



**Wildfire detection and prevention in Northern Minnesota :
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“It was timber, not farmland, that first attracted European settler-colonists to Minnesota. On early maps of the region, the little-known northlands were marked simply “Abundant Pine.” Not the trees but the products that could be built from them, buildings, boats, civilization were the motivation for those who had already exploited eastern forests to move on to Minnesota. (Logging Industry, n.d.) Most Minnesotans would be familiar with the Hinckley Fire -- in just four hours on September 1, 1894, destroyed an estimated 480 square miles, resulting in massive destruction and over 418 deaths. Fire detection and prevention are deeply connected to the history of the Northern Minnesota as both timber and mining meant and still means money, jobs, and where people first settled and then vacationed. Firetowers were built, used, and then left as tourist destination as the work done by the mostly towermen (with a few towerwomen) came to be done by drones, high-definition infrared, and thermal imaging cameras (Fearey, n.d.) .It is easy now to check daily for fire conditions and active fires on our phones from anywhere. One hundred years ago, however, towerman (and women) studied the land for smoke and fires—caused by lightning strikes, by railroads, by people. People cause 90 percent of the fires in Minnesota which on average has 1400 fires per year, with that number increasing during drought years. Fires can occur in the prairie grasslands, deciduous forests, coniferous forest, and aspen parkland biomes of Minnesota. They are caused by unsafe brush fires, carelessly abandoned campfires, lightning strikes, and negligent smokers in federal lands, state lands, native lands, and private property. Prevention is key. Smokey Bear was and continues to be the means that kids learn about fire prevention, but controversies have unfolded around the messaging and the messenger. Natives used controlled fires, but there is no evidence early mining and forestry people sought out their advice. This paper will outline native perspectives on fire, early fire

detection (including firetowers), early governmental agencies and utilization of fire prevention education. In Minnesota, the means of detecting fires and communicating fire prevention messages have changed since 1905 when the position of State Fire Marshal was created.

Natives

Several resources speak to native's use of controlled fires and/or acceptance of naturally occurring fires in land management. (Allen et al, 2010, Zehngraff, 1945, Berkes, 2018, Larson et al., 2020) One elder described this as "bringing back the forest using the Creator's process of burning" (Miller, 2010, 102.) "The Creator has a match, and that match is the Thunderbird. He brings that match to the land when the forest gets too old and can't grow anymore. So, the Thunderbird comes to earth. After the rest is burnt new growth stirs" (Miller, p. 76). Anishinaabe used fires in the Boundary Waters for resin production, increasing the number blueberries, reducing the number of insects, and creating a better ventilated forest, according to a fire ring study (Larson et al., 2021). The combination of the Boundary Waters becoming a designated Wilderness area and intolerance for wildfires [For example: In the 1920s and 1930s, the U.S. Forest Service established a policy of controlling all fires at 10 acres or less by 10 AM the next day] taken together produced a more homogenous, densely forested landscape that is both more susceptible to catastrophic fires and less resilient to droughts." (Larson et al., 2021, p. 17).

Early Days

The position of State Fire Marshal was created by the Minnesota State Legislature in 1905 and over the years changed until it became an arm of Minnesota Department of Public Safety. As in most states, there are a variety of agencies responsible for fire prevention and firefighting. Some of the agencies coordinated by the Minnesota Interagency Fire Center (MIFC) includes the U.S. Forest Service, Fish and Wildlife Service, the Bureau of Indian

Affairs, the Department of Natural Resources, and the Emergency Management Division of the Minnesota Department of Public Safety. MIFC maintains caches of firefighting tools throughout the state, directs the wildfire aviation management program and provides technology support. State of the art weather computers and computer mapping equipment help fire personnel predict daily fire behavior and anticipate future fires. The educational materials that they distribute around the country include Smokey Bear, Woodsy Owl, Junior Forest Ranger, and Junior Snow Ranger Programs. (MIFC, n.d.). MIFC links to the Firewise MN page which has videos, presentations, and teacher and student resources. These Firewise programs started in the 1980s and have changed with an increased number of people living in the Wilderness Urban Interface to include information on mitigating risk factors with homes and outbuildings. Firewise programs in United States have similar guidance for protecting homes, evacuating, and communication in an emergency. There are fourteen firewise communities in Minnesota. This program awards grants to homeowners, provides mitigation education, assesses homes and communities. Firewise community involvement brings in individuals, community groups, including fire and emergency services, local schools, city staff (e.g., foresters, planners), and local interest groups.

Lumber was king from the 1870s to the 1930s, when one of three Minnesotans toiled in the forest products industry and detecting fire was critical. (Granger, 2.29) From 1933 to 1943, FDR's New Deal programs saw an increase in fire towers and an ample source of towermen to staff them, improve phone lines and roads, as well as the building of related buildings. It was not easy getting in as an official forester. Clif Miller, in his narrative of the Schoolcraft (Guthrie) District reported that only four of more than eighty people who took the Minnesota Forest Exam in 1932 passed it and Miller got the job. Eighty dollars a month was what he earned, and the

hours were “whenever needed.” That year he fought thirty-five fires. (Miller, n.d). Another looking to take the exam was snowed in, so, lacking transportation, he walked twenty-two miles to Roseau, took the train to Warroad, walked eighteen miles to a friend’s house and then walked fourteen miles home. (Thompson, n.d.). In the files at the Minnesota Historical Societies, there are tales of even the stenographers’ fighting fires because of the urgent need.

Over 2,000 native families worked for the Civilian Conservation Corps between 1933 and 1943 in Northern Minnesota. (LaFontaine & Vaughan, 2019). Minnesota’s fire lookout towers were built beginning around 1920, the last towers erected in the early 1970, when three quarters of the state’s two hundred lookout towers were still being staffed. During the New Deal, more towers were built as well as their sites, roads, and telephone improved. Indian reservations were sites of lookout towers, owned by the U.S. Indian Service and operated by its Forestry Division. When the 1930s saw an increase in tourism in Northern Minnesota towers became visitor destinations, much as Split Rock Lighthouse is now. Divided up, the Minnesota Forest Service was responsible for about one-third of the state, (fifty-two million acres), the U.S. Forest Service was responsible for the Chippewa and Superior National Forests , and the Forestry division of what became the Bureau of Indian Affairs was responsible for more than a million acres. The number of towers reached its height during the New Deal. Towers protected both the communities and timber resources.

Between 1911 and 1948 the MN Forest Service recorded forty-six thousand fires, an estimated 95 percent of which caused by human activity, campfires and cigarettes being frequently mentioned. Care was given to monitoring times and conditions and agencies could get pretty accurate by studying the patterns and mapping them. Fire agencies could predict how

many fires would start on a given day. A combination of lookout towers with roaming patrols that cleared slash (the accumulation of limbs, leaves, pine needles and miscellaneous fuel left by natural debris and forest management activities, such as thinning, pruning, and timber harvesting), and constructing firebreaks necessitated support buildings such as tool sheds, telephone lines, tool caches, etc.) Initially, patrols on foot, horseback, rail cars, speeders (small gasoline powered railcars) and finally automobiles were on the move. In the case of the 1929 Sawbill Fire, firefighters arrive by canoe (Wolff, 1958).

While some might think it romantic, it was hard being a towerman: A Day in the life: “On a recent day, Simar sat on his stool in the tower's cab, scanning the view with binoculars. He has a plat book to reference and logbook, as well as a map on the wall. Voices from a DNR radio frequently broke the quiet. A pleasant breeze blew through an open west-facing window as Simar explained his job. When he spots smoke, Simar uses an alidade, which is like a 360-degree compass and is perched in the middle of the tower's cab, to line up the location. He calls the DNR dispatch office via radio to report the reading, and the office uses a map to pinpoint where the possible fire is” (Nancy Fogt ForumService 2015, May 23). Another day-in-the-life depiction: “Climb 100 feet to the top of the fire tower for an incredible view. But imagine not being able to leave the cab for hours. You are not allowed to read books or magazines or take a lunch break. Visitors are allowed, but only for ten minutes. Rain or shine spring, summer, and fall, for as little as \$.20 an hour, you scan the horizon for any sign of smoke or fire. (Minnesota Fire Tower Blogspot, 2012). “The state of Minnesota required railroads to install spark arresters and other safety equipment and to employ men to patrol the tracks during the dry season. Patrols often moved along the tracks on a speeder 10 or 20 minutes after a train to watch for fires and extinguish them. In 1920, northern Minnesota railroads were employing more than one hundred

men to patrol the tracks, clear right-of-way of slash, install spark arresting devices, and fight fires” (Granger et al., 2016, p. 2.9). Logging companies and mining companies did the same. (Granger et al., 2016)

One-wire telephone lines could break from winds and winter snow, but in the 30s improvements in both telephone lines and communicating the needed phone number through press releases and brochures to civilians improved fire prevention efforts. Two-way radios allowed towermen to communicate to other towers and firefighters following the flames. Testing antenna lengths meant finding the perfect place of short enough for roaming firefights but long enough to do the job. (Granger et al., 2016, p. 3.14). Tourism was an opportunity for fire prevention education. “Tower watchmen were trained to welcome the public, record their names in a visitors’ registry and instruct the visitors on fire danger, fire prevention, and forest conservation. In 1935-1936, 32,213 visitors climbed lookout towers and registered in the ‘crow’s nest’ and receiving a membership card in the ‘ancient and honorable order of squirrels. In 1933-34, the Minnesota Forestry Division issued hundreds of press releases, distributed 141,000 pieces of literature, delivered 210 lectures to 37,000 people, exhibited at fairs and conventions, educated school children, Boy Scouts, and the enrollees of the CCC camps. (Granger et al., 2016, p. 2.29)

During WW2, fire towers watched for enemy aircraft to counter the Japanese Fu-Go Project a war effort which launched more than 9300 balloons fixed with incendiaries (Tanglen, 2002). Smokey Bear warned: “Our carelessness, their secret weapon” (Tanglen, 2002). During World War II Minnesota produced over 75 per cent of the iron used in the war effort (Library of Congress, n.d.) and the lumber was used for the railroad ties and railroad cars and the relationship between iron ore and lumber was symbiotic. The fifties saw the continued growth of

the timber industry (third largest industry in MN) including important pulpwood and papermaking and a concerted effort at fire prevention followed (Granger, 2016, p. 2.33).

By the 1960s, tourism was big business and a double-edged sword. As more tourists came, there were heightened chances of fires, but more people to spot them. By the late 1960s, the Minnesota Forestry Division was staffing 125 towers, while discussions about alternatives, such as aerial detection, were arising but questioned, as flights were only three times daily at best and cost more. As more folks had summer cabins, there were more people and phone lines to report fires. The 1960s also saw an increasing sensitivity to bigger social issues unfolding. One article published in *Fire Journal* in 1968 wrote that fire inspectors could be “as frightening as a policeman with a search warrant” and urges training to emphasize empathy and intercultural communication. The author also notes the importance of fire personnel understanding the other agencies, including building, health, welfare, and other services. (Grant, 1968). After 1970, use of towers decreased as aerial detection was phased in as fires were increasingly reported by civilian tourists or residents via telephone.

In 1976, the towers were still considered “our frontline method for spotting fires” (Granger et al., 2016, p. 2.37) but there were changes afoot. 1976 firefighting included airplanes and helicopters to drop water. Individuals report most forest fires, according to Granger, writing in 2016. The Department of Natural Resources lists five fire towers you can climb and another five for great views. Currently, towers in Minnesota are used irregularly. “1-2 are used occasionally during periods of high fire danger. A fire agency spokeswoman said, “We rely heavily on aerial detection (airplanes) nowadays” (Personal communication Aug 2, 2022, Patti)

Fire Prevention Education

“By the 1960s, the area burned by wildfire had declined by ninety percent compared to the 1930s. This was accomplished through successful federal, state, and private landowner cooperation” (MacCleery, 2008, p. 49). Fire prevention measures included the thirty thousand membership cards dealt out in 1932 in the “Ancient and Honorable Order of the Squirrels” issued to visitors from the firetowers every year where they joined the community of the forest by climbing up a firetower. (Granger et al., 2016, p. 2.29)

Smokey Bear is, of course, is **the** fire prevention icon. The Advertising Company Foote, Cone, and Belding did the work on Smokey for free, starting in 1944 and continues their work today. The Ad Council and every kind of business ponied up money to distribute the image of Smokey everywhere on every imaginable merchandise. Posters were on streetcars, railroads, ferries throughout 650 cities by 1954. TV trailers, radio spots, newspaper ads, blotters, bookmarks, Teddy bears, T-shirts, scarves and on and on (Hesseln, 2018) are there to get the message out. The original voice of Smokey on radio spots was Jackson Weaver, a radio announcer willing to talk from inside a barrel (Haverkamp, 1994) to make the voice resonate. In 2013, donated media amounted to \$34 million and about 70 percent of adults recall Smokey Bears message without prompting (Hesseln, 2018). Smokey is a member of the Boy Scouts, Girl Scouts, Camp Fire Girls, 4-H Club, and statues of him are everywhere, including the one in International Falls. Smokey’s so popular that he has his own zip code, 20252! (Anton, 2009). His message has changed from “Only you can prevent forest fires” to “Only you can prevent wildfires.” A content analysis of his image found that it spoke to working class men with the blue jeans and that early images were more accusatory, especially blaming carelessness to the loss of wildlife, and “represent model behaviors based on what attracts children and adolescents

while ...protecting youths from allegedly inappropriate adult behaviors.” (Helmets, 2011, p 63).
Smokey’s image adorns the National Fire Danger Rating System seen throughout the country.

Currently, one way the message gets out on the Artificial Intelligence Smokey Bear assistant. In both digital and radio spots, Smokey’s AI Assistant responds to fire questions(Williams, 2022). And now, the Smokey Bear page (Smokeybear.com) has a tab for benefits of wildfire, such as maintaining diversity of forests, and encouraging new growth (Smokey Bear, n.d.). Minnesota’s Firewise in the Classroom program is unique. Middle schoolers are taught to use GPS, aerial photos, and survey methods to assess their community and homes for firewise risks and share this information with the community. (Ballard, 2012, p.236) Lesson plans include understanding the physics of wildfire, looking at prevention strategies, learning to use the public land survey system, conducting home wildfire risk assessments; and creating and presenting a community report. This program is both “responsive to community needs and that allows young people to authentically participate in problem-solving through scientific and community-based inquiry” (Ballard. 2012, 240)

In Minnesota, the State Fire Marshal provides guidelines in English, Spanish, Somali, and Hmong about everything from Christmas Trees to Youth Firesetting Prevention. Forests are important as an economic engine (fifth largest manufacturing sector), tourist attraction, and carbon dioxide storing mechanism, (University of Minnesota, n.d.) so it is important that everyone can read materials that help them prevent fires.

In conclusion

I first really thought about firetowers when I was reading Jack Kerouac. To get to his 63day sojourn as a fire spotter, he “started up the Skagit River with \$45 worth of groceries (purchased on credit), to Diablo Dam, up the Seattle City Light incline lift, across Diablo Lake by boat, up to Ross Dam and Ross Lake, across Ross Lake by boat again, then by horseback with a ranger and a packer six miles up to Desolation Peak. His only contact with the outside world be through a two-way radio to the ranger station.” He wanted the job to write, but as we saw here, early towermen had to be on the alert and did not have much time for musing about big ideas. Over the last century or so, looking for fires has changed in terms of the work, but not the importance. With climate change and the increasing numbers of people living in the wilderness urban interface, it will become even more important that people are aware of the risks of fire and strategies for preventing them, escaping them, and mitigating the impact through proactive measures. The Minnesota Interagency Fire Center is busy proactively looking for techniques to better inform, better persuade, and better assist those impacted by fires.

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