

January 2025

PRESCRIBED FIRE

in the Great Lake States of Minnesota,
Wisconsin, and Michigan



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INTRODUCTION

Fire is no longer commonplace in the modern landscape of the United States. Its absence in our ecosystems is the result of the displacement of indigenous populations, fire-suppression policies, and the suppressive conceptions of fire in the public conscience. The movement to reintroduce fire with the use of prescribed burns is critical to the improved stewardship of all managed areas that were previously part of a historic burn regime, heralding benefits such as reducing fuel for future burns, and increasing landscape heterogeneity (Kreider et al.). Current literature on the use and impact of prescribed fire centers the American West, in part because it holds most of the wilderness areas in the lower 48 states (Boerigter, “Untrammeling”; Prichard et al.). This paper organizes theory and practice as it relates to the Great Lakes region of Minnesota, Wisconsin, and Michigan, where case studies are used to highlight what prescribed fire could look like under state, tribal, or private management respectively. The intent of this publication is to address the need for further geographically-specific literature, feature pertinent case studies, and inform the continued work of fire practitioners in Minnesota and beyond.

BRIEF HISTORY

Fire exclusion in the US was initiated with the depopulation and displacement of Native Americans. The European ideological belief that fire was destructive and dangerous to humans started in the early 1700s as settlers spread across the land and established control over the landscape (Kimmerer and Lake). The early 20th century was a period of extreme suppression, due in part to the 10 AM policy of 1935, which was enacted to suppress all wildfire ignitions (Kreider et al.). Beyond just policy, the fine and jail time associated with being caught burning was an extreme deterrent for all people (“River Talk”).

During World War II, male firefighters joined the war effort and Japanese shells landed on US soil, further stoking the fear of fire. To assist in fighting fires before they occurred, the Forest Service joined the Cooperative Forest Fire Prevention Program. The campaign enlisted the use of posters depicting animals putting out fires, and after Disney stopped leasing Bambi, the image of Smokey Bear began to be used in 1944 (Blakemore). This image is a fixture in American minds that represents and reinforces the overly simplified narrative that fire is destructive and should be put out. It took until 2001 for Smokey's slogan, "Only YOU Can Prevent Forest Fires", to be changed to "Only You Can Prevent Wildfires" to leave prescribed fire as an acceptable instance of fire use ("About the Campaign").



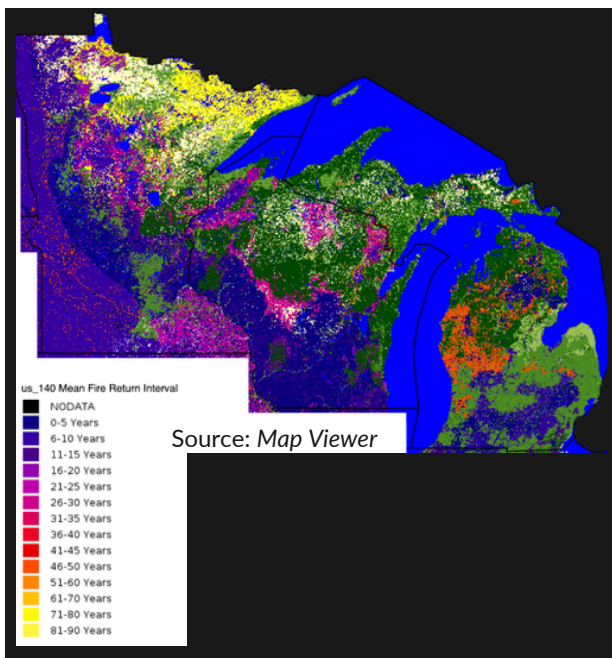
While the slogan change may not have been earth shaking, another influence on the American conception of nature and how we use fire occurred in the 1960s. The Wilderness Act, enacted in 1964, has continued to be an influential piece of policy that defines the concept of "wilderness" and the allowable management actions and activities on these federal lands. The Act describes the suppression of fire and the ignition of prescribed fire to be an action that degrades wilderness character. Wilderness managers are restricted in their actions as they attempt to preserve nature while keeping it untrammelled, or untouched, by man (Boerigter, "Untrammeling").

Recent efforts to reinterpret the meaning of trammeling has resulted in recommendations to classify the intentional removal of fire presence in wilderness areas as a damaging action, and thus necessitate reintroducing fire through prescribed burns in areas with a former burn regime (Boerigter, "Untrammeling"). Fire has a place as a management tool to foster resilience in longer, warmer, and windier fire seasons, even in its nascent stage of acceptance (Pritchard et al.; Coop). Modern American society continues to grapple with the legacy of fire exclusion in a time of increasing and rapid climate change. Redefining the way we interact with and manage wilderness is critical to mitigating the impacts of frequent and severe fires, which fire exclusion and climate change are both contributing to.



REGIONAL CONTEXT

Understanding policy and land use history is crucial to modern comprehension of the necessity of fire. While burn regimes in the modern day can be tracked with satellite data, historical regimes are more difficult to estimate. The exact scope of fire's precolonial use cannot be ascertained due to the erasure of indigenous peoples and their records, but there are some tools available. The website "Landfire" pulls together historical data and records to create a map of the conterminous US ("Homepage"). The map below describes the Mean Fire Return Interval (MFRI), which details that large swaths of these three states saw fire frequently, anywhere from every 1 to 50 years. Information represents the frequency of fires pre European colonization, with results coming from locally developed state-and-transition models ("Historical Fire Regime"). Notably, areas in green are beyond the reach of the legend, meaning they saw fire less frequently than every 90 years.



Each state had large swaths that regularly experienced fire, but there are significant variations across the region. Southwestern Minnesota and a strip of land up to the northwestern tip have burned much more frequently than the northeast, and the central region varies between frequent and extremely infrequent regimes. Southern Wisconsin is dominated by areas that experienced a MFRI between 1–15 years. The eastern edge, along with most of the northern half of the state, saw fire much less frequently. In contrast to the other two, Michigan is dominated by patches of infrequent fire, with the Upper Peninsula's MFRI

being almost entirely longer than 90 years. The areas with frequent fire are small and disjointed in the central south and north.

While this map describes the importance of fire in a historical context, geographic shifts have occurred. This historic data can be used to estimate the fire needs of contemporary communities, as they exist with different distributions.

CASE STUDIES

The following case studies represent the work of multiple groups that support the development of a modern and informed prescribed fire regime in specific geographic contexts. Each case study is introduced with a current and quantitative "Fire Needs Assessment" for the specific geographic region.

We know that the image of Smokey Bear and the associated fear deters progress; the history of fire suppression in the US means contemporary policy does not recognize or understand the positives associated with the presence of fire. For this reason, each study was selected based on their capacity to inspire the work of others, in addition to the impact they have on their own. Through collaboration, capacity can be built to invite fire back to its place as part of healthy management.

Minnesota

The Minnesota Fire Needs Assessment encompasses almost 3.8 million acres of land across Minnesota that needs to be burned annually to maintain grassland (312 thousand acres) and forest (3.48 million acres) ecosystems. Estimated from the Minnesota Forest Action Plan, the ownership of forested land in MN is split 68% private (including corporations, conservation organizations, clubs and partnerships), 9% federal, 14% local, 7% state, 2% tribal (Minnesota DNR).



3.48M acres need to be burned annually to maintain forests statewide

Source: Forest Stewards Guild



312K acres need to be burned annually to maintain grasslands statewide

The Forest Service manages the Boundary Waters Canoe Area Wilderness (BWCAW), which consists of more than 1 million acres of protected land in Superior National Forest, located in northeast Minnesota. It is a site of canoe routes, hiking trails and more than 2,000 designated campsites. Initially protected in 1926, the Forest Service states that visitors are able to “camp in the spirit of the French Voyageurs of 200 years ago” (US Forest Service). This thinking is a part of the narrative that disregards Indigenous presence in the US. For the generations of Indigenous populations who have occupied the area, the BWCAW represents a cultural landscape that has evolved over more than 9,000 years (Gerdes).



Source: Wiebe

Research efforts over the last 60 years circumvent the classical ideas behind an untouched and untrammled wilderness, as defined by the Wilderness Act. Influential mapping research done by Miron "Bud" Heinselman in the Boundary Waters attributed the presence of burn scars on trees to frequent lightning strikes. Published in 1970, continued work has reimagined the origin of these scars. Dendrochronological study conducted by Evan Larson and collaborators has linked the same burn scars to Anishinaabeg use of fire and tool modification in the region (continued in the following section on Wisconsin). Heinselman's ideas and Larson's research are important because they shape our understanding of the region's ecological relationship to fire, notably with red pine, and the positive effect of human-induced fire in the BWCAW region¹("River Talk").

The Forest Service management of the BWCAW region is informed by Tribal, state, local, and federal agencies, as well as the local communities. For the three counties that encompass the Superior National Forest and the BWCAW, The Minnesota Incident Command System and Community Wildfire Protection Plans (CWPPs) help organize efforts to quickly respond to fire between the many organizations in the area. Additionally, CWPPs serve as a resource to identify who these stakeholders are and facilitate partnerships that identify fire related needs in the community²(Dovetail Partners).

1 The BWCAW has continued to be a site of vigorous study for decades. For examples, see the Additional Resources and Information section, as well as the cited works by Larson et al., Frelich and Reich, Kipfmüller et al., Gerdes, Heinselman, and Boerigter.

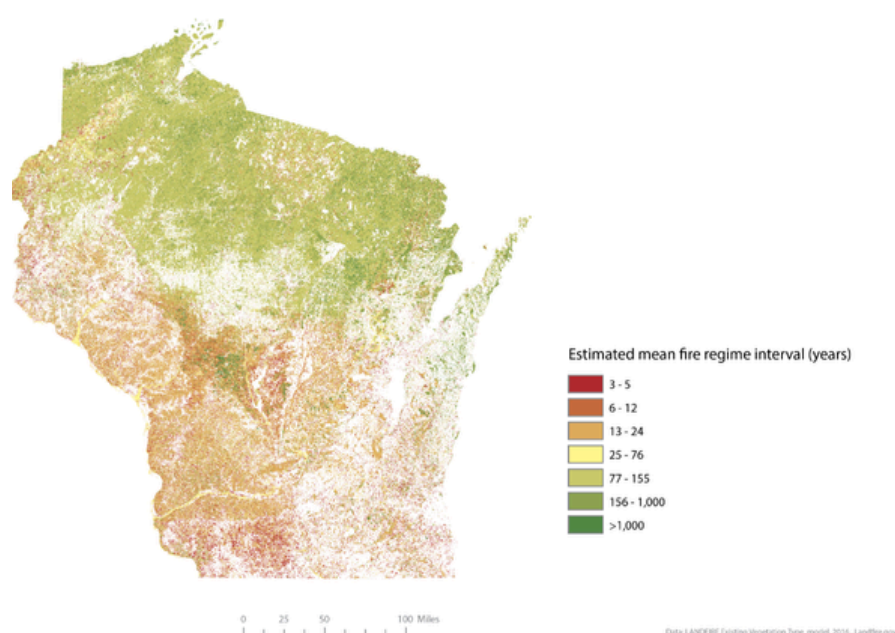
2 See the Dovetail Partners citation for an example CWPP in St. Louis County, or this [hyperlink](#).

The Forest Service recognizes wildfire to be critical to the development of managed ecosystems with historical fire regimes, and as such has implemented prescribed fire for over 25 years. A process is underway to amend the management direction of the BWCAW Forest Plan in order to further address the area's fire-adapted ecosystems. The process has included gathering input from Tribes, local communities, and other stakeholders. The future of fire management may include allowing fire caused by lightning strikes to play a more natural role in the area. Further developments on fire and other management optics are expected in early 2025 (US Forest Service, "Superior National Forest").

Finally, Ely, MN is a Fire Adapted Community,³ which serves as an entry town to the BWCAW. There, working with fire while managing its harms includes orchestrating "chipper day" fuel reduction instructional events for the community, project development with the natural resource program at Minnesota North Vermilion Campus, and working with other partners like the local Fire Department, townships, emergency services and property owners (McFarland and Erickson).

Wisconsin

An analysis in Wisconsin has been conducted to predict the required MFRI by associating current natural communities to the historic communities they most resemble, and assuming a similar fire return interval. While this process is imperfect, it provides a baseline from which individual needs can be derived and understood when encountered on the ground (Marion). Estimates of forest ownership in Wisconsin, per the Forest Action Plan, are distributed as follows: 68% private (including corporations, conservation organizations, clubs and partnerships, 9% federal, 14% local, 7% state, 2% tribal (Wisconsin DNR).



Source: Marion

³ The Fire Adapted Communities Learning Network is supported by The Nature Conservancy, USDA Forest Service and agencies of the Department of the Interior through a subaward to the Watershed Research and Training Center.

This second case study, Nimaawanji'idimin Giiwitaashkodeng (We are All Gathering Around the Fire) focuses on two areas currently called Wisconsin and Minnesota points, or Zhaagawaamikong Neyaashi. The project is led by Evan Larson, Professor of Geography at University of Wisconsin Platteville and Melonee Montano, Traditional Ecological Knowledge Outreach Specialist for the Great Lakes Indian Fish and Wildlife Commission (GLIFWC). Melonee is a member of the Red Cliff Band of Lake Superior Ojibwe.



Incorporating field work with students from Fond Du Lac Tribal Community college, trees were measured and cookies⁴ were cut, collected, and sanded to identify the presence of burn marks, peels, and cultural modifications. Interviews were being conducted starting in 2022 to form a cohesive story of the land as it connected to the life of the trees. As Larson details, “Together, the memories of people and trees will help us understand the deep connections that weave the community of life found on the points now and in the past. They’ll help guide us moving forward” (Zhuikov).

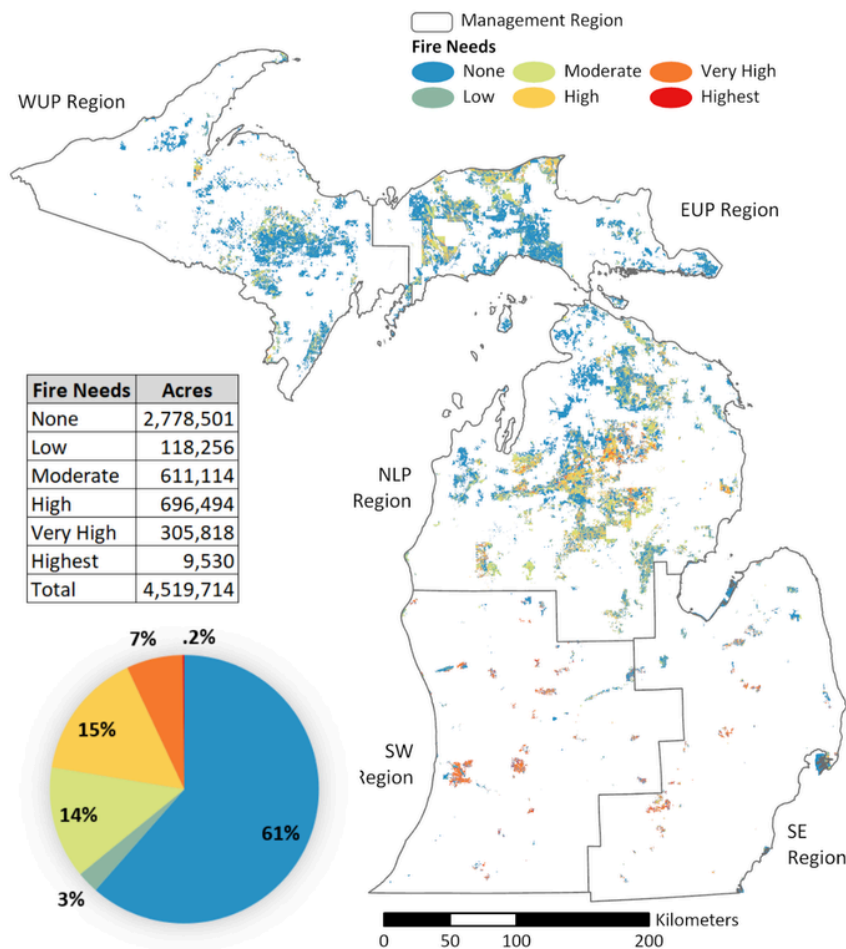
With support from the Wisconsin Sea Grant, this project brought over 30 members of stakeholder groups together to recognize the history of fire use on Wisconsin land. To broaden the impact of the ongoing work, a children's book is being created with the help of Robin Wall Kimmerer, with the intent of furthering the stories being told (Zhuikov). The renewed relationship to and collaboration with fire through work with tribal partners is impactful in the region because these forests have never existed without fire, or people. In order to begin properly addressing the needs of the land, one must understand its history (“River Talk”).

Beyond the immediate area, this project is significant for the future of prescribed fire work because a contemporary recognition of this key fact – that these forests exist because of human/fire relations – addresses a key barrier to the implementation of prescribed fire. It was a partnership between the communities and the land that built the landscape we see now at Minnesota and Wisconsin Point, and that active management commonly included fire. The Nimaawanji'idimin Giiwitaashkodeng project is a part of a revitalization of these practices through storytelling, which builds our knowledge and reminds us of fire's importance.

4 A thin cross-section of a tree trunk that shows the growth rings of the individual. Key to dendrochronological research.

Michigan

The Michigan Natural Features Inventory and the Michigan Department of Natural Resources Wildlife Division created a model that reflects the current fire needs across Michigan. The model shows the lowest need for fire occurs in the Upper Peninsula, and the need for fire is highest in the Southwest Management Region in the Southern Peninsula. While the map only shows the fire need for state-owned land, it is valuable in showing how the DNR identifies the needs of the land, and can be useful for policy makers and land managers in these areas. The Michigan Forest Action Plan details that ownership of forested land is split 64.6% private, 20.5% state-owned, 12.8% national forests and 2.1% local government (Michigan DNR).



Source: Michigan DNR Wildlife Division

The Michigan Prescribed Fire Council (MPFC) is an organization that consists of individuals interested in furthering the safe use of prescribed fire on Michigan landscapes. They have offered annual meetings, crew boss academies, introductory technical field-based training, public outreach efforts, and held professional talks on the use of prescribed fire (Michigan Prescribed Fire Council).

A recognized value of the council is how it provides entry into fire work. Formal training courses, such as the ones offered by the National Wildfire Coordination Group (NWCG) are most appropriate for agency personnel that work full time in fire, or that conduct fire operations on multiple properties or landscapes. The MPFC is working to provide prescribed fire training that is better suited to non-agency personnel or private landowners that may primarily be burning on their own property. This effort builds upon local relationships and provides relevant courses, making access easier for community members.

An example of this success is the Southern Michigan TREX organized in May 2024, which developed the skills of 19 local fire practitioners while learning from multiple successful burns of over 400 acres over ten days. Finding funding to conduct TREX training is difficult, as equipment, instructors, food, and lodging can result in high financial barriers for communities, especially for students and those in the early process of learning (Prescribed Fire Training Exchange).

Additionally, the MPFC is associated with the Northern Michigan Fire Collaborative, which focuses on the implementation of burns. This collaborative is working at building up a fire tools cache, and there is also interest in starting another collaborative in south western Michigan. These kinds of connections are imperative to building local fire operational capacity, where each organization can specialize and together provide comprehensive access to fire work.

ADDITIONAL RESOURCES AND INFORMATION

One region cannot be contained within a single case study. Other examples of important work include the Fire Network, the Menominee Tribe Enterprise with the Menominee Forest in Wisconsin, and the Camp 8 Stand in Minnesota.

The Fire Network is a robust relationship builder that works to alter our relationship with fire for the better across the US. Through its four main programs (the Fire Learning Network, Prescribed Fire Training Exchanges, Fire Adapted Communities Learning Network, and Indigenous Peoples Burning Network), projects are implemented across the country following local goals (“Fire Networks Home”).

Menominee Tribe Enterprises manages the 230,000 acre Menominee Forest in Wisconsin for over 150 years. The objectives of management are significant in the way they address the forest as a complete ecosystem, instead of simply as timber-producing land. The result is a landscape that has received numerous awards and recognition for being an “ecologically viable, economically feasible, and socially desirable” timberland (Menominee Tribal Enterprises).

The Camp 8 Stand can be used to inform the significance of fire in the Arrowhead region of Minnesota, where Dovetail Partners oversees the Minnesota Arrowhead Fire Adapted Communities hub. Managed by The University of Minnesota’s Cloquet Forestry Center (CFC), Camp 8 serves as a center for education and research, including mesophication,⁵ fire adaptation, and the cultural use of prescribed fire (Boerigter, “Camp 8 Stand”).



The [“Great Lakes Fire - media & resources”](#) document provides information on a diverse range of resources about fire in the Great Lakes region.

⁵ An impact of fire exclusion with broad ramifications. See this [hyperlink](#) for a detailed description.



CONCLUSION

As Vern Northrup, Elder and tribal member of Fond du Lac Band of Lake Superior Ojibwe stated, “Fire to us is a tool. And a spirit... we’ve been burning since the last ice age. But since 1910, when the government said fire was bad, the forest has been neglected. The trees and forest have been waiting for 115 years” (Studelska).

There is a similar sentiment being expressed across MN, WI, and MI, albeit with different vocabulary. Land managers and researchers continue to expand our scientific understanding of the positive impacts of fire on ecosystems. The result is an increased understanding of how crucial it is for fire to be put into broad use.

- By maintaining or restoring fire patterns within their historical ranges, land managers can help ensure the resilience, health, and sustainability of these environments while mitigating the risks associated with uncontrolled wildfire (Minnesota Prescribed Fire Council).
- Fire is a natural and necessary component of many Wisconsin ecosystems, such as native prairies, oak communities, wetlands, and pine forests...Where prescribed burning is lacking, Wisconsin is losing its fire-adapted natural communities and many species are declining in abundance (Marion).
- The MPFC strives to create a culture of prescribed fire in Michigan where prescribed fire practitioners have support to manage and protect natural and created landscapes with fire safely and efficiently to achieve land management and human safety objectives (Michigan Prescribed Fire Council).

There is a common interest across the region to effectively and safely expand the use of prescribed fire to better manage all ecosystems. The case studies offered here are divided across state contexts, but each variation of prescribed fire management holds value and can be learned from. In the same way that different organizations across Michigan are associating themselves with others to build local capacity, at an inter-state level the possibilities become even broader. Organizations can provide access to and learn from each other’s strengths, while remaining specialized for their regions. There is an opportunity to share ideas and collaborate, as we know we can do more with our combined knowledge.

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ACKNOWLEDGEMENTS

Thank you to members of the Dovetail Team, including Katie, Eliza, Nia, Grace, Steven, Teresa and Gloria for the lovely weekly discussions. Additionally, I would like to thank Jason Andersen of Pheasants Forever and Clare Boerigter of the Aldo Leopold Wilderness Research Institute for their communication about and contextualization of a topic in which they are so familiar.



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