to NEPA review.

Congress could also act to explicitly account for fire within NEPA, and thus should clarify to agencies that they must adopt regulations that facilitate reintroduction of beneficial fire by recognizing it as a natural process. Such statutory changes could be made in the definition of major federal action (found at 42 U.S.C. § 4336e(10)), in a stand-alone section, or in Congressional findings.

Second, CEQ should require that EA and EIS for proposed federal actions include assessment of the risks posed by continued fire suppression and its contribution toward uncharacteristic high-severity fire effects in project alternatives, including the no-action alternative (40 C.F.R. § 1501.9(e)(2), 1500.3). As fire is a natural and inevitable part of fire-adapted and fire-dependent

ecosystems, any federal decisions and actions that do not enable the restoration of beneficial fire increase the risk of more frequent high-severity wildfires. NEPA regulations should require agencies to analyze alternatives based on their ability to reduce potential impacts from uncharacteristically severe wildfires.

For example, the Department of the Interior regulations on NEPA implementation provide a supplemental definition of the “no action” alternative (43 C.F.R. § 46.30), elaborating on its definition pursuant to CEQ regulations (40 C.F.R. §§ 1500–1508). It establishes two alternate definitions of “no action,” which may mean “no change’ from a current management direction or level of management intensity” or “no project’ in cases where a new project is proposed for implementation” (43 C.F.R. § 46.30). The Department of the Interior should further supplement this definition to clarify that analysis of any alternative, including the no action alternative, which perpetuates a policy of fire exclusion must evaluate the increased risk of wildfire and its attendant harms (see Hessburg et al. 2021). Other federal agencies responsible for managing wildlands should likewise promulgate regulations consistent with their authority under NEPA to accomplish these goals.

In January 2023, CEQ issued interim guidance to agencies on analyzing greenhouse gas and climate changes impacts of proposed actions under NEPA (88 Fed. Reg. 1196). This guidance acknowledged that some “ecosystem restoration” actions can result in short-term emissions while reducing long-term emissions. It specifically noted as an example “certain vegetation management practices that affect the risk of wildfire” such as prescribed fire. CEQ should promulgate new regulations, or issue additional guidance to specify that analysis of the no action alternative should include not only potential long-term greenhouse gas emissions from wildfires, but also other negative impacts—such as threats to human health and safety, and the integrity of ecosystems.

The ESA

The purpose of the ESA is to protect endangered and threatened species and to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved” (16 U.S.C. § 1531). Accomplishing this goal requires reforming agency policies under the ESA to acknowledge that fire is a natural and healthy part of ecosystems, and to facilitate rather than impede fire restoration activities, including cultural burning. As the federal agencies responsible for administering the ESA, FWS and NMFS should promulgate regulations and guidance to clarify that reintroduction and maintenance of beneficial fire is a mechanism to conserve and steward fire-adapted and fire-dependent

ecosystems upon which endangered and threatened species depend. Accordingly, reintroduction of beneficial fire should not be treated as an “agency action” pursuant to the ESA under conditions noted for NEPA previously.

The federal agencies responsible for administering the ESA could accomplish this in a number of ways. First, FWS and NMFS should redefine “action” in 50 C.F.R. Section 402.02 to specify that beneficial fire use is a natural process, rather than an agency action subject to review under the ESA.

Alternately, federal agencies should adopt a new subpart of ESA regulations to exempt beneficial fire projects from consultation requirements. There is precedent for federal agencies to limit consultation requirements for agency actions to mitigate fire risk and restore fire-adapted ecosystems. In 2003, the FWS, Bureau of Land Management, National Park Service, BIA, and NMFS jointly adopted regulations to streamline consultation on Fire Plan Projects to support the National Fire Plan, which was approved in 2000. Under these regulatory provisions, a federal agency taking action on a Fire Plan Project could enter into an alternative consultation agreement with FWS or NMFS, and then make determinations that the project was not likely to adversely affect listed species or designated critical habitat without informal or formal consultation (50 C.F.R. §§ 402.30–402.34). The decades-old National Fire Plan no longer governs federal agency strategy and planning regarding land management to address the wildfire crisis. Federal agencies should adopt new regulations which similarly remove barriers to fuel reduction projects including beneficial fire use, founded in the understanding that fire is a natural process where its use is ecologically or culturally informed.

In addition, Congress should act to explicitly account for the unique nature of fire in the language of the statute. Congress could accomplish this by adding a subsection to the provision on exceptions to the ESA, to note that reintroduction of beneficial fire is not an agency action subject to consultation or permitting requirements. There is precedent for creating exceptions to the ESA for Indigenous practices, as 16 U.S.C. Section 1539(e) exempts Alaska Natives from the provisions of the ESA if their activities are primarily for purposes of subsistence, with limited exceptions. In this case, similar language could be expanded to cultural fire, which is frequently rooted in subsistence and/or ceremonial practices.

The CAA

Federal and state policymakers, including the EPA, state air regulators, and Congress, must also address disincentives to beneficial fire use created by the CAA. Congress adopted the CAA in order to address the harms to

health and wellbeing from “air pollution brought about by urbanization, industrial development, and the increasing use of motor vehicles” (42 U.S.C. § 7401(a)(2)). The purpose of the CAA is not to restrict emissions attendant to natural processes, such as beneficial fire, which are not the result of urbanization, industrial development, or motor vehicles. Modifying policies under the CAA to remove the disincentives to beneficial fire use aligns with the ultimate policy goals of the CAA—by reducing wildfire risk and related public health impacts—and is within the purview of federal and state regulators. The CAA statutory and regulatory framework should be reframed to accurately conceptualize the role of fire in United States landscapes as inevitable and beneficial and create mechanisms that account for fire in order to achieve its ultimate goals of achieving cleaner air.

This could be accomplished by revising the CAA statute to recognize smoke from beneficial fire as a “natural” or “baseline” condition, allowing states to exclude smoke from beneficial fire when determining exceedances or violations of the NAAQS. This approach is supported by the Western Regional Air Partnership, Policy for Categorizing Fire Emissions in the context of regional haze and should be further expanded and adopted consistently in federal and state air quality regulations. This reform should be adopted with the recognition that as land managers work to return fuel loads and ecosystem structures to more characteristic conditions after a century of disruption from fire exclusion policies, these “natural” or “baseline” levels may be higher than would be expected under more characteristic conditions. Nonetheless, even during this period of returning to historic fire cycles, studies have indicated that the emissions resulting from prescribed fires should be lower than those that would have resulted from severe wildfires in that same area (Wu et al. 2023; Long et al. 2017). And allowing for restoration of beneficial fire despite these higher levels of emissions is necessary in order to achieve goals of reducing wildfire severity and frequency, and their attendant emissions, in the longer term. This change would remove the disincentives for approval of permits required to engage in prescribed burning, while obligating air regulators to restrict anthropogenic emissions sources such as motor vehicle emissions and industrial facilities (USDA 2023).

Avoiding concerns about the slippery slope in regulatory reform

Any changes to federal environmental statutes—especially those as important as NEPA, the ESA, and the CAA—necessarily raise concerns about the erosion of environmental protections, either now or in the future. Recognizing fire as a natural process, however, can be appropriately cabined to avoid concerns that any

modifications to NEPA, the ESA, and the CAA, even if well-meaning, would ultimately facilitate future policy changes that undercut important environmental protections.

Facilitating the use of beneficial fire is necessary to mitigate the wildfire crisis, but critics of policies meant to streamline fuel reduction projects have raised concerns that such policies are misused by agencies, allowing them to skirt appropriate environmental review, public input, and accountability (Moriarty 2004; Young 2009; Barbara 2023; Jacoby 2023). In particular, agency use of categorical exclusions under NEPA has long been criticized and litigated. Challenges to use of categorical exclusions for fuel reduction are driven by the fear that the US Forest Service approves these projects in order to generate revenue, rather than to improve forest health, as mechanical thinning may involve removal and sale of commercially valuable trees. Litigants have successfully challenged both agency adoption of categorical exclusion definitions and the application of categorical exclusions to particular projects. For example, in *Sierra Club v. Bosworth* 2007, the Sierra Club successfully challenged the Forest Service’s adoption of a categorical exclusion for fuel reduction projects of up to 400 ha (1000 acres) and prescribed burns of up to 1800 ha (4500 acres) in national forests. The Court of Appeals ruled against the Forest Service and invalidated the regulation, as the Forest Service had not demonstrated it made a reasoned decision, so its adoption was arbitrary and capricious. Litigation has also been used to challenge individual projects. In recent years, federal courts have repeatedly enjoined the Forest Service from applying the categorical exclusion for road maintenance and repair in order to clear damaged and downed trees in the aftermath of wildfires (*Environmental Protection Information Center v. Carlson* 2020; *Wildlands v. Warnack* 2021; *Forestkeeper v. United States Forest Service* 2021). The courts sided with environmental organizations challenging these projects, effectively finding that the Forest Service was using them as a loophole to approve large-scale commercial logging that generated revenue for the Forest Service, without environmental review.

But recognizing fire as a natural process is not just creating more categorical exclusions and would not be subject to the type of misuse that regulatory reform critics so fear. There is no financial incentive for beneficial fire, as it is not a revenue-generating activity (Stephens et al. 2023). Nor would it set the stage for further expansions of projects exempted from review, as no other actions could be easily recharacterized as “natural”: fire’s integral role in ecosystems makes beneficial fire use fundamentally different from other land management strategies and practices.

Conclusion

Climate change and the legacy of a century of fire exclusion have led to a surge in the frequency and severity of wildfires in frequent-fire-adapted forests and woodlands (Parks et al. 2018; Parks and Abatzoglou 2020; Steel et al. 2023). Reintroducing beneficial fire is necessary to restore forest health and combat the wildfire crisis, but the current regulatory landscape is inhibiting rather than enabling agencies and fire practitioners from engaging in this critical work. Reforming environmental statutes and regulations to recognize fire's unique role in ecosystems can enable the use of beneficial fire and ensure continued protection of environment and communities throughout the United States. The recognition of the Tribal right to steward must be a part of that reform (Hankins et al: Indigenous stewardship rights and opportunities to recenter Indigenous fire, forthcoming).

Abbreviations

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| BIA | Bureau of Indian Affairs |
| BLM | Bureau of Land Management |
| CAA | Clean Air Act |
| CEQ | Council on Environmental Quality |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| ESA | Endangered Species Act |
| EPA | Environmental Protection Agency |
| FWS | United States Fish and Wildlife Services |
| NAAQS | National Ambient Air Quality Standards |
| NEPA | National Environmental Policy Act |
| NFMA | National Forest Management Act |
| NMFS | National Marine Fisheries Service |
| NPS | National Park Service |
| NRCS | Natural Resource Conservation Service |
| SIP | State Implementation Plan |
| USDA | United States Department of Agriculture |
| WKRIP | Western Klamath Restoration Partnership |

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