

Restoring Native Hardwoods Initiative

Mohican-Memorial State Forest

The Restoring Native Hardwoods Initiative (RNHI) by the Ohio Department of Natural Resources – Division of Forestry seeks to promote the restoration of native hardwood forests at Mohican-Memorial State Forest. The initiative’s goal is to restore native diversity in the forest, both plant and animal, by slowly managing artificial pine plantations in order to promote the regeneration of native, naturally regenerating, hardwood tree species that are so important to a host of wildlife species. This initiative is in the form of an addendum to the 5-year management plan for all state forest for the period 2015-2020.

Intent

The intent of this initiative has three guiding principles:

- Maintain protection of the Clear Fork River.
- Honor the recommendations of the “Ad Hoc” committee that Mohican SF should provide:
 1. A large core of mature forest,
 2. Native plant and animal diversity,
 3. Low impact recreation,
 4. Education about forest ecosystems and their management.
- Conformance to the current DOF 5-year management plan for all state forests 2015-2020.

Forest Description

Mohican- Memorial State Forest (Mohican SF) is located in southern Ashland County, midway between Columbus and Cleveland. Mohican SF is managed under the multiple-use concept for timber and wildlife habitat, forestry research and demonstrations of good forest land management, primitive recreation and protection of soils and watershed.

Current Forest Composition:

Mohican-Memorial State Forest can be categorized into three broad forest types. Current data show that the forest type with the largest number of acres is pine plantation (artificial plantations of rows of white pine and red pine). Pine plantations account for nearly 1,800 acres of this state forest or 40% of the forested area. These plantations came from historic efforts of the Civilian Conservation Corps from the Depression and World War II eras. They were planted in order to prevent soil erosion from marginal and degraded farm land that had recently become state property. The function of these plantations was to conserve soil long enough that a future native hardwood forest would eventually be established through management and eventual removal of the pine trees. Managed plantations enjoy a vigorous growth of understory vegetation of hardwood trees and shrubs. Unmanaged pine plantations at Mohican are dense with little or no sunlight hitting the forest floor resulting in an understory that is devoid of plants, animals, or other biota. The over-stocked conditions also cause stress to the un-thinned trees resulting mortality from disease, insects, or moisture and nutrient deficiencies.

The second most common forest type at Mohican is hardwood mixed mesophytic stands. These stands are dominated by tree species such as yellow poplar, sugar and red maple, ash, and beech. Mixed mesophytic stands occupy about 1,600 acres or 36% of the land area at Mohican. Mixed mesophytic forests are moist sites that occur on north facing slopes, coves, and bottomlands where sunlight is not direct and moisture is not limiting. These stands are generally mature and the understory vegetation in these stands consists of maple and beech saplings.

The third forest type at Mohican includes hardwood stands dominated by oak and hickory species. These stands occupy the least amount of land area at about 1,100 acres or about 24% of the land area at Mohican. Oak and hickory stands are dominated by trees such as white oak, red oak, scarlet oak, chestnut oak, hickory species, with other assorted tree species present. Oak / hickory stands usually occur on dryer southern exposures or on sites with a history of disturbance such as fire or harvesting. Oak and hickory stands at Mohican however, do not have oak and hickory understories. The understories in these stands are dominated by maple and beech species which means that these stands are likely to eventually convert to maple and beech forests. Oak and hickory trees are considered keystone species in this region due to the dependence that many other insects, plants, and wildlife have on these trees. Oak / hickory forests are more resilient to disturbances, climate change, and forest pests. The lack of oak regeneration has been identified as a significant problem throughout the central hardwood region and forest inventory data for Ohio shows that oak forests are declining for many reasons but mostly due to the lack of oak regeneration in the understory.

Inventory and Growth

Mohican-Memorial State Forest has an estimated standing timber inventory of 32 million board feet of hardwood sawtimber and over 250,000 tons of pine. Timber inventory data show that the annual growth of hardwood sawtimber is approximately 766,000 board feet per year of hardwood sawtimber growth and 6,000 tons per year of pine growth.

Approximately 78% of the forested stands at Mohican are dominated by trees that are between 12 inches and 18 inches in diameter (measured at 4.5 feet off the ground) and have complete crown closure in the canopy allowing no sunlight to hit the ground during the growing season. Less than 1% of the forest has stands that are young, early successional forests dominated by seedlings, saplings, and shrubs. Less than 10% of the forested stands have open canopies whereby sunlight could reach the forest floor to allow herbaceous plants to grow. Early successional forests are also lacking throughout Ohio, including Mohican SF. Early successional forests are a key component for a variety of forest-dependent wildlife species (See 5-year management plan for state forests).

Current Management Zones

Based on the 1998 recommendations from the Mohican Ad Hoc committee, Mohican-Memorial State Forest is divided into 3 zones. Zone A and B are also considered to be High Conservation Value Forests (HCVF) in our FSC certification program.

Zone A – This zone covers approximately 2,067 acres. The purpose of this zone was to encourage the development of “old growth” by avoiding purposeful, human-caused disturbance. No vegetation management is allowed in this zone except for public safety purposes or other limited situations. This zone does not permit silvicultural practices in stands of trees damaged by catastrophic events, such as salvage harvesting. All forms of outdoor recreation are permitted in this zone.

Zone B – This zone covers approximately 1,823 acres. The purpose of this zone was to maintain continuous mature forest cover that would eventually become part of zone A above. Maintenance and promotion of old growth forest characteristics is a priority in this zone. Un-even aged management, single-tree selection silviculture is allowed in this zone provided that it promotes old-growth forest characteristics. Group selection or any even-aged silviculture is prohibited. Salvage of damaged trees from catastrophic events is allowed. All forms of outdoor recreation are permitted in this zone.

Zone C – This zone covers approximately 743 acres. The purpose of this zone was to provide education about forest management. These areas were set aside to serve as demonstration areas. All silvicultural practices are allowed provided they are set up in an educational format for visitors. Recreation is allowed.

The current management zones for Mohican SF were developed in the mid-1990’s resulting from efforts of an ad hoc committee tasked with developing management guidelines for Mohican SF. While many of their recommendations have merit, technology and forest inventory data have changed considerably in over the last several decades resulting in the following issues:

- The current zoning does not match Division of Forestry zoning scheme that has been certified by third party auditors the FSC and SFI standards.
- Based on improved forest inventory data, the current zoning does not match the actual forest condition.
- The high percentage of pine plantations within this forest represents a relatively high risk situation, whereby insects and diseases that impact pine (pine bark adelgid, white pine blister rust, and southern pine beetle) may threaten these plantations and consequently the health of the overall forest. Reducing the overall percentage of pine plantations on the landscape will reduce the risk of a forest health crisis.
- Current zoning does not follow topographical or other land features.
- Under the current zoning, the Division of Forestry does not have the ability to react to forest health events or catastrophic weather events.
- Under the current zoning, the Division of Forestry cannot manage the forest to established scientific and silvicultural norms.

Restoring Native Hardwoods Initiative.

The purpose of this initiative is to update the zoning on Mohican-Memorial State Forest. The proposed changes in management zones for Mohican SF were developed from recent forest inventory data, new and updated GIS technology, a review of natural heritage data locations of RTE species, a review of archeological data locations for special sites, and input from credentialed scientific experts. The changes are also intended to incorporate the

recommendations of the ad hoc committee's work from the 1990's. The proposed zones deal with the above issues in the following ways:

- Zone changes more accurately represent current forest conditions.
- Zone changes more accurately represent desired future conditions.
- Changes are in conformance with internal policy and meet FSC and SFI certification.
- Promotes the ability to restore natural hardwood forest and biodiversity by managing the many artificial pine plantations that exist on the forest.
- Provides for the ability to react to forest health crisis and / or catastrophic weather events, resulting in better stewardship of the public's resources.
- Correctly identifies and protects the "Memorial Forest" and a number of high use recreation areas not previously identified.
- Places a greater emphasis on public safety.
- Protects the known concentrations of RTE species and provides for a desired future condition to accommodate those species in the long term.
- Retains large acreages that will develop old forest characteristics.
- Provides a more proactive approach in managing invasive plant species.

Management Zones Descriptions and Acreages at Mohican-Memorial State Forest.

Zone 1A – High Conservation Value Forest, Natural Area.

The changes would classify approximately **1,326 acres** as zone 1A. This zone is intended to protect and maintain specific natural areas that are environmentally, historically, or culturally special. High Conservation Value Forests (HCVF) possess one or more of six specific High Conservation Values (HCV). Based on current available data, these areas possess one or more HCV's. These 1A areas will be managed in order to maintain or enhance significant resource features. Passive outdoor recreation may be permitted in these areas. Public awareness and use of Natural Areas will be limited, however, and will be allowed based on each area's ability to sustain appropriate uses without being degraded. These areas would be allowed to progress to a condition with old forest characteristics. Zone 1A areas closely align with the former zone "A" proposed in the 1990's by the ad hoc committee. Under the new zone 1A, cutting of vegetation including silvicultural practices will not be permitted, unless otherwise ordered by the Chief of the Division of Forestry due to catastrophic weather, wildfire, or other natural forest health crises. Pine plantations that exist in zone 1A will remain as a legacy and will not have silvicultural practices employed.

Zone 1D – High Conservation Value Forest, Restoration Area.

The changes would classify approximately **820 acres** as zone 1D. This sub-zone of Zone 1 is designated for areas of state forest that contain one or more of the six HCVs, especially HCV 1 and HCV 3, however, these lands are in critical need of management activities in order to restore and maintain their HCV. These areas were formerly classified at Zone "B" under the old system. Within these areas at Mohican SF are large concentrations of artificial white pine and red pine plantations. Managing these pine plantations with the intent to restore native hardwood forests would be a net gain in long-term biodiversity and health to these areas. By classifying these areas as zone 1D, the Division recognizes the unique features that are present, while promoting a desired future condition of native hardwood forest types. This would be accomplished by strategic, periodic management of pine plantations, over the course of many years, to slowly

promote and restore native hardwood forests that would naturally replace them on the landscape. Only silviculture suited to restoration of native hardwood forests would be employed in this zone. Aside from managing the pine plantations, these areas would be allowed to progress to a condition with mature forest characteristics. Salvage timber harvesting may be necessary as ordered by the Chief of the Division of Forestry due to catastrophic weather, wildfire, or other natural forest health crises

Zone 3A – Resource Protection Area.

The changes would classify approximately **193 acres** as zone 3A. This area is intended to offer protection to sensitive soil, water, and other natural resources which may suffer significant damage by inappropriate management or use. Typically, this zone is designed for land which is sensitive for a specific reason: severely erodible soils, bottomland, wetlands, etc. These changes will classify the land immediately surrounding Pine Run within the southern portions of Mohican SF as zone 3A. This river bottomland, and associated side drainages, will be protected in order to avoid damage to this stream. Any management activities adjacent to this stream area would employ the strictest standards.

Zone 3B – Mature Forest Aesthetic Area.

The changes would classify approximately **1,389 acres** as zone 3B. This zone is similar to the old zone “B”. This sub-zone encompasses areas adjacent to developed forest recreation areas, or areas affected by high density public use where primary consideration is given to visual and non-consumption values. Management will be directed toward maintaining healthy, viable stands of trees. At Mohican SF, the majority of the bridle trails system exists in the southern portion of the forest. These areas are composed of some artificial pine plantations interspersed with Oak/Hickory or mixed mesophytic forest types. They do not possess significant concentrations of High Conservation Values. However, they are nonetheless important in a number of ways. The density of trail riding and hunting is high in this area. By classifying the area as zone 3B, the Division of Forestry recognizes the value of the aesthetic attributes of this area, while also seeing the need to manage some the pine plantations in this area to promote biodiversity and forest health. Special considerations will be given to retaining and enhancing aesthetic benefits in this area and retaining large mature trees. Only uneven-aged silvicultural practices will be employed in order to maintain a continuous tree canopy cover, which is consistent with the recommendations from ad hoc committee from the 1990’s. Large mature trees would be retained and mature forest characteristics would be present throughout the area. Salvage timber harvesting may be necessary as ordered by the Chief of the Division of Forestry due to catastrophic weather, wildfire, or other natural forest health crises

Zone 3D – Demonstration Area.

The changes would retain approximately **838 acres** in zone 3B. This zone was previously called zone “C” as is identical to the recommendations from the previous efforts of the ad hoc committee. The purpose of this zone is to provide a venue for long-term demonstration of silvicultural practices, or research. The goal of this sub-zone is to both protect existing research sites, designate areas for future long-term research studies, and to provide educational opportunities to the public about forest management. By retaining this demonstration zone, Mohican SF will be providing educational opportunities to the public, university students,

vocational agricultural students, and other groups on the types and values of a range of forest management practices.

Zone 4A – Intensive Recreation Areas.

The changes would classify **37 acres** as zone 4A. The purpose of this sub-zone is to designate land areas capable of providing high quality outdoor recreation and sustaining relatively large numbers of participants at one time. Areas of 4A at Mohican SF include the Fire Tower, the Memorial Shrine, and the Bridle Trail day use and group camp areas.

Zone 4B – Administrative Areas.

The changes would classify **16 acres** as zone 4B. The purpose of this sub-zone is to designate and provide land areas and facilities for the efficient administration of state forests. Areas of 4B at Mohican SF include the office and equipment buildings as well as the Mohican Youth Academy facility.

Annual Harvest Limit Calculation

Based on recent forest inventory data, the table below shows current forest inventory and annual growth for each zone. The calculations are necessary in order to show a potential sustainable harvest limit should harvesting occur. Division of Forestry policy limits annual harvesting to no more that 50% of annual growth. A potential annual harvest limit is shown on the right hand columns.

These calculations do not represent an annual harvest *goal*. They represent an annual harvest *limit*. Annual harvest strategies will be within the numbers shown below and detailed each year in DOF’s annual work plan. Since several zones restrict silviculture, those volumes were not used in the annual harvest limit. Furthermore, the desired future condition of many of the pine plantations is to restore to native hardwood forests. In conclusion, the annual harvest limit would be approximately 189,000 board feet of hardwood sawtimber and 3,000 tons of pine timber. However, pine plantation management is the focus of this initiative.

Annual Harvest Limit Calculation							
Zone	Acres	Inventory		AnnualGrowth		Limit	
		Hwd Bd Ft	Pine Tons	Hwd Bd Ft	Pine Tons	Hwd Bd ft	Pine tons
1A	1326	9,164,410	71,882	219,946	1,725	-	-
1D	820	5,667,282	44,452	136,015	1,067	-	1,000
3A	193	1,333,885	10,462	32,013	251	-	-
3B	1389	9,599,823	75,297	230,396	1,807	115,198	1,000
3D	838	5,791,686	45,427	139,000	1,090	69,500	1,000
4A	37	255,719	2,006	6,137	48	-	-
4B	16	110,581	867	2,654	21	-	-
	4619	31,923,385	250,393	766,161	6,009	184,698	3,000

Consultations

The changes to the zoning at Mohican SF, as outlined in this initiative, has undergone a multi-step process to ensure that considerations are made to High Conservation Values that may be present on the forest. These steps include the consultation of available datasets, direct consultations with statewide conservation agencies, direct consultations with regional conservations groups, and local experts, and public input at state forest open houses. A list of comments received during the consultation process and responses by the Division of Forestry are posted on our website. The public comment period was extended so that stakeholders had roughly 77 days to provide comments to DOF.

Review by the Integration Committee and the Forest Advisory Council

At the conclusion of the consultation process, the changes were reviewed by the DOF integration committee. The integration committee is composed of all of the program administrators within the Division of Forestry. The integration committee summarized all the comments received and provided a list of concerns to the Forest Advisory Council.

The Forest Advisory Council held a business meeting on December 7, 2017 and made a number of recommendations to the Chief of the Division of Forestry. The Division of Forestry made substantial changes to the draft initiative in order to address public comments and Forest Advisory Council concerns. The Forest Advisory Council and the Chief of the Division of Forestry approved the final plan on January 31, 2018.

Implementation

Proposed changes will be within the stated management objectives of each zone as defined by the “5-Year Management Plan for State Forests”. The management objectives within the 5-Year Management Plan have been through the consultation process and received extensive review and approval in 2015.

Annual strategies and tactics to implement the management objectives will be determined and disseminated to the public annually in the “Annual Work Plan for Mohican-Memorial State Forest”. It is within this annual work plan that individual management activities are proposed.

In order to address specific concerns, DOF has committed to the following items as part of the implementation of this initiative:

- Aesthetic considerations will be made at the individual activity level consistent with the guidelines of the Land Management Manual, and as recommended by the DOF Aesthetic Team.
- DOF will limit silvicultural practices to the recreation “off-season” in order to minimize disruption to forest visitors, unless activities are warranted during other times of the year due to catastrophic weather, natural disasters, or to address a public safety situation.
- Pine plantations within any buffer or protected area (such as 1A) should remain on the landscape and will not be actively managed.

- DOF will design a research proposal to evaluate the history of pine plantation management and silvicultural practices and their impact on hardwood regeneration. The results will help guide future management of Mohican SF and will be publicly available.
- DOF will establish prescriptive monitoring with delineated time intervals of silvicultural practices consistent with the monitoring procedures outlined in the Land Management Manual.
- DOF will not conduct silvicultural practices at Mohican SF until proactive management of invasive species has been completed.
- The complete boundary of the Clear Fork Nature Preserve has an aesthetic buffer.
- DOF commits to between 20 and 40 acres of silvicultural practices in any given year, unless adjustments are warranted due to catastrophic weather, natural disasters, or public safety situations.

Glossary of Terms

Artificial Regeneration – trees established from seed or seedlings brought to the site by man expressly for the purposes of tree re-establishment. Artificial regeneration involves planting. Pine plantations are artificially regenerated stands.

Biodiversity – the variation of life forms with a given ecosystem. It includes the variety and abundance of species, their genetic composition, and the communities, ecosystems, and regions in which they occur. It also refers to the ecological structures, functions, and processes in communities, ecosystems, and landscapes, and includes variation within a species and among species. (Biological Diversity in Forest Ecosystems: A position statement of the Society of American Foresters).

Growth and Yield – growth is measured as change in some characteristic (weight, basal area, volume, etc.) over some specified amount of time. Yield is the amount of some characteristic that can be harvested per period of time. (The Dictionary of Forestry, 1998)

High Conservation Value Forest – Forests that possess one or more of the following high conservation values: 1) globally, regionally or nationally significant concentrations of biodiversity values including RTE species and their habitats; 2) globally, regionally or nationally significant large landscape level forests where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance; 3) contain rare, threatened or endangered ecosystems; 4) provide basic services of nature in critical situations; 5) fundamental to meeting basic needs of local communities (e.g. subsistence); or 6) critical to local communities traditional cultural identity (e.g. religious significance). (The Forest Stewardship Council, Forest Management Standard 1.6).

Natural Regeneration – tree regeneration that is established from seed, sprouts, or root suckers of trees on or formerly occupying the land. Natural Regeneration includes both seeding and vegetative reproduction. Most species of hardwoods combine both seed and vegetative regeneration for reproducing.

Salvage – the practice of removing dead trees or trees damaged or dying because of injurious agents other than competition to recover economic value that would otherwise be lost. (The Dictionary of Forestry, 1998).

Uneven-aged Management – a planned sequence of treatments designed to maintain and regenerate a stand with three or more age classes. (The Dictionary of Forestry, 1998)