

**Forest Management Plan for Omena Woods Association**

**PO Box 55  
Omena, MI 49674  
231-386-7651**

**Property Location: 134 acres within Sections 25 & 36, Leelanau (South)  
Township, (T31N R11W) Leelanau County, Michigan**

134 acres surrounded by Omena Point residents

Plan Created 2020, Management Plan Expiration: 2040



**Plan Written By:**

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**Wildlife Additions By:**

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Certified Wildlife Biologist  
(906) 361-0260



**Schillinger**  
**FORESTRY, LLC**

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Michigan Department of Natural Resources – Forest Resources Division



# LANDOWNER APPLICATION FOREST STEWARDSHIP PROGRAM

Please complete this form with your Plan Writer. The Plan Writer will submit the form to the DNR at the start of the planning process.

### CONTACT INFORMATION

Plan Writer Name Daniel Schillinger	Landowner Name Omena Woods Association
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Landowner Complete Mailing Address (street, city, state, zip)  
PO Box 55  
Omena, MI 49674

Landowner Telephone Number (including area code) 231-386-7651	Landowner E-mail mptomena@torchlake.com
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Ownership Type  Individual  Family  Multiple Families  Club  Trust  Corporation  LLC  Association  Indian Tribe

### PROPERTY LOCATION

County Leelanau	Township Leelanau (South)	Town 31N	Range 11W	Section Number 25 & 36
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Basic Legal Description  
134 Acres within Sections 25 & 36

Forested Acres in Plan 128.9	There is no minimum or maximum acreage to develop a Forest Stewardship Plan. Financial assistance is available for forests ≥20 acres. The cost share formula is based on acres in the plan, excluding large bodies of water or agricultural land not being planted in trees.
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### ELIGIBILITY

Yes	No	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is the property non-industrial private forest land owned by an individual, family, group, corporation, tribe, or other private entity?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Have you applied for a contract with the NRCS to do a CAP 106 forest management plan for this same property?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is this an update or modification of an earlier Forest Stewardship Plan for this parcel that is less than ten years old?

### OTHER PROGRAMS THAT REQUIRE FOREST MANAGEMENT PLANS

Yes	No	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Are you applying separately to the Qualified Forest Program to lower your property taxes? <a href="http://Michigan.gov/QFP">[Michigan.gov/QFP]</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Are you applying separately to the Commercial Forest Program to lower your property taxes? <a href="http://Michigan.gov/CommercialForest">[Michigan.gov/CommercialForest]</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Are you interested in applying to the NRCS for financial assistance to implement this plan? <a href="http://nrcs.usda.gov">[nrcs.usda.gov]</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Would you like to join the American Tree Farm System to certify your exemplary forest stewardship? <a href="http://TreeFarmSystem.org/MI">[TreeFarmSystem.org/MI]</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Would you like to certify your forest management through the Forest Stewardship Council? <a href="http://us.fsc.org">[us.fsc.org]</a>

The Michigan Forest Stewardship Program gives you a free one-year membership in the Michigan Forest Association (MFA). MFA provides education, fellowship, advocacy and a quarterly magazine for family forest owners ([MichiganForests.org](http://MichiganForests.org)).  
**\*\*\*Write "YES" to give the DNR permission to share your contact information with the Michigan Forest Association.\*\*\***

### MICHIGAN STEWARDSHIP ETHIC

Stewardship is an ethic recognizing that the land and its natural inhabitants have an inherent worth and that humans have a responsibility to consider the land as we manage, protect and enjoy the forest. Stewardship guides us to conduct our activities to the utmost of our abilities, insure the future health, productivity, diversity and well-being of the forest, its natural communities and species. We must provide opportunities to our successors that are equal to ours to use and enjoy the forest and its resources.

**LANDOWNER GOALS**

What are your goals for your woods over the next 10 to 20 years?

Maintain/Improve Forest Health, Maintain/Enhance Biodiversity, Maintain safe recreational activities especially hiking and X-country skiing, Consider wildlife habitat improvements as resources allow; re-introducing lost plant species, enhance wildlife habitat for threatened or endangered species, etc.

Potential Management Activities	Not Applicable	Not Important	Somewhat Important	Very Important	Comments
Protect soil resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Protect water quality (rivers, lakes, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Maintain or improve biological diversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Enjoy beauty, scenery and aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Hunting (indicate preferred game species)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HUNTING NOT CURRENTLY ALLOWED
Recreation other than hunting (indicate activity)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	HIKING - X-COUNTRY SKIING - BIRDING
Produce timber for commercial harvest	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Produce firewood	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Produce other non-timber forest products	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Plant trees or shrubs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	WANT TREE PLANTING PLAN
Improve wildlife habitat (indicate species)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Protect threatened or endangered species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Forest health – insects, disease, invasive plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Protect archeological, cultural or historic features	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Protect unique natural features	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	TAMARACK Bogs JUST OFF PROPERTY
Protect or restore wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Minimize the risk of wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Manage carbon stocks to mitigate climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pass land to children or other heirs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ASSOCIATION OWNED - MAINTAIN WOODS

**PLAN PREPARATION COSTS AND DISCOUNTS**

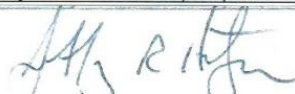
The cost to develop a Forest Stewardship Plan is determined by the plan writer and agreed upon by the landowner. A partial cost share, made possible with funding from the United States Forest Service, may be available through an annual grant to the plan writer. **The cost share formula is "\$200 per plan plus \$0.50 per forested acre up to an annual maximum of \$2,500 per landowner."** Landowners should expect to pay for a significant portion of the total plan costs. The DNR must report matching funds to the Forest Service so landowners must report the amount that they contribute to the total cost of the plan. This form is not a legal contract.

Amount paid by the landowner for this Forest Stewardship Plan	\$ 2,323.00
Cost share from DNR paid to the plan writer after DNR review and approval	\$ 292.00
Write "100" for additional cost share from DNR to plan writer if landowner enrolls in American Tree Farm System. Plan writer must be a Tree Farm Forester and submit "004 Form" to Tree Farm prior to payment.	\$ N/A

**LANDOWNER SIGNATURE**

My Forest Stewardship Plan will describe my goals, forest resources and recommended activities to achieve my goals over the next 10 to 20 years. Participation in the *voluntary* Forest Stewardship Program indicates my intent to use my plan to take good care of my woods. I understand that enrolling in *separate* programs (Qualified Forest, Commercial Forest, American Tree Farm System, Forest Stewardship Council, Environmental Quality Incentives, etc.) requires compliance with those independent program guidelines.

Landowner Signature



Date

1/30/2020

APPLICATION APPROVAL AND PROPERTY REVIEW BY DNR	
DNR Service Forester Signature	Date
State Historic Preservation Office Database Results	
(If positive, contact Stacy Tchorzynski, State Archeologist, at <a href="mailto:TchorzynskiS@michigan.gov">TchorzynskiS@michigan.gov</a> for more detailed information.):	
Threatened & Endangered Species Database Results	
(If present, see the Michigan Natural Features Inventory at <a href="http://mnfi.anr.msu.edu">mnfi.anr.msu.edu</a> for more information.)	
PLAN APPROVAL AND COST SHARE PAYMENT AUTHORIZATION BY THE DNR	
Service Forester Signature to Approve Plan	Date
FSP Coordinator Signature to Authorize Payment	Date
Forest Stewardship Plans must be completed within a single federal fiscal year starting October 1 and ending September 30. <i>Plans must be submitted to the DNR prior to September 15 to allow for year-end reporting.</i> Payment will be authorized if the Forest Stewardship Plan includes required components and if the Plan Writer has a prior grant agreement with the DNR for cost share payments.	
FOREST STEWARDSHIP PROGRAM	
The Forest Stewardship Program is a partnership between the United States Forest Service, the Michigan Department of Natural Resources, 160 professional foresters and landowners to develop a custom Forest Stewardship Plan for their woods. Since 1991, more than 6,600 landowners in Michigan have developed their own Forest Stewardship Plan to help them <i>manage, protect, and enjoy</i> over one million acres of forest. See <a href="http://Michigan.gov/ForestStewardship">Michigan.gov/ForestStewardship</a> for information.	
DNR CONTACT INFORMATION	
<b>DNR Service Foresters</b> Western UP - Gary Willis; 906-353-6651; <a href="mailto:willisg2@michigan.gov">willisg2@michigan.gov</a> ; 427 US 41 North, Baraga, MI 49908 Eastern UP - Ernie Houghton; 906-789-8208; <a href="mailto:houghtone@michigan.gov">houghtone@michigan.gov</a> ; 6833 Highway 2, Gladstone, MI 49837 Northern LP - Mike Hanley; 517-675-5445; <a href="mailto:hanleym@michigan.gov">hanleym@michigan.gov</a> ; 9870 West Stoll Road, Haslett, MI 48840	
<b>Forest Stewardship Coordinator</b> Southern LP - Mike Smalligan; 517-284-5884; <a href="mailto:smalliganm@michigan.gov">smalliganm@michigan.gov</a> ; 525 West Allegan, Lansing, MI 48933	
THE DNR AND USFS ARE EQUAL OPPORTUNITY PROVIDERS AND EMPLOYERS	
The USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. The Michigan DNR provides equal opportunities for employment and access to Michigan's natural resources. Both State and Federal laws prohibit discrimination on the basis of race, color, national origin, religion, disability, age, sex, height, weight, or marital status under the U.S. Civil Rights Acts of 1964 as amended, 1976 MI PA 453, 1976 MI PA 220, Title V of the Rehabilitation Act of 1973 as amended, and the 1990 Americans with Disabilities Act, as amended. If you believe that you have been discriminated against in any program, activity, or facility, or if you desire additional information, please write: Human Resources, Michigan DNR, PO Box 30028, Lansing MI 48909, or Michigan Department of Civil Rights, Cadillac Place, 3054 West Grand Blvd, Suite 3-600, Detroit, MI 48202, or Division of Federal Assistance, U.S. Fish & Wildlife Service, 4401 North Fairfax Drive, Mail Stop MBSP-4020, Arlington, VA 22203. For information on this publication, contact the Michigan DNR, PO Box 30452, Lansing, MI 48909.	

## **Introduction to the Omena Woods Association Land**

### ***Ownership***

The property is jointly owned by an Association of land owners who reside in and around Omena Point. Collectively, there are about 100 members who have elected 9 board members to help manage and care for this land. The intent of the Association is to maintain the land as forested without the potential for development. To this end, the land was encumbered by a Conservation Easement with the Leelanau Conservancy to restrict the potential for development into the future. The Conservation Easement requires that before any management take place, particularly the cutting of trees, those management actions must be approved and written in a Forest Management Plan. This was the catalyst for the development of the original Forest Management Plan, created by Rick Moore in 2004. This plan is intended to be an update and expansion of the original plan, including more specific management actions.

### ***Goals***

The board wishes to pursue the following goals for the land; 1) maintain/improve forest health, 2) maintain/increase visual appearance from the walking trails while maintaining safety, 3) increase tree species diversity by planting native trees not currently on the property, 4) retain the open condition of (Unit 1 & 2) by retaining normal forest succession for the benefit of bird & pollinator species. This plan will detail the management actions required to achieve these goals should the board elect to take them. This is the catalyst for this revised plan.

### ***Past Management Actions***

The Association maintains a list of “Plants Identified at Omena Michigan dated July 8<sup>th</sup> to August 4<sup>th</sup> 1933 (author unknown).” This document shows the long standing care and diligence residents have used while owning this land. Past tree cutting management has focused solely on removing very hazardous trees/limbs and those which have fallen across existing trails. In 2008 the Association began work on an “Omena Woods Meadow Recovery Plan” to maintain Parts of Unit #1 & #2 as a meadow and tailor the plant composition to meadow grasses with hopes of increasing habitat for a host of meadow wildlife species.

### ***Planning Process***

Representatives of the Omena Woods Association Board met with the Plan Writers during the winter of 2019. Multiple field visits in the winter and spring were conducted by members of the Association and the Plan Writers. A draft plan was submitted to the Advisory Board for their review prior to submission to the Association.

### ***Stand Assessment Method***

The Plan Writer first compiled information on property boundaries, soil types, and vegetative cover types. Basic field assessment data was collected by visual and quantitative surveys on multiple occasions in the winter and spring. Vegetative sampling was conducted in the winter sampling both over and understory species. Point and fixed area plots were used to gain a rough estimate of forest density, vegetative species composition, diameter distribution, and dead down woody debris for the forested tracts only. Other observational data included:

insect and disease issues, presence or absence of invasive species, and occurrence of wildlife and their habitats.

### **Omena Woods Existing Conditions**

#### ***Property Location***

The Omena Woods is located on the Omena Peninsula just east of the village of Omena, MI. It is approximately 134 acres in size and predominantly wooded.



Figure 1. Omena Woods.

#### ***Geology***

Omena Woods falls within the Antrim-Charlevoix Drumlin Fields Physiographic Region of the Northern Lower Peninsula High Hills Region. The physiographic region is characterized by hills and plains formed by glacial depositional and meltwater erosional processes (<https://www.esrs.wmich.edu/mgs/webmgs/physiography/physio.html>). The bedrock geology of the Omena Peninsula is Antrim Shale, dating to the late Devonian (419.2-358.9 million years ago). The major lithologic constituents are Sedimentary>Clastic>Mudstone>Shale>Black Shale. The Antrim Shale bedrock is overlain with Lacustrine Sand and Gravel deposited during the glacial-interglacial age of the Quaternary Period (2.6 million years ago - forward) (<https://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=MIDa%3B0>).



## Soils

The four primary soil types found within Omena Woods are; Alpena gravelly sandy loam on 0-12% slopes, East Lake loamy sand on 0-6% slopes, East Lake loamy sand on 6-12% slopes, and Emmet-Omena sandy loams on 25-50% slopes (Figure 2 and Table 1). The parent material for Alpena gravelly sandy loam and East Lake loamy sand are sandy or loamy material over calcareous sandy and gravelly glacial fluvial deposits. The parent material for Emmet-Omena sandy loams is loamy material over calcareous loamy till. These soil types are well drained to excessively drained and comprise the majority of Omena Woods. The only poorly drained soil types are the Houghton-Adrian mucks found along the shore of Mougeys Lake and the Hettinger-Muck complex found east of Omena Lake. For a complete description of the primary soil types see the Appendix.

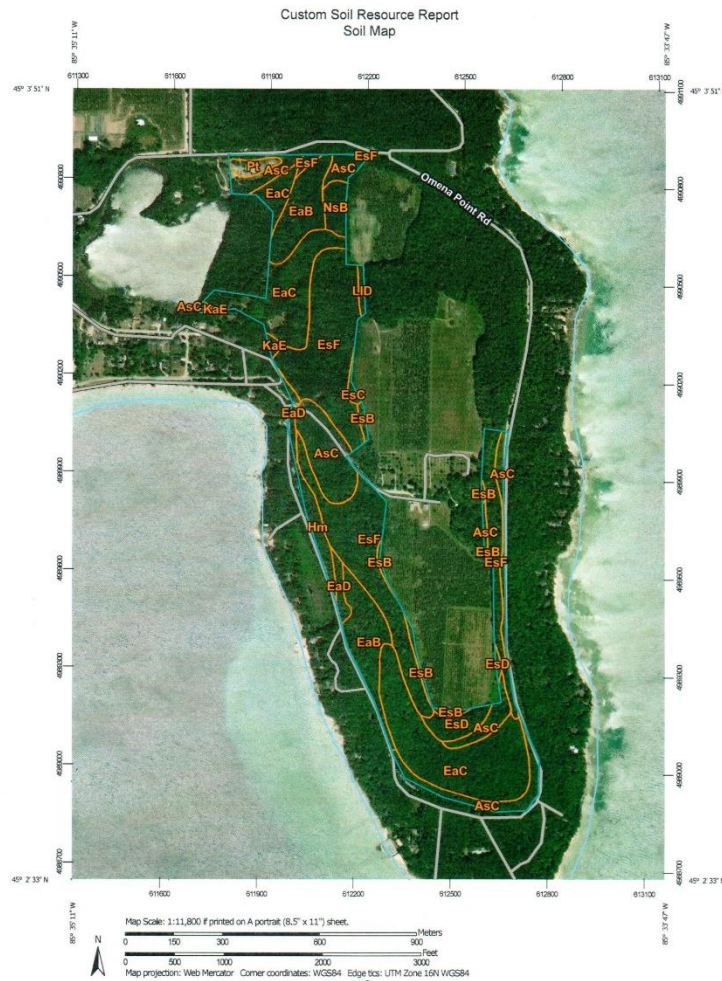


Figure 2. Soils map of the Area of Interest which encompasses Omena Woods (Soil Survey Staff, Natural Resources Conservation Service, and United States Department of Agriculture. Web Soil Survey. Available online at <https://websoilsurvey.sc.egov.usda.gov/>).

Table 1. Soil types found in the Area of Interest (AOI) which includes Omena Woods, Leelanau County (Soil Survey Staff, Natural Resources Conservation Service, and United States Department of Agriculture. Web Soil Survey. Available online at <https://websoilsurvey.sc.egov.usda.gov/>).

Map Unit Symbol	Map Unit Name	Percent Slope	Acres in AOI*	Percent of AOI*
AsC	Alpena gravelly sandy loam	0-12%	23.9	16.4%
EaB	East Lake loamy sand	0-6% lake moderated	16.6	11.4%
EaC	East Lake loam sand	6-12%	39.3	27.1%
EaD	East Lake Loam sand	12-18%	2.7	1.8%
EsB	Emmet-Omena sandy loams	2-6%	2.1	1.4%
EsC	Emmet-Omena sandy loams	6-12%	0.5	0.4%
EsD	Emmet-Omena sandy loams	12-18%	3.5	2.4%
EsF	Emmet-Omena sandy loams	25-50%	48.0	33.0%
Hm	Hettinger-Muck complex	-----	3.1	2.1%
KaE	Kaleva sand	18-35%	0.6	0.4%
LID	Leelanau-East Lake loam sands	12-18% lake moderated	0.7	0.5%
NsB	Nester silt loam	2-6%	2.7	1.9%
Pt	Pits, gravel	-----	1.7	1.2%
<b>Totals for Area of Interest</b>			<b>145.2</b>	<b>100.0%</b>

\*AOI=Area of Interest

### **Wetlands**

The Michigan Department of Environmental Quality (DEQ) Wetlands Map Viewer ([www.mcgi.state.mi.us/wetlands](http://www.mcgi.state.mi.us/wetlands)), indicates that a portion of Unit 1 is designated wetland as mapped by the National Wetland Inventory and Michigan Inventory Resource System and that portion of Unit 3 east of Omena Lake has wetland soils (see Appendix). A permit is required for filling, dredging, draining or development. See [www.Michigan.gov/DEQWetlands](http://www.Michigan.gov/DEQWetlands) for more information about wetlands. Any management activity throughout the ownership should follow the “Sustainable Soil and Water Quality Practices on Forest Land” (Best Management Practices – [www.michigan.gov/dnr](http://www.michigan.gov/dnr)).

## Management Unit Map

The Omena Woods is approximately 134 acres in size with <2% in Open/Grass (Unit 1), 6% in Open/White Pine (Unit 2), 13% in Hemlock/Northern Hardwoods (Unit 3) and about 80% in Northern Hardwood forest (Unit 4) (Figure 3).

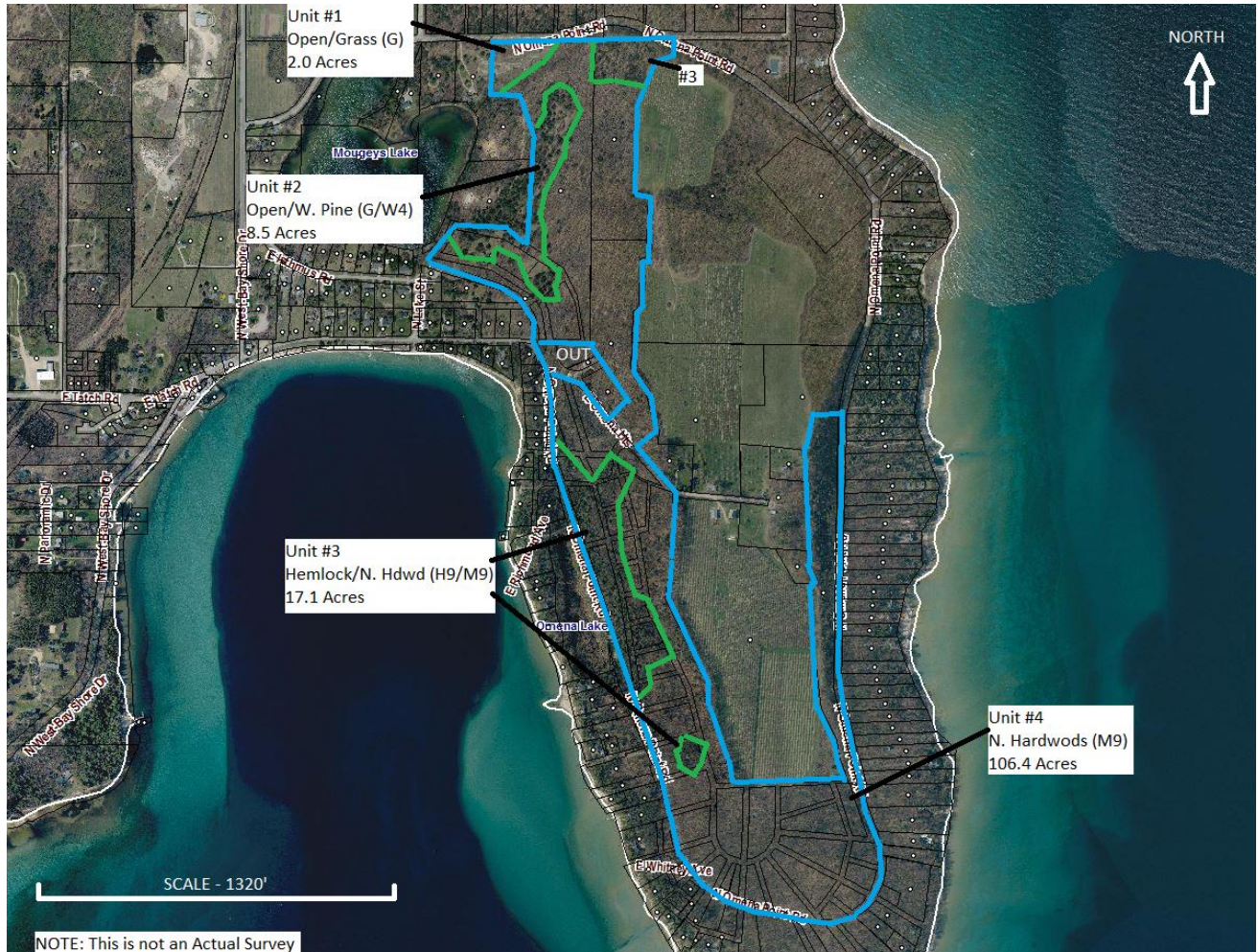


Figure 3. The Omena Woods consists predominantly of Northern Hardwoods, Hemlock Hardwoods, with Open/Grass and Open/Pine cover types.

### *Management Unit 1 – Open/Grass:*

Acres:  $\approx 2$

Soils: Pt, AsC, EoD

Management Objective: Goal 4 – Create/maintain habitat to benefit bird/pollinator species.

Management Unit Description: Management Unit 1 is best described as an old gravel pit. It has been maintained in an open – non-forested condition with the objective of potentially being used as a drainage field in the future. To maintain that open condition, shrubs and saplings have been treated and the site seeded with native grasses and forbs. There is some establishment of native grasses, however, spotted knapweed and autumn olive, both aggressive invasive species, occur throughout the unit. Portions of the unit have been identified as wetland, including wetland soils.



*Management Unit 2 – Open/White Pine:*

Acres:  $\approx 9$

Soils: AsC, EaC

Management Objective: Goal 4 – Create/maintain habitat to benefit bird/pollinator species.

Management Unit Description: Management Unit 2 was once a golf course and is now succeeding to forest. It consists of scattered openings, shrubs, and trees. The predominant tree species include; white pine, cherry, aspen, and northern red oak. The white pine are in poor form due to the white pine weevil. Young white pine growing in open conditions are susceptible to damage by this weevil. The weevil attacks the leader which results in multiple stems versus a single trunk resulting in poor stem structure in the future. Invasive honeysuckle, autumn olive, and spotted knapweed are found extensively in this unit. As part of the “Omena Woods Meadow Restoration Plan” portions of the unit were treated to remove the shrub component targeting staghorn sumac and juniper as well as encroaching saplings.

(Below) Open grassy are showing the massive deer browse pressure on hardwood saplings



*Management Unit 3 – Hemlock/Northern Hardwoods:*

Acres: ≈ 17

Soils: EaB, EaC, EsB, EsD, Hm

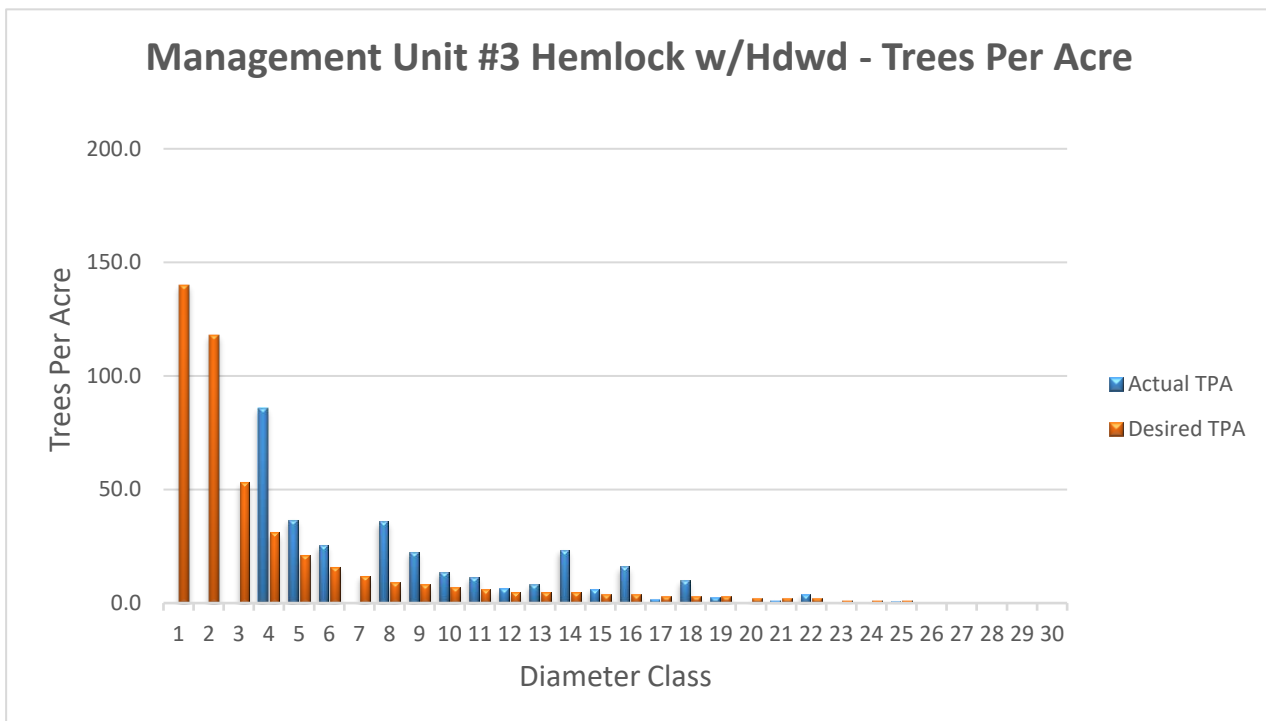
Management Objectives: Goal 1 – Forest health, Goal 2 – Safe recreation, Goal 3 – Regional biodiversity

Site Quality: Good

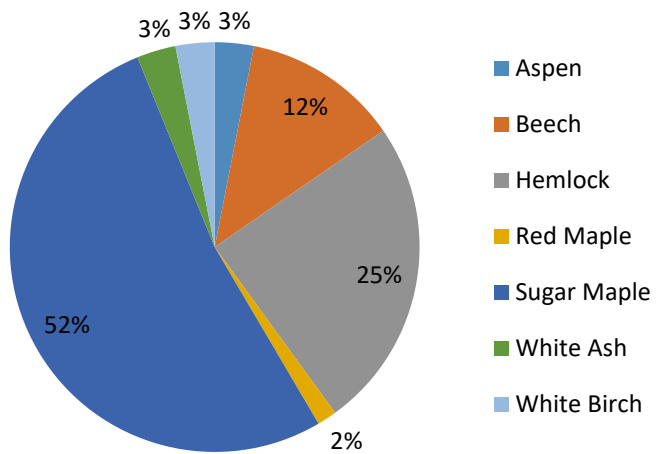
Stand Quality: Good

Stand Density: 163 ft<sup>2</sup>/Acre

Management Unit Description: Unit 3 consists of 3 scattered hemlock stands with a hardwood component. This unit is over-stocked. Optimal tree growth of hardwoods occurs at a stand density of 85-90 ft<sup>2</sup>/Acre. Tree diversity is considered average. Sugar maple comprise 52% of the canopy, hemlock 25%, and the remaining 23% is comprised of 5 other species. This stand is over-stocked in all the diameter classes between 4-18” and very understocked in every diameter class less than 4”. In fact there were no trees to be sampled less than 4” in any of the field sample plots. There were considerably more wildlife tracks in this unit than all the other units combined. Hemlock provides thermal cover for white-tailed deer and numerous beds were observed.



### Unit #3 Hemlock w/Hdwds, Tree Species Index



Characteristic “beech snap” hazard



Deer “yarding” under hemlock

*Management Unit 4 – Northern Hardwoods:*

Acres: ≈ 112

Soils: AsC, EaB, EaC, EsB, EsC, EsD, EsF

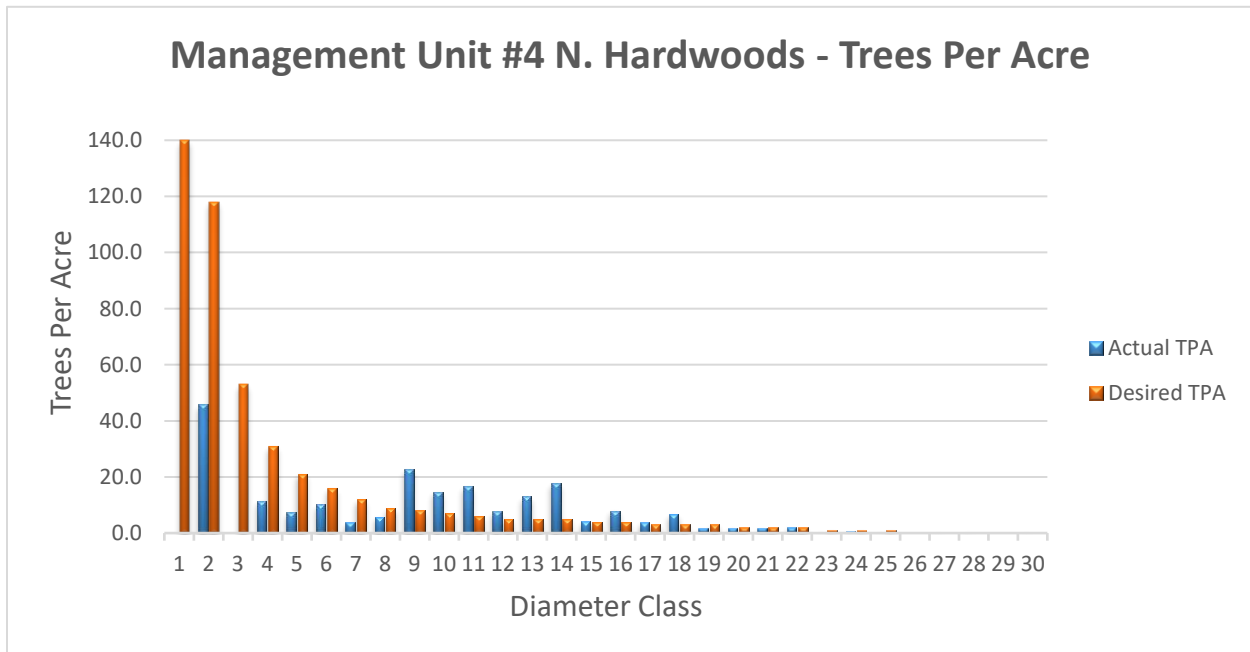
Management Objectives: Goal 1 – Forest health, Goal 2 – Safe recreation, Goal 3 – Regional biodiversity

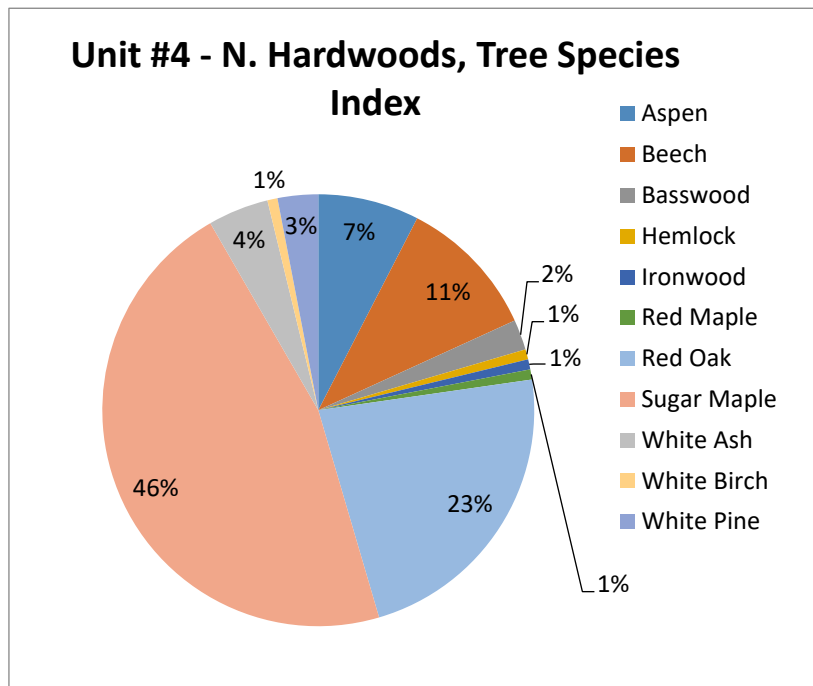
Site Quality: Good

Stand Quality: Good-Excellent

Stand Density: 120 ft<sup>2</sup>/Acre

Management Unit Description: This unit has good tree species diversity with 11 different species represented but is over-stocked, limiting the optimal growth of individual trees. The stand is classified as Northern Hardwoods with the three predominant tree species being sugar maple at 46%, northern red oak at 23% and American beech at 11%. Both oak and beech are important mast producing species and support numerous wildlife species. This stand is over-stocked in the 9-14” diameter classes and understocked in every diameter class less than 9” Secondly, the only species of trees sampled in 2-3” category were ironwood, a non-preferred food of white-tailed deer. There were no trees found to sample under 6” in diameter on the southern end of this unit. There are 2 sizable mature aspen pockets mixed with hardwoods in the northern half of this unit.





Unit 4 - mature Northern Hardwoods with pockets of mature aspen blown over in a recent storm. Note the non-existent small tree component (2-6" in diameter)

#### ***Threatened and Endangered Species***

A search of the Michigan Natural Features County Element Database by the Michigan DNR, Forest Stewardship Office resulted in the identification of Furrowed Flax (*Linum sulcatum*) as potentially in this section of the Township. This plant grows on disturbed oak barrens and is likely not present on this property. Should this plant be found, none known at this time, management activities should be avoided which disturb/injure this plant.

#### ***Wildlife Habitat***

Omena Woods is comprised of a variety of wildlife habitat conditions including both forested and non-forested habitats. Water is also a necessary habitat component. Even though there is no free standing water available within Omena Woods, the close proximity of the tract to Mougeys Lake, Omena Lake, Omena Bay and Grand Traverse Bay is significant. Water adjacent



to undeveloped forest is beneficial to wildlife. The combination of all the various habitats across the ownership results in a diversity in plant communities, vegetative species composition, and structure. This diversity correlates with wildlife habitat diversity. Of the 399 vertebrate wildlife species found in Michigan, 299 are found in Leelanau County. Of this, forested habitats similar to what is found within Omena Woods provide potential habitat for 120 species and non-forested, savanna-like habitat, 99 species (WHAM-MIWILD analyses, see Appendices). In addition, the forested stands contain a variety of structural habitat features which may be necessary to the overall quality of the habitat for wildlife. These include; significant dead down woody debris, snags, living and dead cavity trees, a large tree component, canopy gap openings, and mast producing species (e.g. northern red oak, American beech, and ironwood). These structural features are a critical habitat component for 109 species (WHAM-MIWILD, see Appendix). These analyses assume healthy conditions. The forested stands in Omena Woods tend to lack a vigorous understory layer due in part to an overabundant deer herd. The non-forested areas have invasive shrub species which degrade the health of the system and impact the value to wildlife.



Tree Hollow



Small mammal tracks and downed trees



Foraged ironwood seeds

Wildlife or wildlife sign (e.g. tracks or calls) recorded within the Omena Woods on a single winter day included: numerous microtines (possibly deer mice and voles), shrews, squirrels, a weasel, coyotes, bobcat, many white-tailed deer, red-bellied and downy woodpeckers, chickadees and blue-jays.



Squirrel track



Buck rub



Small mammal track



Coyote scat

## ***Archeological, Cultural, or Unique Natural Sites***

The Michigan Department of Natural Resources reports that the archeological database has 3 potential sites of Cultural Importance;

***Omena Woods- this information is confidential and not for public dissemination. Archeological site locations are exempt from FOIA.***

*There are three previously reported archaeological sites in this project area:*

*20LU7- early Indigenous village, in **south ½ of Section 36** but precise location and whether any significant archaeological materials remain are currently unknown.*

*20LU54- historic Native American apple orchard, in **north ½ of Section 36** but precise location and whether any significant archaeological materials remain are currently unknown.*

*20LU60- circa 1852 Native American village and mission, **near Omena Bay in Section 25** but precise location and whether any significant archaeological materials remain are currently unknown.*

*The area has not yet been professionally archaeologically surveyed, but is considered potentially sensitive for the presence of prehistoric and historic archaeological sites. Archaeological sites and materials may be observable on the surface or may be buried shallowly near the ground surface. Every effort should be made to minimize ground disturbance. Recommend a plan for the inadvertent discovery of archaeological artifacts, sites, and human remains. Professional archaeological survey and Tribal consultation may be appropriate should extensive ground disturbing projects be proposed.”*

*Stacy Tchorzynski  
SHPO Archaeologist  
Office: 517-335-9840 | Desk: 517-335-9914*

*State Historic Preservation Office  
Michigan Economic Development Corporation  
300 N Washington Square  
Lansing, MI 48913*

Standard Seven of the American Tree Farm System is Protect Special Sites – “Special sites are managed in ways that recognized their unique historical, archeological, cultural, geological, biological or ecological characteristics.” Omena Woods is located within a Forest of Recognized Importance (FORI). The FORI in Michigan include Great Lakes coastline, riparian corridors along Wild and Scenic or Natural Rivers, rare forest types, or forests that provide required habitat for threatened or endangered species. Forests within a mile of the Great Lakes are globally rare and should be managed to maintain forest cover near Great Lakes shorelines.

Much of Omena Woods consists of Mesic Northern Forest, which consists predominantly of sugar maple, American beech, hemlock, and white pine. The state element ranking for the Mesic Northern Forest type is S3. The S3 ranking is defined as “Vulnerable in the state due to a restricted range, relatively few occurrences (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation” (<https://mnfi.anr.msu.edu/reports/MNFI->

[Report-2007-21.pdf](#)). The Mesic Northern Forest type across the State has been negatively impacted by logging and overabundant deer populations. Past and current logging practices and high deer densities have direct and indirect effects on stand structure and vegetative species composition including the presence of invasive species. These combined factors have resulted in a loss of vertical structure (i.e. layers within the stand) and a reduction in plant species diversity, including the loss of conifers. For example, an old growth Northern Hardwood stand at low deer densities has a variety of plant species including herbaceous plants, as well as trees of all size classes (seedlings, saplings, poles, sawlogs) and shade tolerance/intolerance compared to a stand with high deer densities. For a complete discussion see the Michigan Natural Features Mesic Northern Forest Abstract in the Appendix.



(Left) An old-growth Northern Hardwood stand at low deer densities and (Right) a second growth Northern Hardwood stand with high deer densities. Note the difference in tree species composition and vertical structure and the “browse line” in the second growth stand.

## Omena Woods Management Actions

### *Goal 1) Maintain/improve forest health*

#### Insects and Disease

Eastern hemlock is an important component of Omena Woods and the Mesic Northern Forest in general. It makes a significant contribution to biodiversity and supports numerous wildlife species. This plan will look to promote hemlock trees within their natural units. The Hemlock Woolly Adelgid is an exotic pest introduced to the United States from Asia. It has led to the widespread decline and death of hemlock throughout the eastern United States. This pest has reached Michigan and may cause future problems to the hemlocks of Omena Woods. The adelgid is readily spread by the wind, by moving infested material, and by other forest dwelling

animals typically between the months of March and June. This insect feeds on the underside of young hemlock needles and creates small woolly “cotton ball” scales that protect them while feeding. Inspecting hemlocks for the Hemlock Woolly Adelgid should be done by qualified professionals each year. This monitoring effort would allow the prompt treating of infested trees before their numbers swell. To treat this pest with limited resources, the hemlock trees in unit #3 should be focused on for treatment.

Beech Bark Disease is a problem across Michigan and it has impacted the American beech trees of Omena Woods. This is a two factor disease that first starts when a scale insect penetrates the bark of a tree, allowing a fungus to enter through the wound. Eventually, the combined actions of the scale and the fungus lead to the death of the tree. From mid-summer to fall, the scale insects are in their crawler stage and can move to neighboring trees. Since the beech trees in Omena Woods have the disease, the moving of beech firewood or logs is prohibited at this time. The beech component on this property is over 10% of the tree canopy so the owners are encouraged to annually assess their trees for health and safety. This is especially true for the infested trees near the trails and benches. These trees pose a hazard and should be removed during the next scheduled management activity. Current research suggests a few beech (about 1%) survive the initial infestation and hopefully will perpetuate the species.



Emerald Ash Borer is an exotic insect pest which has decimated the native ash species throughout Michigan. They have attacked all of the ash trees in the region and the only ash trees which are not dead/dying are under existing insecticide programs. There are several ash trees on this parcel which have had trunk injections in the past and are now being treated with a systemic insecticide. (2) of the ash trees currently under treatment have declining canopies and these trees should be pruned for safety or removed entirely. The other trees under treatment should be treated for as long as resources and overall tree health allow.

Oak Wilt is a deadly fungal vascular disease that targets red oaks. There are many northern red oaks scattered throughout Omena Woods with a particularly dense pocket on the ridge over-looking Omena Bay near the Isthmus road. Oak wilt gains access to the tree through a wound or a root graft from a nearby diseased tree. Oak wilt is very difficult to control once it becomes established in a stand. It can move quickly through a stand through root grafts from red oak tree to red oak tree. No cutting or pruning of red oaks is allowed from April 15<sup>th</sup> through August 15<sup>th</sup>. Dormant season cutting/trimming is preferred. Refer to the Appendix for more detailed information.

These forest health issues need to be addressed when management takes place on this property. The landowner is encouraged to keep in contact with a Schillinger Forestry or a registered forester to keep up on any new treatment measures for these or other forest health issues. Should any widespread control measures be found for these pests/diseases foresters will be the first to know about them.

Deer Control and Plant Protection: High deer densities influence plant species composition and abundance by reducing plant survival, growth, reproduction and consequently recruitment. Throughout the Great Lakes region the regeneration of northern white cedar, eastern hemlock, oaks, and maples has been significantly impacted by deer. This may occur at densities as low as 8 deer per square mile while regional densities in northwest Michigan are 15-30 deer per square mile. The resulting increase in browsing pressure has shifted the understory in some locations of the state, including this property, toward ferns, sedges, and non-palatable herbs and shrubs, particularly invasive species. This implies that the future dominant trees in the forest will not be what they are today.



A group of maples well over 20 years old, decimated by browsing deer

The Omena Woods has the ideal blend of habitat conditions for white-tailed deer. It has ample edge habitat which provides a mix of open and forested conditions, thermal cover provided by the hemlock, forage provided by the saplings, acorns, and the adjoining orchard, and close proximity to water. As with many properties in the region, forest regeneration in Omena Woods has been severely negatively impacted by white-tailed deer. Any management steps, especially those which include planting/maintaining plants which deer eat, must account for the potential of heavy browse.

Due to human interaction most/all of the natural predators for deer (wolf and coyote) have been eliminated from the ecosystem. This coupled with milder winters of late have led the deer population to swell. Without human intervention (fencing, planting tubes, hunting, etc.) deer may thwart many of the management suggestions made in this plan. Significant attempts should be made to reduce the herd. This could be accomplished by supporting native predators (coyote and bobcat), end supplemental feeding (which is illegal in the Lower Peninsula), and working with neighbors, especially the farmers to take additional deer (especially does), through active harvest. Currently, hunting is not permitted on this property mainly due to a valid concern, safety. However, if deer browse is continually left un-checked, much of the planting and habitat work included in the plan will be in vain. The owners are currently exploring the possibility of allowing some pre-selected, safe hunting on this property and this is highly encouraged.

As the Owners begin implementing deer browse control measures, it will be helpful to quantify the results. Therefore, the Association should begin to annually monitor the density of the deer herd. This is most effectively accomplished through pellet group counts. The pellet group count is indicative of the number of deer present on the ownership. Monitoring the herd will allow the Association to adjust management through time. Repeating the same sample areas year after year will give a good indication of the deer herd's population fluctuations and how certain control efforts are working. In other areas of the State, foresters are seeing tree regeneration problems at around 8-15 deer/square mile. Once deer numbers exceed 20 deer/square mile forest regeneration is close to impossible. Control measures should be directly related to effects on tree browse, and assessed with current data annually. For a how-to manual on pellet group counts see the Appendix.



Deer grubbing for acorns.



Deer bed under hemlocks.

Over the summer of 1933 the Association conducted a botanical survey of the ownership. Recorded in that survey were the American Yew and Showy Lady's Slipper. Both of which are highly palatable to deer. It would be interesting to repeat the botanical survey to see just how much has changed over time. Such a survey would allow the Association to judge the impact of land use change, deer herbivory, and management through time and could be used to inform future management decisions.

As most gardeners are aware, protecting palatable plants from browsing deer can be a challenge. Outside of constructing a large and expensive enclosure, some simple low cost methods can be used. They include; the repeated use of spray repellent on new vegetation, fencing or tubing individual desirable plants or tree seedlings, fencing small patches of seedlings or unique natural sites with fish line and/or deer netting, or piling brush or slash around plantings to restrict deer movement – or a combination of all of the above. Vigilant monitoring, reapplication, and repairs will be required.



Fence individual seedlings or groups. Using a brush pile to protect desirable seedlings.

Specific Management Actions relating to Goal 1:

- Monitor Units 3 and 4 for insect and disease infestations on an annual basis by a professional forester. Develop treatment plans as needed for future pests.
- Continue Emerald Ash borer treatments on those ash trees with healthy enough canopies to warrant the cost of treatment.
- Increase tree diversity by supplementally planting trees in forest openings trees which may now grow in this region; tulip poplar, hickories, walnut, butternut, etc.
- Increase tree species diversity by introducing native plants which should be growing on this property and are not found currently, see goal #3 for more details.
- Reduce the whitetail deer herd by;
  - o Ending predator removal.
  - o Ending supplemental feeding.
  - o Allowing hunting. Consider using pre-selected hunters who follow all Michigan hunting laws, purchase their own liability insurance, and meet established deer harvest guidelines (often hunters will pay for exclusive hunting rights to a property, adding a potential revenue stream).
  - o Work with neighboring farmers to obtain depredation permits from the State.
  - o Annually monitor the herd using pellet group counts to evaluate the effectiveness of management actions.
  - o (If needed and resources allow) Hire certified wildlife control specialists (aka sharp shooters) to reduce the herd to the carrying capacity of the land per the population survey.
- Protect plants from browsing deer, especially any newly planted trees.
  - o Periodically spray repellent.
  - o Fence or tube individual plants.
  - o Use heavy gauge fishing-line or deer netting to protect small groups of plants.
  - o Pile brush around desirable plants to restrict deer.
- (If resources allow) Redo the botanical survey to evaluate change through time.

For more information on deer baiting and feeding see:

[https://www.michigan.gov/dnr/0,4570,7-350-79136\\_79772\\_79773\\_83479---,00.html](https://www.michigan.gov/dnr/0,4570,7-350-79136_79772_79773_83479---,00.html)

For more information on deer damage permits see:

[https://www.michigan.gov/dnr/0,4570,7-350-79134\\_82777-293285--,00.html](https://www.michigan.gov/dnr/0,4570,7-350-79134_82777-293285--,00.html)

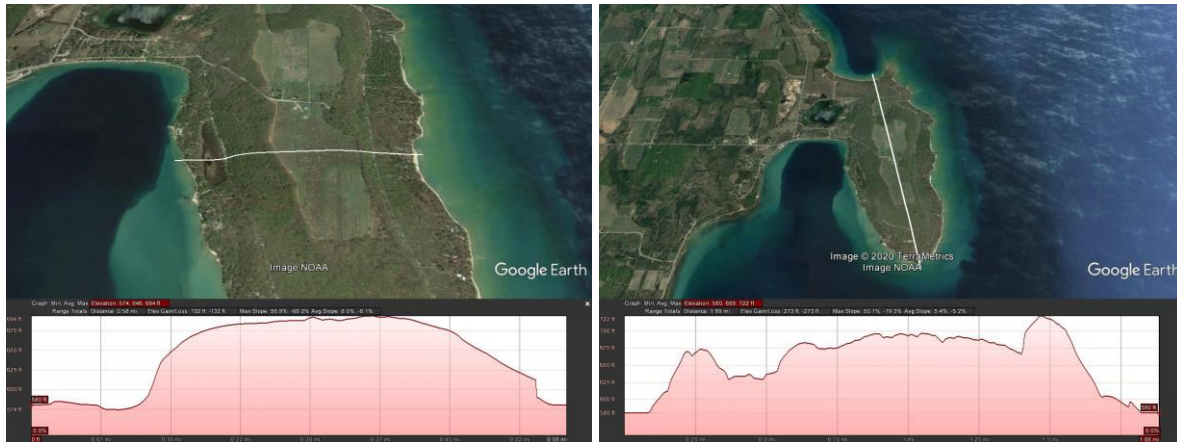
**Goal 2) *Maintain/increase visual appearance from the walking trails while maintaining safety***

**Aesthetic Quality:** People respond positively to natural versus urban landscapes, preferring trees and other vegetation. Research indicates a direct link between visual quality and human health. Within forested landscapes, people tend to prefer more open forest conditions with scattered large trees. Negative features include; many small trees, large amounts of dead and down woody debris, and a thick shrub layer. At times, human perceptions of visual quality may be at odds with forest health and the ecological value of the stand. For instance, dead down woody debris is of significant value to wildlife and important in carbon retention and nutrient cycling yet has low visual value.

The stands comprising the Omena Woods are as diverse in visual quality elements as they are in habitat types. This diversity is represented in a variety of forms, colors, and textures across a relatively short distance, which lends to high visual quality. Within stand features which contribute to high visual quality include: tree species diversity, canopy breaks, open stand conditions, and a large tree component. All of which are present in Units 3 and 4. Units #1 and 2 offer plant height differences and areas to add a larger number of blooming plants which will be blooming when many members are in town and recreating on the property. Secondly, if executed properly, having a large number of different species of plants blooming over a large timeframe will have both the visual and pollinator benefits.

**Hazard Trees:** Prior to the wide spread mortality associated with the introduction of exotic insects and diseases (see Goal 1 above), wind events were the primary natural disturbance regime in the Mesic Northern Forest. Small micro-bursts continue to create canopy gaps fairly frequently while large, stand replacing events happen every 1,200-1,500 years (see Appendix). The potential impact of a wind event on a stand is dependent in part on soil type and topographic position. The majority of the soil types comprising Omena Woods are rated as having a “Slight” wind-throw potential (<https://websoilsurvey.sc.egov.usda.gov/>). Only the Hettinger-Muck Complex was rated as “Severe” by the Web Soil Survey. The Hettinger-Muck Complex is found in the low lying area east of Omena Lake in Unit 3. The severe rating is due in part to the fact that this type is found where the water table is at the surface and the soils are saturated and poorly drained. Despite the majority of the area having only a “Slight” rating, there is evidence for wind-throw. This is due in part to the topographic position of Omena Woods as it is exposed to wind events from many directions. The fairly recent wind-throw of aspen in Unit 4 on the western ridge is an example. The blow-down of these overstory aspen will promote sprouting and if the opening is large enough, creates light conditions favorable for aspen growth. Aspen sprouts are highly palatable to deer and efforts should be made to protect regeneration.





Elevation profiles of the Omena Peninsula. Note the significant ridges that are exposed to wind events in both profiles.

Past disturbance events are evident in the tree species composition of Omena Woods. Throughout the forested units there are patches of shade-intolerant trees such as big tooth aspen and northern red oak. Both require a fairly large opening in the canopy for establishment. Today, canopy gap formation is made by wind events coupled with ash mortality due to Emerald Ash Borer and beech mortality caused by Beech Bark Disease. The combined effect has created numerous gaps of various sizes through-out the stands. These openings should allow enough light to reach the forest floor to stimulate regeneration. This regeneration, unless protected will be hindered by deer. The numerous standing dead trees and those that are hung-up are regarded as Hazard Trees. Hazard Trees near areas frequently used by people should be dropped to the forest floor and allowed to decay naturally for the wildlife and nutrient cycling benefits.



Windthrow of big tooth aspen in Unit 4.



Even though standing dead trees are beneficial to wildlife, if they are in close proximity to areas used by humans they pose a hazard.

#### Specific Management Actions relating to Goal 2:

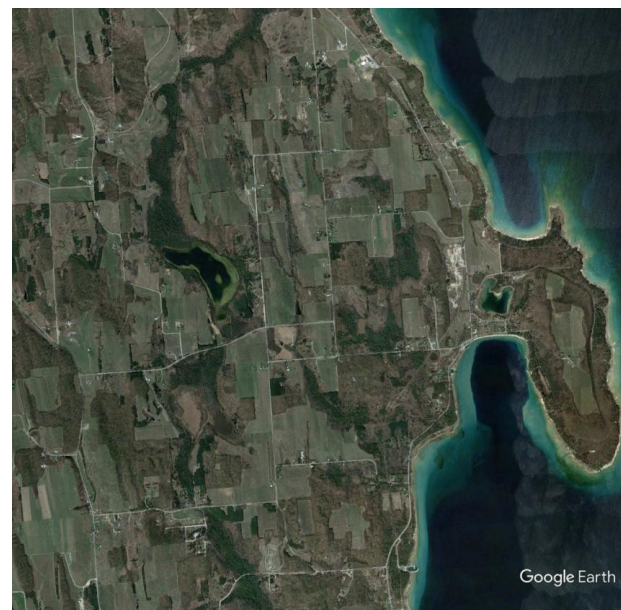
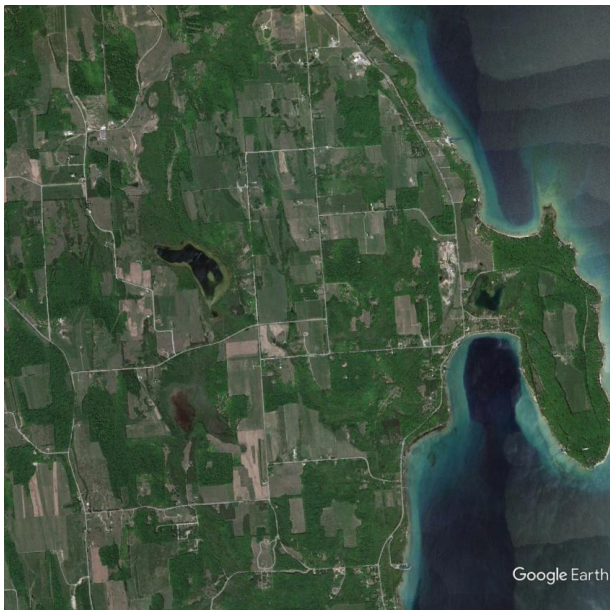
- For Units 1 and 2, create a more open condition by removing encroaching tree saplings, and invasive shrub species like honeysuckle and autumn olive, to make room for more wildlife beneficial plants and shrubs. To control autumn olive or honeysuckle: Cut all autumn olive/honeysuckle when it is found during the late summer/fall and immediately apply an approved basal treatment herbicide with a broad leaf herbicide containing 2, 4-D and or triclopyr. The following summer(s) use a spot spray application to kill back any sprouting autumn olives or honeysuckle, using care to avoid any desirable broadleaf vegetation. Refer to reference material for more removal details. All State pesticide regulations must be followed while applying any pesticide. A non-chemical option to control these invasive shrubs, is repeated cutting, or pulling the plants out roots and all, until the plants run out of energy to re-sprout. This mechanical only treatment will cost more in labor but would limit the use of herbicides.
- With the invasive shrubs controlled consider adding wildlife/pollinator beneficial shrubs; gray dogwood, serviceberry, staghorn sumac, juniper or sand cherry. Find a full list in the appendix “Native Shrubs”
- Within Units #1 & #2, control in federally listed invasive plant spotted knapweed. To control spotted knapweed: prescribed burning, selective herbicide application, manual removal and/or smothering with mulch or landscape fabric. Black plastic applied for an entire growing season kills the weeds and many of the seeds within the soil’s seed bank. This is the most effective when treating small areas.
- With the spotted knapweed controlled consider adding pollinator, and visually appealing, flowers like; dotted mint, butter fly weed, milkweed, golden rod and in the

forest edges add ramps, columbine, etc. Refer to the appendices “Native Perennials” for more plants species to include in Omena Woods.

- For Units 3 and 4, maintain a diversity of tree species. This entails the regeneration of shade intolerant species (e.g. oak, cherry, aspen, pine) either through the protection of regeneration in the larger openings created by insects/disease/natural disturbance or active harvest (e.g. patch cut or group selection). Regardless of method, regeneration would need to be protected from browsing deer.
- Remove hazard trees that pose a safety threat near trails and benches as they are found. Whoever is selected to be cutting trees on this property MUST be insured to do so and wear all the required personal protective equipment.

***Goal 3) Increase tree species diversity by planting trees not currently on the property***

**Scaling Biodiversity:** Regional biodiversity scales from the neighborhood in which Omena Woods resides to specific features within each Unit. Prior to European settlement, Leelanau County was predominantly forested and the most extensive forest type was Beech-Sugar Maple-Hemlock Forest (see GLO survey in the Appendix). Logging began around the 1870’s and the majority of the local communities that exist today had their beginnings as logging towns. The remaining forested habitats in Leelanau County are significantly reduced and highly fragmented, coniferous habitats more so. Large expanses of contiguous forested habitat are necessary to many forest dwelling species and these large patches are critical to the regional biodiversity.



Leaf-on and leaf-off images of the neighborhood incorporating Omena Woods. The bright green in the leaf-on image is forest and the dark green in the leaf-off image is conifer.

Unlike the majority of the neighborhood, the Omena Peninsula is still mostly forested and has a high conifer component. Unfortunately, as it is a peninsula, it is not well connected with other forested habitats in the neighborhood and movement of forest dependent species between forested patches may be challenging. Sustaining these forested habitats is critical to regional

biodiversity. The conifer component, eastern hemlock in particular, provides habitat for variety of species and is under threat from the hemlock wooly adelgid. Units 3 and 4 within Omena Woods play an important role in providing forested and coniferous habitats within the neighborhood and make a significant contribution to the regional biodiversity.

Within stand diversity in the plant species composition of the overstory trees in Units 3 and 4 was high with both shade tolerant (e.g. sugar maple and hemlock) and intolerant (e.g. aspen and northern red oak) species represented. The degree of available sun light determines in part what species regenerate and this degree is dependent upon the size of the gap in the canopy. Large canopy gaps allow shade intolerant species to compete while small gaps favor shade tolerant ones. There were numerous canopy gaps of various sizes in both Units 3 and 4 yet regeneration was limited. Not only was tree species diversity limited in the understory the understory itself was sparse, lacking the density expected for stands of their age and condition.

The presence and relative abundance of small mammals, such as mice and voles, is positively associated with the amount and size of dead down woody debris. Large diameter dead down woody debris was abundant throughout both forested Units. The importance of this component to mammal populations in Omena Woods was evident based on the numerous small mammal tracks observed, including those of their predators, bobcat and weasel. Healthy small mammal populations are a critical component of a forest food chain.

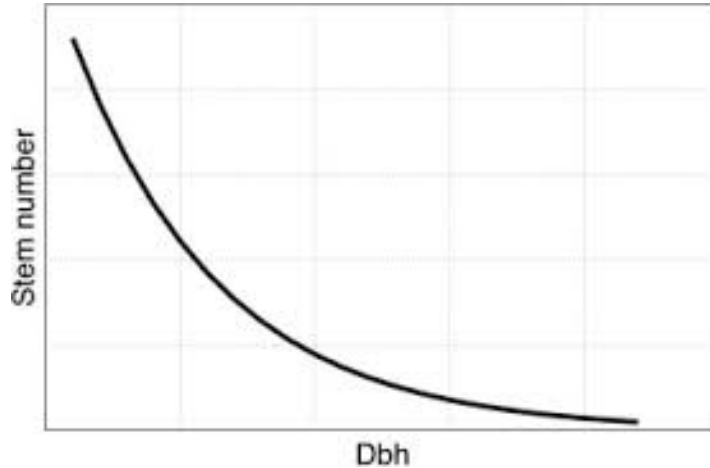
Deer and Regional Biodiversity: Forest fragmentation benefits “edge loving” species like the white-tailed deer. In the absence of predators, an over-abundant white-tailed deer herd can impact plant species composition and stand structure. Locally, an overabundant herd has also been associated with a decrease in spring wildflowers and an increase in tick populations and invasive plant species. Deer impact plant species composition by their forage preferences. Some plants are simply more palatable and nutritious than others. For instance, white-tailed deer in a Mixed Northern Hardwood stand prefers sugar maple, northern red oak, basswood, and hemlock over ironwood and American beech. This browse preference, combined with too many deer results in an overall decrease in tree species diversity. This is apparent in Units 3 and 4 at Omena Woods. Maple saplings in particular were few in number compared to what would be expected in a healthy Northern Hardwood stand. The majority of maple saplings that did exist were heavily browsed. The predominant sapling tree species in Omena Woods was ironwood. Ironwood is an important component of the Northern Hardwood forest and provides numerous seeds for birds and small mammals during the winter months. However, it tends to be a codominant species and not a dominant species in a healthy Northern Hardwood forest.

Stand structure is represented by the presence of different size classes; seedlings, saplings, poles, small saw trees, and large saw trees within a stand. The distribution of size classes within a sustainable uneven-aged Northern Hardwood stand follows what foresters call an “inverse J” curve. In a stand that follows an inverse J curve there are numerous seedlings and saplings, some pole sized trees, and fewer large diameter trees. Deer browse on what they can reach which is the palatable seedlings, saplings, and shrubs. This leaves behind a distinct “browse line” resulting in a park-like appearance. The impact of deer on forest regeneration was observed in Units 3 and 4 and depicted in the data for each unit (see Management Unit descriptions). The loss of this understory layer impacts wildlife, notably those birds that nest in

the intermediate canopy layers. The net loss of tree species diversity and within stand structure has a negative effect on regional biodiversity. It is important to note that the species composition and the number of seedlings and saplings present today represent the future forest conditions. In the absence of predators or the protection of regenerating trees and shrubs, the future state of the forest is uncertain. This is a common problem throughout the region and significantly impacts biodiversity.



Heavily browsed sapling.



Inverse J curve of a sustainable unevenaged stand.

Invasive Species and Regional Diversity: An invasive species is any non-native species that causes harm to an ecosystem. Not having evolved within that ecosystem, invasive species provide no role and have no natural predators or diseases. The lack of predators allows them to reproduce unhindered and spread quickly. These high populations can out-compete and displace native species. Unfortunately, the native species have no defenses against the invaders and cannot compete with a species that has no predators. Invasive species can reduce biodiversity and disrupt ecosystem functions such as water flow, nutrient cycling, and decomposition. In addition, the chemicals used to control the invasive species, if improperly used, may impact native species. There are invasive species present in Omena Woods notably autumn olive and honeysuckle in Unit 2 and spotted knapweed in both Units 1 and 2.



Honeysuckle

Extirpated Plant Species: The three species mentioned by the Board for reintroduction efforts were meadow willow (*Salix petiolaris*), mountain ash (*Sorbus decora*), and mountain maple (*Acer spicatum*). Meadow willow is associated with open marshy ground typical of shorelines, ditches, bogs, and fens margins. Mountain ash and mountain maple can be habitat associates and may be found in the forested dunes and bluffs along the northern Great Lakes shorelines. Suitable habitat is available for all three species within Omena Woods. Their extirpation is most likely due to an overabundant deer herd. All three species are susceptible to browsing by deer. Mountain ash and mountain maple in particular are highly palatable. Any attempts at reintroduction would have to include reducing the herd and/or fencing to protect seedlings from browsing deer.

Specific Management Actions relating to Goal 3:

- Enhance tree species diversity in Units 3 and 4 by protecting regeneration in natural and man-made openings from browsing deer.
- Leave the dead and down woody debris component in Units 3 and 4 as it has critical ecosystem and wildlife habitat functions.
- Protect the conifer (hemlock and white pine) components in Units 3 and 4 as they have critical ecosystem and wildlife habitat functions.
- Maintain/improve a native shrub component within Units 1 and 2 for its contribution to wildlife species richness. See goal #2 for planting ideas.
- Control invasive species in every unit, annually. See goal #2 for control options.
- Manage the deer herd to sustain ecosystem function.
- Increase native herbaceous and shrub species diversity with a focus on extirpated species (e.g. meadow willow, mountain ash, and mountain maple) by active planting and protection on suitable sites throughout the Units. For a list of potential plant species see the Appendix.

***Goal 4) Retain the open condition of (Unit #1 & #2 by retarding normal forest succession for the benefit of bird and pollinator species.***

Wetland Designation: As a portion of Unit 1 is designated wetland, any use of this area should include a wetland determination and avoidance of disturbing this area if it qualifies as such.

Sustaining an Open Condition: Early successional habitats are dynamic and are a challenge to maintain in an open condition. This is especially true on sites that would typically succeed to forest. Active attempts to sustain an open condition comprised of native plant species in Unit 1 have been made and have been met with limited success. Continued effort to control invasive species while building the soil to support native grasses and forbs can be made. Partnerships, technical assistance, and potential funding for the control of invasive species and creation of pollinator habitat does exist through active programs with the USDA Natural Resource Conservation Service.

Omena Woods Meadow Recovery Plan- Changes Proposed: Grassland birds are in decline across North America due in large part to habitat loss and changes in agricultural practices. In the past, a plan was developed to create/enhance habitat to benefit “Open Meadow” bird species

in Omena Woods Units 1 and 2. Herbaceous openings are restricted to much of Unit 1 and multiple small openings in Unit 2. Grassland bird species require not just herbaceous plant species but expansive areas of suitable habitat with a minimum of edge in contact with forested habitats (Table 3). Such habitat may have existed at one point in time on the peninsula, however, large expanses of grassland habitat are no longer present. The amount of effort required to revert Unit 2 to grassland would be substantial. Even if all of Unit 2 was converted to suitable habitat the 8 acres would not be large enough to support grassland birds.

Table 3. The minimum size of a contiguous patch of grassland habitat required by those grassland birds that are on the decline in North America.

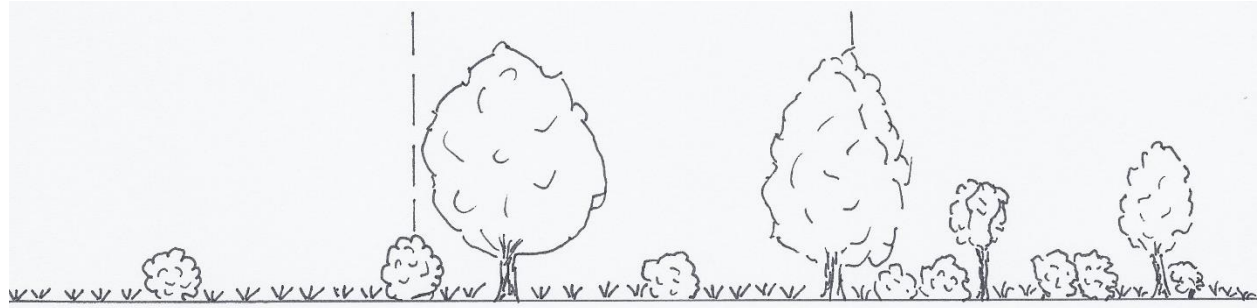
Declining Grassland Bird Species	Minimum Patch Area Requirement (acres)	Sensitive to Patch Shape Complexity
Vesper Sparrow	12	Yes
Savannah Sparrow	25	Yes
Grasshopper Sparrow	74	Yes
Eastern Meadowlark	12	Yes
Bobolink	25	Yes

In the Omena Woods Meadow Recovery Plan, the authors propose to halt the succession of the openings to forest by treating the shrub and sapling tree components without the removal of overstory trees. They give a list of bird species who they believe would benefit from such an action. The majority of the bird species listed are associated with high stem density shrubby habitats that may occur as a transitional habitat from an open to a forested condition (see diagram below). It is confusing that the management action proposed would actually be detrimental to the bird species listed. In addition, the recommendation was made to treat native shrubs such as sumac and juniper, both of which are valuable food sources to many of the bird species listed as well as having the advantage of being nonpalatable to deer. The author's of this Forest Management Plan suggest abandoning the work tasks in the meadow recovery plan of removing native shrubs from these areas and even adding to them where appropriate, as described under goal #2. Further adding a wide blooming range of herbaceous plants will significantly improve pollinator habitat. Funding and technical support for invasive species control and pollinator habitat creation is available through the USDA Natural Resource Conservation Service. Finally, to enhance the shrub and herbaceous layer the owners should consider opening up the canopy by removing some of the larger white pine, and feathering the forest edge (i.e. soften the transition from forest to open) by encouraging saplings and shrubs for birds to nest/perch/feed in.

Herbaceous <25% Woody

Savanna-like (low density trees)

Shrub/Brush ≥25% Woody

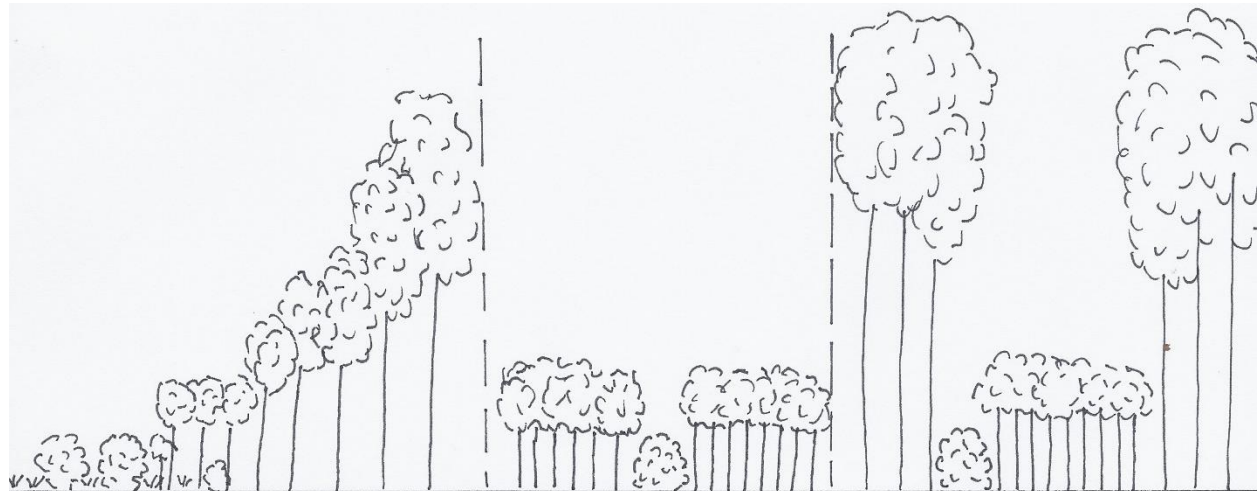


-----Tree Swallow-----  
 -----Eastern Kingbird; Eastern Bluebird-----  
 -----Baltimore Oriole-----  
 -----Gray Catbird/Brown Thrasher/Cedar Waxwing/Song Sparrow/Indigo Bunting/Am.Redstart-----  
 -----Mourning Warbler/Nashville Warbler-----

Forest Edge

Forest Sapling Size Class

Forest Canopy Gap



-----Gray Catbird/Brown Thrasher/  
 Cedar Waxwing/Song Sparrow/  
 Rose-breasted Grosbeak/  
 Baltimore Oriole-----  
 -----Mourning Warbler/Indigo Bunting-----  
 -----American Redstart/Nashville Warbler-----  
 -----Rose-breasted Grosbeak-----

**Specific Management Actions related to Goal 4:**

- Meet with representatives of NRCS to discuss technical assistance and potential funding for removing invasive species and establishing pollinator habitat for Unit 1 & 2. Set up properly, as described in goal #2, a variety of plants with different bloom times can be planted both for the visual beauty and long term wildlife and pollinator use.
- Hire a botanist or wildlife biologist to select the plants and shrubs which would both thrive in these opening and benefit the most number of wildlife species. Refer to Goal #2 and appendix for site prep work plants to consider adding.



**Management Actions for Each Management Unit – Omena Woods**  
 134 acres within Sections 25 & 36, Leelanau (South) Township, (T31N R11W)  
 Leelanau County, Michigan

Unit #	Management Activity	Year Planned	Year Complete
All Units, Esp #1	Monitor for Invasive Forest Pests, By Registered Forester	Annually	
All Units	Continue appropriate Forest Pest treatments	Annually	
All Units	Conduct white-tail deer density sampling; pellet counts (best), trail cameras (fair)	Annually	
All Units	If needed (very likely) begin SAFE deer population control measures until populations levels do not harm forest regeneration	Annually	
All Units, Esp #1-2	Control invasive plants; autumn olive, honeysuckle, spotted knapweed, etc.	2020-2024 & As resources allow	
1 & 2	Cut back encroaching tree species	As resources allow	
All Units, Esp #1-2	Plant wildlife/pollinator beneficial shrubs and herbaceous plants	2020-2024 & As resources allow	
3 & 4	Have a Certified Arborist inspect trees along trails, by benches, for hazards to hikers	Annually	
All Units, Esp #1-2	Re-Introduce extirpated plant species	As resources allow	



A standing dead beech tree provides a host of benefits, from housing insects to feeding and housing many species of birds and mammals. This stem and others like it should be retained.