

2 – Eastern Upper Peninsula Forest History

As the climate cooled during the most recent ice age and glaciers expanded south, forest communities moved ahead of the glaciers. When the climate warmed again and the glaciers retreated north, a new landscape was exposed and the complicated pattern of rocks, gravel, soil and water left behind by the glaciers provided a foundation for our contemporary Michigan forests. Not all species recolonized at the same rate – refuge location, seed size, germination requirements, competitive ability and dispersal vectors affected how species responded to the changing climate. Spruce and tamarack were likely the first, soon after the ice sheets receded 10,000-12,000 years ago, followed closely by balsam fir, jack pine, red pine and then white pine. Oak and maple were slower to move, not reaching the northern Lower Peninsula until around 9,000 and 6,000 years ago, respectively. The most recent major forest species to colonize northern Michigan appears to be hemlock. Over thousands of years, forested natural communities formed and re-formed across Michigan, influenced by local geology, soils, hydrology and climate. Fluctuations in climate were reflected by changes in the forest communities, including the advance and retreat of the prairie-forest border, with grassland and savannah occasionally entering Michigan. By the early- to mid-1800s, around 95% of Michigan's vegetation is estimated to have been forest. Many boreal wildlife species, such as Canada lynx and woodland caribou were found statewide. Southern wildlife species, such as Virginia opossum, were entirely absent from the region.

The economic and social situation in the Upper Peninsula was driven and shaped by the conflict among the French and English traders and ultimately Native Americans. The French and English fought for control of the fur trade that involved trading European goods for furs supplied by Native Americans.

The Straits of Mackinac became a major fur trading area when the French began the fur trade around 1659. England entered the picture in 1670 and the French built forts on both sides of the straits to protect their trading relationship with Native Americans. Control of the straits area shifted back and forth for almost 150 years until in 1828, three years after the international boundary was established by the treaty that ended the War of 1812, when the United States gained full control of the straits and the Upper Peninsula.

During this period, the forest remained intact and the fur trading records show that the area's wildlife consisted of black bear, beaver, fisher, otter, mink, muskrat, raccoon, fox, wolf, moose and white-tailed deer.

As the fur trade began to wind down with the decline in furbearer numbers, the quest for other resources available in the Upper Peninsula began to take over. Most of the population had settled near good ports along the Great Lakes shoreline and remained relatively small until the discovery of iron in the Marquette Range in 1844 and the advent of intensive copper mining in the Keweenaw started the growth in the area's population. The increasing job market brought more people to the area and a set of canals and locks was built in Sault Ste. Marie to improve shipping between Lake Superior and the lower St. Mary's River and Lake Huron.

During the early 1800s, major land purchases and various treaties resulted in vast tracts of federally owned land. The responsibility for disposal and settlement of these lands rested on the Commissioner of Public Lands and the General Land Office. Before land could be disposed of, a survey was needed to divide the land into townships and sections. Surveys were conducted in the Territory and State of Michigan from 1816 to 1856 by deputy surveyors of the General Land Office. As part of township and section boundary establishment, surveyors established and recorded witness trees, recorded specific trees along section lines (on average, eight to 12 trees per section) and often noted summary information along section lines including tree species (ranked by relative abundance) and general soil character. In addition, recently burned areas, wind throw and beaver floodings were recorded along section lines, as were various cultural features of either Native American or early European settler origin (Comer et al., 1995).

Ecologists from the Michigan Natural Features Inventory developed a methodology to translate General Land Office notes into a map useful to researchers and land managers. Based on these maps, the most common forest types in the eastern Upper Peninsula prior to significant European settlement included beech-sugar maple, lowland conifer swamp and fir-spruce-cedar swamp (Figure 2.1). Hemlock-sugar maple, cedar swamp, hemlock-white pine, tamarack swamp and red pine-jack pine made up the next most common cover types on the landscape (Figure 2.1). Documented primary forest disturbances included windthrow and fire. Windthrow was common on both upland hardwood and conifer forests. Fire was important in the jack pine, red pine and white pine dominated forests, but it also occurred infrequently in hardwood forests mainly as understory burns.

Figure 2.2 shows data for the current state forest. The major changes have been in replacement of hemlock-beech-sugar maple, white-red pine and mixed conifer with aspen and beech-sugar maple cover types. There have also been increases in the mixed pine-oak and mixed hardwood swamp associations.

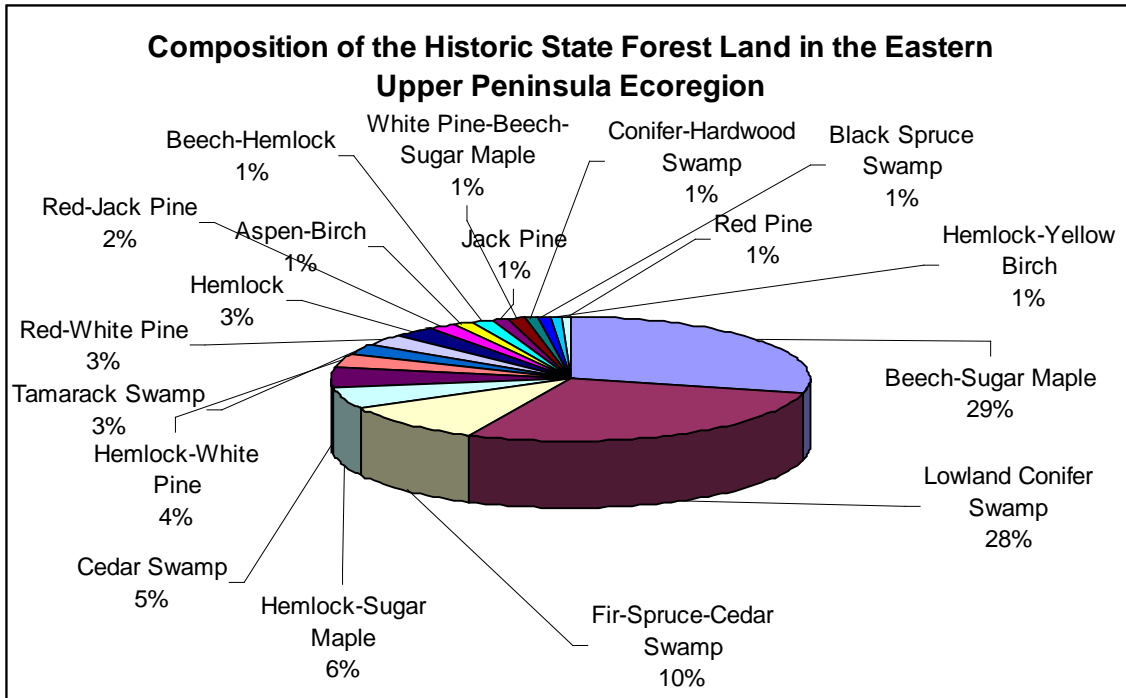


Figure 2.1. Historic state forest cover type composition in the eastern Upper Peninsula forested landscape based on General Land Office interpreted data (Michigan Natural Features Inventory, 1995).

Figure 2.1 shows that the historical state forest in the eastern Upper Peninsula was dominated by conifer species and primarily by upland conifer. The current state forest is still dominated by upland forest, but the upland forest is dominated by deciduous species (Figure 2.2) and lowland forest has also become dominated by deciduous species. The historic forest on state forest land was dominated by late successional forest conditions. While late successional forest conditions on the current state forest still represent the largest portion, the early successional conditions have almost doubled since historic times (Figure 2.3) which is consistent with the harvest history and the desire to provide habitat for white-tailed deer, ruffed grouse and woodcock.

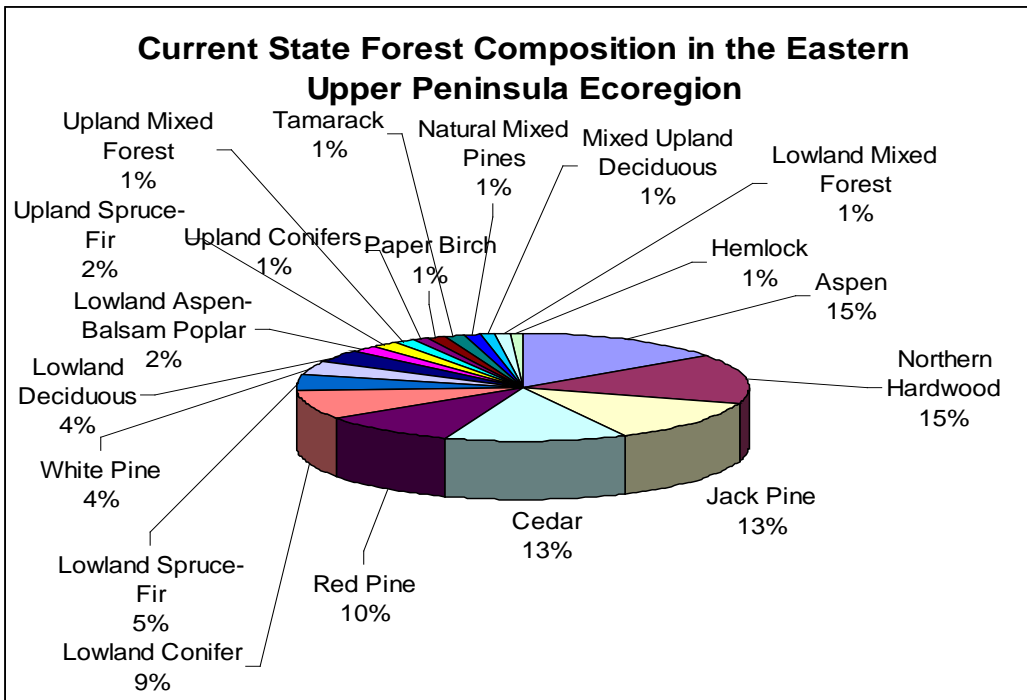


Figure 2.2 Current state forest cover type composition in the eastern Upper Peninsula ecoregion (2012 Department of Natural Resources inventory data).

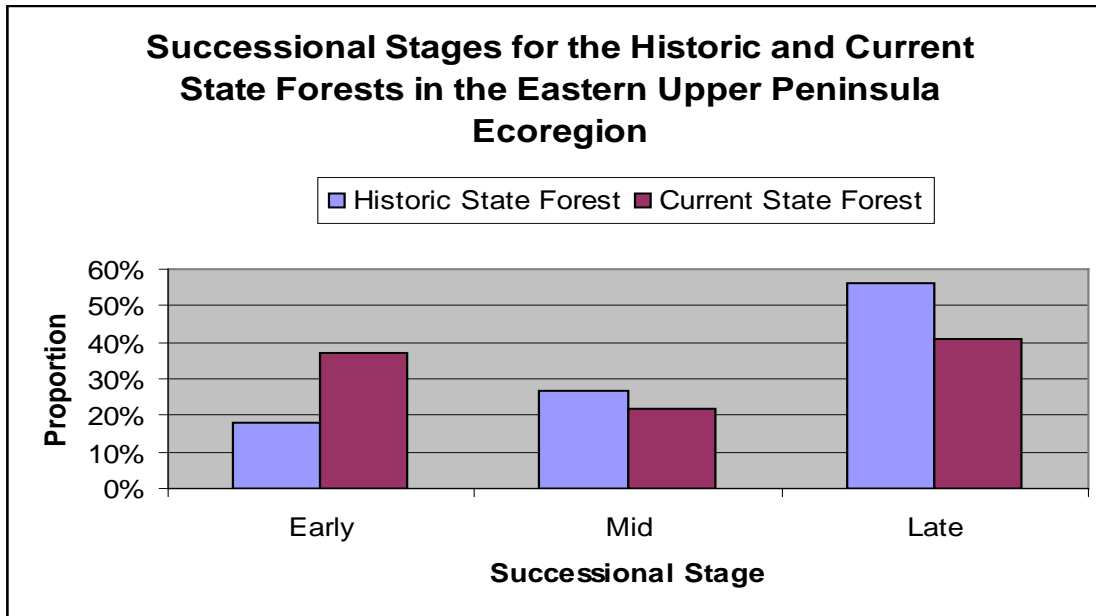


Figure 2.3. Comparisons of successional stages for the historic (General Land Office interpreted data) and current state forest in the eastern Upper Peninsula ecoregion (Michigan Natural Features Inventory, 1995 and 2012 Department of Natural Resources inventory data).

Much of the Marquette iron was smelted in Fayette, Newberry or in St. Ignace, as it was easier to bring the iron to the smelter than it was to bring the bulky charcoal to the mines. The intensive cutting of eastern Upper Peninsula hardwoods had begun to feed these smelters. Land clearing continued, as some soils were found conducive to farming. The white cedar swamps were being harvested to support home construction. Then the white pine cutting of lower Michigan reached the Upper Peninsula. With the advent of the railroads in the 1880s, the logging era was in full swing and small towns like Seney suddenly became boom towns.

In the late 1890s, hemlock was in great demand in the eastern Upper Peninsula to extract the tannin from its bark for curing leather. The bark was brought to tannery sites in Munising, Manistique and Sault Ste. Marie. As they were cut over, most of the hemlock forests converted to other forest types. Human disturbance has affected hemlock more than any other species within the eastern Upper Peninsula landscape (Verme, 1996).

Settlers harvested timber, cleared land and started wildfires contributing a new form of significant disturbance. Many of the notable fires during this period were late season incidents, impacting new settlements and the surrounding forests severely during significant drought periods. Fires in the eastern Upper Peninsula during this period coincided with catastrophic fires in other areas in the great lakes. Major fires include: 1884 (Wetmore to St. Ignace), 1908 (Eckerman to Sault Ste. Marie), 1919 (Whorl Fire-North of Newberry), 1925 (Hovey Lake Fire-Schoolcraft County), 1930 (Driggs and Fox River Fires), 1931 (Duck Creek Fire – Schoolcraft County), 1936 (Green School Fire) and 1947 (North of Newberry). These fires had negative impacts on soil fertility. Nitrogen rich top soils were burned off in areas of hot fires. Some of the most severely impacted sites are still stump barrens today.

With the harvesting and subsequent fires, the prairie-chicken and sharp-tailed grouse populations increased dramatically. Vegetation and animal communities expanded or contracted depending on their tolerance to the many changes in the landscape. Many of the marginal farms failed over the next few years and large portions of the Upper Peninsula became the lands that no one wanted. Much of the land reverted to the state or federal government for non-payment of taxes (Zhang, Pregitzer and Reed, 2000).

The increased human presence had a large impact on fish and wildlife populations. During the latter half of the 1800s, the fragmented forest resulted in a rapid increase in deer numbers. Deer populations probably reached their peak between 1875 and 1886. During this period, deer, moose and caribou were viewed as a commodity and heavily hunted. By 1910 no caribou remained in the Upper Peninsula. As for moose, the population was so low by 1889, that the legislature granted complete legal protection.

Fisheries exploitation by settlers began in a truly commercial sense from about 1800 to 1870. The human population growth and activity had serious implications for environmental quality and fish populations. Dams for mills, uncontrolled logging activity and associated sedimentation degraded the riverine habitats (Dann and Schroder, 2003).

During the last of the white pine days, many people were realizing that controls were needed on use of natural resources. In 1899, a Michigan law was enacted setting up a Forestry Commission and authorizing a state forest system. Professor Filbert Roth of the Forestry School at the University of Michigan was hired part-time in 1902 as the first Forestry Warden. In 1909 the first full time forester was hired. In 1913, the Public Domain Act was passed to supersede the homesteading of tax reverted lands. Together with the Land Exchange Act of 1911, the way was created for the establishment of state forest reserves which later became state forests. The state forest system began as 45,000 acres and grew as the lumbering era dwindled and depression hit in 1930 (Widner, 1968).

To remedy the exploitation of our natural resources, the legislature created the first agencies to manage and protect our resources. In 1921, the legislature combined them all into one unit called the Michigan Department of Conservation. In the same year, the Conservation Commission, a citizen body appointed by the governor was established to provide policy direction for department's activities. On July 1, 1946 the Conservation Commission took action to combine the lands managed by the Game Division with lands managed by the Forestry Division to create the present day state forest system where the divisions would have joint management of all the lands.

Another conservation effort was initiated through one of President Franklin D. Roosevelt's most popular New Deal relief programs. On May 2, 1933, two hundred young men from Detroit arrived at an isolated spot on the Raco Plains in Chippewa County to set up Camp Raco. This was Michigan's first Civilian Conservation Corps facility. Within months, many more camps were established across northern Michigan. By the time the program ended in 1942, over 100,000 Michigan men would have served the Civilian Conservation Corps. Their accomplishments include: planting over 484 million seedlings, expending 140,000 man-days in wildfire fighting, planting 150 million fish in rivers and lakes and constructing 7,000 miles of truck trails, 504 buildings and 222 bridges.

The forests of the eastern Upper Peninsula have changed since pre-settlement days. The demand for forest products have also changed over time based on the needs of society and the available resources. Demand has changed from softwood sawlogs and hardwood used to fuel steam locomotives and to smelt ore, to high-quality hardwood veneer logs and wood fibre.

Wildlife populations have also changed with the changing forest. Gone are the woodland caribou. Moose and marten disappeared, but have been reintroduced and currently have small isolated populations. Other species that preferred the vast expanses of old late-successional forest have also declined and are present today in lower numbers and density.

Values have changed as well. An economy of recreational pursuit developed around early successional wildlife species that were able to spread north with the changing forest conditions. The most important of these are white-tailed deer, ruffed grouse and woodcock. The regeneration of historic forest conditions is neither possible nor desirable from an ecological, social or economic perspective. The management challenge is to maintain or enhance the current conditions without losing elements associated with old forests that are still present on the landscape. The current condition of the state forest land is described in more detail in Section 3 of this plan.