

Menominee Forestry

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PRE- EUROPEAN MENOMINEE

According to Menominee legend, the Menominee Indians have lived in the Midwest for 10,000 years or more. It is this reason that they call themselves “Kias-Matchitiwuk”; Algonquin for “ancient ones.” (Fowler) It is said that these woodland Indians have inhabited a huge tract of land that stretched from the Milwaukee River in the south to the Escanaba River in the Upper Peninsula of Michigan, and from Lake Michigan to the Mississippi River in the west. (Pecore)

The culture of the Menominee has been greatly molded through their use of the forest resources for thousands of years. The climate of the Midwest has influenced the seasonal patterns of the tribe and the living elements have had an influence on their livelihood, as they have utilized virtually everything that grows in the forest. The name “Menominee” comes from the Algonquian word “Omaehnominiwuk” meaning “people of the wild rice.” It was given to them by neighboring tribes who noticed that the plant seemed to follow the Menominee; interestingly, when this tribe left an area, the wild rice also disappeared from that landscape. (Ourada)

Wild rice is a type of grain that grows in low areas, in the backwaters of rivers and marshy areas. The rice breaks the surface of the water sometime in June, and is ready to harvest in September. The rice is harvested by floating in a canoe, usually one made from birch bark, through the rice fields and simply shaking the stalks, causing the rice to fall into the canoe. During this process, some of the seed inevitably fell into the water, ensuring that there will be rice for future years. Much of September was spent collecting the wild rice and processing it into edible grain. (Norick)

Bear and deer hunting took place during, and shortly after, the rice season in September. (Norick) The mating season of the whitetail deer results in a lot of unwary deer movement making, them easy prey for the skilled hunters. These woodland animals have large amounts of meat and fat, which are loaded with protein and calories. Bows and arrows, made from several species of trees, proved to be effective weapons and an excellent means of protection.

During the winter, the Menominee lived on the food that was collected during the summer and fall. Some things they collected were Hickory nuts and acorns. Also cattail roots, arrowhead, wild onions, spikenard root, May apple, high-bush cranberry, hazelnut, beechnut, blood root, wild plum, lambs quarter, various berries, cherries and the inner bark of many plants were used as food. (Ourada) All of these are available only during the summer, so the women of the tribe spent many hours gathering the foods while the men concentrated on hunting. Many of these foods stored very well in birch bark containers. (Ourada)

Paper Birch trees had many uses to the Menominee. The bark was used for numerous things including canoes, shelters and storage containers. This white bark can be removed from the trees without killing them in the spring, if done properly, when the bark is very moist with sap. High amounts of the hydrophobic compound betulin make this bark perfect for many things. This chemical helps protect the bark from bacteria, fungi, insects, animals, ultraviolet radiation and other things. (Krasutsky) These properties, coupled with the hydrophobic nature of betulin, make this an excellent material to use for food storage, canoes, boots and various other things.

Some other things used from the forest in the winter were snowshoes made from black ash and other species, furs from animals for warmth and also fuel wood for heat.

In the springtime, the dead dry grasses and leaves allowed for the easy use of fire to maintain oak savannas and many of the plants that they used throughout the year. One of these

old oak savannas was found near Green Bay (Dorney) in what many consider to be traditional Menominee land. In this area, there are large White Oak trees spread throughout with a younger stand of Oaks and Hickories currently growing between them. The younger trees have been able to grow due to fire suppression in the twentieth century.

After a spring fire, the seeds in the soil of many berry species will germinate and grow very well for several years. Many thin-barked tree species that are killed by fire do not produce nuts. The thick bark of large oak trees protects the living tissue within the tree from the heat of the fire. The death of thin-barked and smaller trees results in fewer live trees in one area. Therefore, there is less competition for nutrients, water and sunlight. This, along with more room to grow, allows the oak trees to grow massive live crowns. Large trees with huge crowns and little competition naturally produce more acorns or nuts.

Early spring is maple sap time. The Menominee collected the sap and boiled it down to use as candy and sweetener, much like we still do today. The tribe used heated rocks to drop them in the sap to cook it. Birch bark baskets were used to cook and store the syrup and hard candy. (Norick)

The Menominee were a woodland Indian tribe, so hunting and gathering was their main source of food, but after the arrival of Europeans, agriculture became increasingly important. (Ourada)

EUROPEAN CONTACT

The first contact with European people occurred near Green Bay in 1634 when Jean Nicolet, a French explorer, crossed Lake Michigan in search of the Orient. With Nicolet came the fur-trading era. This era brought about many changes to the Menominee way of life,

including their utilization of the forest resources. Over time, the Menominee's dependence on the forest changed from hunting and gathering, to trapping. The Menominee people broke into many bands and spread throughout the land in order to get the furs that they needed to trade with the French. These new hunting habits resulted in the creation of many new bands.

Through trade, the Menominee received iron and brass to replace many of the tools and containers that they used before. Cloth blankets replaced the fur clothing for which the French happily traded. Steel needles replaced those of stone and shell origin and kettles replaced clay pots, gourds and birch bark containers. (Fowler) Over time, items received by Menominee in trading became necessary for their survival, and their dependence on the forest soon became a dependence for the resources to trade. The men had to work very hard to get enough furs to trade for what he needed to support his family.

With the advent of westward expansion by the Europeans, came many treaties between the Menominee and the United States of America, which ceded vast areas of land to the United States. The Treaty at the Fall of Wolf on May 12, 1854 marked the boundaries of the current Reservation. In the Treaty of Keshena on February 11, 1856, two townships were ceded for the use of the Stockbridge and the Munsee Indians of New York. This left a little more than 235,000 acres, ten townships, as the current land base of the Menominee Indian Tribe of Wisconsin. (Fowler) When the reservation was created, the Menominee people returned to a more settled way of life, and the band system began to decline. In 1961, the Menominee lost their federal protection and assimilation began. (Huff, Pecore) Menominee County was created and the Menominee lost their culture as the federal government attempted to bring them into mainstream America. The children were not allowed to speak their native language in schools, and many

families grew apart from each other as their culture was repeatedly put down and erased through the school system. (Nevison)

Allotment Act

The Dawns Allotment Act of 1887 was another attempt by the United States at assimilation. The Menominee Chiefs realized what would happen to their reservation if they agreed to allow division into smaller lots, which would divide the members of the tribe; the lands could be sold to whites and therefore, lost from the reservation. This was very effective way to assimilate many tribes into the American society, because many Native Americans could not afford to pay the taxes on the land and were often forced to sell. As a result, more than 75 million acres were lost from other reservations during allotment. But the Menominee stayed with the community ownership of the lands they did have, which resulted in retention of the lands. (Fowler) This resistance is the reason that the forest is still intact today and utilized so intensely and exceptionally.

ESTABLISHMENT OF CURRENT FOREST MANAGEMENT

The late 1800's and early 1900's mark The Great Cutover of Wisconsin virgin timber resource. Timber barons stripped the land of trees and farmers cultivated the bare ground, resulting in a transformation of the landscape in Wisconsin. In northern Wisconsin, much of the land cover contains less than 40% prime farmland. (www.wi.nrcs.usda.gov) This, combined with short growing seasons, rendered a lot of the land unsuitable for farming. Some of this land was abandoned after the trees were removed, causing a large increase of some sprouting hardwood species like, Aspen. Many wildfires ran through portions of the state, killing off large amounts of White Pine and Hemlock regeneration. One such fire was the now- famous Peshtigo Fire on October 8, 1871, which burned an estimated 1.2 billion acres of woodland.

(forestry.about.com/cs/forestfire) The Comstock Fire of 1891 and the Phillips Fire of 1894 are other examples of large devastating fires in Wisconsin. This, combined with the sprouting potential of some hardwoods, resulted in far less White Pine and Hemlock.

With the increasing young forests of Aspen and other pioneer species, and increasing farmland, the deer population exploded. Deer often prefer to eat White Pine, Oak and Cedar leaves. (www.michigan.gov/dnr/) This further hampers the regeneration of these desirable species.

Act of 1890

During The Great Cutover, the Menominee experienced a great amount of outside pressure to cut and liquidate their pine resource. Wisconsin Senator Philetus Sawyer, also owner of the Sawyer Lumber Company, attempted to pass laws that would, in effect, force the Menominee to cut and sell the timber to only one sawmill at poor prices. The Menominee resisted this and were helped in Congress by U.S. Senator Robert LaFollette, Sr. The Indian Agent from Green Bay reported that the Menominee were aware of the greater value of standing trees over dead or fallen timber, so they used their lumber money wisely and never willfully destroyed the green timber. (Fowler)

A sawmill in Keshena Falls, established in 1856, manufactured lumber, shingles and other wood products. In 1871, the mill began to manufacture Pine lumber that could be sold outside of the reservation. However, during this period the tribe was still only allowed to utilize the dead and down timber from the forest. (Huff)

In the midst of a new American way of way of thinking about the land, Congress passed the Act of June 12, 1890. This act established the annual allowable cut on the reservation. This was the first time that foresters attempted to prescribe the cutting of trees on a sustained yield

basis, based on scientific methods used to figure out how much could be cut. This also marked the beginning of a national shift toward a conservation land ethic, and the idea of land stewardship. (Fowler) This allowed the Menominee to harvest green timber at a rate of 20 million board feet per year, while maintaining a growing crop of trees. (Huff) Between 1890 and 1907, about 290 million board feet of timber were harvested and sold on the reservation.

Neopit Sawmill

A huge windstorm blew down approximately 40 million board feet of timber in 1905. This initiated the creation of the LaFayette Act in 1890, which established a modern sawmill in the town of Neopit. This mill made it possible for the Menominee to process the blown down timber in addition to their annual allowable cut. (Huff) Within 50 years of the establishment of this mill, one billion board feet of lumber was cut. (Huff)

Today, the mill also has planing, molding and kiln-drying capabilities. Some of the lumber sawn is still sold as green rough sawn lumber, but much of it is now sold as a final product. The mill employees are about 90% tribal members, which helps keep the dollars generated by the mill, on the reservation. (Johnson)

Indian Reorganization Act

In 1934 the Indian Reorganization Act further defined the role of the federal government in the management of Native American forests. Under this act, the Secretary of the Interior was to “make rules and regulations for the operation and management of Indian forestry units on the principal of sustained-yield management.” Sustained yield management was defined as, “the yield of forest products that a forest can produce continuously at a given intensity of management.” (Huff)

Termination

With the continued success of the Menominee forest operations and a successful lawsuit of \$8.5 million for forest resource mismanagement filed with the Indian Claims Commission, a hospital, clinic, law enforcement and a judicial system were established on the reservation. This success helped to justify the termination of the Menominee tribe. (Huff)

Under the Menominee Termination Act of 1959, the tribe lost federal protection as a sovereign nation, and was regarded simply as American citizens. The hospital and BIA schools closed, and the tribe began a downward economic spiral. With this the land was no longer federally managed and controlled, and Menominee County was created. This act was another attempt to assimilate the Menominee people into American culture, and proved to be devastating to them. Because the reservation was now a county, the land base was no longer exempt from taxes. In order to pay these property taxes, some of the land had to be sold to land developers, which resulted in the creation of the Legend Lake area. The management of the land was transferred to Menominee Enterprises, Incorporated (MEI), which was controlled by seven men, four of which were bankers from Milwaukee. MEI was required to continue the sustainable management of the forests to preserve the economic development and jobs that resulted from the forestry related operations. (Fowler) The Wisconsin Department of Natural Resources (DNR) oversaw and regulated the management activities at this time as well as forest protection from wildfires.

The Menominee Restoration Act

The Termination Act proved to be unlawful and criminal in nature. With the help of John Collier the Menominee people rallied, and the Federal government recognized them as a sovereign nation again in 1973 with the Menominee Restoration Act. MEI now transferred assets back to the Tribe and the rights of the tribal members were restored.

The Trust and Management Agreement reestablished the relationship between the Menominee and the Federal government. Section 6 of this agreement says, “All Tribal land which is forest land shall be operated on a sustained yield basis.” (Fowler) It reads that the forests must be managed under the Forest Management Plan: Menominee Tribal Enterprises, Inc. 1968-1982. (Fowler) This agreement puts the Tribe in the place of MEI and the Secretary of the Interior in the place of the DNR. The BIA as trust representative of the Secretary provides the same forest protection duties that the DNR provided during termination. (Fowler)

Indian Self Determination Act

In 1975, the Indian Self Determination Act was passed; putting well organized and managed MTE in control of all forest operations. The role of the BIA became one of service, where they must assure that the tribe is maintaining sustainably, in compliance with the Forest Management Plan. (Fowler) With this plan, the Menominee Indian Tribe can now safely and effectively manage their forests while maintaining continued federal protection and forest sustainability at the same time, well into the future.

Public Law 93-638

Public law 93-638 allows MTE to engage in intra- government contracts. They were approved for this in 1995 and contract with the federal government for forest development and road maintenance. With these contracts, it is ensured that MTE will be able to stay on the cutting edge of forest management practices and development strategies. (Fowler)

SUSTAINABILITY

Even through all this adversity that the Menominee people and culture experienced, they continued with the sustainable management of the forest and today have some of the best- known

forests in the world. This huge, very productive forest surrounded by marginal agricultural land can easily be seen on satellite images (source?).

The Menominee have developed a very effective balance between the environment, the economy and the community. (Men) These three basic necessities of a healthy society have all been strongly met by the sustainable forest management, where forest growth equals all removals over time. Almost all of the pre-European plants and animals still thrive, making up a very diverse biologic component and a wide range of age classes all over the forest. (Fowler) The economy continues to flourish with continued harvesting and manufacturing of forest products resulting in many jobs for tribal members. When an area is marked to cut, preference is often given to tribal members who make their living as loggers. This helps to keep the revenue gained from the forest on the reservation. And the community continues to strengthen as cultural sites are protected. (Fowler)

The Menominee recognized the importance of maintaining biodiversity in the forests long ago. They knew that by keeping all of the pieces of the forest they would ensure that one disease or other natural disturbance could not destroy the entire forest. This also results in many different wildlife habitats which maintains a very diverse animal population. (Fowler) Keeping a range of age classes in the forest also guarantees that there will always be some marketable quality timber to harvest at any time in the future. The Menominee know that they could liquidate their forest resource and be very wealthy for a short time, but as stewards of the land, they knew preservation was a necessity, because the land in turn takes care of them.

One visitor from Europe (Elverfeldt, 1995) stated “In contemplating the landscapes of the eastern and mid-western USA, I cannot help but imagine the beautiful and valuable forests which

could exist here, if all Americans had concluded an intergenerational contract with their children, in the way the Menominee Indians...have done.”

In the 150 plus years of the reservation, more than 2 billion board feet have been harvested and the standing volume is approximately the same as it was when the reservation was established. (Dauerwald) The quality of the standing timber has actually improved as new science, better management and harvesting methods are continually put into practice on the reservation. (Men) Research is also common practice. When *The Northern Logger* visited the reservation, several foresters were sawing White Pine logs on a small sawmill to determine the frequency of White Pine Tip Weevil attacks on the mature trees of the forest. When the tip weevil attacks a tree, the terminal shoot is killed, resulting in crooked or multiple stems. (Lorimer) The study found that the past tip weevil attacks on the trees were equal in quantity to the attacks that occur now. This research was used to make management decisions regarding the regeneration phase of Eastern White Pine stands. (Johnson) They discovered that by growing the young trees in dense stands and weeding out the poor formed trees, they can establish a fully stocked stand with straight stems. It has been shown that the tree can put on enough diameter growth to cover up the past tip weevil attacks and essentially straighten out the stem, resulting in quality saw timber production. (Lorimer)

THE FOREST TODAY

The Menominee forest today is home to some 33 tree species, including; Balsam Fir, Tamarack, Jack, Red and Eastern White Pine, Hickory, White, Pin and Northern Red Oaks, Balsam Poplar, Black Cherry, White and Black Spruce, Black and White Ash, Beech, Paper and Yellow Birch, Red Maple, Cedar, Bigtooth and Quaking Aspen, Basswood, Eastern Hemlock,

Sugar Maple and Butternut. (Men) The Menominee are attempting to grow each of these species on the sites that each one grows best.

Habitat Typing

In a forest as large as that of Menominee Indian Reservation there are many different ecosystems based on many different factors. Some of these factors are the soil characteristics, slope, aspect, water availability and nutrient availability. All these factors and many others combined in one area determine how productive a site can be and what species of trees can be effectively grown on that site.

The forest habitat type classification system developed by John Kotar is very effective at determining the potential of the habitat types that have been identified in Wisconsin. This system uses understory shrubs and herbaceous plants as indicators of habitat type along with the available water to the plants. Some plants only grow on the richest of sites, while some dominate the nutrient poor, and dry sites and many grow in between in the average sites. This makes the herbaceous component of the forest very effective in determining the suitability of a site for various tree species and groups, as trees vary immensely in their nutrient and water needs. However, trees can be found on many habitat types that are not necessarily a good site for that tree species, meaning they will not live long, grow fast, get large or have good form. They often only grow vigorously, in good form, and reach large sizes on a select few habitat types, therefore using the trees themselves as indicators of site productivity is not easy and may be impossible.

On the Menominee forest, eleven habitat types have been found. The Menominee use the characteristics of these habitat types to determine which trees they want to grow on each site.

(Fowler)

The Menominee have identified more than 9,000 individual stands in their forest. A stand is a group of trees that are of similar species composition, age class and density. (Fowler) Each of these stands is looked at individually, and the management of each stand is done based on what is currently growing on each respective stand, and the objective for each tree species. If the stand is already composed of the objective species, then silvicultural practices are performed to maintain that composition. If the stand has a few of the objective species present, silvicultural practices will be implemented to try to increase the significance of that species on the site. If there are no objective species in the stand than the stand is clearcut and converted to the correct species via seeding or planting. (Fowler)

CONTINUOUS FOREST INVENTORY

The composition of the stands and the volume of standing timber are monitored through the Continuous Forest Inventory (CFI)(Fowler). This information is used to make many management decisions including planting, thinning, and harvesting of mature trees. Foresters take careful measurements to ensure that they always have a good estimate of the volume in the forest. Accuracy is critical in order to determine changes that occur in the forest related to growth, death and harvests. These issues are all important in maintaining a sustained yield forest.

SILVICULTURE

There are three basic silvicultural methods used on the reservation to achieve regeneration. They are selection, shelterwood, and clearcut. Each of these methods is used for different species based on their growth characteristics and ability to grow in shade.

Selection cutting is used in Northern Hardwood and Hemlock Hardwood forest types. Northern hardwoods consist of Sugar Maple, Beech, Basswood, Yellow Birch, and hardwoods, including Hemlock. On the Habitat Types that are capable of growing large, healthy specimens in a timely manner, selection cutting is used. When deciding which trees to remove in this system, each tree is examined for its health, vigor, maturity and ability to survive to the next rotation. The high- risk trees (unlikely to survive to next rotation) are the first priority to remove, followed by poorly formed and low growth potential. (Fowler) These species are generally able to become established and grow well in more shade than other species of trees. When a single tree or small groups of trees are removed, seedlings are able to respond quickly to the gap that has been created in the canopy. These gaps are also made slightly larger (quarter to half acre) to allow for mid- tolerant species like White Ash and Yellow Birch to become established in the stand.

Each of these uneven aged stands are entered and thinned every 15 to 20 years to a predetermined stocking level. Through research, foresters have determined the growth potential for each species in relation to the size of the trees in a stand, and the number of trees per acre. By keeping each stand at the proper density of each size classes, the growth of the stand as a whole is maximized. (www.menominee.nsn.us) Eventually, after many entries into a stand there are a high percentage of healthy, well formed, mature trees, with many younger, healthy trees growing between them. With this situation you are able to remove some of these large valuable trees in order to reach the predetermined stocking level desired after each entry into the stand.

Shelterwood is used for those species that need some shade in order to become established as seedlings and saplings, but then grow the best when in full sunlight. This is an

even aged silvicultural system. This works well with white pine, northern red oak and white oaks.

The first step is removing some of the mature trees, leaving the best, (for superior genetics) in order to allow sunlight to penetrate to the forest floor. If too many trees are removed in the first cut, the stand will be overwhelmed by less desirable species that thrive in full sunlight. The ground is then scarified; meaning machinery is used to expose bare soil. This allows the seeds produced by the overstory to germinate and establish. The trees left will protect the seedlings from being burned away by over exposure to the sun. In White Pine stands, herbicides are used when necessary to kill competing hardwood species that often sprout when the crown is opened up. After there is ample regeneration below the mature trees, the mature trees are removed. This gives the saplings all the sunlight they need to grow freely.

Clear cutting is used to regenerate species that have a competitive advantage in full sunlight and do not need the shade of other trees to protect them from the sun and weather while they become established. Some of these species are Quaking Aspen, Bigtooth Aspen and Paper Birch. These species will sprout seedlings from the stumps or roots of cut trees; this will grow very fast if they receive full exposure to the sun. Other species, Red Pine for example, will not sprout, so they must be replanted after the final removal of the mature stand. These systems are also often treated with intermediate thinnings to release the best trees from competition by inferior specimens.

In all these systems, special attention is given to regeneration of the objective species for each site. This is a very important step in achieving sustained yield forestry and the Menominee Indians have become very good at it. Each stand is individually monitored to ensure that adequate regeneration is achieved. If it is not achieved, special treatment is given to ensure that

it will be. This can include scarification of the soil and waiting to remove the overstory longer than normal.

When the stand reaches a point that the trees are competing for resources too much, it is thinned. These intermediate thinnings leave the best trees to increase their crown sizes to allow for faster growth and, therefore, more merchantable volume to harvest at maturity. When the trees reach maturity the process starts at the beginning again and a new stand is established.

All of this timber management is done while adhering to Best Management Practices developed by the state of Wisconsin to protect soils from erosion and compaction. Precautions are also taken to minimize the negative impacts of timber harvesting on wildlife and fish resources. The requirements of many wildlife species are maintained through maintaining openings in the forest and taking into account forest edges and travel corridors when designing harvest units. All of these practices help to maintain diverse, healthy ecosystems within the reservation.

As you can see the Menominee way of sustained yield forest management has come a long way in the last 150+ years and only shows signs of improving. They have always tried to do the right thing with their natural resources. One elder said, "Everything we have comes from Mother Earth, from the air we breathe to the food we eat, and we need to honor her for that. In treating the forest well, we honor Mother Earth." (Huff)

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