

Northeastern Forest and Conservation Nursery Association Meeting

Grand Rapids, Michigan

July 20 to 23, 2009

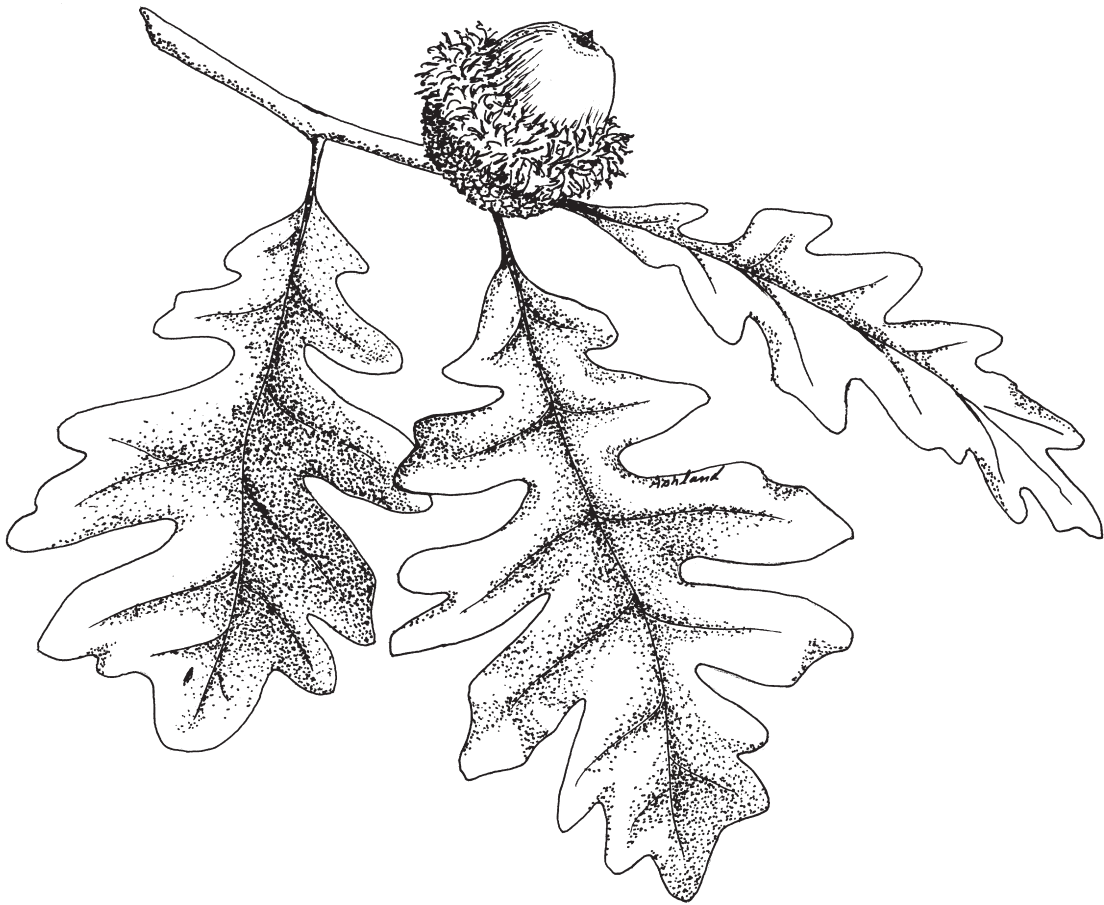


Illustration courtesy of College of Natural Resources, University of Idaho.

The Forests of Michigan—From Ice to Axe to Growth

Larry A Leefers

Larry A Leefers is Associate Professor, Department of Forestry, Michigan State University, 126 Natural Resources Building, East Lansing, MI 48823; Tel: 517.355.0097; E-mail: Leefers@msu.edu.

Leefers LA. 2010. The forests of Michigan—from ice to axe to growth. In: Riley LE, Pinto JR, Dumroese RK, technical coordinators. National Proceedings: Forest and Conservation Nursery Associations—2009. Proc. RMRS-P-62. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station: 74-76. Online: http://www.fs.fed.us/rm/pubs/rmrs_p062.html.

Abstract: Michigan's forests have evolved considerably during the past 4500 years. Post-glacial expansion of forests provided extensive, versatile resources for indigenous peoples. Eventually, these resources were exploited by immigrants to Michigan from Europe and the eastern US. Today, the forests are recovering and growing via natural regeneration and tree plantings, with many current uses and challenges.

Keywords: Michigan history, public nurseries, forest exploitation, forest fires

Introduction

Michigan's forests provide important ecological, economic, and social benefits. They inspire strong ties through past and present cultures—everything from practical uses to artistic expressions flow from the forests. The purpose of this paper is to describe selected dimensions of Michigan's forest history and to present some directions for the future of the forests.

In the mid-1990s, Drs Donald Dickmann and Larry Leefers designed a new course at Michigan State University (East Lansing, MI). That course was entitled *Forestry 101—Michigan's Forests*. The intent was to attract students from outside of the College of Agriculture and Natural Resources so they would have a greater knowledge of forests and their evolution. The course has fulfilled this role by educating 60 to 70 students each spring from many majors across the university. From the onset, it was clear that a textbook would be useful; a book covering the breadth of course topics simply did not exist. So, after several years of research and writing, *The Forests of Michigan* (Dickmann and Leefers 2003) was published (reprinted in 2007). This paper reflects many topics covered in the book: glaciation and species migration; indigenous peoples and their uses of the forests; early European and American settlement; use of General Land Office records to construct maps of circa 1800 forests; the plunder of the pineries; horrific fires of the late 1800s and early 1900s; and how Michigan's policies began addressing these problems.

Overview of Michigan's Forest History

The Great Lakes region, including Michigan, was covered with ice and snow during the latter part of the Pleistocene Epoch. The Wisconsin Ice Age began approximately 70,000 years before present (YBP), and the Great Wisconsin Glacier began to retreat 17,000 to 19,000 YBP (Hupy and Yansa 2009). As the glaciers receded, species migrated into the region from refugia to the south. By 4500 to 3500 YBP, most of the forests we have today had arrived, though the distribution was different (Dickmann and Leefers 2003). This slow race to the north will continue as the atmosphere warms.

Paleo-Indians likely followed the flora and fauna migration into the region. Over a long period of time, the Paleo-Indian populations waned and eventually indigenous people, especially the Odawa (Ottawa), Ojibwe (Chippewa), and Bodewademi (Potawatomi), migrated into the region. These indigenous peoples made extensive use of forest resources—from the construction of birch-bark canoes to the cooking of maple sugar. Extensive knowledge of trees was passed on orally over many generations, including much knowledge about the use of trees for medicinal purposes.

European and American explorers and settlers brought dramatic changes to the land that would become Michigan (from the Ojibwe word "meicigama" meaning "great water," which refers to the Great Lakes). The French focused on the fur trade, but they were eventually supplanted by the British, and later the Americans, who had a greater interest in land and its bounty. Europeans also brought new diseases, and indigenous lives and many aspects of culture were lost as epidemics swept across the region.

Another great force was unleashed by the Continental Congress when it passed the Land Ordinance of 1785 and the Northwest Ordinance of 1787. Combined, these new laws fueled the desires of settlers by providing a means for establishing legal descriptions of land in the "Northwest" (Ohio, Indiana, Michigan, Illinois, Wisconsin, and part of Minnesota) and a mechanism for statehood (Williams 1989). In the end, their main desire was to own land, so a series of treaties between the United States and various tribes led to acquisition of most lands and resources in the state. This paved the way for the land sales to come. The Land Ordinance allowed the General Land Office to survey Michigan's lands and es-

establish townships (9.7 km x 9.7 km [6 mi x 6 mi]) and sections (1.6 km x 1.6 km [1 mi x 1 mi]). The effort started in Michigan in 1816 and ended in 1866. The surveyors' records, which included extensive information on tree species and sizes, have been interpreted to provide maps of the circa 1800s forests in Michigan (Albert and Comer 2009). These maps provide a foundation for comparing the extent and composition of today's forests with those of the past.

In addition to land grants for railroads, schools, and other purposes, the US Congress passed the Homestead Act in 1862. This legislation allowed settlers to acquire 65 ha (160 ac) of land if they resided on it for 5 years and built a 12 x 14 house with a shingle roof and two windows. Some shenanigans took place because there was no unit of measurement on the dimensions... inches worked as well as feet! This policy and later revisions helped move more land into private hands, and the stage was set for the plunder of Michigan's pineries.

The white pine (*Pinus strobus*) logging era began in the 1840s and lasted until early in the 20th century. A New Englander, upon arriving in heavily forested northern Michigan, was quoted as saying, "We'll never cut all this pine until Hell freezes over" (as quoted in Wells 1978). Michigan had extensive timber resources and little enforcement of the rule of law. As a result, there was ample fraud and thievery to illegally exploit the timber resources; we see similar events in contemporary times in several developing countries. New technologies also contributed to the demise of the forests, that is, Michigan double-bit axes, crosscut saws with rakers, Silas Overpack's big wheels, and narrow-gauge railroads. These all contributed to the movement of the pines from the woods to the rivers to the mills. The hardwoods soon followed, with mills located in the forests and lumber transported via railroad to markets. In total, over 472 million m³ (200 billion bd ft) of softwood and hardwood lumber was cut (approximately one billion trees) by the time the carnage was completed (Dickmann and Leefers 2003).

The aftermath of the logging had two intertwined components—the agrarian settlement of the north and forest fires. Farmers poured into northern Michigan with hopes of a prosperous agricultural future. For many, this dream became a nightmare. "A Farmer for Every Forty" was a nice slogan (Schmaltz 1983). Grueling work was required to convert the logged-over lands into farmsteads, but the sandy soils were not productive. A major tool for land clearing was fire; fire and smoke were common on the landscape. In time, weather conditions deteriorated to create disastrous fires. For example, innumerable land-clearing fires during a droughty period in October 1871 were fanned by strong winds from a low-moisture, high-pressure front (Haines and Sando 1969). These conditions were instrumental in the disastrous Chicago Fire, Pestigo Fire, and Great Michigan Fire. The latter covered approximately 1 million ha (2.5 million ac). Many other fires followed in coming decades (Dickmann 2009).

Forest exploitation, extensive fires, and failed farming all marked the close of the 19th century. At the turn of the 20th century, three forestry challenges needed to be addressed in northern Michigan: what to do about the "lands nobody wanted," how to control wildfires, and how to reforest the denuded lands. Forestry leaders such as Dr William James Beal at Michigan Agricultural College (MAC) agitated for forestry laws and actions. The Department of Forestry at MAC was established in 1902 to train foresters that would be needed to address the "forestry problem." It is the oldest, continuous undergraduate forestry program in the US.

Carl Schenck, renowned forester and founder of the Biltmore School of Forestry, noted that, "The State claims 3,000,000 acres of so-called tax homesteads, which are held for sale to ignorant immigrants" (Schenck 1904). Indeed, farmers failed many times in their efforts on dry sandy plains and hills, and subsequently abandoned their farms. These farms would come back to state ownership and were then

sold to speculators or other farmers. Failure would come again, and the cycle would repeat itself. Eventually, the state adopted policies to establish the first state forests, and more productive lands were left in private hands. Over the 20th century, the state forest system eventually grew to 1.5 million ha (3.8 million ac) in size. National forests and other public lands expanded as well. The "lands nobody wanted" became the public lands everybody wanted.

Fire control was greatly aided in the 1930s by the creation of Civilian Conservation Corps (CCC) camps throughout northern Michigan. For the first time, there was an army of men ready to attack fires and various forestry projects when needed. In the mid-1940s, Smokey Bear made his fire prevention debut. In time, fire control mostly gained the upper hand through the efforts of public forestry agencies and local fire departments, but fire remains a concern for those living in the northwoods.

As with fire control, the CCC played a major role reforesting Michigan. Many pine plantations were established during the 1930s and in subsequent years. Initially, the focus was on reforestation and soil protection. During the CCC era, 485 million trees were planted in Michigan by enrollees (Dickmann and Leefers 2003). In time, timber products began flowing from these stands.

Several public nurseries were essential in reforestation efforts. Most produced jack pine (*Pinus banksiana*) and red pine (*P. resinosa*) seedlings along with white pines and various hardwoods. The first federal nursery in Michigan, and the second one nationally, was at Higgins Lake (Dumroese and others 2005). It operated from 1903 to 1965 and produced up to 20 million seedlings per year during the 1930s. Today, remnants of the nursery are on display at the CCC Museum at North Higgins Lake State Park. Three major nurseries were established during the Great Depression—the James W Toumey Nursery at Watersmeet, the Thomas B Wyman Nursery at Manistique, and the AK Chittenden Nursery at Wellston.

Toumey was named after a Yale forestry professor and dean. Established in 1935, it supplied 6 million seedlings per year at its peak. It still annually supplies national forests in the Lake States with seedlings (Anonymous 1985).

Wyman was named after a pioneering Upper Peninsula field forester and educator. In 1936, 3 years after its establishment, it was the largest nursery in the US, with 15 million seedlings produced per year. The nursery was closed during most of World War II and was transferred to the Michigan Department of Natural Resources in 1950. It continues to supply their needs for seedlings, mostly jack and red pine (Botti 1992).

Chittenden was named for the long-time chair of the Department of Forestry at MAC. It operated until 1973 and had a capacity of 18 million seedlings per year. It was established in the spring of 1934, and jack pine seedlings produced in the first year were used to plant 1950 ha (4825 ac) in the fall of 1934 (Watts 1938). In 1935, there were 120 million trees in the ground, "a tree for every person in the country..." On a humorous note, an overturned bathtub sat next to stacks of lumber during initial construction, leading some suppliers to mistakenly think that a children's nursery was being built. As a result, some mail was sent to "Nurse Ryman" (Rindt 1958).

Several other nurseries came and went during the period that Chittenden operated. These included the Hardwood Nursery at Wolverine and the Southern Michigan Nursery at Brighton. Michigan Agricultural College (now Michigan State University) also operated several nurseries, as did some Soil Conservation Districts (Botti 1992).

Though nurseries played a significant role in the reforesting of Michigan, natural regeneration was even more important. Today, Michigan's forests are increasing in area and volume (Leefers 2009). On public lands, multiple-use is still the overriding management philosophy; timber, recreation, wildlife, water, and so on are all important.

Family forests are more oriented towards aesthetic and recreational uses, and investor-owned lands focus on timber. The future of Michigan's forests will be determined by what has evolved during the 20th century and the trends we are now facing.

Forests of the Future

Dumroese and others (2005) described four nursery eras. The first was "Restoration Response" from the 1900s to 1930s. Soil stabilization and watershed protection were of special interest; Higgins Lake Nursery fit this model. The second was "Conservation and Jobs Creation," running from the 1930s to the 1950s. Most public nurseries in Michigan were established for this purpose. The third era was "Responding to the Public's Demand for Timber" from the 1950s to the 1990s. Most Michigan nurseries fulfilled this goal, but began curtailing operations as the focus on timber diminished. Finally, we entered the "Return to Restoration" in the 1990s. Now the focus is on endangered species, ecosystems, and related concerns, and the nurseries produce seedlings for these purposes.

Several other trends will also affect Michigan's future forests. These include concerns for sustainability, the role of communities in forest resource management, fragmentation and parcelization, global warming, the development of carbon markets, bioenergy, international trade, and insect and diseases. Foresters and the nursery industry will be affected by these forces.

On a recent trip to Indonesia, I saw a banner near the Jakarta airport. It read "One Man, One Tree." This program encourages the planting of millions of trees across the country. As optimists who plant trees, foresters and nursery people likely agree with the saying, "There are two great times to plant trees: the first was 20 years ago—the second is now." Michigan's forests have made it through ice, axe, and fire. They will make it through the next wave of challenges as well.

Acknowledgments

I would like to thank Professor Emeritus Donald I Dickmann, Michigan State University, for his review of this paper and contributions to its content.

References

- Albert DA, Comer PJ. 2009. Atlas of early Michigan's forests, grasslands, and wetlands. East Lansing (MI): Michigan State University Press. 107 p.
- Anonymous. 1985. News release on Toumey Nursery dated February 8, 1985. Ironwood (MI): USDA Forest Service, Ottawa National Forest. 4 p.
- Botti B. 1992. The role of public nurseries in Michigan. In: Proceedings of the 1992 Northeastern Area Nurserymen's Conference; 27-29 July 1992; Escanaba, MI. Manistique (MI): Michigan Department of Natural Resources. p 2-5.
- Dickmann DI, Leefers LA. 2003. The forests of Michigan. Ann Arbor (MI): The University of Michigan Press. 297 p.
- Dickmann DI. 2009. Forests and forestry from an historical perspective. Chapter 40. In: Schaetzl RJ, Darden JT, Brandt D, editors. Michigan geography and geology. Boston (MA): Pearson Custom Publishing.
- Dumroese RK, Landis TD, Barnett JP, Burch F. 2005. Forest Service nurseries: 100 years of ecosystem restoration. *Journal of Forestry* 103(5):241-247.
- Haines DA, Sando RW. 1969. Climatic conditions preceding historically great fires in the North Central Region. St Paul (MN): USDA Forest Service, North Central Forest Experiment Station. Research Paper NC-34. 19 p.
- Hupy CM, Yansa CH. 2009. The last 17,000 years of vegetation history. Chapter 7. In: Schaetzl RJ, Darden JT, Brandt D, editors. Michigan geography and geology. Boston (MA): Pearson Custom Publishing.
- Leefers LA. 2009. Michigan's forests and forestry from a contemporary perspective. Chapter 41. In: Schaetzl RJ, Darden JT, Brandt D, editors. Michigan geography and geology. Boston (MA): Pearson Custom Publishing.
- Rindt CA. 1958. Enclosure to a letter to Mr JW Jay, USDA Forest Service, Cadillac, MI dated September 4, 1958. Portland (OR): USDA Forest Service, I-Information Special Articles.
- Schenck CA. 1904. Lectures on forest policy, second part: forestry conditions in the United States. Biltmore (NC): Biltmore Forest School. 108 p.
- Schmaltz NJ. 1983. The land nobody wanted: the dilemma of Michigan's cut-over lands. *Michigan History* 67(1):32-40.
- Watts LP. 1938. Chittenden Nursery. Enclosure to a letter to Paul W Kearney, Brooklyn, New York dated December 17, 1938. Cadillac (MI): USDA Forest Service, Huron-Manistee National Forest. I-Information General.
- Wells RW. 1978. Daylight in the swamp. New York (NY): Doubleday and Company. 240 p.
- Williams FD. 1989. The Northwest Ordinance: essays on its formulation, provisions, and legacy. East Lansing (MI): Michigan State University Press. 141 p.