

Untrammeling the wilderness: restoring natural conditions through the return of fire



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The 1964 Wilderness Act established the National Wilderness Preservation System, which is now comprised of 111 million acres and more than 800 wilderness areas managed by NPS, USFS, USFWS, and BLM. In addition to these federal agencies, several tribes manage areas either labeled as wilderness or managed in keeping with wilderness principles. The Act sought to define the concept of wilderness, stating that these areas should be untrammelled by man while also mandating the preservation of natural conditions. These two ideals -- the untrammelled quality and the natural quality -- have at times created significant dilemmas surrounding wilderness management.

According to the untrammelled quality, any human intervention is considered a degradation to wilderness character, even if actions were taken to improve conditions. Critics note that the untrammelled ideal fails to acknowledge the role of Indigenous stewardship practices, such as cultural burning, in shaping certain wilderness landscapes. In contrast, preserving natural conditions, defined as indigenous species compositions, structures, and functions of the wilderness, has at times called for limited human intervention. While both qualities are considered in management decisions, the untrammelled quality is often prioritized, creating substantial barriers to the restoration of fire through prescribed burning even as fire exclusion has impacted wilderness areas negatively.

Over a century of fire exclusion, including the reduction and removal of Indigenous burning and the suppression of lightning-ignited wildfires, has significantly altered and degraded many fire-adapted wilderness ecosystems. In the absence of fire, fuel loads and forest density have often increased, wildlife habitat has degraded for some species, and species composition has frequently shifted. These changes have often decreased the resilience of wilderness areas to climate change and the inevitable wildfire, making these landscapes more prone to uncharacteristically severe and potentially ecologically transformative wildfires, which are inconsistent with historical fires and may cause large-scale vegetation type conversions. Although fire suppression and prescribed burning are both viewed as trammeling actions by official wilderness strategy, this has not limited wildfire suppression but has prevented the use of human-ignited fire in wilderness areas.

In many fire-adapted wilderness ecosystems, fire exclusion has altered long-standing and historical cycles of burning, constituting an act of trammeling with cascading effects that can be described through a framework of four orders of trammeling. The first order of trammeling is the exclusion of fire from fire-adapted ecosystems, disrupting historical fire regimes. The second order is an indirect effect of the first order, where forest structure and species composition depart from historical conditions resulting in more

MANAGEMENT IMPLICATIONS

- Intentional human-ignited fire can be an effective fire restoration tool that can help preserve the natural conditions of wilderness areas and thus untrammel over a century of fire exclusion
- Prioritizing the untrammelled quality in wilderness management decisions has discouraged the use of prescribed burning in wilderness
- Tribal partnerships may provide opportunities for rethinking fire stewardship in wilderness areas and can potentially support the restoration of cultural burning where tribes are seeking to restore this stewardship practice
- Restoring historical fire regimes in wilderness areas through intentional human-ignited fire likely requires increased agency support, consistent guidance, and enhanced public engagement

homogenous landscapes, the loss of early seral vegetation types, increased fuel loads and forest density, and the proliferation of fire-sensitive species. These effects lead to the third order, where altered landscapes, additionally effected by climate change, may experience uncharacteristically large and severe wildfires which may result in vegetation type conversion from forest to non-forest. This may then prompt the fourth order of trammeling, which includes previously unnecessary management interventions to restore landscapes following uncharacteristically severe wildfires.

Intentional burning may be a critical restoration tool, mitigating the impacts of the first and second orders of trammeling and thus decreasing the likelihood of the third and fourth orders. Human-ignited fire is capable of restoring historical fire regimes and supporting historical ecological conditions, reducing the likelihood of uncharacteristically severe wildfires, and increasing ecosystem resilience. Additionally, the use of intentional fire in wilderness areas has been known to reduce fire severity in later wildfires, with previously burned areas able to serve as fuel breaks and aid in structure protection and burnout operations. Despite the many experts who have noted prescribed burning as a needed management practice, its implementation has remained stable or decreased in recent years.

While prescribed burning by federal personnel is considered a trammeling action, Indigenous cultural burning is not currently addressed by official wilderness strategy. Recognizing the role of Indigenous cultural burning in shaping certain wilderness areas may support expanded partnerships between agencies and tribes seeking to restore this stewardship practice.

There are several challenges to implementing intentional fire in wilderness areas, including a lack of infrastructure and remoteness that complicate



Graphic shows the four orders of trammeling—cascading actions that foreseeably result from fire exclusion over time

access and the establishment of fire breaks. Opportunities to overcome these barriers and expand the use of intentional fire in wilderness areas include increasing agency support, providing consistent guidance, enhancing public engagement, and partnering with tribes to rethink the role of fire stewardship.

Failure to increase the pace and scale of intentional burning in wilderness areas may increase the likelihood of catastrophic wildfires in the coming decades. Federal management agencies have the opportunity to untrammel over a century of fire exclusion by reintroducing fire across wilderness areas and preserving the natural conditions of these landscapes for future generations.

Additional Information

This brief is based on the following article:

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