



After the Fire: Potential Impacts of Fire Exclusion Policies on Historical Cherokee Culture in the Southern Appalachian Mountains, USA

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Abstract

Anthropogenic fire is generally accepted by contemporary foresters as shaping historical landscapes in the southern Appalachian Mountains, the ancestral lands of the Cherokee people. However, the consensus on historical Cherokee cultural burning practices is largely limited to artifactual inferences and colonial documents. While the historical importance of fire for Cherokee people is richly woven into their oral histories, information on historical Cherokee cultural burning in forestry literature is typically presented in the context of contemporary land management practices, themselves rooted in settler colonialism and institutionalized conservation strategies. However, in the broader literature and cultural context it is clear that Cherokee cultural burning likely had deeply rooted symbolic importance and twentieth century fire exclusion policies banning certain burning practices flouted Cherokee rights through direct interference and significant landscape-level change. Our research explores Cherokee fire traditions prior to the exclusion era and assesses the impacts of fire exclusion policies on landscape change as well as Cherokee cultural practices and sovereignty.

Keywords Cultural burning · Traditional Ecological Knowledge · Prescribed fire management · Historical landscapes · Cherokee · Appalachian Mountains · United States

Introduction

Anthropogenic fire is generally recognized as a significant driving factor shaping the historical landscapes and plant community compositions of the southern Appalachian Mountains, the traditional and ancestral territory of the Cherokee people (Abrams et al., 2022; Lafon et al., 2017; Van Lear, 1989). The biological and structural diversity of the forested landscapes of the southern Appalachian Mountains have been developed and refined by fire over several millennia (Abrams et al., 2022; Lafon et al., 2017; Van Lear, 1989). Empirical evidence and artifactual data attest to landscape-level burns as integral to the history and the development of southern Appalachian forests (Delcourt & Delcourt, 1997; Lafon et al., 2017, 2022; Stambaugh et al., 2018). While the scale and location of fires in the Appalachians

varied from year to year, a fire return interval of 10–40 years between major fires was necessary to develop their historical conditions (Fowler & Konopik, 2007; Holzmueller, 2009). Appalachian plant species may have evolved under fire conditions mostly determined by lightning ignitions, and it is clear that plant community diversity, richness, and overall composition stabilized under both abiotic and anthropogenic fire conditions (Abrams et al., 2022; Brose et al., 2001; Delcourt & Delcourt, 1997; Dumas et al., 2007; Kimmerer & Lake, 2001). From the end of the Mississippian archaeological period until European colonization, anthropogenic burning in the southern Appalachians was practiced predominantly by the Cherokee (Eastern Band of Cherokee Indians, 2016; Lafon et al., 2017). Following colonization, both Cherokee villagers and European settlers, who imported some European burning practices and adopted Indigenous practices, conducted cultural burning (Fowler & Konopik, 2007). This lasted until the early twentieth century when nationwide bans on burning, strict policy enforcement, widespread anti-fire propaganda such as the Smokey Bear campaign were introduced (Pyne, 2017).

The academic consensus on the characteristics and extent of those historical Cherokee cultural burning practices that

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significantly influenced and maintained historical southern Appalachian landscapes is largely derived from artifactual evidence (e.g., Delcourt & Delcourt, 1997), colonial-era documents (e.g., Adair, 2005), and early anthropological studies (e.g., Mooney, 2012 and Mooney & Olbrechts, 1932). As a result, and in the context of the inherently colonial perspective of academic ecology (see: Trisos et al., 2021), contemporary forestry literature is often largely devoid of the cultural context in which burning practices were rooted. The use of fire by historical Southeastern Indigenous cultures, including but not limited to the historical Cherokee, is mostly relegated to introductions (see Johnson & Hale, 2002; Jurgelski, 2008), marred by ethnocentrism, racism, or classism (see Maxwell, 1910; Yeater, 1940), or otherwise ignored in favor of a goals-driven perspective of fire for modern applications only, removed from historical context (see: NWCG, 2017; U.S. Department of the Interior, n.d.; U.S. Forest Service, n.d.). Even in culturally situated literature, most descriptions of anthropogenic fire practices in the Appalachian Mountains are those of the historically recent white settlers (see Jurgelski, 2008). The work of Fowler & Konopik (2007) is perhaps the most complete synthesis of Southeastern Indigenous burning practices, acknowledging that ceremonial fires were considered sacred, but is nevertheless limited by a focus on landscape burning as an agricultural practice. Other studies that discuss cultural fire histories and identify that the exclusion era had drastic ecological consequences, such as Brose et al. (2001), fail to question the sociocultural impacts of fire exclusion on Indigenous cultures. This contrasts with the extensive literature pertaining to other historical government bans on Indigenous traditions (see Enoch, 2002; Feir, 2016; Smith, 2004). Only recently has there been any broader recognition of the fire exclusion era as one with cultural implications (Vinyeta, 2022). The relatively recent specialization of academic forestry does not typically consider cultural traditions as valid sources of information or insight (see: Trisos et al., 2021). As a result, available forestry literature on the regions of the American Southeast and southern Appalachian Mountains has largely ignored the cultural significance of burning outside of its direct agricultural applications.

This raises considerable concern since in the southern Appalachians and in the American Southeast broadly, land managers burn more acreage per year than any other region in the country (CPFC, 2018; CPFC, 2020) while interacting with the fewest tribal governments as a result of historical genocide and the Indian Removal Period (see: Farrell et al., 2021). This, coupled with the narrow and common view that historical Cherokee burning was entirely utilitarian ultimately justified twentieth century fire exclusion policies as bans on agricultural practices and not as a set of policies with deep cultural ramifications. In the broader literature and

cultural context it is clear that historical Cherokee burning practices were likely integral to their cosmology and played a symbolic as well as practical role, and fire exclusion policies may have had significant impacts on Cherokee cultural sovereignty and were, like other anti-Indigenous policies, culturally oppressive. Our research focuses on the cultural burning practices of the historical Eastern Cherokee people and adjacent Southeastern cultures, as well as the potential effects of fire exclusion era policies on Cherokee cultural sovereignty and the spiritual and material benefits of their stewardship practices. We argue: (1) that historical Cherokee cultural burning practices likely had deep religious and symbolic importance beyond their agricultural purposes, and therefore (2) that fire exclusion policies of the Twentieth Century had cultural impacts beyond their commonly cited ecological implications.

Background

Fire History of the Southern Appalachians

Lightning fires drove the evolution of many species in montane Appalachian forests (Dumas et al., 2007), such as the fire-adapted overstory trees oak (*Quercus spp.*) and chestnut (*Castanea dentata* [Marshall] Borkhausen), which benefit from burning through their regenerative capabilities following fire and the negative effects of fire on their major competitors, for example, fast-growing hardwood trees such as red maple (*Acer rubrum* Linnaeus), a species that proliferated following fire exclusion (Dumas et al., 2007; Huddle & Pallardy, 1999; Nowacki & Abrams, 2008; Signell et al., 2005; Warwick, 2021). Certain pines with serotinous cones (such as Table Mountain pine [*Pinus pungens* Lambert] and pitch pine, [*Pinus rigida* Miller]) require the heat from fires to disperse seeds (Williams, 1998). Both woody and herbaceous species benefit from fire through the facilitation of vegetative regeneration or reduction of competing species (Warwick, 2021). Fire can also promote species success and diversity by creating varying breaks in the landscape, such as forest islands, that isolate species populations (MacDougall, 2003). In several cases, plant species that may be biologically capable of regeneration without fire may still be outcompeted by other species in the absence of consistent fire (Dumas et al., 2007; Signell et al., 2005). Overall, general modification of the Appalachian Mountains' abiotic environment tips competitive balance in favor of so-called light-loving species and species able to outlast fire-sensitive species (Lafon et al., 2017; Johnson & Hale, 2002; Warwick, 2021).

Human habitation in the Appalachians predates the stabilization of the eastern woodlands' modern-day climax

hardwood forest by several millennia, lending credence to the idea that anthropogenic fires set by early Indigenous peoples significantly influenced the structure and composition of Appalachian forests (Brose et al., 2001; Fowler & Konopik, 2007). Vegetation patterns and species composition in the Appalachian range stabilized around 4,000 years ago with a canopy dominated by oak (*Quercus spp.*), chestnut (*Castanea dentata*), and hickory (*Carya spp.*) (Brose et al., 2001; Delcourt & Delcourt, 1997). Pine forests also rapidly expanded their range around this time (Johnson & Hale, 2002). The Fire-Oak Hypothesis (Dumas et al., 2007; Lafon, 2017) states that frequent surface fires facilitate open understories while inhibiting fire-sensitive species, thus promoting the regeneration and dominance of oaks, hickories, and other fire-adapted species like yellow pines. There is evidence that fire activity in Appalachia increased as a consequence of increased human activity (Stambaugh et al., 2018; Van Lear, 1989) refer to this phenomenon in other parts of the eastern United States as the “Wave of Fire:” a notable increase in fire frequency following human settlement (Indigenous or colonial) at multiple, staggered times during the past 350 years (see also Cooley, 2004; Eastern Band of Cherokee Indians, 2016; Pyne, 2021; Van Lear, 1989). While the universal applicability of the Wave of Fire hypothesis is debatable, the general relationship between human activity and fire is widely acknowledged (Lafon et al., 2017), and it is well-recognized that each settlement group incorporated at least some landscape burning practices into daily life and culture (Johnson & Hale, 2002), a cultural-ecological relationship that, at least in the case of Indigenous practices, Winthrop (2014) identifies as *culturally reflexive stewardship*. The expansion of pine forests in the Appalachians coincides with expansions of Indigenous populations (Johnson & Hale, 2002). Overall, anthropogenic fire shapes landscapes according to human values, affects and sustains other-than-human processes, and promotes biodiversity and landscape-level heterogeneity.

Despite fire regime changes following colonization, anthropogenic burning was ubiquitous in the Appalachians until the introduction of capital-intensive timber harvesting from around 1880 (Brose et al., 2001; Stambaugh et al., 2018). Until 1930 this period was marked by industrialized harvesting practices involving extensive clear cuts and slash production that left the Appalachian landscape extremely susceptible to wildfires by increasing fuel in the forests and caused many wildfires through the presence of industrial infrastructure ignition sources (Brose et al., 2001). A survey of the timber industry in West Virginia in 1911, for example, “attributed 71% of all wildfires to locomotives and 20% to mills” (Brose et al., 2001: 32). Unlike low-intensity surface fires, these fires were extremely intense and devastating for forests, soils, and waterways (Brose et al., 2001).

For instance, the provocative nature writer Horace Kephart (1913: 99) described burnt areas of the Great Smoky Mountains as “firescalds” or “brulés.” These major wildfires contributed to the establishment of fire exclusion policies starting in the early Twentieth Century (Brose et al., 2001).

Fire Exclusion Policies

Major wildfires coincided with the beginnings of the modern conservation movement and the formation of the Forest Service in the United States, contributing to the adoption of fire prevention as a major goal of government land management agencies.¹ Ignoring storied cultural traditions, state and federal forestry agencies, strongly encouraged by the timber industry which was itself threatened by increasingly common wildfires after industrialization, sought complete dominion over wildfires and woods burning in the eastern United States, including in the Appalachian region (Brose et al., 2001; Pyne, 2017). The U.S. Forest Service Smokey Bear campaign is perhaps the most well-known propaganda campaign to alert the public to the perceived dangers of wildland fires. While effective in curbing out-of-control wildfires, such campaigns also promoted the idea that fire had no place in conservation or forest management, a position since largely abandoned (Brose et al., 2001). Nevertheless, woods burning persisted in some Appalachian communities (Carle & Kaufmann, 2002).

Fire exclusion policies drastically altered the composition of pine/oak communities in the southern Appalachian Mountains. Hillsides once covered by canopies of fire-adapted oak and pine trees have been replaced by mixed, shade-tolerant, fire-sensitive hardwood species with dense understories of young saplings and shrubs (Dumas et al., 2007; Elliott et al., 1999; Nowacki & Abrams, 2008). Contemporary forestry literature acknowledges that an intensive restoration phase involving repeated applications of prescribed fire to reinstate the historical fire interval is likely necessary to restore open, diverse understories and promote the regeneration of key hardwood species like oak and hickory, likely in tandem with silvicultural treatments, such as harvesting and thinning (Brose et al., 2001; Holzmueller et al., 2009; Oakman et al., 2019; Stambaugh et al., 2007; Waldrop et al., 2016; Van Lear et al., 2000). The current management plans of the Eastern Band of the Cherokee Indians, while similar, include significantly more focus on

¹ The US Forest Service and other foresters disapproved of woods burning (1940), describing it as “incendiarism” (Shea, 1940: 1) or “Paiute forestry,” (Pyne, 2017: 100–110). Yeater (1940) refers to the practice as ignorant and irresponsible, practiced by the “hillbilly” (p. 3) and the “firebug” (p. 1) for excitement, out of spite, because it “is in their blood” (p. 12) or because of “sour on the government and everything in general” (p. 11).

the cultural value of various plant species (Eastern Band of Cherokee Indians, 2016).

Synthesis and Analysis of Literature

We here consider how traditions of cultural fire across Indigenous Southeastern peoples and of historical Cherokee culture are associated with their foundational symbolic and ritual traditions (see: Winthrop, 2014). Additionally, we examine ecological responses to cultural burning to determine the range of outcomes of burning practices.²

Fire as Cultivator

The status of fire as both symbolic and practical is central to historical Southeastern Indigenous cultures broadly, exemplified by the many historical Indigenous cultures of the region that share similar perceptions of fire as a traditional motif, ritual element, and agricultural tool (see Duncan, 1998; French & Hornbuckle, 1981; Mooney, 2012; Mooney & Olbrechts, 1932; Swanton, 1995). Thus, fire is regarded as a process with ancestral origins that can be used for both symbolic and utilitarian purposes for many daily and seasonal utilitarian tasks. Households in historical Southeastern villages maintained a central fire used for domestic purposes: cooking, creating pottery, and for medicinal practices. At the landscape level, fires used to develop areas for hunting and agriculture, as well as modifying the surrounding village landscape (Blumer, 2004; Fowler & Konopik, 2007; Hammett, 1992; Lafon et al., 2017).

Details of historical Cherokee cultural burning practices are largely unknown (Cooley, 2004; Stambaugh et al., 2013). However, historical documents provide some insight into general trends regarding burns, especially in combination with information about adjacent or derivative practices of nearby Indigenous cultures or those of white settlers. For example, larger landscape fires may have occurred once or twice a year and may have been prompted by specific goals (Cooley, 2004; Flatley et al., 2013; Fowler & Konopik, 2007; Lafon et al., 2017; Mooney, 2012). Smaller fires around villages may have occurred much more frequently (Cooley, 2004; Eastern Band of Cherokee Indians, 2016; Flatley et al., 2013; Lafon et al., 2017; Mooney, 2012). “Accidental” burns, perhaps ignited from sources like abandoned campfires, were also common (Cooley, 2004; Flatley et al., 2013),

although these records reflect ethnocentric mis-construal of woods burning as irresponsible (e.g., Maxwell, 1910).

In dry conditions conducive to burning, typically from fall through early spring, larger burns facilitated fuel reduction and understory suppression required for travel and foraging, promoted hunting grounds for game animals, and rejuvenated culturally salient plants in the following growing season (Cooley, 2004; Van Lear, 1989; Kimmerer & Lake, 2001). In fall and winter, larger fires may have been used to hunt deer or other animals (Fowler & Konopik, 2007; Maxwell, 1910; McLoughlin, 1992; Van Lear, 1989; Williams, 2003). In the fall specifically, fires were used to facilitate foraging by clearing leaf litter to expose fallen chestnuts, acorns, and other hardy forest products (Eastern Band of Cherokee Indians, 2016; Fowler & Konopik, 2007; Mooney, 2012; Van Lear, 1989). More localized burns around the village outskirts cleared land for agriculture and hunting grounds (Cooley, 2004; Eastern Band of Cherokee Indians, 2016; Lafon et al., 2017; Maxwell, 1910). James Adair, a colonial-era trader, noted large burning slash piles left after a woodland-clearing (Adair, 2005); other colonial explorers provide similar descriptions (Fowler & Konopik, 2007). Thus, the most noticeable effects of repeated surface fires on the landscape were likely within a few miles of villages (Lafon et al., 2017), although larger burns could extend further (Fowler & Konopik, 2007). Likewise, the distributions of plant species, particularly trees, within and around Indigenous communities in the Southeast were noticeably different from uninhabited or less densely inhabited areas (Warren, 2016).

In addition to intentional cultural burning, cumulatively, accidental fires may also have played a notable role in shaping the Appalachian landscape (Flatley et al., 2013). Studies of other Southeastern Indigenous cultures as well as white settlers note the occurrence of accidental landscape burns from sources such as small escaped campfires (Flatley et al., 2013; Maxwell, 1910; McNeil, 1995). With few barriers to extinguish them, these smaller burns, over time, would have further facilitated travel and cross-village communication, as well as providing other cultural benefits (Cooley, 2004; Jurgelski, 2008), particularly in locales frequented by hunters. In many ways, such accidental fires were likely beneficial given the current understanding of the benefits of periodic surface fires. Given the current popular image of the accidental wildfire, it is critical to note that, in the historical Appalachian landscape, these would have had significantly less impact on the landscape than current accidental wildland fires, primarily because historical forests and woodlands would have had significantly less fuel build-up.

Late nineteenth- and early twentieth-century ethnographers occasionally used the word *accidental* to imply that Indigenous people burned their woods irresponsibly,

² We avoid use of terms such as *cultural services* or *ecosystem services* as both stem from Western economic concepts of costs and benefits that view Cherokee stewardship as a set of practices focused exclusively on production (Coeckelbergh, 2017; Winthrop, 2014). We prefer to use *benefit* to describe any constructive consequence provided to the Cherokee people by their stewardship practices; we derive the qualifiers *tangible* and *intangible* from Ryan et al. (2012).

confusing abiotic fires with anthropogenic fires that were in fact both intentional and culturally important (see especially Maxwell, 1910). This confusion may have been rooted in perceptions of the scale of culturally important fires since, without the precision of modern, institutionally prescribed fires, historical Southeastern Indigenous burning may have been planned but not precisely contained. Most historical landscape fires were put out by weather, fuel depletion, or natural fire breaks (Johnson & Hale, 2002). Alternatively, it could be speculated that these fires documented as accidental may indeed have been initiated without purpose but were left to burn by the Cherokee people, who had knowledge of both the benefits of fire and the generally low risks they posed, given the significantly lower fuel loads carried by historical forests compared with contemporary forests. Recognition of the symbolic and religious cultural precedents of fire in Cherokee culture permits a realization that historical documentation of irresponsible, accidental fires is likely a reflection of the Cherokee people's deep understanding of ecological processes and the benefits they provide, rather than the carelessness perceived by colonial observers.

Tangible Benefits

There are much clearer connections between the understanding of historical Eastern Cherokee cultural burning practices and how their effects on the Appalachian landscape are connected to the development and sustenance of their material culture. Academic studies as well as reports from land management agencies and tribal governments describe how anthropogenic burning at the largest scale created many landscape-level benefits for Cherokee populations that enabled them to directly and indirectly cultivate many plant and animal species important in their daily life and for their cultural and religious beliefs and customs.

Most directly, historical Cherokee cultural burning practices had a direct impact on plant species composition of the southern Appalachian Mountains; many of these species were extremely salient to Cherokee foodways and pharmacopoeia (Abrams & Nowacki, 2008; Cozzo, 2004; Moerman, 1998; Vick, 2011). The plant resources nurtured by cultural burning practices of the historical Cherokee were derived from several plant types (fire-tolerant, fire-adapted, ruderal) and species (Warwick, 2021) and were used in diverse ways, including for food and medicine, shelter, handicrafts, hunting, domestic life, and religious activities (Cooley, 2004; Cozzo, 2004; Eastern Band of Cherokee Indians, 2016; Moerman, 1998). Species used for a wide variety of cultural benefits were often major overstory trees, i.e., American chestnut (*Castanea dentata*), white oak (*Quercus alba* Linnaeus), and blackgum (*Nyssa sylvatica* Marshall), since they provide a wide array of materials through bark, fruit,

flowers, leaves, and wood of varying qualities (Moerman, 1998). Fire-dependent pine species, such as Table Mountain Pine (*Pinus pungens*), shortleaf pine (*Pinus echinata*), and pitch pine (*Pinus rigida* Miller), which have greatly diminished modern ranges, represented major sources of medicine and other materials, particularly lumber (Dumas et al., 2007; Moerman, 1998; Nowacki & Abrams, 2008). Other culturally useful trees, like black locust (*Robinia pseudoacacia* Linnaeus), may not require fire but grow best on disturbed land and likely saw much greater habitat with consistent fire disturbance than under the conditions of modern overgrown forests (Abrams & Nowacki, 2008; Boring & Swank, 1984). In all cases, consistent fire allowed for the maturation of both materially and culturally important tree species. Since many of the dominant woody and herbaceous plant species native to the traditional homelands of the Cherokee people are fire-dependent or benefit from fire, the absence of fire on the landscape represents a significant inhibiting factor to the production of essential and foundational cultural resources.

Fire-dependent plant species that compose the herbaceous and shrub layer in oak woodlands, such as goat's rue (*Tephrosia virginiana* [Linnaeus] Persoon), New Jersey tea (*Ceanothus americanus* Linnaeus), and hairy bush clover (*Lespedeza hirta* [Linnaeus] Hornemann) are among the most-impacted by the absence of fire because they require full sun unavailable in modern mixed-hardwood forests, but constituted many of the important medicinal and craft resources of historical Cherokee communities (Clark, 1971; Cozzo, 2004; Hayden, 2020; Moerman, 1998; Speck, 1944; Taylor, 1940). Fruit-producing plants, such as black huckleberry (*Gaylussacia baccata* [Wangenh.] K. Koch), bear huckleberry (*Gaylussacia ursina* [M.A. Curtis] Torr. & A. Gray), American wintergreen (*Gaultheria procumbens* Linnaeus), and deerberry (*Vaccinium stamineum* Linnaeus) experience denser growth following fire and were used as a variety of prominent food sources (Cozzo, 2004; Elliot et al., 1999; Moerman, 1998; Perry, 1974; Warwick, 2021). Many important grass species benefitted from consistent fire because of increased light availability and crown destruction as a regenerative impetus. Rivercane (*Arundinaria gigantea* [Walter] Muhlenberg) was used for craft and cultural purposes and experienced significant habitat and population decreases in the last century (Bugden et al., 2011; Cozzo, 2004; Moerman, 1998). The grass species broomsedge (*Andropogon virginicus* Linnaeus) was used for important ritual practices in Green Corn Ceremonies (Moerman, 1998). Certain species not dependent on fire for reproduction or achieving maturity, such as Virginia pine (*Pinus virginiana* Miller), blackberry (*Rubus spp.*), and other wildflowers and herbs contemporarily considered roadside weeds were also indirectly cultivated through disturbances caused by cultural burning practices and were important sources

of many Cherokee craft and medicinal resources (Cooley, 2004; Eastern Band of Cherokee Indians, 2016; Vick, 2011).

Fauna as well as flora benefit from mosaic-style landscapes of mixed forest and cropland, including major game animals, notably white-tailed deer (*Odocoileus virginianus* Zimmerman). Dense, continuous forest, by contrast, typically supports the lowest-density deer populations (Bolstad & Gragson, 2008; Little et al., 2018). Deer are also foundational in Cherokee cosmology and daily life (Duncan, 1995; Mooney, 2012; Swanton, 1995), revered as other-than-human persons (Peres & Altman, 2018). While contributing to foodways and nutrition, deer also provided for a variety of non-food uses, such as clothing and tools, both practical and reflecting Cherokee worldview through design and ornamentation (Perdue & Deer, 2009). Additionally, deer parts were used for religious artifacts such as amulets, as well as being the subject of prayers and songs related to hunting and killing deer for human use. Turkeys (*Meleagris gallopavo* Linnaeus) are similarly integrated into this system, as they also benefit significantly from periodic landscape burning (Howard et al., 1959; Johnson & Hale, 2002). Because of the general benefits of periodic landscape burning on wildlife diversity and abundance, as well as the integration of other-than-human species into Cherokee cultural life, these trends can be extrapolated to other species, such as black bear (*Ursus americanus* Pallas), as well (Brooks, 2019; Duncan, 1998; Johnson & Hale, 2002; Little et al., 2018). The suppression of fire from the landscape negatively impacts wildlife populations, thus limiting both material and symbolic resources for the Cherokee population.

Fire as Ritual

The available literature on the cultural precedents of fire use among Southeastern Indigenous cultures indicates fire's critically important role as a symbolic element in religious beliefs and rituals. For historical Cherokee people, fire was a transformative medium considered to possess emotions and consciousness (Nabokov, 2007). Across Southeastern Indigenous cultures stemming from the Mississippian Period tradition known as the Southeastern Ceremonial Complex (SECC), fire has a major role in rituals of purification, renewal, and consecration (Albanese, 1984; Cozzo, 2004; Speck, 1939; Swanton, 1918, 1995). In oral traditions associated with or derived from the SECC, fire is often represented as a gift from an animal; the traditions of the Alabama people, for example, relate that fire was adopted by human beings after seeing bears use it to hunt deer (Maxwell, 1910; Swanton, 1995). In historical Catawba (Iswa) culture, fire was associated with life, healing, purity, and influence over living aspects of the Catawba environment; it was integrated into ceremonial dances and used in funerary rites as a means

of dedication (Speck, 1939). Fire held a place of primacy in the symbolic system in historical Cherokee life, representing purification, fertilization, and power (Albanese, 1984; Mooney, 2012; Mooney & Olbrechts, 1932; Perdue, 1998; Stambaugh et al., 2013). Their oral tradition describes fire as first introduced by a lightning ignition, directly indicative of the origins of fire on the Appalachian landscape; the Water Spider alone succeeded in transporting fire across their lands (Mooney, 2012). The colonial writer James Adair (2005) mentions the use of fire by various peoples including the Choctaw, Chickasaw, Muskogee, Catawba, and Cherokee, particularly in relation to their funerary, medicinal, and other ritual practices; he also identified the sanctity of fire in those cultures, which he compares to similar beliefs in the Abrahamic religions, perhaps erroneously (Hudson & Adair, 1977). The purifying and renewing role that fire played in these historical Southeastern cultures perhaps reflects the observation of landscape renewal following wildland fires.

In historical Cherokee culture prior to the fire exclusion period, fire had widespread cultural and spiritual significance that was arguably inseparable from its physical presence. In other Cherokee cultural traditions, the use of fire by humans is a common and often pivotal motif, such as the story of *Ustu'li*, in which brush and grass are ignited to defend against a mythic serpent (Mooney, 2012), or the destruction of the cannibal called *Stone Coat* with fire that provided their ancestors with knowledge of medicine, rituals, rules, and dances (Albanese, 1984; French & Hornbuckle, 1981). In configurations, such as in Mooney's (2012) examples of the *Ice Man* and *U'tlun'ta* (the *Spear-Finger*), the regular periodicity of cultural burning prompts or gives temporal context to narrative traditions as much as any toponym.

The most well-documented cultural precedent of fire in Cherokee culture is the tradition of the Sacred Fire and its presence in the Green Corn Ceremony, a four-part liturgical cycle that historically took place between August and October of every year and shared similarities with other regional harvest ceremonies (Rodning, 2017; Witthoft, 1946); this cycle would have taken place simultaneously with cultural burns in autumn for forest crops like chestnuts (Mooney, 2012). At the end of the cycle, the Sacred Fire in the main village house that was kept alight year-round was extinguished and re-lit, signifying renewal of another cycle of cultivation for the following year's harvest and Green Corn Ceremony. The fires extinguished in the remaining village households were relit from this central fire (Albanese, 1984; Bartram, 1791; French & Hornbuckle, 1981). Although this ceremony had greatly diminished by the end of the nineteenth century, its presence remains significant even after the Removal Period in various modified forms (Albanese, 1984; Finger, 1991; French & Hornbuckle, 1981).

Intangible Benefits

Much remains unknown about the extent of the continuity of religious, ritual, and symbolic practices among historical Eastern Cherokee populations of the late 1800s and early 1900s (Albanese, 1984). However, the available literature pertaining to Cherokee religious and symbolic beliefs in conjunction with that regarding Cherokee cultural burning practices appear to reflect their complementarity or at least a connection. As we have described, it is difficult to represent Cherokee cultural burning as a distinctly utilitarian agricultural strategy separate from their beliefs about the spiritual aspects of fire reflected in their oral history, religion, and cultural identity, although many sources, especially related to fire ecology and forestry, do just this (for example: Johnson & Hale, 2002).

With these precedents and relationships in mind, banning the use of landscape-level fire on the grounds that its potential uncontrolled spread might impact areas of perceived vulnerability was without doubt detrimental to the cultural sovereignty of the historical Eastern Cherokee people. While it is impossible to determine the parameters of the relationship between the cultural burning and religious beliefs of the historical Eastern Cherokee, it should be noted that cultural burning cannot be equated with the secular, utilitarian practice that contemporary literature portrays it to be, just as cultural facets like language, clothing, and hairstyles are not considered to be meaningless aesthetic or utilitarian traditions within Indigenous communities.

Discussion

Effects of Fire Exclusion on Resource Accessibility and Cultural Traditions

Although no similar record exists regarding the Cherokee people, it is

well-documented that white Appalachian settlers were fundamentally impacted by fire exclusion policies (Jurgelski, 2008). Settlers to the Appalachian region historically burned for similar reasons to those of the Cherokee, much as they had previously done in Europe (Carle & Kaufmann, 2002; Johnson & Hale, 2002). “Woods burning” became common practice among rural Appalachian settlers passed down through generations, primarily from father to son (Carle & Kaufmann, 2002; Jurgelski, 2008; Shea, 1940; Van Lear, 1989; Yeater, 1940). Although the settlers were aware of the dangers of major wildfires, they also understood the benefits of burning (McNeil, 1995; Shea, 1940). While the impacts of fire exclusion on the Indigenous peoples of Appalachia have received less attention, we argue that they

were likely greater than for the settlers given the significant cultural and religious centrality of the role fire in historical Cherokee traditions (Albanese, 1984; Mooney, 2012; Mooney & Olbrechts, 1932; Perdue, 1998; Stambaugh et al., 2013).

Historical Cherokee society had already been significantly impacted by the Removal Period, territorial encroachment, and cultural genocide, so the fire exclusion era should be seen as part of the ongoing cultural oppression of the Cherokee people. While the exact extent of burning in Cherokee communities directly before and during the fire exclusion era cannot be determined (although it should be noted that frequent burning, banned during the exclusion era, did take place in settler communities despite its illegality; see Shea, 1940), the banning of such a central element of Cherokee culture nevertheless remains a colonial ethnocentric policy that undoubtedly had broader socio-cultural impacts similar to those resulting from the language and religious bans of the period, particularly for loss of cultural identity and increasing forced dependence on settler lifeways, foodways, and beliefs.

At the landscape-level, the burning bans had a long-term impact on the overall appearance of the Appalachians, as well as the composition and abundance of plant and animal species (Lafon et al., 2017), further isolating the remaining Cherokee communities from fire-dependent natural resources. Denser, un-burned forests, coupled with broader changes in transportation development and changes in land ownership, impacted accessibility to hunting grounds and common modes of transportation connecting Cherokee communities, further isolating the remaining Eastern Cherokee within colonial settler populations and reducing vital sources of food and culturally salient materials. Plant species used for basic food requirements, medicines, and cultural practices that depended on fire for regeneration and reproduction, and even plant species not dependent on fire, became noticeably reduced on the landscape, especially with compounding pressure from settler encroachment and gradual deforestation.

Contemporary scholars, such as Vick (2011) note the immensely devastating affect that the Indian Removal period had on the ability of Cherokee peoples based in what is now Oklahoma to access plants of major importance for food and medicine (see above). However, it is important to remember that the historical Cherokee landscapes of the Appalachian Mountains that outlasted the period of Indian Removal, including the formalized Eastern Band of the Cherokee Indians, were drastically different even from their conditions in the early 1800s. Thus, even Cherokee communities that avoided forced emigration and remained in the Appalachians likely also experienced, as a consequence of fire exclusion policies, changes in resource accessibility

that negatively impacted their ability to continue their cultural practices, fundamentally threatening their culture and sovereignty in a way analogous to forced removal, albeit arguably to a lesser degree. It is therefore especially notable that fire exclusion policies are not acknowledged anywhere in available literature as a force of Indigenous cultural suppression that created barriers for Indigenous communities to access their traditional lands in addition to being the cause of widespread landscape degradation.

This narrative is not confined to the Appalachian region we discuss here; Indigenous cultures across the continent used and continue to use fire in a variety of cultural capacities (Kimmerer & Lake, 2001; Storm & Shebitz, 2006; Trusler & Johnson, 2008), and all were similarly negatively impacted by the fire exclusion era (see: Vinyeta, 2022). Kimmerer & Lake (2001), for example, have documented similar traditions among the Karuk people, who conduct ritual burning, as well as among the Potawatomi, Ottawa, and Ojibwe peoples, who are called *keepers of the flame*. Contemporary management practices that exclude cultural context impede the ability of land managers to holistically reverse the effects of land degradation, in this case a long period of fire exclusion (see Leonard et al., 2020; Stewart, 2014). Consequently, without a framework that values cultural traditions as integral to fire history, the fire exclusion era is treated exclusively as an ecological blunder and not an act of cultural oppression, excluding any relevant information on the effects that fire exclusion policies may have had on cultural practices in the southern Appalachian Mountains, particularly for historical Eastern Cherokee people.

Implications and Moving Forward

Current members of the Eastern Band of Cherokee Indians report witnessing and experiencing increased generational separation from traditional Cherokee environmental philosophies and connections (Lineberger, 2016). That the concept of banning fire from the Appalachian landscape appears to have been unrecognized by Twentieth Century and contemporary scholars as a cultural issue—or, more maliciously, been strategically repressed (see Vinyeta, 2022)—should not free current land managers from responsibility to address and rectify this on-going fundamentally colonial problem. Although state and federal agencies are working to rectify the ecological impacts of fire exclusion policies, they have failed to do the same for the cultural repercussions of those policies. The reintroduction of fire to the southern Appalachian landscape is a positive shift from the former paradigm of fire exclusion. However, the further inclusion of cultural context and cultural values into forestry is necessary to more holistically deconstruct the potentially detrimental effects of former policies. This, ultimately, is a limitation of a colonial

discipline historically focused primarily on economic interests rather than human (particularly Indigenous) cultural values and therefore largely lacks cultural sensitivity.

While land managers create policy based on a human/other-than-human dichotomy, Indigenous practices exist in a paradigm of humans as part of wider ecological systems. Fire, as a symbol and presence in historical Eastern Cherokee life, did not exist separately from other aspects of culture or ecology. It is illogical to continue to artificially exclude human culture from the mountains, the prairies, and forests, which themselves, through millennia of fire, are inherently anthropogenic landscapes.

Moving forward, it is in the interest of land management agencies to work alongside the Eastern Band of Cherokee Indians and other Indigenous tribes nationwide to aid in the development of more inclusive management goals. Instead of attempting to simply recreate precolonial forest conditions, even by incorporating traditional ecological knowledge (see Whyte et al., 2018), our research reaffirms the idea that institutions and management agencies should (1) acknowledge their responsibility in impacting Indigenous cultural sovereignty in the southern Appalachian Mountains and elsewhere, and (2) share resources, promote cross-institutional collaboration and ecological, social, and cultural goals, with a particular focus on cultivating culturally salient plant species and plant communities while supporting accessibility for Indigenous use (see: Aldern & Goode, 2014; Baumflek et al., 2021; Copes-Gerbitz et al., 2021; Kimmerer & Lake, 2001; Ryan et al., 2012; Wyatt et al., 2021). More broadly, it must be the goal of scientists and land managers to further integrate people historically marginalized by the discipline of ecology, particularly fire ecology, into the stewardship roles for which the discipline takes responsibility. Indeed, the ecologically integrated cultural traditions of the Cherokee people and their personal roles in reflexive stewardship are largely what created the historical woodland conditions to which land managers so desperately wish to return.

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Declarations

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