

# Forest Management Plan Guidance for Michigan's Family Forest Owners



Plan Duration: 2021 to 2025

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This forest management plan meets the minimum requirements of the American Tree Farm System and the USFS Forest Stewardship Program.



[TreeFarmSystem.org/Michigan](https://www.TreeFarmSystem.org/Michigan)

This forest management plan guidance, both the simple 10-page template and the longer reference materials, are intended to help landowners and foresters develop a simple plan that meets the minimum requirements for the following programs. Landowners and foresters should confirm with the agency or organization that administers the program they seek to join for current guidelines on forest management plans and other program rules.

1. Landowners certifying excellent forest management in the American Tree Farm System are required to have a written forest management plan to document their commitment to the 2021 Standards of Sustainability. More information about Tree Farm and the current Standards are at [TreeFarmSystem.org/View-Standards](https://www.treefarm.org/View-Standards).
2. The Forest Stewardship Program, administered by the United States Forest Service and State Foresters in all 50 states, has defined standards for a simple yet comprehensive forest stewardship plan since 1990. More information about plan requirements and 155 foresters who develop plans is at [Michigan.gov/ForestStewardship](https://Michigan.gov/ForestStewardship).
3. Landowners seeking to lower their property taxes through the Commercial Forest Program are required to develop and follow a plan to optimize the production, utilization and regeneration of forest products. The Department of Natural Resources requires that plans are developed by a Registered Forester ([Michigan.gov/RegisteredForester](https://Michigan.gov/RegisteredForester)) or other qualified natural resource professional. More info is at [Michigan.gov/CommercialForest](https://Michigan.gov/CommercialForest).
4. Landowners seeking to lower their property taxes through the Qualified Forest Program are required to develop and follow a plan to optimize the production, utilization and regeneration of forest products. The Michigan Department of Agriculture and Rural Development requires that plans are developed by a Qualified Forester. More information is at [Michigan.gov/QFP](https://Michigan.gov/QFP).
5. Landowners seeking financial assistance to do projects in their woods with the natural Resources Conservation Service (NRCS) are required to do conservation planning prior to doing the work. The Michigan NRCS accepts Forest Stewardship Plans and Tree Farm forest management plans when applying for financial interest to implement a plan and this template meets both Forest Stewardship and Tree Farm requirements. More information is at [www.nrcs.usda.gov/wps/portal/nrcs/mi/home](https://www.nrcs.usda.gov/wps/portal/nrcs/mi/home).
6. This template does NOT meet the NRCS requirements for a “Conservation Activity Plan 106” (forest management plan) if a landowner has financial assistance from NRCS to develop their plan. More information is at [www.nrcs.usda.gov/wps/portal/nrcs/mi/home](https://www.nrcs.usda.gov/wps/portal/nrcs/mi/home).
7. This template does NOT meet the requirements of forest certification through the Forest Stewardship Council. More information is at [us.fsc.org](https://us.fsc.org).

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## Introduction

Landowners certified by the American Tree Farm System are required to have a written forest management plan that is consistent with the size of the forest and the scale and intensity of forest management. It is best practice for a landowner to hire a professional forester to develop a comprehensive and custom plan that is based on the landowner's goals, forestry science and land ethics. However, sometimes a simple template may be adequate for landowners to begin learning about their forest and make initial decisions regarding forest management activities. This template uses the American Tree Farm System "2021 to 2025 Standards of Sustainability" as a framework to set goals, evaluate a forest and plan for management activities. It is designed to help a landowner enroll in the American Tree Farm System and certify their woodlands, if this template is appropriate to the size of the forest and scale and intensity of forest management.

Landowners and their forester must provide some information in all blanks in the template, even if noting that element is absent or not relevant to the property. Required information includes forest management goals, current forest conditions, planned management activities, a map of the forest, legal description and other information that shows compliance with the 2021 to 2025 Standards of Sustainability, or other program guidelines when participating in other programs.

Landowners are encouraged to work with a professional forester to complete the template, using as many pages as desired or necessary. The supporting reference materials in the Appendices are available to provide context and background information. Landowners must work with a Tree Farm forester to complete the separate five-page "021 Form" to enroll in Tree Farm. The American Tree Farm System does not allow foresters to charge for Tree Farm inspections, but foresters are not obligated to donate additional services like filling in this template or making maps. A directory of Tree Farm foresters is at [TreeFarmSystem.org/Michigan](https://www.TreeFarmSystem.org/Michigan).

This template may be adequate to enroll in other programs that require forest management plans if it includes all elements required by their separate program guidelines. This template is consistent with the 2015 Standards and Guidelines of the Forest Stewardship Program and the National Association of State Foresters "Principles and Guides for a Well-Managed Forest." This template may comply with the Qualified Forest and Commercial Forest programs if the plan optimizes the production, utilization and regeneration of commercial forest products. This template does not meet the specifications for a Conservation Activity Plan 106, but the Natural Resources Conservation Service allows landowners with a Tree Farm plan or Forest Stewardship Plan to apply for financial assistance to implement conservation practices in those plans.

Landowners who would like more information about their forest should hire a professional forester or wildlife biologist to develop a custom Forest Stewardship Plan for their woods. More information and a list of 150 foresters and 5 biologists available to develop more comprehensive Forest Stewardship Plans is at [Michigan.gov/ForestStewardship](https://Michigan.gov/ForestStewardship).

The authors of this 2021 to 2025 plan template are Ryan Hauser-Jeryc, consulting forester, ([Ryan@AuroraForestry.com](mailto:Ryan@AuroraForestry.com)) and Mike Smalligan, Forest Stewardship Coordinator for the DNR Forest Resources Division ([SmalliganM@Michigan.gov](mailto:SmalliganM@Michigan.gov)). This plan should be updated when the American Tree Farm System publishes the 2026 to 2030 Standards of Sustainability.

## Forest Management Plan Template

### Landowner Name and Contact Info

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### Forester Name and Contact Info

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### Legal Description and Forested Acres in Plan

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### Date and Duration of Plan

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### Forest Management Goals

<p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p> <p>5.</p> <p>6.</p> <p>Etc.</p>	
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### Executive Summary of Planned Forest Management Activities

Stand	Ac.	Description of Activity	Date Planned	Date Complete	Cost / Profit
1					
2					
3					
4					
Etc.					

**Map – sketch or insert map.** Include property lines, management units, water, buildings, special sites and north arrow. Maps can be developed with ArcGIS, Google Earth, county GIS websites, Web Soil Survey and other software. Additional maps could show soil types, topography, surrounding landscape, forest types, surface water, road or trails and buildings.

**Property Tax Identification Number:**

**Stand Descriptions, Management Activities and Desired Future Conditions**

1	<b>Current Condition of Stand 1</b> (Size, type, species, density, age, etc.)
	<b>Desired Future Condition for Stand 1</b>
	<b>Planned Activities for Stand 1</b> (Who, What, Where, When, How & Why?)
2	<b>Current Condition of Stand 2</b> (Size, type, species, density, age, etc.)
	<b>Desired Future Condition for Stand 2</b>
	<b>Planned Activities for Stand 2</b> (Who, What, Where, When, How & Why?)
3	<b>Current Condition of Stand 3</b> (Size, type, species, density, age, etc.)
	<b>Desired Future Condition for Stand 3</b>
	<b>Planned Activities for Stand 3</b> (Who, What, Where, When, How & Why?)

## American Tree Farm System's 2021 to 2025 Standards of Sustainability

**Standard 1: Commitment to Practicing Sustainable Forestry.** Landowner demonstrates commitment to forest health and sustainability by developing a forest management plan, implementing sustainable practices, and seeking opportunities to expand their knowledge and understanding of sustainable forest management.

Performance Measure 1.1 Landowner shall have and implement a written forest management plan consistent with the size of the forest and the scale and intensity of the forest activities.

*Indicator 1.1.1* Management plan shall be active, adaptive and embody the landowner's current objectives, remain appropriate for the land certified and reflect the current state of knowledge about natural resources and sustainable forest management.

*Indicator 1.1.2* Management plans shall describe current forest conditions, landowner's current objectives, management activities aimed at achieving landowner's objectives, document a feasible strategy for activity implementation and include a map accurately depicting significant forest-related resources.

The forest management plan shall demonstrate consideration of the following resource elements: forest health, soil, water, wood and fiber production, threatened or endangered species, special sites, invasive species and forests of recognized importance. Where present and relevant to the property, the plan shall describe management activities related to these resource elements.

Where present, relevant to the property and consistent with landowner's objectives, the plan preparer should consider, describe and evaluate the following resource elements: fire, wetlands, desired species, recreation, conversion, forest aesthetics, biomass and carbon.

*Indicator 1.1.3* The Landowner should monitor for changes that could interfere with the management objectives as stated in management plan.

### Soil

[WebSoilSurvey.sc.egov.usda.gov](http://WebSoilSurvey.sc.egov.usda.gov)

### Water

[Michigan.gov/MiWaters](http://Michigan.gov/MiWaters)

### Wood and Fiber Production



### Additional Resources

- Wetlands ([mcgi.state.mi.us/wetlands/mcgiMap.html](http://mcgi.state.mi.us/wetlands/mcgiMap.html) )
- Recreation
- Conversion to other land use
- Biomass
- Carbon ([nrs.fs.fed.us/niacs](http://nrs.fs.fed.us/niacs))

**Standard 2: Compliance with Laws.** Forest management activities comply with all relevant federal, state and local laws, regulations and ordinances.

**Performance Measure 2.1** Landowner shall comply with all relevant federal, state, county and municipal laws, regulations and ordinances governing forest management activities.

**Indicator 2.1.1** Landowner shall comply with all relevant laws, regulations and ordinances and will correct conditions that led to adverse regulatory actions, if any.

**Indicator 2.1.2** Landowner should obtain advice from appropriate qualified natural resource professionals or qualified contractors who are trained in, and familiar with, relevant laws, regulations and ordinances.

### Relevant Laws

- EGLE Permits for Stream Crossings or Wetlands
- Threatened or Endangered Species
- Historic Preservation
- Pesticide Use
- Right to Practice Forestry

**Standard 3: Reforestation and Afforestation.** Landowner completes timely restocking of desired species of trees on a regeneration harvest site and nonstocked areas where tree growing is consistent with land use practices and the landowner's objectives.

**Performance Measure 3.1** Reforestation or afforestation shall be achieved by a suitable process that ensures adequate stocking levels.

**Indicator 3.1.1** Reforestation or afforestation shall achieve adequate stocking of desired species reflecting the landowner's objectives, within five years after regeneration harvest, or an appropriate time frame for local conditions, or within a time interval as specified by applicable regulation.

### Plans for Tree Planting or Natural Regeneration after Harvest

Site preparation, species, density, contractors, nursery list at [Michigan.gov/ForestStewardship](http://Michigan.gov/ForestStewardship)

**Standard 4: Air, Water and Soil Protection.** Forest management practices maintain or enhance the ecosystems and ecosystem services provided by the forest, including air, water, soil and site quality.

Performance Measure 4.1 Landowner shall meet or exceed practices prescribed by [state forestry best management practices](#) (BMPs) that are applicable to the property.

*Indicator 4.1.1* Landowner shall implement specific [state forestry BMPs](#) that are applicable to the property.

*Indicator 4.1.2* Landowner shall minimize road construction and other soil disturbances within riparian zones and wetlands.

**Relevant Best Management Practices ([Michigan.gov/Forestry](#))**

- Roads
- Riparian Zones
- Ruts
- Spills
- Stream Crossings
- Wetlands

Performance Measure 4.2 Landowner shall consider a range of forest management activities to control pests, pathogens and unwanted vegetation.

*Indicator 4.2.1* Landowner should evaluate alternatives to pesticides for the prevention or control of pests, pathogens and unwanted vegetation to achieve specific management objectives.

*Indicator 4.2.2* Pesticides used shall be approved by the Environmental Protection Agency (EPA) and applied, stored and disposed of in accordance with EPA-approved labels and by persons appropriately trained, licensed and supervised.

**Records of Pesticide Use**

Date, Name of Applicator, Chemical, Application Rate, Acres, Effectiveness

Performance Measure 4.3 When used, prescribed burns shall conform with landowner's objectives and all applicable rules, laws, and regulations.

*Indicator 4.3.1* Prescribed burns shall conform with the landowner's objectives and state and local laws and regulations.

**Prescribed Fire or Wildfire**

Consult with [Michigan.gov/BurnPermit](#) and [FireCouncil.org](#)

**Standard 5: Fish, Wildlife, Biodiversity and Forest Health.** Forest management activities contribute to the conservation of biodiversity.

Performance Measure 5.1 Forest management activities shall protect habitats and communities occupied by threatened or endangered species as required by law.

*Indicator 5.1.1* Landowner shall periodically confer with natural resource agencies, state natural resource heritage programs, qualified natural resource professionals or other current sources of information to determine occurrences of threatened or endangered species on the property and their habitat requirements.

*Indicator 5.1.2* Forest management activities shall incorporate measures to protect identified threatened or endangered species on the property.

**Relevant Threatened or Endangered Species**

Email County, Town, Range & Section to DNR Service Forester for MNFI ([mnfi.anr.msu.edu](http://mnfi.anr.msu.edu)) report.

Performance Measure 5.2 Landowner should address the desired species and/or desired forest communities when conducting forest management activities, if consistent with landowner's objectives.

*Indicator 5.2.1* Landowner should consult available and accessible information on management of the forest for desired species and/or forest communities and integrate it into forest management.

**Desired Species**

Performance Measure 5.3 Landowner should make practical efforts to promote forest health.

*Indicator 5.3.1* Landowner should make practical efforts to promote forest health, including prevention, control or response to disturbances such as wildland fire, invasive species and other pests, pathogens or unwanted vegetation, to achieve specific management objectives.

**Relevant Forest Health Issues**

Consult [Michigan.gov/ForestHealth](http://Michigan.gov/ForestHealth)

Performance Measure 5.4 Where present, forest management activities should maintain or enhance forests of recognized importance.

*Indicator 5.4.1* Appropriate to the scale and intensity of the situation, forest management activities should incorporate measures to contribute to the conservation of identified forests of recognized importance.

Forests of Recognized Importance
<p>This property (IS or IS NOT) located within a Forest of Recognized Importance.</p> <p>Forests of Recognized Importance in Michigan:</p> <ul style="list-style-type: none"> <li>• Within Half Mile of Great Lakes Coastline</li> <li>• State Natural Rivers or Federal Wild &amp; Scenic Rivers</li> <li>• Significant Wildlife Habitat (Required by T&amp;E Species, DWC in UP, &gt;500 acres in SLP)</li> </ul>

## Forests of Recognized Importance in Michigan:

- Standard 6: Forest Aesthetics.** Forest management activities recognize the value of forest aesthetics.

*Indicator 6.1.1* Forest management activities should apply visual quality measures compatible with appropriate silvicultural practices.

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Performance Measure 7.1 Forest management activities shall consider and maintain any special sites relevant on the property.

*Indicator 7.1.1* Landowner shall make a reasonable effort to locate and protect special sites appropriate for the size of the forest and the scale and intensity of forest management activities.

Email County, Town, Range & Section to DNR Service Forester for State Historic Preservation Office results:

**Standard 8: Forest Product Harvests and Other Activities.** Forest product harvests and other management activities are conducted in accordance with the landowner's objectives and consider other forest values.

Performance Measure 8.1 Landowner should use qualified natural resource professionals and qualified contractors when contracting for services.

*Indicator 8.1.1* Landowner should seek qualified natural resource professionals and qualified contractors.

*Indicator 8.1.2* Landowner should engage qualified contractors who carry appropriate insurance and comply with appropriate federal, state and local safety and fair labor rules, regulations and standard practices.

*Indicator 8.1.3* Landowners should retain appropriate contracts or records for forest product harvests and other management activities to demonstrate conformance to the Standards.

#### **Professionals Assisting with Forest Management Activities**

- Surveyor
- Forester
- Logger
- Sawmill
- Wildlife Biologist
- Fisheries Biologist
- EGLE Permit Staff
- Conservation Officer

Performance Measure 8.2 Landowner or designated representative shall monitor forest product harvests and other management activities to ensure they conform to their objectives.

*Indicator 8.2.1* Harvest, utilization, removal and other management activities shall be conducted in compliance with the landowner's objectives and to maintain the potential of the property to produce forest products and other benefits sustainably.

#### **Monitor Forest and Forest Management Activities**

- Forest Management Activities
- Forest Health Issues
- Trespass Problems
- Changes in Goals
- Changes in Forest Conditions
- Changes in Economic Conditions
- Changes in Family or Personal Matters

**General Description of Property and its Location in Landscape or Watershed**

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**Assessment for the Natural Resources Conservation Service**

Current Resource Concerns	Potential Conservation Practices

**Amend plan as needed to reflect natural disasters or other unexpected events**

Date	Event	Amendment to Plan

**Statement of Compliance for Commercial Forest and Qualified Forest Programs:**

*"I hereby acknowledge that I have reviewed this forest management plan and understand my responsibilities regarding conducting management practices and harvests as called for in the plan."*

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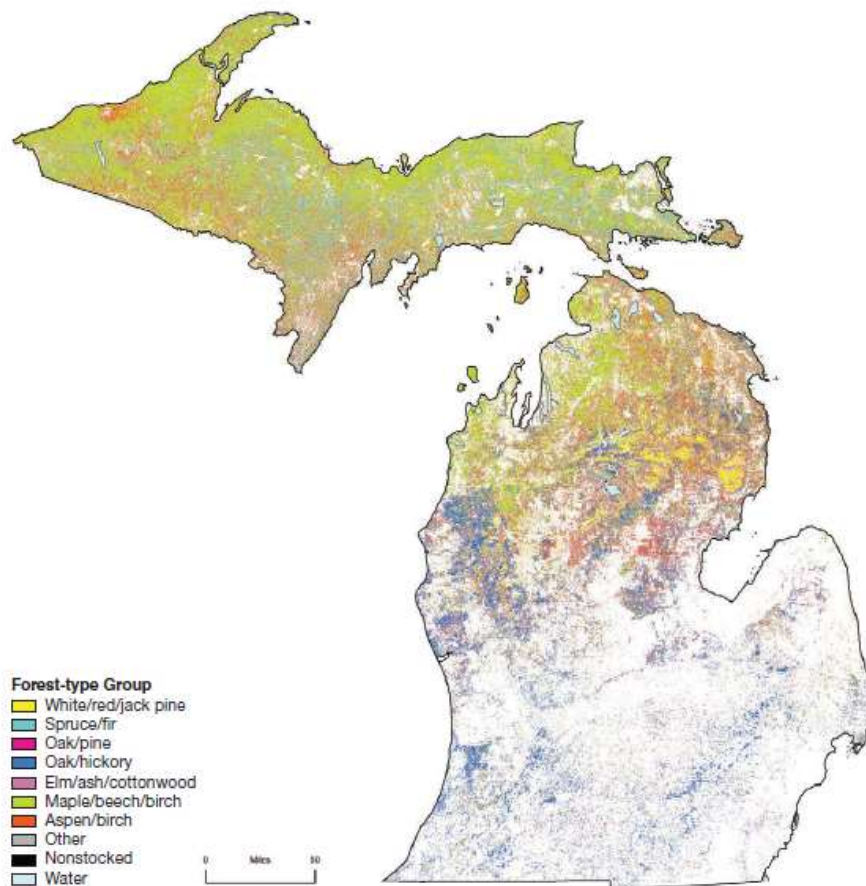
**Landowner Signature****Date**

## Appendix I – Introductory Materials

### *Forests of Michigan*

Michigan ranks 11<sup>th</sup> in the nation with 20.3 million acres of forest land, which is 56% of the land area of our two peninsulas. The Federal and State governments own and manage 7.2 million acres of forest land, primarily in northern Michigan. Municipal governments (county, township, schools, etc.) own 433,000 acres. Corporations own and manage 2.8 million acres of forest land. Private individuals and families own 9.1 million acres or 45% of the forests throughout the state. All together the 400,000 family forest owners in Michigan are the largest group of forest owners and forest land area in our state. The average family forest in Michigan is 23 acres. Forests between 10 acres and 20,000 acres are eligible to be certified in the American Tree Farm System.

**Figure 1. Distribution of forest types in Michigan**



Most of Michigan's forests are in the northern Lower Peninsula (37%) and the Upper Peninsula (45%) where there are large areas of contiguous forest land.

However, there are many small woodlots scattered throughout the southern Lower Peninsula which has 18% of the total forest area in Michigan.

Michigan's other land use includes 10 million acres of agriculture, 3 million acres of wetlands and 2 million acres of urban.

About 80% of Michigan's 10 million residents live in urban areas.

(Source: Michigan Forests 2014, USDA Forest Service.)

This template may be used by any forest landowner in Michigan, except for state or federal forests. The appendix materials are statewide in scope and therefore contains general rather than specific information about local forests in Michigan. Tree Farmers are encouraged to work with their forester to develop a custom forest management plan if this template is not adequate for the size of their forest or the complexity of their forest management activities.

## *American Tree Farm System*

The American Tree Farm System is a family of woodland stewards that provides community, recognition and legacy. The American Tree Farm System cares about people and helps Tree Farmers care for their forests. Tree Farmers protect the ecology of their land while earning income from their forest. Landowners join Tree Farm and post the “Big Green Sign” to show family and neighbors that they are outstanding landowners who takes great care of their forests.

This template is designed to help landowners enroll in the American Tree Farm System to certify their excellent forest management. An inspection from one of the 125 Tree Farm Inspecting Foresters is required to enroll. This template shows compliance with the 2021 to 2025 Standards of Sustainability for relatively small forests with low intensity management. Landowners are encouraged to hire a professional forester to develop a custom forest management plan for large or complex forests. See [TreeFarmSystem.org](https://www.treefarm.org) for information about the Tree Farm program, forest certification and the full text of the Standards of Sustainability.

The mailing address for the Michigan Tree Farm Committee is 110 West Michigan Ave, Suite 100, Lansing MI 48933. The website is [TreeFarmSystem.org/Michigan](https://www.treefarm.org/Michigan). Ray Gurley is the Administrator and can be reached at 517-853-8880 or [RGurley@MichiganForest.com](mailto:RGurley@MichiganForest.com).

**Figure 2. Michigan’s oldest family-owned Tree Farm**



The Dilley Tree Farm in Newaygo County is Michigan’s oldest family-owned Tree Farm. Ann (far left in red shirt) and Newton Dilley joined Tree Farm in 1954, just two years after they got married.

Four generations of Dilleys enjoy their forest and work hard to protect water quality and fish habitat in the White River, which passes through their forest ([ForestsForFish.org](https://www.forestsforsfish.org)).



## *National and State Forest Management Priorities*

The Michigan Department of Natural Resources (DNR) updated its “[Forest Action Plan](#)” in 2020. Michigan’s Forest Action Plan outlined eight goals and numerous strategies and objectives to address the three national priorities of conserving working forests, protecting forests from threats and enhancing public benefits from forests. All states are required by national “Farm Bill” laws to develop a Forest Action Plan to guide their use of federal funds for state and private forestry.

Most of the goals, strategies and activities identified in Michigan’s Forest Action Plan are applicable to private forest landowners, the primary audience for this template plan. This plan attempts to address some of these issues and individual landowners should identify specific strategies to address relevant issues on their own forest land. The full text of Michigan’s Forest Action Plan is available at [Michigan.gov/Forestry](https://www.michigan.gov/Forestry).

### **Goals in Michigan’s 2020 Forest Action Plan**

1. Enhance coordination among cooperative programs, stakeholders, and partners
2. Advocate for sound forestry policies
3. Increase economic productivity and benefits
4. Communicate the value and importance of forestry
5. Involve partners and the public in managing Michigan’s forests
6. Monitor the condition of the forest and impacts of our work
7. Improve understanding of forests through research
8. Implement actions to improve Michigan’s forests

### **National Priorities for State and Private Forests**

#### Conserve and Manage Working Forest Landscapes for Multiple Values and Uses

- Identify and conserve high-priority forest ecosystems and landscapes
- Actively and sustainably manage forests

#### Protect Forests from Threats

- Restore fire-adapted lands and/or reduce risk of wildfire impacts
- Identify, manage and reduce threats to forest and ecosystem health

#### Enhance Public Benefits from Trees and Forests

- Protect and enhance water quality and quantity
- Improve air quality and conserve energy
- Help communities plan for and reduce wildfire and forest health risks
- Maintain and enhance economic benefits and values of trees and forests
- Protect, conserve and enhance wildlife and fish habitat
- Connect people to trees and forests and engage them in environmental stewardship activities
- Manage trees and forests to mitigate and adapt to global climate change

## *Personal Forest Management Goals*

Individual landowners have a wide variety of goals for their property that reflect their personal preferences, the attributes of their forest and their desired future conditions for their land. Landowners are encouraged to work with a professional forester to identify their forest management goals and to implement their plans in ways consistent with their own land ethic.

### Common Forest Management Goals and Activities:

- Reduce expenses of forest ownership and management
  - Enroll in Qualified Forest or Commercial Forest programs to lower property taxes
  - Enroll in Environmental Quality Incentives Program for financial assistance
- Improve fish and wildlife habitat
  - Plant trees or shrubs to provide food and cover for desired wildlife species
  - Maintain or create the habitat required by preferred species
  - Place wood into streams or stabilize bank erosion for improved fish habitat
- Improve forest health
  - Prevent, treat and slow the spread of insects, diseases and invasive plants
  - Minimize the risk of wildfire by thinning heavy fuels and installing fire breaks
- Protect soil and water resources
  - Build high quality roads and landings for recreation and management
  - Follow Best Management Practices (BMPs) during forest management activities
  - Build stream crossings that protect water quality and fish habitat
  - Protect or restore wetlands
  - Maintain riparian forest buffers
- Maintain or improve biological diversity and natural communities
  - Protect threatened or endangered species and their habitats
  - Manage carbon stocks to mitigate climate change
  - Protect unique natural features and rare forest types
  - Protect archeological, cultural or historic features
- Enhance recreational use
  - Build trails to expand access to forest
  - Manage forest to improve hunting, fishing, camping, birdwatching, trails, etc.
  - Enjoy beauty, scenery and aesthetics
- Produce income from forest management
  - Conduct commercial timber harvests
  - Produce firewood or other non-timber forest products
  - Lease land for hunting or fishing
  - Plant trees for future generations to manage and enjoy
  - Sell forest carbon offsets or other ecosystem service credits
  - Hire a professional forester when conducting forest management activities
  - Hire qualified logging professionals when conducting timber harvests
- Pass land to children or other heirs
  - Establish a trust or LLC to pass land to heirs
  - Hire a surveyor to establish known property corners and boundaries
  - Include children and grandchildren in management decisions and activities
- Enroll in the American Tree Farm System to certify excellent forest management

## Appendix II - Forest Resources Assessment

### *Current Forest Conditions*

This template and appendix materials provides a statewide overview of the major forest resource elements that should be reviewed at the ownership level when landowners certify their forest stewardship through the American Tree Farm System. Individual landowners should work with a Tree Farm Inspecting Forester to describe these elements in the template or hire a professional forester to develop a custom forest management plan for their property.

### *Forest Health*

Standard Five says that landowners should make a practical effort to promote forest health. The Department of Natural Resources publishes annual “[Forest Health Highlights](#)” with information about forest insect and disease problems in Michigan. See [Michigan.gov/ForestHealth](#) for recent editions. To report an unusual insect or disease in your forest, please email several photos, a description of the problem and the precise location to [DNR-FRD-Forest-Health@Michigan.gov](mailto:DNR-FRD-Forest-Health@Michigan.gov). The Michigan Department of Agriculture and Rural Development (MDARD) is responsible for legally quarantined pests like Asian Longhorn Beetle and Hemlock Woolly Adelgid. MDARD provides information about exotic forest pests at [Michigan.gov/ExoticPests](#).

USDA Forest Service - Forest Health - <http://fhm.fs.fed.us/>

**Table 1. Common insects and diseases in Michigan’s forests or in nearby states**

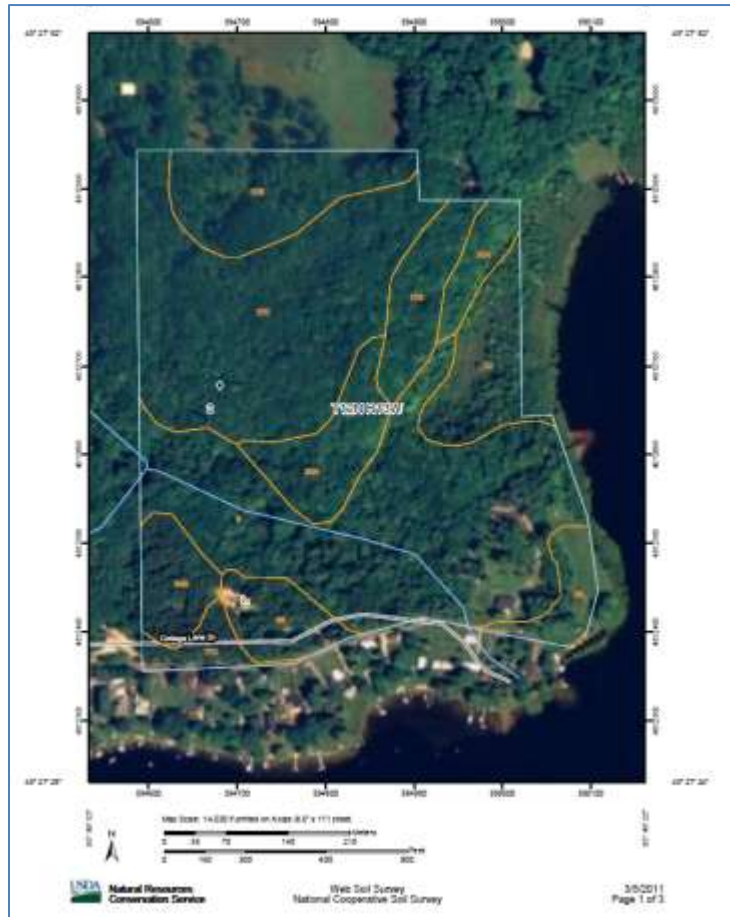
<b>Currently Impacting Michigan’s Forests</b>	<b>Not Yet Present in Michigan</b>
<a href="#">Emerald Ash Borer</a>	<a href="#">Asian Longhorn Beetle</a>
<a href="#">Spruce Budworm</a>	<a href="#">Spotted Lanternfly</a>
<a href="#">Hemlock Woolly Adelgid</a>	<a href="#">Balsam Woolly Adelgid</a>
<a href="#">Redheaded Pine Sawfly</a>	<a href="#">Thousand Cankers Disease</a>
<a href="#">Gypsy Moth</a>	
<a href="#">Beech Bark Disease</a>	
<a href="#">Oak Wilt Disease</a>	

Integrated Pest Management (IPM) is a set of guidelines to protect the environment from excessive use of pesticides. IPM requires correctly identifying pests, setting an economic or action threshold and then implementing the best method to control the pest. IPM actions may include cultural, mechanical, biological, and chemical controls. Chemical pesticides are a useful tool, but should not be the first or only choice to control pests, especially in forests. Managing the forest to keep it growing vigorously is the preferred method to promote resilience to disturbance and reduce impacts from common insects and diseases. Silvicultural treatments are often preferred over chemical treatments to address common forest health problems in Michigan.

## Soil

Soil determines the vegetation, economic productivity, potential for wind throw, susceptibility to erosion and suitability for heavy equipment for active forest management on any property.

**Figure 3. Example Soil Survey from Web Soil Survey**



Soil information, plant productivity and common trees for any parcel can be found on the Web Soil Survey at [websoilsurvey.sc.egov.usda.gov](http://websoilsurvey.sc.egov.usda.gov).

Landowners or foresters can use the Web Soil Survey to identify the soil types on any parcel. The Web Soil Survey provides additional reports including useful information about topography, water features, drainage, vegetation and equipment limitations.

Landowners, foresters and loggers should take caution to protect soil from rutting or erosion into any nearby surface water when conducting forest management activities. Forest management activities should apply relevant [Michigan Forestry Best Management Practices for Soil and Water Quality](http://Michigan.gov/Forestry) as required by Standard Four ([Michigan.gov/Forestry](http://Michigan.gov/Forestry)).

## Water

Michigan has more surface area of water than we do forests. Our state has 20.3 million acres of forest and 25.6 million acres of water. Michigan has jurisdiction of 45% of the Great Lakes surface area which is 24.7 million acres or 96% of our surface water. The shoreline of the four Great Lakes surrounding Michigan is 3,049 miles long. Michigan has 10,759 inland lakes (5+ acres) which total 0.9 million surface acres of water. Michigan has 76,439 miles of rivers and streams.

Standard Four requires landowners, foresters and loggers to protect our water resources by using the [Michigan Forestry Best Management Practices for Soil and Water Quality](http://Michigan.gov/Forestry) (BMPs) available on the DNR website at [Michigan.gov/Forestry](http://Michigan.gov/Forestry).

**Figure 4. Best Management Practices loggers use to protect Michigan’s lakes and rivers**



Source: [ForestsForFish.org](http://ForestsForFish.org)

## *Wood and Fiber Production*

Michigan’s forests provide an abundance of goods and services for humans and animals to use and enjoy. Some of the most common forest products are wood for lumber and fiber for paper, particle board and oriented strand board. Forest management is used to optimize the production of wood and fiber while producing many other ecosystem services like clean water and habitat.

The following descriptions of common forest types in Michigan are adapted from the “Forest Management Guidelines for Michigan” ([Michigan Society of American Foresters](http://MichiganSocietyofAmericanForesters.org), 2010). Additional information about forest types in Michigan is available from the Michigan Natural Features Inventory at [mnfi.anr.msu.edu/communities](http://mnfi.anr.msu.edu/communities). An excellent book about the forest types of Michigan is “Michigan Forest Communities: A Field Guide and Reference” by MSU Professor Don Dickmann (MSU Extension). The extent of these forest types is based on USFS Forest Inventory and Analysis data published in “Michigan Forests 2014” (USFS FIA) even though their forest cover terminology is slightly different than the [MichiganSAF.org](http://MichiganSAF.org) publication.

**UPLAND FOREST TYPES.** Upland forests occur on well drained soils and are diverse with local differences in climate, soil and management history.

**Northern Hardwoods.** Sugar maple and beech dominate this forest, although beech is not in the western Upper Peninsula. Associates include yellow birch, red oak, basswood, red maple, white ash, black cherry, paper birch, bigtooth aspen, quaking aspen, eastern hemlock, white pine, white spruce and northern white cedar. This is the most widely distributed forest type in Michigan with almost 4 million acres.

**Aspen.** Quaking aspen, bigtooth aspen, balsam poplar and paper birch are benchmark species of this type. Michigan has about 2.5 million acres of aspen forests. Aspen is an early successional species and acres of aspen forests in Michigan peaked in the 1930s. Most of the aspen forests are in the northern Lower Peninsula and Upper Peninsula. Aspen is an important source of timber and provides excellent wildlife habitat for grouse, woodcock and deer.

**Southern Maple Beech.** Sugar maple dominates the mesic habitats and beech is better adapted to sandy soils in this common forest type. Associated species include red oak, white oak, bur oak, chinquapin oak, white ash, tulip poplar, basswood, black cherry, red maple, bitternut hickory, black walnut, sassafras, white pine and hemlock. Maple-beech forests are the most common type in southern Michigan covering over a million acres.

**Pine.** This type gets its name from the three native Michigan pines: red pine, white pine and jack pine. Red pine and jack pine dominate on dry, sandy soils. White pine occurs on mesic, sandy loams. Associates include white oak, black oak, northern pin oak, red oak, red maple, black cherry, bigtooth aspen, quaking aspen, paper birch, hemlock, balsam fir and white spruce. There are 2.5 million acres of pine forests in Michigan.

**Northern Oak.** White oak, black oak and northern pin oak are the signature trees. Associated species include white pine, red oak, red pine, jack pine, black cherry, red maple, bigtooth aspen, quaking aspen, hemlock and balsam fir. Most of the 1.2 million acres occurs in the northern Lower Peninsula.

**Southern Mixed Hardwoods.** This is an oak-dominated forest type with black oak, white oak and red oak the signature species. Associated trees include shagbark hickory, pignut hickory, sassafras, black cherry, red maple, bur oak, scarlet oak, northern pin oak, white ash, basswood, black walnut, bigtooth aspen, red cedar and white pine. Dry-mesic oak forests are common in southern Michigan, covering about 700,000 acres.

**Spruce-Fir.** White spruce and balsam fir dominate this forest type. Associates include northern white cedar, paper birch, yellow birch, quaking aspen, red maple, white pine and hemlock. This type is extensive in the Upper Peninsula with almost a million acres.

**Hemlock.** This forest typically occurs on the dunes of Lakes Michigan and Superior and on the north-facing slopes of ridges and ravines. Associates include beech, red maple, paper birch, yellow birch, red oak, white pine, white spruce, and balsam fir. This forest type is about 160,000 acres and located primarily in the western Upper Peninsula.



**WETLAND FOREST TYPES.** Glacial landforms, abundant rainfall and poorly drained soils have produced many types of forests growing on wetlands in Michigan. Wetlands are protected by the federal Clean Water Act (1972) and Michigan's Natural Resources and Environmental Protection Act (PA 451 of 1994).

**Southern Deciduous Wetlands and Floodplain.** These forests occur in the floodplains of rivers and streams, poorly drained former lakebeds and wet depressions. Signature tree species are silver maple, red maple, green ash, black ash, American elm, cottonwood and black willow. Also common are quaking aspen, peachleaf willow, crack willow, boxelder, swamp white oak, bur oak, pin oak, slippery elm, sycamore and yellow birch. The elms have declined due to Dutch elm disease and ashes now are being decimated by the emerald ash borer. This forest type occupies about 1.6 million acres in southern Michigan.

**Northern White Cedar.** These forests are found along streams, wet depressions, inland lakes and swales along the Great Lakes. Northern white cedar dominates this cover. Associated trees include tamarack, white pine, white spruce, black spruce, balsam fir, hemlock, red maple, black ash, paper birch, yellow birch, American elm, quaking aspen and balsam poplar. Michigan has 1.3 million acres of northern white cedar and it is common in the eastern Upper Peninsula.

**Northern Hardwood Wetlands.** These poorly drained forests are found on northern floodplains, glacial lake plains and morainal stream headwaters. The signature hardwoods are black ash, green ash, yellow birch, American elm, red maple and balsam poplar. Scattered conifers—balsam fir, tamarack, northern white cedar, white pine, and hemlock—may also be present. It is found throughout the northern Lower Peninsula (about 500 thousand acres) and the Upper Peninsula (about 350 thousand acres).

**Conifer Bogs and Muskegs.** This type occupies former lakes and ponds that have filled in with undecomposed plant residues over the course of thousands of years. Conifers dominate this type with black spruce forming pure stands. Associates include tamarack, balsam fir, jack pine, white pine and northern white cedar. These wetlands are found mostly in the Upper Peninsula, although they do occur in the Lower Peninsula, and occupy about 465,000 acres state-wide.

## **OTHER FOREST TYPES.**

**Plantations.** Trees are planted for forestry, wildlife and ecological purposes. Significant wildland planting began in the 1920s and reached peaks during the Civilian Conservation Corps era in the 1930s. Most of Michigan's plantations consist of red pine for lumber or jack pine for Kirtland's warbler habitat. Other trees occasionally found in plantations include white pine, Austrian pine, Scotch pine, white spruce, Norway spruce and European larch. Sometimes Christmas tree farms are not harvested and become low-quality plantations. Hardwoods like black walnut, red oak and hybrid poplar have been planted in very limited acreage. Hardwoods are usually grown for nut or biomass rather than timber because of the very long rotation.

**Open Canopy Forest Types.** Savannas or barrens are small areas of open forests consisting of scattered or clumped trees. They represent a transition between closed forests and prairies and are maintained by frequent disturbances, usually fire or grazing. Although they occupied more than 2

million acres in the state in the 1800s, savannas are the rarest forest types in Michigan today because most of these forests have been converted to agriculture or urban land uses. Savanna-barren communities are important habitats for wildlife and rare savanna-prairie plants.

**Southern lake plain openings** are very rare, occurring in lowland habitats near the shores of Lakes Erie and St. Clair and Saginaw Bay. **Southern oak barrens** are found in dry, sandy xeric habitats in the southern part of the state. **Northern pine and oak barrens** occur in dry, sandy xeric habitats in the northern part of the state. **Great Lakes barrens** are found in wide, sandy depressions between coastal sand dunes. **Alvar savannas** are rare communities growing on flat limestone or dolomitic bedrock close to the shores of the northern Great Lakes. **Pine stump plains** are found in northern Michigan where areas once densely forested did not return to trees following historical logging and extreme wildfires.

### *Threatened and Endangered Species*

Standard Five requires landowners to protect threatened or endangered species and the habitat they occupy. Landowners or foresters should ask their local DNR Service Forester to check the Michigan Natural Features Inventory database to identify any possible threatened or endangered species that may occupy the property. Forest management plans should report the presence, or absence, of any known or potential threatened or endangered species on the property.

State Listed Species. Michigan's Natural Resources and Environmental Protection Act (PA 451 of 1994) provides protection to state listed animals and plants. The DNR maintains a list of the State listed threatened or endangered species at [Michigan.gov/Wildlife](http://Michigan.gov/Wildlife). There are many more species on the State of Michigan list (hundreds) than the federal list of threatened or endangered species.

- State T&E animals - [mnfi.anr.msu.edu/data/specialanimals.cfm](http://mnfi.anr.msu.edu/data/specialanimals.cfm)
- State T&E plants - [mnfi.anr.msu.edu/data/specialplants.cfm](http://mnfi.anr.msu.edu/data/specialplants.cfm).

Federally Listed Species. The 1973 Endangered Species Act requires landowners to protect the habitat occupied by threatened or endangered (T&E) animals and not “take” or harm those protected animals. If landowners know about the presence of a threatened or endangered species on their property, it is their duty to review the requirements for protecting the habitat for that species and to take appropriate actions in the management of their forest to avoid killing these protected animals. The U.S. Fish and Wildlife Service lists 26 federally threatened or endangered species for Michigan at [fws.gov/midwest/endangered/lists/michigan-spp.html](http://fws.gov/midwest/endangered/lists/michigan-spp.html).



**Table 2. Federally listed threatened or endangered species in Michigan**

<b>Species</b>	<b>Status</b>	<b>Distribution</b>	<b>Habitat</b>
<a href="#"><u>Canada lynx</u></a>	Threatened	Upper Peninsula	Northern forests
<a href="#"><u>Gray wolf</u></a>	Delisted 2020	Upper Peninsula	Northern forests
<a href="#"><u>Indiana bat</u></a>	Endangered	Southern Lower Peninsula	Riparian woods, upland forests, caves, and mines
<a href="#"><u>Northern long-eared bat</u></a>	Threatened	Statewide	Upland forests, caves, and mines
<a href="#"><u>Kirtland's warbler</u></a>	Delisted 2019	Northern Lower Peninsula and eastern Upper Peninsula	Jack pine forests
<a href="#"><u>Karner blue butterfly</u></a>	Endangered	Southern Lower Peninsula	Pine barrens & oak savannas with lupines
<a href="#"><u>Small whorled pogonia</u></a>	Threatened	Berrien	Dry woodlands
<a href="#"><u>American hart's tongue fern</u></a>	Threatened	Chippewa, Mackinac	Limestone sinkholes in mature hardwood forest
<a href="#"><u>Copperbelly water snake</u></a>	Threatened	Branch, Calhoun, Cass, Eaton, Hillsdale, St. Joseph	Wooded and permanently wet areas
<a href="#"><u>Eastern massasauga</u></a>	Threatened	Lower Peninsula	Shallow wetlands and adjacent upland
<a href="#"><u>Hine's emerald dragonfly</u></a>	Endangered	Alcona, Alpena, Mackinac, Menominee, Presque Isle	Wetlands
<a href="#"><u>Mitchell's satyr</u></a>	Endangered	Southern Lower Peninsula	Wetlands and fens
<a href="#"><u>Poweshiek skipperling</u></a>	Endangered	Southern Lower Peninsula	Wet prairie and fens
<a href="#"><u>Eastern prairie fringed orchid</u></a>	Threatened	Southern Lower Peninsula	Wet prairies and meadows
<a href="#"><u>Lakeside Daisy</u></a>	Threatened	Mackinac	Dry, rocky prairies
<a href="#"><u>Pitcher's thistle</u></a>	Threatened	Northern Lower Peninsula and eastern Upper Peninsula	Dunes along Great Lakes shorelines
<a href="#"><u>Piping plover</u></a>	Endangered	Northern Lower Peninsula and eastern Upper Peninsula	Sandy, gravel or cobble Great Lakes shorelines
<a href="#"><u>Dwarf lake iris</u></a>	Threatened	Northern Lower Peninsula and eastern Upper Peninsula	Beach ridges along Great Lakes shorelines
<a href="#"><u>Rufa red knot</u></a>	Threatened	Statewide	Coast and wetlands along Great Lakes
<a href="#"><u>Houghton's goldenrod</u></a>	Threatened	Northern Lower Peninsula and eastern Upper Peninsula	Interdunal wetlands along Great Lakes shorelines
<a href="#"><u>Michigan Monkey-flower</u></a>	Endangered	Benzie, Charlevoix, Emmet, Cheboygan, Leelanau, Mackinac	Mucky, wet areas along Great Lakes shorelines
<a href="#"><u>Hungerford's crawling water beetle</u></a>	Endangered	Emmet, Montmorency, Oscoda, Presque Isle	Five streams in northern Michigan and Ontario
<a href="#"><u>Clubshell</u></a>	Endangered	Hillsdale	Streams and rivers
<a href="#"><u>Northern riffleshell</u></a>	Endangered	Monroe, Sanilac, Wayne	Streams, rivers & L. Erie
<a href="#"><u>Rayed bean</u></a>	Endangered	Oakland, St. Clair	Belle, Black, Clinton and Pine Rivers
<a href="#"><u>Snuffbox</u></a>	Endangered	Southern Lower Peninsula	Creeks and rivers

## *Special Sites*

Standard Seven defines special sites as “unique historical, archeological, cultural, geological, biological or ecological” places. Landowners can also self-designate their own special sites. Special sites must be noted on the map in the forest management plan. The absence of special sites should be noted in the plan. Special sites are most often archeological or cultural sites identified by the State Historic Preservation Office (SHPO - [Michigan.gov/SHPO](http://Michigan.gov/SHPO)) or unique natural communities identified by the Michigan Natural Features Inventory (MNFI).

Archeological and Cultural Sites. Landowners and foresters should consult SHPO to determine if archeological or cultural sites may be present on the property and report this result in their forest management plan. DNR Service Foresters provide a free database review for landowners and foresters. If a site is known to be on the parcel, landowners can contact Stacy Tchorzynski, the State Archeologist, at 517-335-9914, or [TchorzynskiS@michigan.gov](mailto:TchorzynskiS@michigan.gov), for more information.

Unique Natural Communities. Landowners and foresters should consult MNFI to identify any possible unique natural communities and report their presence or absence in the forest management plan. MNFI lists and ranks unique natural communities that occur throughout Michigan. Most of these communities would be rather small (just a few acres or so) and may be contained within a single landowner’s property. Communities with a state ranking of S1 or S2 should be considered special sites, even communities without trees that occur within the certified forestland (see Table 3). MNFI provides a definition, rank, expected location and examples of each natural community at [mnfi.anr.msu.edu/communities/list](http://mnfi.anr.msu.edu/communities/list).

**Table 3. Michigan’s S1 and S2 Natural Communities**

### **Natural Communities Ranked S1**

<a href="#">Alvar</a>	<a href="#">Lakeplain Oak Openings</a>	<a href="#">Northern Bald</a>
<a href="#">Cave</a>	<a href="#">Lakeplain Wet Prairie</a>	<a href="#">Oak Barrens</a>
<a href="#">Dry-mesic Prairie</a>	<a href="#">Lakeplain Wet-mesic Prairie</a>	<a href="#">Oak Openings</a>
<a href="#">Granite Lakeshore Cliff</a>	<a href="#">Limestone Lakeshore Cliff</a>	<a href="#">Volcanic Lakeshore Cliff</a>
<a href="#">Hillside Prairie</a>	<a href="#">Mesic Prairie</a>	<a href="#">Wet Prairie</a>
<a href="#">Inland Salt Marsh</a>	<a href="#">Mesic Sand Prairie</a>	<a href="#">Wet-mesic Prairie</a>

### **Natural Communities Ranked S2**

<a href="#">Clay Bluff</a>	<a href="#">Limestone Bedrock Glade</a>	<a href="#">Sandstone Lakeshore Cliff</a>
<a href="#">Coastal Fen</a>	<a href="#">Limestone Bedrock Lakeshore</a>	<a href="#">Sinkhole</a>
<a href="#">Coastal Plain Marsh</a>	<a href="#">Limestone Cliff</a>	<a href="#">Volcanic Bedrock Glade</a>
<a href="#">Dry Sand Prairie</a>	<a href="#">Oak-Pine Barrens</a>	<a href="#">Volcanic Bedrock Lakeshore</a>
<a href="#">Granite Bedrock Glade</a>	<a href="#">Patterned Fen</a>	<a href="#">Volcanic Cliff</a>
<a href="#">Granite Bedrock Lakeshore</a>	<a href="#">Pine Barrens</a>	<a href="#">Wet-mesic Flatwoods</a>
<a href="#">Granite Cliff</a>	<a href="#">Sandstone Bedrock Lakeshore</a>	<a href="#">Wet-mesic Sand Prairie</a>
<a href="#">Great Lakes Barrens</a>	<a href="#">Sandstone Cliff</a>	
<a href="#">Interdunal Wetland</a>	<a href="#">Sandstone Cobble Shore</a>	

## *Invasive Species*

Standard Five says that landowners should make a practical effort to promote forest health, including minimizing invasive species. Invasive species are non-native species that cause harm to humans or the environment. Invasive species can change water, light and nutrient availability in forests. Invasive plants can form monocultures that adversely affect regeneration and alter the species composition of the forest. Tree Farmers are encouraged to report invasive species to the DNR, Midwest Invasive Species Information Network or Eyes on the Forest.

Information on how to identify and treat invasive plants is available at:

- Midwest Invasive Species Information Network - [www.misin.msu.edu](http://www.misin.msu.edu)
- Midwest Invasive Plant Network - [www.mipn.org](http://www.mipn.org)
- DNR Invasive Species Info - [Michigan.gov/InvasiveSpecies](http://Michigan.gov/InvasiveSpecies)
- Cooperative Invasive Species Management Areas - [MichiganInvasives.org/ManagementAreas](http://MichiganInvasives.org/ManagementAreas)

**Table 4. Common Invasive Species in Michigan**

<b>Species</b>	<b>Ease of Treatment</b>	<b>Common Treatments for Early or Established Populations</b>
<a href="#">Multiflora Rose</a>	Extremely difficult once established. Cutting or mowing stimulates sprouting	Early: Hand-pulling, digging, cutting, mowing, herbicide Established: Herbicide and cutting
<a href="#">Honeysuckle</a>	Moderately difficult once established. Cutting or mowing stimulates sprouting	Early: Hand-pulling, digging, cutting, mowing, herbicide Established: Herbicide and cutting
<a href="#">Autumn Olive</a>	Difficult once established. Cutting or mowing stimulates sprouting	Early: Hand-pulling, digging, cutting, mowing, grazing Established: Herbicide
<a href="#">Garlic Mustard</a>	Extremely difficult once established. Seed bank long lasting	Early: Hand-pulling, tamp soil Established: Hand-pulling, herbicide
<a href="#">Oriental Bittersweet</a>	Difficult once established. Cutting or mowing stimulates sprouting	Early: Hand-pulling, digging, cutting, mowing, herbicide Established: Herbicide and cutting
<a href="#">Glossy and Common Buckthorn</a>	Difficult once established. Cutting or mowing stimulates sprouting	Early: Hand-pulling, cutting, mowing Established: Herbicide, girdling, cutting
<a href="#">Japanese Barberry</a>	Difficult once established. Cutting or mowing stimulates sprouting	Early: Hand-pulling, digging, cutting, mowing, herbicide Established: Herbicide and cutting
<a href="#">Tree of Heaven</a>	Difficult once established. Cutting or mowing stimulates sprouting	Early: Digging, hand-pulling, herbicide Established: Cutting, girdle w/ herbicide
<a href="#">Japanese Knotweed</a>	Extremely difficult to kill, even with herbicides. Extensive root	Early: Hand-pulling Established: manage with herbicides Don't Mow

	systems that can re-sprout for three years	
<a href="#">Phragmites</a>	Extremely difficult once established. Cutting, digging or burning stimulates population	All stages: Foliar herbicide in late summer or fall
<a href="#">Asian Carp</a>	Extremely difficult if established	Monitor waterways and lakes, and report anything to DNR
<a href="#">Zebra Mussel</a>	Difficult if established	Monitor waterways and lakes. Make sure boats are scraped before moving
<a href="#">Feral Swine</a>	Private land: Shoot onsite and let DNR know of location. Public land: Need a hunting license and shoot on site.	Early: Shoot onsite or trap Established: Trap, shoot and manage as much as possible

### *Forests of Recognized Importance*

Standard Five asks Tree Farmers to maintain the integrity of Forests of Recognized Importance. Forests of Recognized Importance (FORI) are defined as “globally, regionally and nationally significant large landscape areas of exceptional ecological, social, cultural or biological values.” FORI occur at the landscape level, not the individual management unit or parcel level. In Michigan, Forests of Recognized Importance on private forest land are primarily important wildlife habitat, corridors of legally protected rivers and Great Lakes coastlines. Forest management plans, including this template plan, must note if the property is located within a FORI or is not located within a FORI.

#### Important Wildlife Habitat

- Statewide: forest types that provide habitat required by state and federally listed species
  - Example: oak savanna or pine barrens for Karner blue butterfly
- Upper Peninsula: [deer winter complexes](#)
  - More info at [Michigan.gov/Deer](http://Michigan.gov/Deer)
- Southern Lower Peninsula (south of Clare County): contiguous forests >500 acres
  - >500 acres of contiguous forest with intact canopy cover for species that require core interior habitat; could span multiple ownerships

#### Great Lakes Coastlines

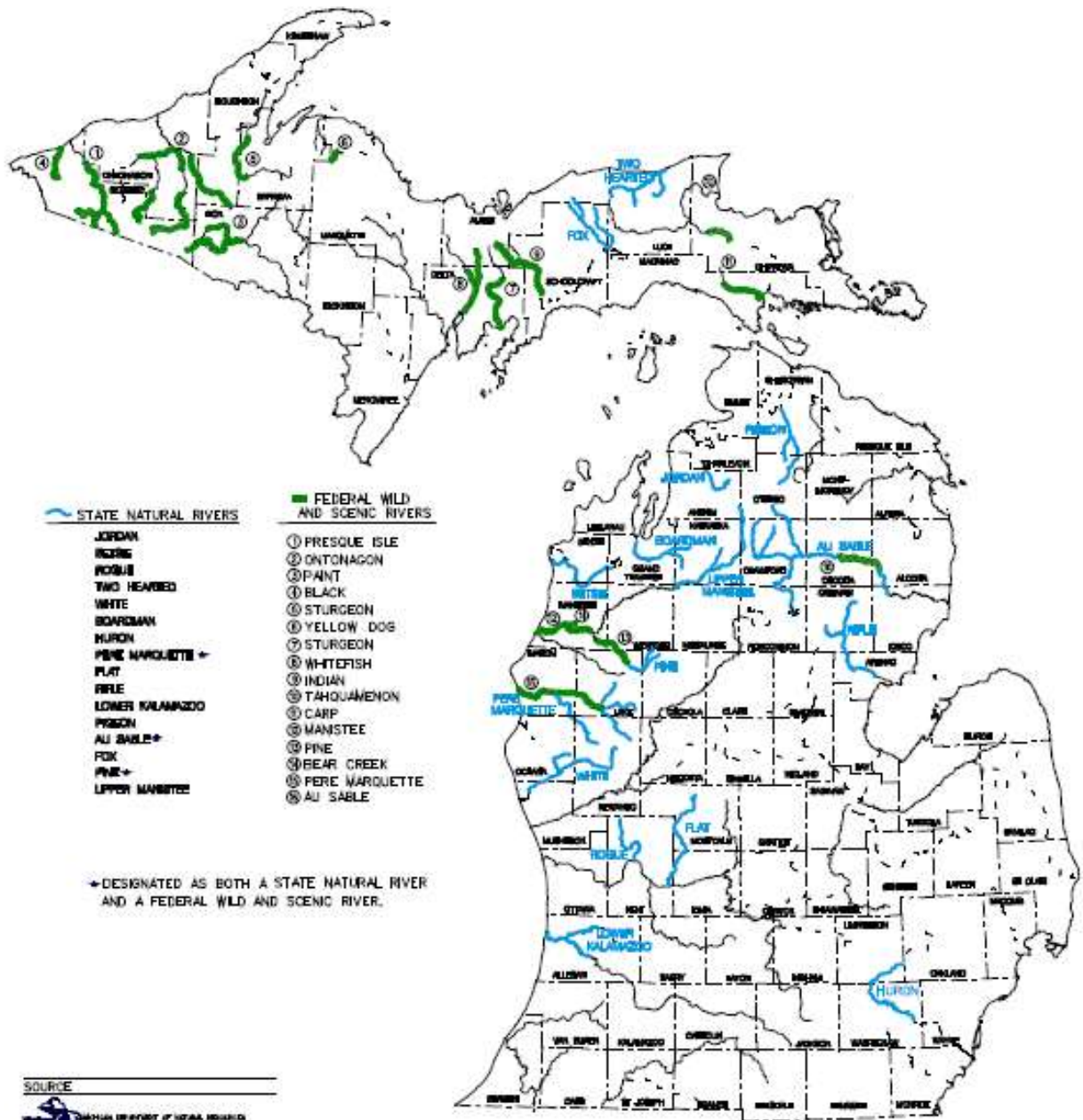
- Statewide: forests of any type within ~0.5 mile of Great Lakes shorelines
  - See [mnfi.anr.msu.edu/communities/community.cfm?id=10679](http://mnfi.anr.msu.edu/communities/community.cfm?id=10679)

#### Riparian Zones Along Legally Designated Unique Rivers

- State designated “[Natural Rivers](#)”
  - Jordan, Betsie, Rogue, Two Hearted, White, Boardman, Huron, Pere Marquette, Flat, Rifle, Lower Kalamazoo, Pigeon, Au Sable, Fox, Pine, and Upper Manistee

- Federally designated “[Wild and Scenic Rivers](#)”
  - Au Sable, Bear Creek, Black, Carp, Indian, Manistee, Ontonagon, Paint, Pere Marquette, Pine, Presque Isle, Sturgeon (Hiawatha), Sturgeon (Ottawa), Tahquamenon, Whitefish, Yellow Dog
- Consult local zoning ordinances for special riparian management zone restrictions

**Figure 5. State Natural Rivers (blue) and Federal Wild and Scenic Rivers (green)**





## Fire

If landowners use prescribed fire, Standard Four requires them to use it in conformance to their objectives, pre-fire planning and all relevant laws. Prescribed fire is a management tool used to reduce hazardous fuels or unwanted understory plants. Prescribed fire should only be conducted by trained and properly insured professionals. All prescribed fires require a burn permit available at [Michigan.gov/BurnPermit](http://Michigan.gov/BurnPermit). More information about prescribed fire is available on the Michigan Prescribed Fire Council website at [FireCouncil.org](http://FireCouncil.org).

Michigan has about 10,000 wildfires every year. Most of these fires are caused by humans and are usually just a few acres. Wildfires in Michigan commonly occur on private land where a homeowner is burning debris in dry weather. The high-risk time for wildfire in Michigan is early spring after snowmelt and before “greenup.” Large wildfires are a significant risk in some forest types like jack pine forests that are predisposed to fire. Information about minimizing the risk of wildfire in Michigan can be found at [Michigan.gov/FireManagement](http://Michigan.gov/FireManagement) and [www.canr.msu.edu/planning/zoning\\_ordinance\\_resources/firewise](http://www.canr.msu.edu/planning/zoning_ordinance_resources/firewise).

## Wetlands

Standard Four requires landowners to minimize road construction or other disturbances in riparian zones and wetlands. The Web Soil Survey ([websoilsurvey.sc.egov.usda.gov](http://websoilsurvey.sc.egov.usda.gov)) and the Department of Environment, Great Lakes and Energy (EGLE) Wetlands Map Viewer can be used to identify state and federal defined wetlands ([mcgi.state.mi.us/wetlands](http://mcgi.state.mi.us/wetlands)). A permit is not required for typical forest management activities in a wetland. A permit from EGLE is required for filling, dredging, draining, or development. Temporary forest management activities should not be used to justify draining or filling wetlands for permanent roads or recreational purposes. An EGLE permit (online at [Michigan.gov/MiWaters](http://Michigan.gov/MiWaters)) is required for a stream crossing (culvert or bridge) and usually costs \$50 or \$100. Information about wetlands is at [Michigan.gov/Wetlands](http://Michigan.gov/Wetlands). Management activities in forested wetlands should follow [Michigan Forestry Best Management Practices for Soil and Water Quality](http://Michigan.gov/Forestry) available at [Michigan.gov/Forestry](http://Michigan.gov/Forestry).

**Figure 6. EGLE Wetlands Map Viewer at [www.mcgi.state.mi.us/wetlands](http://www.mcgi.state.mi.us/wetlands)**



## *Desired Species*

Standard Five encourages landowners to address desired species and forest communities when conducting forest management activities. Michigan's forests provide habitat for a wide variety of wildlife. Birds, animals and insects prefer specific forest types and age classes. Landowners should recognize tradeoffs in habitat where managing a forest for a desired species may be detrimental to other wildlife species.

**Edge:** Edge is where two habitats meet and can be more favorable to wildlife than just one type alone. The more edge available, the greater the diversity potential with food, shelter and water more easily accessed.

**Dead Wood:** Snags are dead, standing trees that provide habitat for woodpeckers, raccoons, squirrels and many other birds and animals. Decaying logs, stumps and tree tops also provide a multitude of benefits for wildlife and forest ecology. The downed material offers habitat for many different mammals, reptiles, birds, insects and amphibians. Dead wood decays and returns nutrients back into the forest soil. Many people think that dead wood is ugly, but "messy" forests with lots of snags and down, dead wood are more healthy ecosystems than clean forests that look like golf courses or city parks.

**Mast:** Mast is edible seeds produced by trees and shrubs. Trees that produce mast are a valuable food source for many species of wildlife. Hard mast includes acorns from oaks and nuts from hickories, walnut and beech. Soft mast includes fruit from cherries, dogwood, elderberry, hawthorn and viburnum. Mast can be an important food source throughout the year. More information about mast producing trees is at [MI mast.org](http://MI mast.org).

**Vernal Ponds:** Vernal ponds are depressions of poorly drained soil that hold water for part of the year, mainly in the spring. Vernal ponds and other wetlands in the woods provide micro-habitats for certain plants and animals that require more moisture than the surrounding forest. The Michigan BMP manual requires landowners to protect vernal ponds when conducting forest management activities.

**Deer.** White-tailed deer utilize a wide variety of forests and other land uses (agriculture, urban, wetlands). Many deer in the Upper Peninsula must migrate to [Deer Wintering Complexes](#) with dense conifers to survive harsh winters with deep snow and extreme cold. The National Deer Association provides information about managing deer habitat at [DeerAssociation.com](http://DeerAssociation.com).

**Ruffed Grouse.** Ruffed grouse prefers young, thick forests that offer protection from predators and food sources close to the ground. Young aspen forests are ideal for ruffed grouse, but they also like young northern hardwood and oak forests. The Ruffed Grouse Society provides information about habitat management at [RuffedGrouseSociety.org](http://RuffedGrouseSociety.org).

**Songbirds.** Dozens of migratory and resident songbirds spend their lives in Michigan's forests. Some species prefer core interior forests of 500 or more contiguous acres. Other species prefer forest edges or young forests. Landowners can work with foresters and loggers to manage habitat for their preferred species of songbirds. A very interesting project in Vermont called "Foresters for the Birds" has many good materials at [vt.audubon.org/foresters-birds](http://vt.audubon.org/foresters-birds). The American Bird Conservancy has funding from the US Forest Service to adapt Foresters for the Birds to Michigan.

**Fish.** Michigan’s rivers, streams, inland lakes and Great Lakes provide great fish habitat for a wide variety of fish and other aquatic organisms. Aquatic ecosystems benefit from surrounding forests that provide cold, clean water and beneficial inputs into the water. Riparian forests stabilize stream banks to minimize erosion of sediment into water and shade streams to keep the temperatures cool. Forests provide protective structure and spawning areas for fish when trees and branches fall into the water. Leaves and twigs from trees are part of the aquatic food web when insects eat the leaves and fish then eat those insects. Michigan BMPs seek to protect soil and water quality so that forests can provide abundant clean water and quality fish habitat. More info is at [ForestsForFish.org](http://ForestsForFish.org).

**Other Wildlife.** There are many other birds, animals and insects (pollinators) that landowners love to observe and sometimes hunt in their woods. The DNR Wildlife Division published “Managing Michigan’s Wildlife: A Landowners Guide” which contains information about many more species and forest types. It is available on the DNR website at [www.michigandnr.com/publications/pdfs/huntingwildlifehabitat/landowners\\_guide/Introduction/TOC.htm](http://www.michigandnr.com/publications/pdfs/huntingwildlifehabitat/landowners_guide/Introduction/TOC.htm)

### **Additional Wildlife Resources**

- DNR Wildlife Division – [Michigan.gov/Wildlife](http://Michigan.gov/Wildlife)
- Michigan United Conservation Clubs - [MUCC.org](http://MUCC.org)
- UP Sportsmen’s Alliance - [SportsmensAlliance.org](http://SportsmensAlliance.org)
- Audubon Society - [MichiganAudubon.org](http://MichiganAudubon.org)
- National Wild Turkey Federation - [NWTF.org](http://NWTF.org)
- Michigan Trout Unlimited – [MichiganTU.org](http://MichiganTU.org)
- US Fish and Wildlife Service - [FWS.gov/Partners](http://FWS.gov/Partners)

### *Recreation*

Standard One encourages landowners to evaluate the recreational use of the woods in their forest management plan. Forests provide a variety of recreational opportunities because of the diverse forest types and geography. Landowners enjoy many forms of outdoor recreation in forests.

- |                               |                               |
|-------------------------------|-------------------------------|
| • Hunting and fishing         | • Environmental restoration   |
| • Hiking, skiing, snowshoeing | • Canoeing, kayaking, tubing  |
| • Camping                     | • Bird and wildlife watching  |
| • ORV and snowmobile trails   | • Equestrian or biking trails |

Tree Farmers are encouraged to invite local school groups to visit their forest for an educational and fun field trip. The Michigan Tree Farm Committee provides transportation funding through “Wheels to Woods” grants. Application forms for teachers are at [WheelsToWoods.org](http://WheelsToWoods.org).

### *Conversion*

Conversion is the removal of natural or historic vegetative cover to convert land use from forest to non-forest or non-forest to forest. Forests that are converted to other land uses (deforestation) must be removed from the acres of certified Tree Farm forests. Consult township ordinances for land use rules. Michigan’s 20 million acres of forests have been stable or increasing since 1930.



**Figure 7. Eli and his dad Bill Brand – Upper Peninsula loggers and Tree Farmers in Luce County hosting a [Wheels to Woods](#) trip for 170 students at their log yard**



### *Forest Aesthetics*

Standard Six says that landowners should manage the visual impacts of forest management activities consistent with the size of the forest, the scale and intensity of forest management activities and the location of the property. Aesthetics is the nature and appreciation of beauty. Many people, and especially Tree Farmers, recognize that forests are very beautiful. Landowners are proud of the appearance and beauty of their woods. Many Tree Farmers work to improve the aesthetics of their forest for their family, the community, peers and even the public passing by their property. Forest management should promote a healthy and visually pleasing forest. However, many forest management activities are messy in appearance in the first few years after a treatment. Tree Farmers can talk with their forester to anticipate how different silvicultural activities that will impact aesthetic value of their woods in the short and long term.

Michigan's "Right to Forest Act" defines Generally Accepted Forest Management Practices for aesthetics, forest types, noise, dust, smoke and chemicals ([Michigan.gov/Forestry](http://Michigan.gov/Forestry)). The Right to Forest Act provides guidance on visual sensitivity classes for common forest management practices in Michigan to help landowners and foresters address aesthetics.

## *Biomass*

Standard One encourages landowners to address the production of biomass in their forest management plans. Biomass refers to trees or parts of trees that are burned to produce heat or electricity. Biomass might be the by-product of management, restoration, utilization, hazardous fuel reduction treatments or natural disasters. The majority of biomass in Michigan comes from harvest residuals like tops and limbs or sawmill residuals like bark and sawdust. Additional sources include storm cleanup, landscape debris, broken crates and pallets. Wood ash after burning can be used as fertilizer if not chemically treated.

Power from biomass is sometimes considered “carbon neutral” because trees grow back in decades rather than thousands of years like fossil fuels. Biomass power plants produce green energy and provide local jobs. It is common for sawmills to burn their residues onsite to provide heat or electricity for their facility. Michigan has several biomass power plants operating in Cadillac, Grayling, Flint, Hillman, L’Anse, Lincoln, McBain and Escanaba.

Many landowners use wood from their forest for heating their homes. Storm damage, forest health treatments and tops from timber sales are common sources of firewood for personal use. Selling firewood is a good way to create income while improving the forest. Many insects and diseases are transmitted through the movement of firewood, so it is always best practice to use local firewood or heat treat firewood for commercial sales.

- Michigan Biomass - [MichiganBiomass.com](http://MichiganBiomass.com)
- DNR Biomass Guidance - [Michigan.gov/documents/dnr/WGBH\\_321271\\_7.pdf](http://Michigan.gov/documents/dnr/WGBH_321271_7.pdf)
- Places to Buy Local Firewood - [FirewoodScout.org](http://FirewoodScout.org)

## *Carbon Cycle*

Standard One encourages landowners to address carbon in their forest management plans. Carbon dioxide is removed from the atmosphere through photosynthesis and decomposition of organic matter into the soil. Carbon dioxide is released to the atmosphere through respiration, deforestation, and soil tillage. About 65% of terrestrial carbon stocks in Michigan’s forests are in soil organic carbon and only 21% is in the above ground biomass (trunk, branches, leaves). Below ground biomass (roots), dead wood, and litter (dry leaves) make up the remaining 14% of the carbon stocks in Michigan’s forests. Healthy forests clean the air and produce oxygen through photosynthesis. Therefore, forests in Michigan and around the world are very important ecosystems that remove carbon dioxide from the atmosphere and help to reduce the global impacts of climate change.

More information about the forest carbon cycle and ways to mitigate climate change is available at [www.fs.fed.us/ecosystemservices/carbon.shtml](http://www.fs.fed.us/ecosystemservices/carbon.shtml). The Northern Institute for Applied Climate Science in Houghton is an excellent resource for landowners who wish to consider forest management strategies to reduce risk from climate change - [www.nrs.fs.fed.us/niacs](http://www.nrs.fs.fed.us/niacs).

## *Legacy Planning*

Many Tree Farmers would like to pass their woods to their children or other heirs. Transferring land from one generation to another is challenging and complex with many legal and family issues to discuss and resolve. Landowners should seek legal advice regarding wills, trusts and other estate planning mechanisms to transfer land. Parents should talk with their children to communicate their desires for their land while they are still alive. Landowners should also include their children on the list of owners of their Tree Farm so the Michigan Tree Farm Committee can recognize generational transfer and multi-generation Tree Farms.

Ties to the Land ([TiesToTheLand.org](http://TiesToTheLand.org)) is a program developed at Oregon State University to help forest landowners do succession planning and discuss their plans with family members. Ties to the Land workshops are hosted by MSU Extension or local Conservation Districts.

Conservation easements are another tool to help landowners ensure that their forest management goals are carried into future generations. Conservation easements are voluntary agreements by landowners to give up certain rights like parcelization, land use change or development. Landowners with easements should inform their forest to develop a plan that coordinates and complies with their conservation easement. Landowners should also make sure any timber sale contract with a logger complies with the requirements of their easement. Landowners may have to inform their land conservancy about forest management activities before they occur.

Heart of the Lakes ([HeartOfTheLakes.org](http://HeartOfTheLakes.org)) is an association of 36 organizations that offer conservation easements and other services to help landowners protect their forest. Conservation easements may offer reduced property taxes and are a useful tool to ensure land management values are passed to future owners.

**Figure 8. Frost Middle School in Livonia at their 12-acre school forest in Wayne County**



Photo Credit: Ashley Harlock, 8<sup>th</sup> grade student at Frost Middle School

## *Agroforestry and Range*

Range is open land that is used for grazing animals. Range may include open forests with widely spaced trees that still provide enough grass for grazing animals. Range is not a common land use in Michigan. Grazing domestic animals in Michigan's forests is discouraged because cows, sheep and goats often damage roots and limit regeneration of desired tree species.

Agroforestry describes land-use systems that intentionally combine trees and agriculture on the same land to enhance productivity. Agroforestry is not common in Michigan, but it can be very useful to both farmers and forest owners. More information is available from the National Agroforestry Center at [www.fs.usda.gov/nac](http://www.fs.usda.gov/nac).

There are five common agroforestry systems in temperate climates.

1. Alley Cropping: growing crops between rows of trees
2. Silvopasture: grazing animals among trees planted on improved pastures
3. Wind Breaks: planting rows of trees to reduce wind
4. Riparian Forest Buffer: planting trees near streams and lakes to reduce soil erosion
5. Forest Farming: growing specialty crops like mushrooms or ginseng in the woods

## *Assessment for the Natural Resources Conservation Service*

The USDA Natural Resources Conservation Service (NRCS) provides money and advice to forest landowners to fix resource concerns, or environmental problems, with conservation practices, which are specific techniques to address existing resource concerns. The NRCS usually requires a landowner to have a forest management plan prior to help guide the planning and implementation of conservation practices. The Michigan NRCS accepts Forest Stewardship Plans and Tree Farm forest management plans when applying for funding, although this template plan does not meet all conservation planning requirements. Landowners and their forester should work with local District Conservationists to help them fill out "job sheets" to identify resource concerns and develop detailed specifications for conservation practices. Contact info for local NRCS Service Centers is at [www.nrcs.usda.gov/wps/portal/nrcs/mi/contact/local](http://www.nrcs.usda.gov/wps/portal/nrcs/mi/contact/local).

**Table 5. Common resource concerns and conservation practices**

<b>Resource Concerns</b>	<b>Conservation Practices</b>
water quality degradation	stream crossings, riparian forest buffers
soil erosion	forest trails and landings, streambank and shoreline protection
plant health	forest stand improvement, tree pruning, prescribed burning, firebreak
plant productivity	tree establishment, site preparation, forest stand improvement
degraded fish or wildlife habitat	stream habitat improvement, early succession habitat, upland wildlife habitat, wetland wildlife habitat
invasive plants	brush management, forest stand improvement



## Appendix III - Forest Management Strategies

### *Desired Future Conditions*

Forest management activities are meant to accomplish the landowner's current goals for a management unit and bring about the desired future conditions for the forest. Individual landowners should use this template to identify and describe their desired future conditions for their own woods. Landowners can also hire a forester to develop a custom forest management plan to describe what they want their forest to look like in 20 to 50 years.

### *Best Management Practices*

Standard Four requires landowners to comply with best management practices to protect soil and water quality. Best management practices (BMPs) are guidelines published by the State of Michigan to protect Michigan's water resources from non-point source pollution and erosion while working on forest land. The 1972 federal Clean Water Act requires that states develop BMPs to protect water quality in forests. The [Michigan Forestry Best Management Practices for Soil and Water Quality](https://www.michigan.gov/Forestry) is online at [Michigan.gov/Forestry](https://www.michigan.gov/Forestry). BMPs include proper location and construction of logging roads, the use of riparian management zones (RMZs), installation of culverts and other stream crossings, proper use of pesticides and other chemicals, and site preparation for planting. BMPs also include the proper seasonal timing of activities to minimize the spread of insects or disease. All forest management activities should minimize soil erosion, especially in wetlands and within a few hundred feet of surface water.

### *Silvicultural Systems Used to Manage Michigan's Forests*

Foresters use "silvicultural systems" to manage forests. Silviculture is the science of how forest types regenerate and how to manage those forests for desired outcomes. Silvicultural systems are a group of practices to grow and regenerate a forest to accomplish landowner objectives. There are two basic silvicultural systems used in Michigan for management and regeneration of forests – even aged and uneven aged systems.

**Even aged** forests contain overstory trees of nearly the same age. Even aged systems are commonly used for tree species that require abundant sunlight to reproduce and grow. Even aged silvicultural systems include clearcut, seed tree and shelterwood.

- **Clearcut:** A clearcut removes the entire stand in a final harvest. It is used to regenerate shade intolerant species like aspen or a final harvest in a pine plantation. Individual trees or groups of trees may be retained for wildlife or diversity. Regeneration may be natural or planted depending upon the species.
- **Seed Tree:** A seed tree harvest removes most of the mature trees but retains scattered trees that provide seed to naturally regenerate the stand.

- **Shelterwood:** A shelterwood regenerates a new stand under a partial canopy of residual overstory trees. Shelterwood systems require two or more harvests to remove some of the mature trees and then the remaining mature trees after a new cohort of seedlings has been established.

**Uneven aged** forests contain three or more age classes in the forest. Uneven aged systems are commonly used for tree species that can reproduce and grow in shade. Uneven aged silvicultural systems include single tree and group selection.

- **Single Tree Selection:** Single tree selection removes scattered individuals to create small gaps in the canopy to regenerate shade tolerant trees like sugar maple or beech.
- **Group Selection:** Group selection removes more than two trees in small groups to create larger gaps in the canopy to regenerate mid-tolerant species like yellow birch, basswood or white pine.

**Intermediate Treatments.** Operations carried out during the life of a stand before final harvest may be prescribed to accomplish certain objectives. In young stands, thinning of dense regeneration and release of desired species from competition gives the best trees more growing space and reduces the time to reach a desired size. These treatments are usually a cost to the forest owner but increase the value of the final crop.

- **Thinning** should occur when stands of intermediate-age are too dense and optimal growth is inhibited. Thinning to proper densities by removing poorer quality tree stems and non-commercial timber species free If thinning is done before the trees have any market value, it is called pre-commercial thinning.
- **Pruning** is the removal of living and dead limbs from the main stem of potential high-value crop trees. Pruning also produces a visually pleasing forest, improves access and can reduce risk of wildfire. Pruning is a good investment when knot-free logs bring a premium price on species like white pine, red oak, black cherry or black walnut.
- **Prescribed fire** is a silvicultural tool that simulates the natural role of fire in ecological processes. Prescribed fire can reduce accumulation of fuels to lessen the chance of a destructive wildfire, improve wildlife habitat, discourage unwanted shrub or tree species, increase plant and animal biodiversity, reduce certain insects and diseases and stimulate regeneration of favored trees. Prescribed fire is used in management of red pine stands or in oak and pine-oak savannas. Prescribed fire can also be used following a clearcut to consume slash and prepare the site for natural seeding or planting.
- **Mowing** can be used when prescribed fire is not a viable option due to time of year, climate change or landowner preference. Mowing can mimic prescribed fire to a degree but doesn't create bare ground conditions for fire adapted seeds.

- **Pesticides** are used to control competing vegetation or to reduce harmful levels of insects, diseases or other pests that are causing damage beyond an economic threshold.

**Table 6. Recommended Silvicultural Systems for Common Forest Types in Michigan**

Forest Type	Primary System	Secondary System	Acceptable System
<b>Upland Forest Types</b>			
Southern Maple-Beech	Single Tree Selection	Group Selection	
Southern Oak-Mixed Hardwood	Shelterwood	Group Selection	Single Tree Selection
Northern Hardwoods	Single Tree Selection	Group Selection	Small Patch Clearcut
Hemlock	Shelterwood	Group Selection	Single Tree Selection
Oak	Shelterwood	Group Selection	Single Tree Selection
Pine	Shelterwood	Seed Tree	Clearcut
Spruce-Fir	Patch Clearcut	Clearcut, with Standing Patches	Protection
Aspen-Birch	Clearcut	Heavy Shelterwood	Seed Tree
Plantations	Thinnings then final Clearcut	Shelterwood	Single Tree Selection
<b>Wetland Forest Types</b>			
Southern Deciduous Swamps & Floodplains	Single Tree Selection	Group Selection	
Hardwood Conifer Swamps	Shelterwood	Small Patch Clearcut	Single Tree Selection
Northern White Cedar	Shelterwood	Clearcut Strips	
Conifer Bogs & Muskegs	Clearcut (fire prone areas)	Group Selection (fire resistant areas)	Prescribed Fire
<b>Uncommon Forest Types</b>			
Southern Lakeplain Oak-Hardwood Openings	Prescribed fire	Mowing	
Southern Oak Barrens	Prescribed fire	Mowing	
Pine & Oak Barrens	Prescribed fire	Mowing	
Great Lakes Barrens	Prescribed fire	Mowing	
Alvar Savannas	Prescribed fire	Mowing	
Pine Stump Plains	Protection		

### *Common Forest Management Activities*

**Certify Forest with American Tree Farm System.** This template is designed to help landowners join the American Tree Farm System ([TreeFarmSystem.org/Michigan](http://TreeFarmSystem.org/Michigan)) to certify that their forests are well-managed. Certification documents the public goods that “Tree Farmers” provide to

society including wood, water, recreation and wildlife. Certified forests are reviewed by a third party to show society that both the American Tree Farm System and forest landowners are complying with their “[Standards of Sustainability](#).” The minimum requirements to join Tree Farm are ten acres of forest, a current forest management plan, compliance with the “Standards of Sustainability” and a free inspection by a Tree Farm Inspector. Completing the template properly shows compliance with Standard One if it is appropriate to the size of the forest and scale and intensity of forest management activities.

**Join the Michigan Forest Association.** The Michigan Forest Association (MFA) is an organization in Michigan that provides education, advocacy and fellowship for forest landowners ([MichiganForests.org](http://MichiganForests.org)). Annual dues are around \$45. MFA provides information about forest management (magazines, newsletters, emails) and opportunities for networking with other landowners (annual conference, workshops, field days). MFA advocates for private forest landowners by providing testimony to local, state and federal policy makers. MFA and the Michigan Tree Farm Committee hold a combined “Michigan Forest Celebration” each year for landowners to gather and enjoy learning about forests.

**Monitor Forest Health Annually.** Forest health is a significant concern for forests throughout Michigan. Tree Farmers should monitor their forest regularly (each year and during different seasons) for changes that may indicate additional insect or disease problems. The DNR publishes an annual “[Forest Health Highlights](#)” about forest insects and diseases to inform landowners about significant issues in Michigan ([Michigan.gov/ForestHealth](http://Michigan.gov/ForestHealth)). MDARD is the state agency in charge of regulated forest pests and quarantines with information available at [Michigan.gov/ExoticPests](http://Michigan.gov/ExoticPests).

There are several new insects and diseases that are not yet present or well established in Michigan but are in nearby states (Asian longhorn beetle, Thousand cankers on walnut, etc.). Report any unusual problems to the DNR or MDARD.

Integrated Pest Management (IPM) are guidelines to protect the environment from excessive use of pesticides. IPM requires correctly identifying pests, setting an economic or action threshold, and then implementing the best method to control the pest. IPM actions may include cultural, mechanical, biological, and chemical controls. Chemical pesticides are a useful tool, but should not be the first or only choice to control pests. For example, oak wilt is prevented by the cultural practice of not wounding oaks between April 15 and July 15. After oak wilt is established, the primary action is a mechanical control to cut oak roots to prevent the spread of the fungus through root grafts. Be sure to keep records of pesticides used in the woods.

**Enroll in a Property Tax Program.** The State of Michigan offers two programs to reduce property taxes on forest land – the Commercial Forest Program and the Qualified Forest Program. Both programs require landowners to hire a forester to develop a written forest management plan that optimizes the production, utilization and regeneration of commercial forest products. Landowners must comply with their plan to retain the property tax benefits. Additional information about these programs is in the Appendix.

This plan template may be accepted by the agencies administering property tax programs if the Addendum is completed by a “[Qualified Forester](#)” for the Qualified Forest Program or a



[“Registered Forester”](#) for the Commercial Forest Program. Both property tax programs have specific requirements for forest management plans and require landowners to comply with their plan. This plan includes a landowner Statement of Compliance to indicate compliance with Michigan’s property tax programs. *“I hereby acknowledge that I have reviewed this forest management plan and understand my responsibilities regarding conducting management practices and harvests as called for in the plan.”*

**Construct Forest Trails.** One of the limitations to management and recreation in many forests is the lack of established trails for motor vehicle to access all parts of the stand. Although loggers will be able to develop skid trails throughout the forest for their equipment when conducting a timber sale, it may be beneficial to develop a trail system prior to conducting the next timber sale to direct logging traffic where you want it. This activity could be a great effort or expense, but there are options available for reducing your expenses. The Natural Resource Conservation Service (NRCS) offers financial assistance through the Environmental Quality Incentives Program (EQIP) for “forest trails and landings” (code #655). Standard Four requires that landowners comply with all relevant BMPs and laws regarding road and trail construction.

**Conduct a Commercial Timber Harvest.** Standard Eight says that forest product harvests and other management activities are conducted in accordance with the landowner’s objectives and consider other forest values. Sustainable timber production is compatible with many other forest management goals. It is possible to conduct a timber harvest every ten to fifteen years in many forest types while keeping aesthetics, biodiversity, habitat and recreation as equal priorities.

There are many components needed to plan and implement a commercial timber harvest. Standard Eight recommends using qualified natural resources professionals and contracts. Standard Eight requires a Tree Farmer or their agent to monitor all forest management activities.

1. Inventory management unit
2. Establish harvest goals and strategy
3. Select the appropriate silvicultural systems
4. Determine attributes of residual stand and goals for regeneration
5. Retain coarse woody debris, legacy trees and protect T&E habitat
6. Locate haul roads, skid trails and landings
7. Identify riparian management zones and plan for compliance with all relevant BMPs
8. Allow for topography, wetlands, aesthetics and other considerations
9. Mark sale boundary and trees for sale
10. Advertise timber sale, select winning bidder and negotiate timber sale contract
11. Pre-harvest meeting with qualified logging professionals
12. Monitor timber harvest
13. Post-harvest inspection for return of bond
14. Retain records of silvicultural activities

**Timber Harvest Objectives.** The primary objective for any timber sale is to *improve the forest*, as defined according to the values of the landowner and the attributes of the forest. A timber sale should improve the species composition and growing conditions of remaining trees for future timber sales. A forester’s primary concern is *keeping quality trees* in your forest, instead of selling

most of your quality trees (a very poor practice called “high-grading”). A timber sale can be used to improve wildlife habitat, develop trails for recreation, improve forest health and regenerate new trees. Finally, a timber sale should also seek to *optimize* (but not necessarily maximize) the profits for the landowner in keeping with the above objectives.

Timber Harvest Method. Foresters use “even age” and “uneven aged” methods to harvest trees as appropriate for the forest type being managed. Even aged methods create a new cohort of trees with a similar age throughout the entire stand. Even aged systems are used for trees that require sunlight to reproduce. Uneven aged methods preserve variation in age classes in the stand. Uneven aged systems are used for trees that can reproduce in shade.

Timber Sale Process. The Michigan Tree Farm System recommends working with a professional forester to plan and administer a timber sale. However, Tree Farmers are allowed to manage their own sale. Either way, there are five basic steps in a timber sale. The timber sale process can take six to eighteen months, so start planning a year before the desired time.

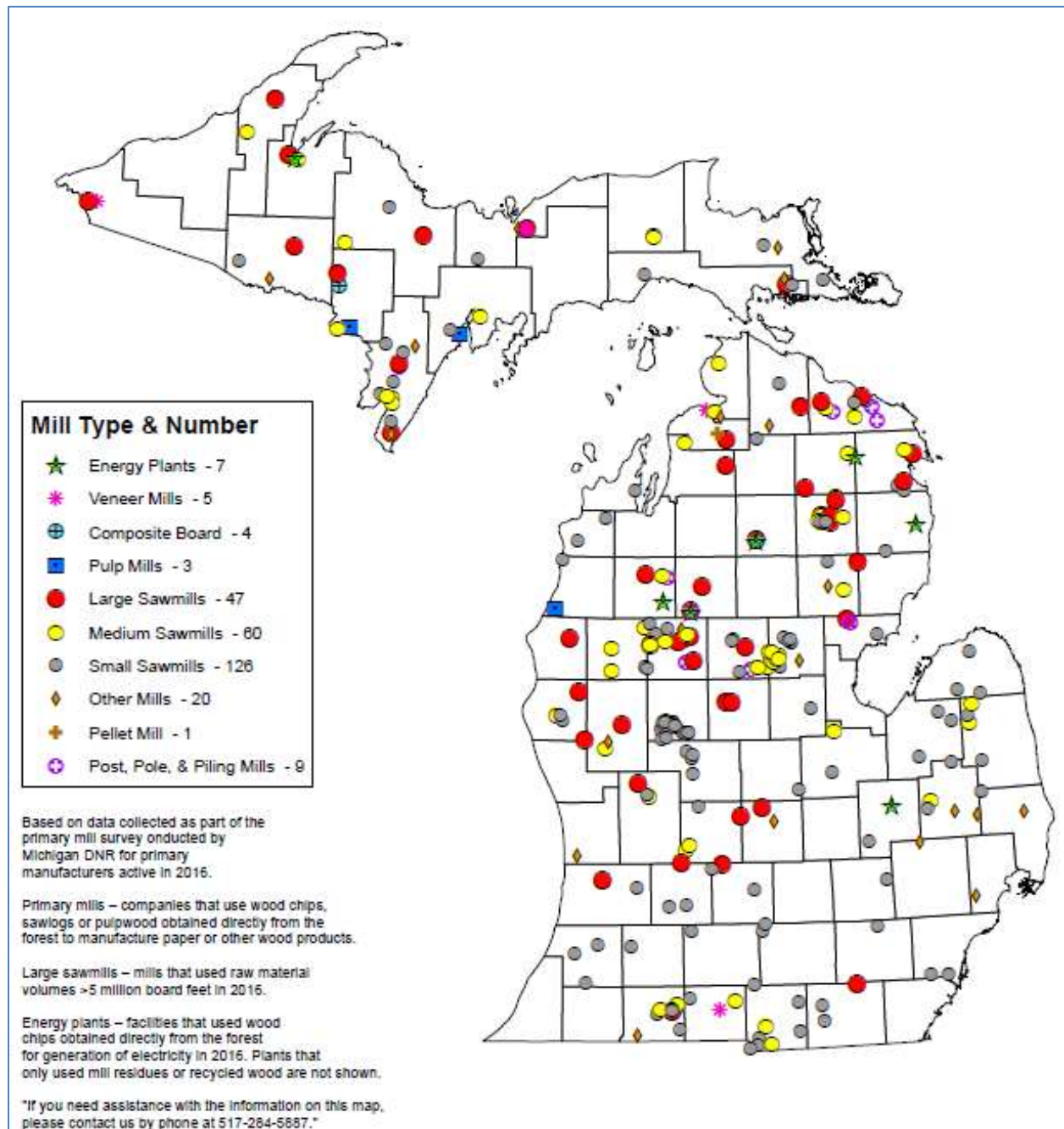
1. A forest inventory measures the attributes of the forest to determine how to proceed with the sale. This template does not include an inventory so the Tree Farmer or their forester should assess individual stands to determine when it is ready for harvest.
2. Decide what trees to sell and what trees to keep. Determine the trees to sell, paint those trees at stump and breast height, measure volume and estimate market value. Based on a licensed boundary survey, identify the property corners and property lines so that all trees that are included in the sale are within your property boundary.
3. Advertise the timber sale. The true market value of the trees marked for sale is determined by getting multiple bids. Send the prospectus to several reputable timber buyers to invite them to inspect the trees marked for harvest and bid on the sale.
4. Negotiate a timber sale contract between the landowner and the timber buyer. Select the best buyer based on price and other factors (reputation, timing, equipment, references, etc.). Negotiate a comprehensive contract, collect a performance bond, verify insurance, and collect full payment *prior to* harvest (for a lump sum stumpage sale).
5. Supervise the harvest to ensure the contract is followed. Determine the location of skid trails and log landing for harvest equipment (place them where you would like to improve recreational trails for later use). Visit the site during timber harvest to verify performance. Also visit the site after the harvest to determine the refund of the performance bond.

Timber Sale Timing. Timber harvests should be conducted when the soil is frozen or dry. A fall or winter harvest will reduce the exposure of wounded trees to insects (bark beetles) or disease (oak wilt). Avoid a spring harvest when possible to minimize rutting which damages soil and the roots of the residual trees. Selection harvests are often done on a ten to fifteen-year interval.

- Michigan Master Loggers - [mimlc.com](http://mimlc.com)
- Michigan Association of Timbermen – [MichiganTimbermen.com](http://MichiganTimbermen.com)
- SFI Trained Loggers - [SFI.org](http://SFI.org)
- Michigan Forest Products Council - [MichiganForest.com](http://MichiganForest.com)

**Forest Products.** Tree Farmers are not obligated to sell their trees, but they are encouraged to optimize the production, utilization and regeneration of forest products. Michigan's forests produce many types of products including lumber, paper, particle board, oriented strand board and hundreds of other products. There are several hundred primary mills that turn logs into products and even more secondary mills that create value-added products. Michigan's forest products industry is valued at over \$21 billion and provides 8,000 logging and trucking jobs, 32,000 primary manufacturing jobs and 55,000 secondary manufacturing jobs.

**Figure 9. Michigan's Primary Forest Products Companies**



**Stream Crossing.** Many forests have streams that are barriers to access parts of the property for recreation (foot or ATV) or forest management (skidders, trucks, harvesters). There are several options for crossing streams including culverts, fords and permanent or temporary bridges. The best option will be determined by the characteristics of the stream, the intensity of the management and the size of equipment crossing the stream. A small footbridge may be adequate for recreational use for foot traffic or small off-road vehicles. Larger bridges or culverts should be used for frequent use by heavy equipment. Portable bridges are good options for occasional timber harvests where a permanent crossing is not required. In-stream fords may be suitable if the stream bed and banks are bedrock.

All stream crossings need to be as wide as the “bank-full width” of the stream to prevent erosion and allow for passage of fish and other aquatic organisms. Building temporary or permanent stream crossings (culvert or bridge) requires a \$50 or \$100 [permit](#) from the Department of Environment, Great Lakes & Energy (EGLE) “MiWaters” website ([Michigan.gov/MiWaters](http://Michigan.gov/MiWaters)). The NRCS provides cost share funding through EQIP practice #578 for stream crossings. The [Michigan Forestry Best Management Practices for Soil and Water Quality](#) manual provides guidance on stream crossings. Standard Four requires that landowners comply with all relevant BMPs and laws regarding stream crossings.

Conservation organizations like Trout Unlimited, Huron Pines, Conservation Resource Alliance, The Nature Conservancy and Superior Watershed Partnership can provide technical assistance to plan, permit and build stream crossings on private forest land.

- [MichiganTU.org](http://MichiganTU.org)
- [HuronPines.org](http://HuronPines.org)
- [RiverCare.org](http://RiverCare.org)
- [Nature.org](http://Nature.org)
- [SuperiorWatersheds.org](http://SuperiorWatersheds.org)

**Forest Stand Improvement.** Commercial timber sales usually occur every ten to fifteen years for most hardwood forests. Forest stand improvement (FSI) activities can be used to improve the quality of the growing stock in the stand between timber sales. This activity is likely to be a cost rather than an expense, but forest stand improvement activities are eligible for funding from the NRCS (Code #666).

Forest stand improvement activities include:

- Removing dead or diseased trees (excellent for firewood)
- Killing undesirable or invasive tree and shrub species (tree of heaven, buckthorn)
- Removing low quality trees that will not increase in merchantable value
- Thinning plantations to allow optimum growth
- Pruning branches that reduce stem value (black walnut or other high value hardwoods)

**Planting Trees & Shrubs.** Tree Farmers love to plant trees in their woods for economic, ecological, wildlife and aesthetic purposes. Planting hardwoods may not be an economical land investment due to the high initial costs and long rotation length (80 years or more). Most forestry

plantations are conifers like red pine that have a shorter rotation length and good economic returns if located near well-developed markets. Site preparation is required to remove competing weeds and to provide ongoing weed control for a few years after planting. Young seedlings often require fencing or tree tubes to prevent deer or rodent damage. There are several species of native shrubs that provide great wildlife habitat including grey dogwood, hazelnut, serviceberry, sumac, crabapple, hawthorn, ninebark, and wild plum.

Large quantities (thousands) of tree seedlings can be purchased at wholesale prices from a commercial seedling nursery. The DNR maintains a list of 19 commercial nurseries that produce tree seedlings for forestry planting [Michigan.gov/ForestStewardship](http://Michigan.gov/ForestStewardship). Local Conservation District tree sales are a good source for smaller quantities (dozens or hundreds) of trees and shrubs planted for wildlife or conservation or reforestation purposes. The NRCS may provide funding for Tree and Shrub Establishment (#612) and Tree and Shrub Site Preparation (#490) for large tree or shrub planting projects (thousands of seedlings on multiple acres).

**Invasive Species Treatment.** Invasive plants should be treated to prevent further establishment on site or spreading to other locations. The treatment for most invasive plants is to cut at the base of the plant, remove seeds from site and treat stump with herbicides to prevent sprouting. Other methods to treat invasive plants include digging, grazing, girdling and mowing. Different species react very differently to treatments so selecting the appropriate treatment is essential. See the table four regarding specific treatments for common invasive species.

**Riparian Forest.** A riparian forest is the 100+ foot wide strip of forest along a stream or lake that is managed intentionally to protect water quality and provide wildlife habitat. Riparian forests are sometimes newly planted forests along streams in agricultural land (an agroforestry practice) but they can also be managed areas in existing forests. The Michigan [BMP manual](#) refers to “riparian management zones” because it is often desirable to manage riparian forests for ecological and habitat benefits, not just exclude activity in a buffer near the water’s edge. The NRCS provides money and advice to develop or enhance riparian forests (code #391). Landowners using EQIP funds for this practice must include planned specifications for the treatment’s purpose, width and length of the riparian buffer, mapped location, tree species to be planted, number, size, spacing and timing of the planting and the desired basal area.

**Stream Habitat Improvement.** Healthy streams require large and small wood in the water to provide suitable fish habitat and banks with adequate vegetation to minimize erosion of sediment into the stream. Placing wood structures into the stream for fish habitat requires a permit from the EGLE and the DNR Fisheries Division if it is a designated Natural River, so obtain permits early in the planning stages for this conservation practice. The NRCS conservation practice code for stream habitat improvement is #395. Landowners using EQIP for financial assistance must include specifications including the treatment’s purpose, site description, timing, vegetation planting, maintenance, site protection, site preparation and map.

**Firebreaks.** Landowners should consider installing firebreaks in forests that are prone to wildfires. Jack pine forests are the most fire prone forest in Michigan, but other forest types and unique conditions are also susceptible to wildfire. Firebreaks are simply strips of land without vegetation



that slow the spread of fire by removing fuels. The NRCS may provide money and advice to install firebreaks, which is conservation code #394 in EQIP.

**Wildlife Habitat.** Many people own forests because they enjoy viewing, photographing or hunting many kinds of birds, game and other wildlife. Habitat improvement activities are specific to the desired wildlife species and the forest habitat it prefers. Landowners should consult with foresters or wildlife biologists to get advice on ways to improve wildlife habitat. Many forest management activities can be used to improve habitat for desired species.

### *Aesthetic Impacts*

Standard Six says that landowners should manage the visual impacts of forest management activities consistent with the size of the forest, the scale and intensity of forest management activities and the location of the property. Forest management activities, even when done well, will have a negative impact on aesthetics in the first few years. Tree Farmers are encouraged to apply visual quality measures compatible with appropriate silvicultural practices when conducting forest management activities. Even better, put up educational signs along main roads to educate people about forest management. Proper forest management will enhance aesthetics in the long term (10-100 years) by maintain healthy forest ecosystems.

**Figure 10. Pierce Family Tree Farm in Iosco County hosting a field day at the 2017 Michigan Forest Association and Michigan Tree Farm annual celebration**



## Appendix IV – Miscellaneous Materials

### *Glossary of Common Forestry Terms*

The following glossary is adapted from <https://dnr.maryland.gov/forests/Pages/gloss.aspx>

- Agroforestry** - a land-use system that combines both agriculture and forestry in one location.
- Alley Cropping** - widely spaced rows of trees with annual crops growing in between the rows.
- Basal Area (Tree)** - cross sectional area of a tree at 4.5 feet off ground in units of square feet (ft<sup>2</sup>).
- Basal Area (Forest)** - basal area of all trees per acre summed up, in units of ft<sup>2</sup>/acre; measure of density.
- Biomass** – harvesting and using whole trees or parts of trees for energy production
- Board Foot** – a measure of volume 1 foot by 1 foot by 1 inch or 144 cubic inches of wood.
- Bolt** – 8 foot long log
- Browse** - parts of woody plants, including twigs, shoots, and leaves, eaten by forest animals.
- Carbon Cycle** – the biogeochemical cycle to exchange carbon between the biosphere and atmosphere by means of photosynthesis, respiration and combustion.
- Clearcut** - the harvest of all the trees in an area to reproduce trees that require full sunlight.
- Cord** - a unit of wood cut for fuel that is equal to a stack 4 x 4 by 8 feet or 128 cubic feet
- Cordwood** - small diameter or low-quality wood suitable for firewood, pulp, or chips.
- Crop Tree** - a young tree of a desirable species with certain desired characteristics.
- Crown** - the uppermost branches and foliage of a tree.
- Cruise** - a forest survey used to obtain inventory information and develop a management plan.
- Cull** - a sawtimber size tree that has no timber value as a result of poor shape or damage.
- Diameter at Breast Height (DBH)** - diameter of a tree trunk taken at 4 1/2 feet off the ground.
- Diameter-Limit Sale** - a timber sale in which all trees over a specified DBH may be cut. Diameter-limit sales often result in high grading and is a very poor forestry practice.
- Endangered Species** – a species in danger of extinction.
- Even-Aged Stand** - stand with age difference between oldest and youngest trees is minimal (<10 years).
- Forestland** – land at least one acre in size that is at least 10 percent stocked with trees.
- Forest Farming** - cultivating high value specialty crops in the shade of natural forests.
- Forest Stand Improvement (FSI)** - any practice that increases the health, composition, value or rate of growth in a stand. Also called Timber Stand Improvement when focused on timber.
- Group Selection** - harvesting groups of trees to open the canopy and encourage uneven aged stands.
- Habitat** - the ecosystem in which a plant or animal lives and obtains food and water.
- Hardwoods** - a general term encompassing broadleaf, deciduous trees.
- High Grading** - to remove all good quality trees from a stand and leave only inferior trees.
- Intolerance** - characteristic of certain tree species that does not permit them to survive in the shade.
- Landing** - cleared area where logs are processed, piled, and loaded for transport to a sawmill.
- Log Rule** - a method for calculating wood volume in a tree or log by using its diameter and length. Scribner, Doyle and the International 1/4-inch rule are common log rules.
- Lump-Sum Sale** - a timber sale in which an agreed-on price for marked standing trees is set before the wood is removed (as opposed to a mill tally or unit sale).
- Mast** - nuts and seeds such as acorns, beechnuts, and chestnuts that serve as food for wildlife.
- Over-mature** - trees that have declined in growth rate because of old age and loss of vigor.
- Overstocked** - trees are so closely spaced that they do not reach full growth potential.
- Pole Timber** - trees 4 to 10 inches DBH.
- Pre-Commercial Operations** - cutting to remove wood too small to be sold.
- Prescribed Fire** – an intentional and controlled fire used as a management tool used to reduce hazardous fuels or unwanted understory plants (invasive, undesirable species, etc.).
- Pulpwood** - wood suitable for use in paper manufacturing.



**Range** - cattle grazing in natural landscapes.

**Regeneration** - the process by which a forest is reseeded and renewed.

**Riparian Forest Buffers** - strips of land along stream banks where trees, shrubs and other vegetation are planted and managed to capture erosion from agricultural fields.

**Salvage Cut** - the removal of dead, damaged, or diseased trees to recover value.

**Sapling** - a tree at least 4 1/2 feet tall and between 1 inch and 4 inches in diameter.

**Sawlog** - log large enough to be sawed economically, usually >10" diameter and 16' long.

**Sawtimber stand** - a stand of trees whose average DBH is greater than 11 inches.

**Sealed-Bid Sale** - a timber sale in which buyers submit secret bids.

**Seed-Tree Harvest** - felling all trees except for a few desirable trees that provide seed for the next forest.

**Selection Harvest** - harvesting single trees or groups at regular intervals to maintain uneven-aged forest.

**Shelterwood Harvest** - harvesting all mature trees in two or more cuts, leaving trees to protect seedlings.

**Silvopasture** - planted trees and improved forages to provide suitable pasture for grazing livestock.

**Silviculture** - the art and science of growing forest trees.

**Site Index** - measure of quality of a site based on the height of a dominant tree species at 50 years old.

**Site Preparation** - treatment of an area prior to reestablishment of a forest stand.

**Skidder** - a rubber-tired machine with a cable winch or grapple to drag logs out of the forest.

**Slash** - branches and other woody material left on a site after logging.

**Snag** - a dead tree that is still standing and provide food and cover for a variety of wildlife species.

**Softwood** - any gymnosperm tree including pines, hemlocks, larches, spruces, firs, and junipers.

**Species of Special Concern** - not threatened or endangered yet, but has low or declining populations.

**Stand** - a group of forest trees of sufficiently uniform species composition, age, and condition to be considered a homogeneous unit for management purposes.

**Stand Density** - the quantity of trees per unit area, evaluated in basal area, crown cover or stocking.

**Stocking** - the number and density of trees in a forest stand. Classified as under-, over-, or well-stocked.

**Stumpage Price** - the price paid for standing forest trees and paid prior to harvest.

**Succession** - the replacement of one plant community by another over time in the absence of disturbance.

**Sustained Yield** - ideal forest management where growth equals or exceeds removals and mortality.

**Thinning** - partial cut in an immature, overstocked stand of trees to increase the stand's value and growth.

**Threatened Species** - a species whose population is so small that it may become endangered.

**Timberland** - forest capable of producing 20 ft<sup>3</sup> of timber per acre per year.

**Tolerance** - the capacity of a tree species to grow in shade

**Under-stocked** - trees so widely spaced, that even with full growth, crown closure will not occur.

**Understory** - the level of forest vegetation beneath the canopy.

**Uneven-Aged Stand** - three or more age classes of trees represented in a single stand.

**Unit Sale** - a timber sale in which the buyer makes regular payments based on mill tally and receipts.

**Veneer Log** - a high-quality log of a desirable species suitable for conversion to veneer.

**Well-Stocked** - stands where growing space is effectively occupied but there is still room for growth.

**Windbreaks** - rows of trees to provide shelter for crops, animals or farm buildings.

## *Forest Economics*

**Capital Gains Tax Information.** Profits from timber sales are taxed as capital gains, rather than ordinary income, if you own the timber for more than twelve months. Expenses, including the cost of a management plan or a consulting forester's fees for a timber sale, can be deducted from profits. There are many great tax related resources available on [TimberTax.org](http://TimberTax.org), including the most recent edition of the annual "Tax Tips for Forest Landowners."

## *Federal and State Laws Related to Forest Management*

Standard Two of Tree Farm's Standards of Sustainability require compliance with local, state and federal laws. Consult with local natural resource professions to ensure that forest management complies with relevant laws.

- USA - Federal Insecticide, Fungicide, and Rodenticide Act, 1947
- USA - National Historic Preservation Act, 1966
- USA - Clean Water Act, 1948 and 1972
- USA - Endangered Species Act, 1973
- MI - Michigan Pesticide Control Act, Public Act 171 of 1976
- MI - Natural Resources and Environmental Protection Act, Public Act 451 of 1994
- MI - Right to Forest Act, Public Act 676 of 2002

## *Forest Stewardship Program*

The purpose of the Forest Stewardship Program is to help forest landowners manage, protect, and enjoy their land ([Michigan.gov/ForestStewardship](https://www.michigan.gov/ForestStewardship)). The voluntary program connects landowners with foresters and wildlife biologists in the private sector to develop and implement a custom Forest Stewardship Plan. The US Forest Service supplies funding and partners with the DNR to administer the program and assist private forest landowners. Since 1990, more than 7,000 landowners from every county in Michigan have developed a custom Forest Stewardship Plan to help them manage, protect, and *enjoy* 1.1 million acres of private forest land. The 10-page template and supporting reference materials meet the minimum requirements for a Forest Stewardship Plan.

## *Commercial Forest Program*

Landowners in the Commercial Forest Program pay a specific property tax (\$1.30 per acre in 2021). Landowners must have at least 40 acres of forest, a forest management plan, conduct commercial harvests as prescribed in the plan and allow PUBLIC ACCESS for hunting, fishing and trapping. Landowners must notify the DNR before they harvest forest products. The application fee is \$1 per acre with a minimum fee of \$200 and a maximum fee of \$1,000. The application deadline is April 1 for tax benefits in the following year. For more information and enrollment forms, see [Michigan.gov/CommercialForest](https://www.michigan.gov/CommercialForest). *If this template is used to enroll in the Commercial Forest Program, the forester who develops the plan must be a “[Registered Forester](#)” or other professional forester recognized by the DNR to write plans for the program.*

## *Qualified Forest Program*

Landowners in the Qualified Forest Program with 20 or more forested acres can reduce their property taxes by up to 18 mills. Landowners must comply with their forest management plan to optimize the production, utilization and regeneration of commercial forest products. Landowners report the volume and value of harvests to Michigan Department of Agriculture and Rural

Development after they occur. Public access for hunting and fishing is NOT required, so this program is more attractive to family forest owners who own land for their recreation. There is a \$50 application fee and an annual fee equivalent to 2 mills to help fund the operation of the program. See [Michigan.gov/QFP](http://Michigan.gov/QFP) for information and program enrollment forms. *If this template is used to enroll in the Qualified Forest Program, the forester who develops the plan must be a “[Qualified Forester](#)” recognized by MDARD to write plans for the program.*

### *Financial Assistance Programs*

The Natural Resources Conservation Service (NRCS) administers several programs such as the Environmental Quality Incentives Program ([EQIP](#)) or Conservation Stewardship Program ([CSP](#)) that provide financial assistance to forest owners to implement “conservation practices” to address “resource concerns” on their land. Landowners usually need a forest management plan prior to enrolling in most NRCS programs. The [Michigan NRCS](#) accepts Forest Stewardship Plans and Tree Farm management plans when applying for EQIP. However, this 10-page template and reference materials do not contain the level of detail required by NRCS for planning many conservation practices. Work with your NRCS District Conservationist and forester (“[Technical Service Provider](#)”) to fill out supplemental “Job Sheets” to provide more detailed specifications for conservation practices. See [nrcs.usda.gov/wps/portal/nrcs/mi/home](http://nrcs.usda.gov/wps/portal/nrcs/mi/home) for information about NRCS programs in Michigan and how to contact your [local NRCS Service Center](#).

**Figure 11. Hilde and Mark Janke, 2017 Inspecting Forester of the Year, Nick Sanchez, Tree Farm Secretary, Bob and Jane Bruggink, 2017 Tree Farmers of the Year**

