

## 4.6 Central Houghton Management Area

### Summary of Use and Management

Vegetative management in the Central Houghton management area (MA) (Figure 4.6.1) will provide a variety of forest products; maintain or enhance wildlife habitat; protect areas with unique characteristics; and provide for forest based recreational uses. Timber management objectives for the 10-year planning period include area is the production of high quality timber products, particularly hardwood sawlogs and veneer. Wildlife management objectives include addressing the habitat requirements identified for the following featured species: blackburnian warbler, pileated woodpecker, ruffed grouse and northern goshawk. Management activities may be constrained by site conditions and the skewed age-class distributions. Maintaining high quality hardwoods and retaining stand diversity will be issues for this 10-year planning period.

#### Introduction

The Central Houghton management area is on dissected moraines in Central Houghton County. The state forest covers 46,908 acres and is in scattered blocks. The management area is dominated by the northern hardwoods, aspen and lowland conifer cover types. Other attributes that played a role in the definition of this management area include:

- Dominated by the mesic northern forest natural community;
- High-range in site quality;
- Provides multiple benefits including forest products and dispersed recreational activities; and
- Provides a variety of fish and wildlife habitats.
- This management area contains one of the western Upper Peninsula Grouse Enhanced Management Systems areas. This area plan will emphasize balanced age classes of aspen for timber production which will have habitat benefits for ruffed grouse. The boundaries of Grouse Enhanced Management Systems areas will be delineated and an operational plan will be developed during this planning period by the local biologist in collaboration with the Forest Resources Division unit manager and integrated into the plan through the revision process.

The management priority for this area is the production of high-quality timber products, particularly hardwood sawlogs and veneer while maintaining habitat qualities for wildlife species dependent on the northern hardwood communities in this area

The predominant cover types, composition, and projected harvest areas for the Central Houghton management area are shown in Table 4.6.1.

Table 4.6.1. Summary of cover types, composition, limited factor area, manageable area and projected harvest area for the Central Houghton management area (2012 Department of Natural Resources inventory data).

Cover Type	Cover %	Current Acreage	Hard Factor Limited Acres	Manageable Acres	10 Year Projected Harvest (Acres)		Projected Acreage in 10 Years	Desired Future Harvest (Acres)	
					Final Harvest	Partial Harvest		Final Harvest	Partial Harvest
Northern Hardwood	69%	32,456	4,401	28,055	0	13,794	32,456	0	13,794
Aspen	7%	3,479	253	3,226	582	0	3,479	538	0
Lowland Conifers	5%	2,559	1,084	1,475	164	0	2,559	164	0
Upland Open/Semi-Open Lands	1%	586	0	586	0	0	586	0	0
Lowland Open/Semi-Open Lands	2%	954	0	954	0	0	954	0	0
Misc Other (Water, Local, Urban)	1%	512	0	512	0	0	512	0	0
Others	14%	6,362	1,898	4,464	805	1,130	6,362	378	1,188
<b>Total</b>		<b>46,908</b>	<b>7,636</b>	<b>39,272</b>	<b>1,551</b>	<b>14,924</b>	<b>46,908</b>	<b>1,080</b>	<b>14,982</b>

# Central Houghton

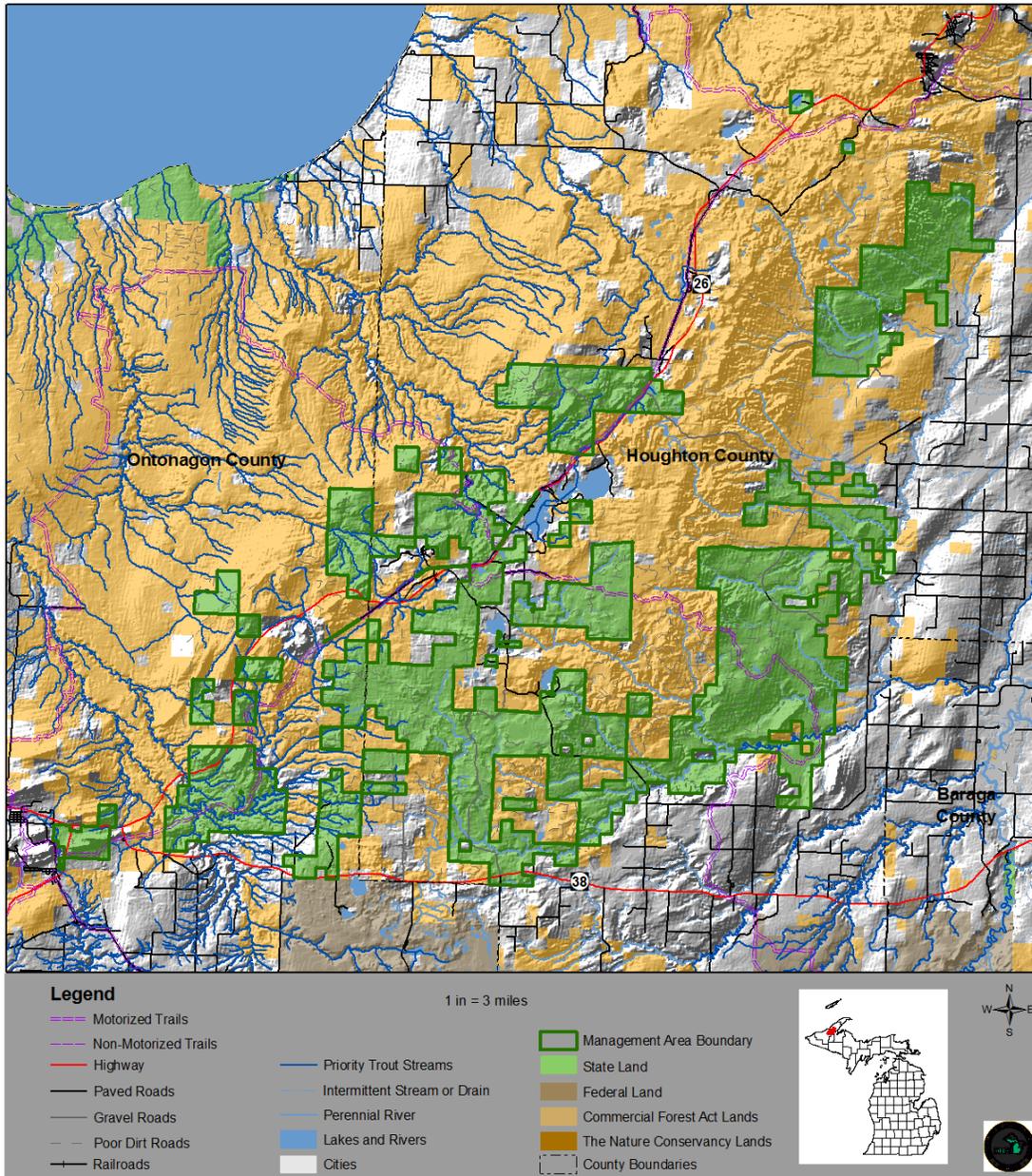


Figure 4.6.1. A map of the Central Houghton management area (dark green boundary) in relation to surrounding state and other forest lands in Houghton County, Michigan.

#### 4.6.1 Forest Cover Type Management Direction

The following sections contain information on vegetation management for each of the major cover types, a grouping of minor cover types and important non-forested vegetation types for the Central Houghton management area in the form of Desired Future Condition, 10-Year Management Objectives and Long-Term Management Objectives. This information applies to those portions of the forest where active management (i.e., timber harvest, prescribed fire, planting or mowing) will be conducted. In other portions of the state forest, the natural processes of succession and disturbance will provide ecological benefits. While most stands have a variety of tree species and other vegetation, they are classified by the species with dominant canopy coverage.

The following cover types are valued commercially for their timber products; ecologically as sources of habitat for numerous wildlife species; and for the variety of recreational opportunities they provide. Harvesting and regenerating these cover types will provide for a continuous flow of forest products and will help to ensure (or provide) wildlife habitat.

#### Northern Hardwoods Cover Type

##### Current Condition

Northern hardwood stands occur on 32,456 acres (69%) of state forest land in this management area (Table 4.6.1). They occur on high-quality sugar maple sites. Most stands have been managed on a selection harvest basis. Due to low deer numbers in this area, there are few problems with herbivory and most areas regenerate successfully. Northern hardwood is typically managed using an uneven-aged harvest system based on basal area rather than age. Figure 4.6.2 shows the current basal area distribution for the management area. There are 4,401 acres of northern hardwood that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

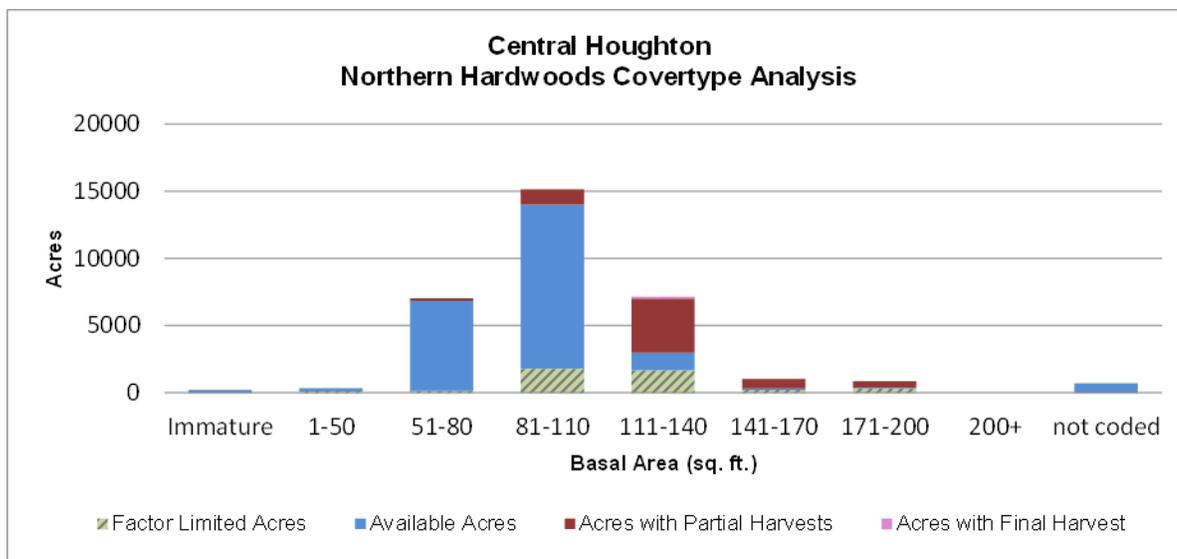


Figure 4.6.2. Graph of the basal area distribution for the northern hardwood cover type on the Central Houghton management area (2012 Department of Natural Resources inventory data).

##### Desired Future Condition

- Uneven-aged northern hardwood stand structure promoting high-value sugar maple sawlogs and veneer with a full complement of tree seedlings recruiting into the overstory and well developed shrub and herbaceous layers.

##### Long-Term Management Objectives

- Using an uneven-aged system, selective harvest northern hardwood stands on a 20-year cycle (this will result in an estimated 13,794 acres for harvest each decade); and
- Maintain and encourage minor species to increase within-stand diversity.

## 10-Year Management Objectives

- Approximately 13,794 acres will be selectively cut in the next decade;
- Maintain and promote regeneration of white pine, oak, hemlock and upland cedar where they occur in stands that are harvested; and
- Work to regenerate hemlock components in stands lacking that species.

## Aspen Cover Type

### Current Condition

About 3,479 acres (7%) of state forest land in this management area are in the aspen cover type (Table 4.6.1). The aspen is grouped on the east side of the management area. Most of the aspen cover type in this management area is found on medium-productive hardwood sites. Aspen is poorly distributed across age classes with a spike occurring in the 10-19 year age class (Figure 4.6.3). Many of the stands coded as uneven-aged, are actually two-aged stands. In the future they will be managed as even-aged. There are 253 acres of aspen that have harvest limitations at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

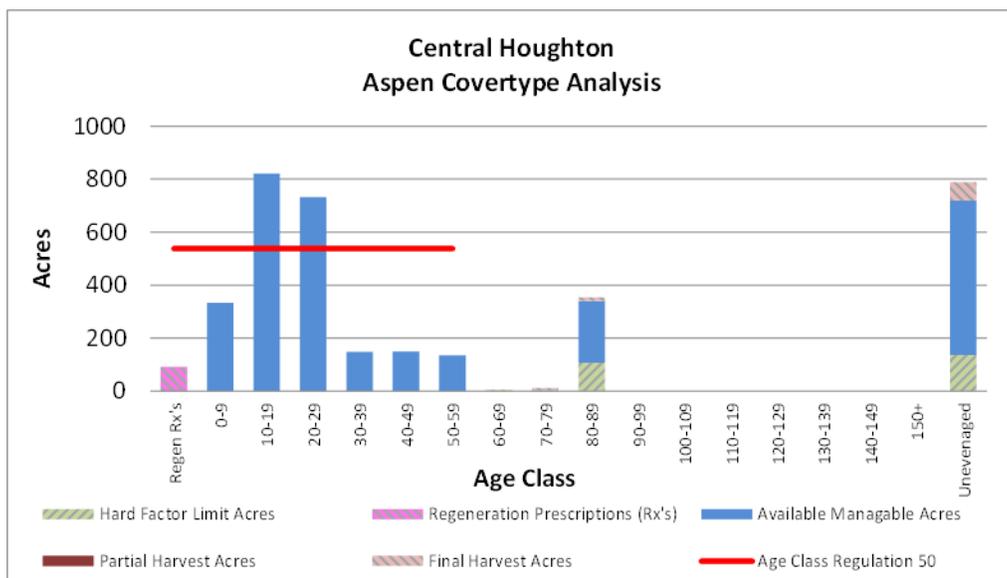


Figure 4.6.3. Graph of the age-class distribution for the aspen cover type on the Central Houghton management area (2012 Department of Natural Resources inventory data).

### Desired Future Condition

- Balanced acres in each age class over a 50-year rotation;
- Provide an even supply of forest products;
- Provide a balanced mix of habitat conditions for a variety of wildlife; and
- Provide a variety of hunting-type opportunities.

### Long-Term Management Objectives

- Harvest and regenerate 538 acres each decade; and
- Stands of aspen with harvest limitations will succeed to more shade tolerant species.

### 10-Year Management Objectives

- The projected ten-year final harvest of aspen is 582 acres with most of this acreage expected to come from uneven-aged stands;
- Two-aged stands with mature aspen over younger stands should be identified and scheduled for harvest;
- Aspen within the identified Grouse Enhanced Management Systems area may be managed differently than the rest of the aspen within the management area, with a shorter rotation age, small patch cuts and carefully considered stand adjacency; and

- Maintain mature large-tooth aspen as retention.

## Lowland Conifers Cover Type

### Current Condition

Lowland conifers occur on 2,559 acres (5%) of the MA (Table 4.6.1). This cover type is found on poorly drained sites supporting mixed stands of cedar, black spruce, tamarack, balsam fir, white birch and balsam poplar. There are 1,084 acres that have factor limits due to wet conditions or for riparian corridors. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Due to the wet site conditions, they are more susceptible to rutting damage from logging equipment and present difficult operating conditions for harvesting. Mixed lowland conifers are poorly distributed across the age-class distribution. Most of the stands are between 80 and 110 years old (Figure 4.6.4). Little harvesting has been done in this type over the past 40 years.

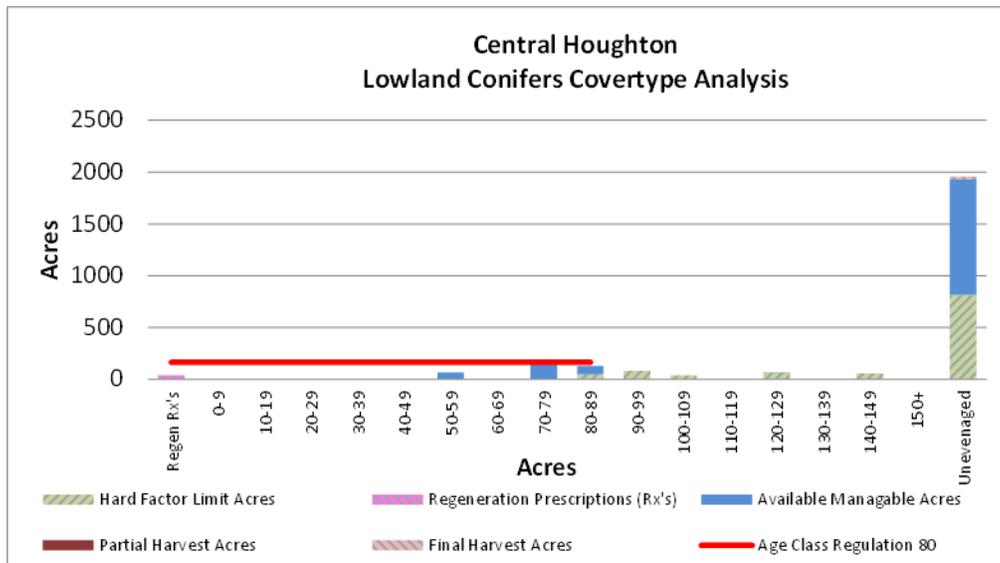


Figure 4.6.4. Graph of the age-class distribution for the lowland conifer cover type on the Central Houghton management area (2012 Department of Natural Resources inventory data).

### Desired Future Condition

- Closed canopy stands interspersed with patches of all age classes;
- Sustainable regeneration and recruitment of seedlings and saplings;
- Maintain the closed canopy structure to provide important winter deer habitat; and
- Plan to harvest the oldest available stands to regenerate them before widespread mortality occurs.

### Long-Term Management Objectives

- Manage stands on an 80-year rotation allowing for approximately 105 acres to be harvested per decade;
- Regenerate stands to species mixes similar to the pre-harvest conditions preferring cedar, hemlock, black spruce and balsam fir; and
- Harvesting will be done using small clearcuts or strips with clumped retention.

### 10-Year Management Objectives

- Harvest 164 acres over the next decade focusing on the use of "low impact" harvesting systems and successful, reliable regeneration techniques;
- Regenerate stands to species mixes similar to the pre-harvest conditions preferring cedar, hemlock, black spruce and balsam fir;
- Use appropriate silvicultural techniques to assure adequate regeneration; and
- Monitor harvested sites.

## **Other Forested Cover Types**

### Current Condition

Other forested types make up 6,362 acres (14%) and are made up of hemlock (1,371 acres), upland mixed forest (1,023 acres), mixed upland deciduous (1,009 acres), lowland deciduous (732 acres), upland conifer (635 acres), cedar (380 acres), upland spruce/fir (355 acres), oak (317 acres), lowland mixed forest (272 acres), tamarack (134 acres), lowland spruce-fir (130 acres) and jack pine (4 acres). Together these types make up about four percent of the management area (Table 4.6.1).

Approximately 1,898 acres of these other minor cover types have site conditions limiting their harvest this decade. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

### Desired Future Condition

- Maintain similar proportions of minor cover types within the management area.

### Long-Term Management Objectives

- Manage minor cover types to maintain representation using appropriate silvicultural methods;
- Harvest as opportunities arise in conjunction with other management activities;
- Most of the minor cover types in this management area are typically managed with even-age systems; however, if opportunities arise these stands will be harvested and managed at an appropriate rotation;
- Monitor to assure adequate regeneration; and
- Where stands have site conditions limiting harvest, early successional cover types will be lost through natural succession.

### 10-Year Management Objectives

- Harvest those stands without harvest limitations adjacent to other planned harvest activities and where stand conditions indicate that harvesting is appropriate; and
- Projected harvests in these cover types include 805 acres of final harvest, and 1,130 acres of partial harvest over the next decade.

## **Other Non-forested Cover Types**

### Current Condition

Non-forested cover types found on this management area include: upland open/semi-open lands (586 acres – 1%), lowland open/semi-open lands (954 acres – 2%) and miscellaneous other (water, local, urban) (512 acres – 1%) (Table 4.6.1).

### Desired Future Condition

- Maintain current acreage in grasses and other non-forested cover types.

### Long-Term Management Objectives

- Permanent grass openings will be maintained with frequent low-intensity fires and mechanical treatments allowing native grasses and forbs to dominate.

### 10-Year Management Objectives

- Grass-types will be treated for opening maintenance this decade as needed.

#### 4.6.2 – Featured Wildlife Species Management

This management area represents almost 15% of the western Upper Peninsula state forest hemlock resource and is one of the few management areas where the species reliably regenerates and recruits. The primary focus of wildlife habitat management in the Central Houghton management area will be to address the habitat requirements identified for the following featured species: blackburnian warbler, pileated woodpecker, ruffed grouse and northern goshawk. Some of the most significant wildlife management issues in the management area are mesic conifers; mature forest; habitat fragmentation; coarse woody debris; and retention or development of large living and dead standing trees (for cavities). Increasing the structural and compositional diversity of the northern hardwoods with a particular emphasis on increasing the hemlock component is of utmost importance. During this 10-year planning period, additional analyses to better define the spatial extent of priority areas (e.g., identifying large contiguous blocks of potential habitat for northern goshawk) for featured species will be performed.

This management area will include one of the western Upper Peninsula Grouse Enhanced Management System areas. The boundaries will be delineated during this planning period by the local biologist in collaboration with the Forest Resources Division unit manager. Aspen stands that fall within the boundary may be managed to enhance habitat and hunting opportunities for ruffed grouse. Habitat treatments may include managing aspen on a shortened rotation with multiple age classes and smaller stand sizes.

##### **Black Bear**

The western Upper Peninsula black bear goal is to maintain or improve habitat. Management for bear should focus on improving existing habitat (e.g., maintaining corridors, mast and refuge trees) in this management area.

##### Wildlife habitat specifications:

- Maintain or increase the oak cover type and within stand oak component of hardwood forests within the management area;
- Maintain or increase mast by providing forest clearings that promote food sources such as pin cherry, juneberry/serviceberry, hazel, raspberry, blackberry and blueberry;
- Minimize herbicide use that would be detrimental to mast production;
- Maintain lowland conifer and hardwoods along and around drainages, vernal pools and forested wetlands; and
- Maintain refuge tree species with rough bark to provide escape cover to cubs (e.g., white pine and hemlock).

##### **Blackburnian Warbler**

The goal for blackburnian warbler is to maintain suitable breeding habitat. Management efforts for blackburnian warblers should focus on within stand diversity, discouraging habitat fragmentation and maintaining mature forest with a conifer component in priority landscapes. Specifically, increase mesic conifer cover types (i.e., hemlock, white pine, red pine, upland spruce-fir) and allow some to mature beyond standard rotation ages, retain a larger percentage of mesic conifer during harvests, employ silvicultural practices that encourage the regeneration of mesic conifers and where feasible, under plant hemlock, white pine and white spruce in hardwood-dominated stands.

##### Wildlife habitat specifications:

- Increase the mesic conifer (e.g., hemlock, white pine, natural red pine and upland spruce-fir) component on state forests by: a) Retain mesic conifer during harvests; b) Use silvicultural practices that encourage the regeneration of mesic conifer; and c) Where desired/feasible, under plant hemlock, white pine and white spruce in hardwood-dominated stands on suitable sites without a seed source.
- Provide for late successional mesic conifer-dominated stands, particularly hemlock, in the management area by extending the normal rotation length for white spruce and balsam fir cover types by 20 years in upland areas.

##### **Northern Goshawk**

The goal for northern goshawk is to maintain suitable habitat. Management at the stand scale should focus on the protection of nest trees, provision of coarse woody debris and on addressing fragmentation. Landscape scale management should provide mature and old aspen stands in the 60-69 year-old age class.

#### Wildlife habitat specifications:

- Maintain a minimum of 15% of the state forest aspen resource above age of 60 in this management area (this can be accomplished using factor limited stands, special conservation areas, etc...). All known woodland raptor nests should be reported to local wildlife staff and documented in the Integrated Forest Monitoring Assessment and Prescription comments. If the species is known, the common name should be included in those comments. The Wildlife habitat specifications contained within Michigan DNR's *Interim Management Guidance for Red-Shouldered Hawks and Northern Goshawk on State Forest Lands* (August 2012) will be followed until the workgroup has completed the guidance that will permanently replace the interim guidelines.

#### **Pileated Woodpecker**

The western Upper Peninsula goal for pileated woodpeckers is to maintain or improve habitat. State forest management for the species should address mature forest and retention or development of large living and dead standing trees (for cavities) in this management area. Focusing such efforts on riparian and animal movement corridors will benefit additional species.

#### Wildlife habitat specifications:

- Identify and retain as many existing large (>15 inches diameter at breast height) snags and cavity trees, coarse woody debris and reserve green trees, as possible to ensure a sustainable supply of future cavity/foraging trees and associated coarse woody debris. Poorly formed trees and those damaged by natural disturbance or earlier harvests, particularly deciduous trees, are good candidates for future snags and cavity trees. Large diameter aspen and other soft hardwoods are preferred.
- Even-aged managed stands: leave scattered retention patches around some 18 inches in diameter at breast height or greater (if unavailable, identify future potential 18 inch secure trees) to be recruited as a nucleus, using the upper end of the retention guidelines.
- Uneven-aged managed stands: Retain a minimum of three secure cavity or snags per acre with one exceeding 18 inches diameter at breast height. If snags or cavity trees are lacking, leave trees with defects of the maximum available size that will likely develop and be recruited as cavity trees.
- Offset salvage harvests deemed necessary due to insect or disease, or fire within the same cover type and age class (within the compartment, management area or WUP ecoregion), to minimize impacts on pileated woodpecker habitat. Total allowable harvest in these situations will be evaluated on a case-by-case basis.

#### **Ruffed Grouse**

The western Upper Peninsula goal for ruffed grouse is to maintain or improve habitat. Management during this planning period will focus on early successional forest in priority landscapes, balancing age-class distribution and provision of soft browse.

#### Wildlife habitat specifications:

- Maintain aspen acres in the management area and balance the age-class distribution of aspen cover types.
- Stand size for grouse: Ideal aspen stands will be irregularly shaped 10-40 acres to maximize juxtaposition or edge avoiding extensive single age final harvests. Larger harvest units should have irregular boundaries, provide one 1-3 acre unharvested clumped inclusion for every 40 acres harvested.
- Manage the aspen cover type for smaller patch size, a shorter rotation and a more deliberate habitat configuration within the designated Grouse Enhanced Management Systems areas where appropriate.
- Hold or increase the conifer component in aspen stands. Leave conifers under four-inch diameter at breast height in mixed stands and aspen types as immediate residual escape cover and to promote corridors.
- Maintain cherry production for soft mast and oak component in stands with oak and emphasize areas with a hazel understory.

#### **4.6.3 – Rare Species and Special Resource Area Management**

All forest operations must be reviewed for potential conflicts between rare species and proposed forest operations following the guidance in “DNR’s Approach to the Protection of Rare Species on State Forest Lands” (IC4172). This is especially important when listed species are present, when past surveys have indicated a possibility of their presence, or when appropriate habitat is available and the species is known to occur in the general region.

Past surveys have noted and confirmed ten listed species and no natural communities of note occurring in the management area as listed in Table 4.6.2. Any established management guidelines will be followed. Further surveys for special species and natural communities will be carried out as a matter of course during the inventory process and opportunistically for special more focused surveys.

The Pine Lake Dam Flooding State Wildlife Management Area is a special conservation area within this management area as shown in Figure 4.6.5.

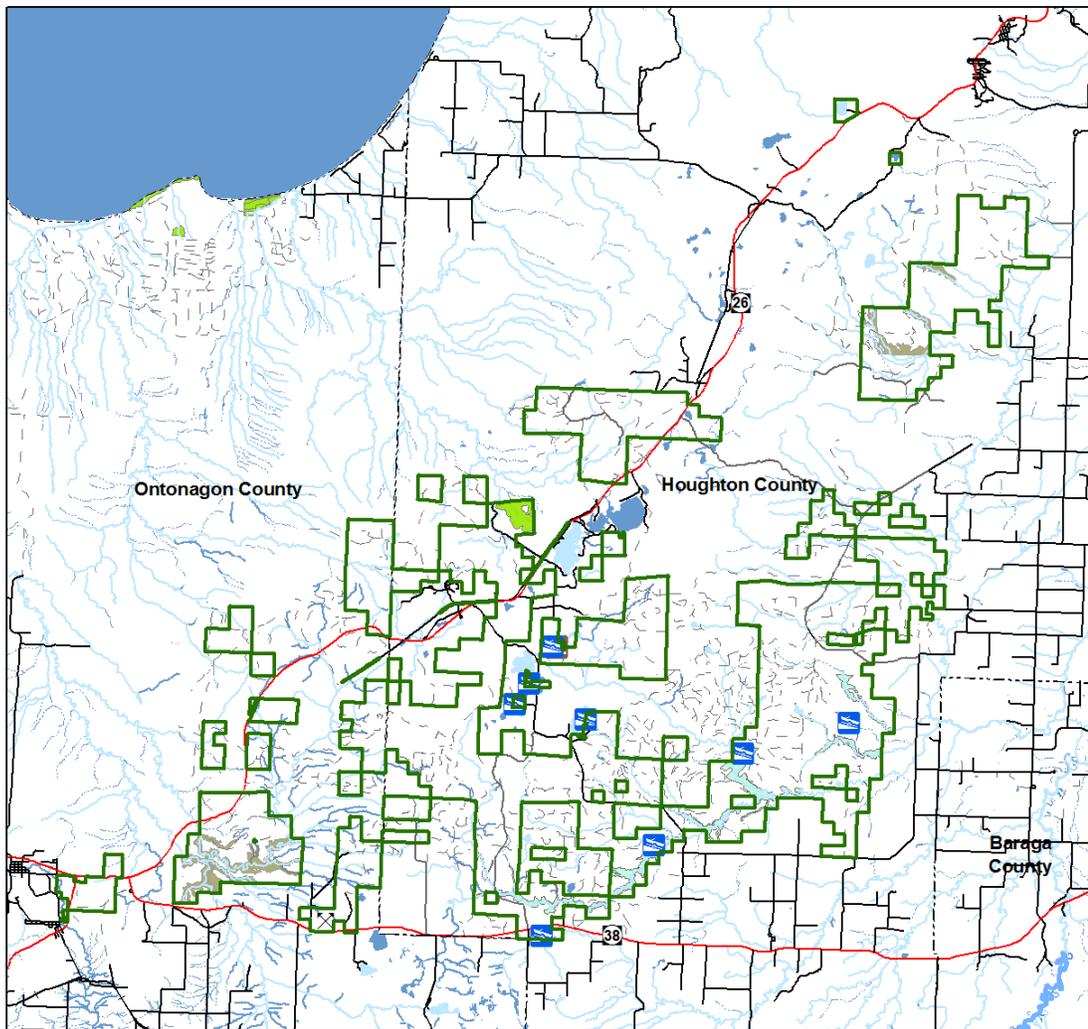
Approximately 1337.5 acres of potential old growth have been identified within the Central Houghton management area. These stands were identified for a broad range of reasons and were coded in the Operations Inventory database as Stand Condition 8. These stands area also special conservation areas until they are evaluated.

Table 4.6.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Central Houghton management area.

Common Name	Scientific Name	Status	Status in Management Area	Climate Change Vulnerability Index (CCVI)	Confidence	Natural Community Association	Probable Cover Types	Successional Stage
<b>Birds</b>								
Common loon	<i>Gavia immer</i>	T/G5/S3-4	Confirmed	HV	Very High	Emergent Marsh	Lowland open/semi-open	N/A
						Bog	Lowland open/semi-open	N/A
Bald eagle	<i>Haliaeetus leucocephalus</i>	SC/G5/S4	Confirmed	IL	Moderate	Bog	Lowland open/semi-open	N/A
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Northern hardwood swamp	Black Ash	Late
						Poor conifer swamp	Tamarack	Late
						Floodplain forest	Lowland mixed	Mid
						Dry northern forest	Jack Pine, Red Pine	Early
						Dry-mesic northern forest	White Pine	Late
						Mesic northern Forest	Northern Hardwood	Late
<b>Fish</b>								
Bigmouth shiner	<i>Notropis dorsalis</i>	SC/G5/S4	Confirmed	MV	Moderate	Rivers	Aquatic	N/A
<b>Mammal</b>								
Tri-colored bat (Eastern pipistrelle)	<i>Perimyotis subflavus</i>	SC/G5/S2S3	Confirmed	PS	Very High	Caves	Caves	N/A
<b>Reptile</b>								
Wood turtle	<i>Glyptemys insculpta</i>	SC/G4/S2S3	Confirmed	MV	Moderate	Northern wet meadow	Lowland open/semi-open	N/A
						Bog	Lowland open/semi-open	N/A
						Rich conifer swamp	Tamarack	Late
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Northern shrub thicket	Upland open/semi-open	N/A
						Mesic northern forest	Northern Hardwood	Late
<b>Plants</b>								
Walking fern	<i>Asplenium rhizophyllum</i>	T/G5/S2S3	Confirmed			Mesic northern forest	Northern Hardwood	Late
						Limestone cliff	Upland open/semi-open	N/A
						Boreal forest	Upland & Lowland Sp/F	Mid
						Limestone lakeshore cliff	Upland open/semi-open	N/A
						Mesic southern forest		
						Sinkhole	Upland open/semi-open	N/A
Laurentian fragile fern	<i>Cystopteris laurentiana</i>	SC/G3/S1S2	Confirmed			Mesic northern forest	Northern Hardwood	Late
						Granite cliff	Upland open/semi-open	N/A
						Limestone cliff	Upland open/semi-open	N/A
American shore-grass	<i>Littorella uniflora</i>	SC/G5/S2S3	Confirmed			Submergent marsh	Lowland open/semi-open	N/A
Farwell's water milfoil	<i>Myriophyllum farwellii</i>	T/G5/S2	Confirmed			Emergent marsh	Lowland open/semi-open	N/A
Fairy bells	<i>Prosartes hookeri</i>	E/S2/G5	Confirmed			Mesic northern forest	Northern Hardwood	Late

Climate Change Vulnerability Index: EV – Extremely Vulnerable; HV – Highly Vulnerable; MV – Moderately Vulnerable; PS – Presumed Stable; and IL – Increase Likely.

# Central Houghton



1 in = 3 miles

### Legend

- Highway
- Paved Roads
- Gravel Roads
- - - Poor Dirt Roads
- Railroads
- · - · - Intermittent Stream or Drain
- Perennial River
- Lakes and Rivers
- ▭ Management Area Boundary
- ▭ Cities
- - - County Boundaries

### Ecological Reference Areas

- ▭ High Conservation Value Areas
- ▭ Coastal Environmental Areas
- ▭ Critical Dunes
- ▭ Natural Rivers Vegetative Buffer
- ▭ Natural Rivers Zoning District
- ▭ Critical Coastal Habitat (Piping Plover)
- ▭ Kirtland Warbler Habitat
- ▭ Dedicated Management Areas
- ▭ Natural Areas Legally Dedicated

### Special Conservation Areas

- ▭ Campgrounds
- ▭ Fishing Access Sites
- ▭ Boat Access Sites
- ▭ Mineral Resource Locations
- ▭ Wild & Scenic Rivers (USFS Lands)
- ▭ Visual Management Areas
- ▭ Contiguous Resource Areas
- ▭ Possible Type 1 and Type 2 Old Growth
- ▭ Potential Old Growth
- ▭ Non-Dedicated Natural Areas & National Natural Landmarks
- ▭ Springs, Wetlands, or Riparian Areas
- ▭ Cold Water Streams & Lakes
- ▭ Wildlife Management Areas
- ▭ Research, Development, and Military Lands
- ▭ Great Lakes Islands



Figure 4.6.5. A map of the Central Houghton management area showing the special resource areas.

There have been no high conservation value areas or ecological reference areas identified in the management area as illustrated in Figure 4.6.5.

Management goals during this planning period:

Goal 1: To develop and maintain a list of rare, threatened, endangered and special concern species and natural communities for the management area through a continuous inventory and through opportunistic focused inventory surveys.

Objective 1-1: Field staff should be trained and aware of the identification characteristics and natural history of rare, threatened, endangered and special concern species.

Objective 1-2: Occurrences of rare, threatened, endangered and special concern species noted during the inventory process by inventory staff should be verified and added to the body of knowledge for the management area.

Goal 2: To evaluate the potential old growth areas by the end of this 10-year planning period.

#### 4.6.4 – Forest Health Management

Although forest health issues span the entire landscape, some specific threats are more important in this management area due to the species composition, site quality or other factors. Some of the more important forest health pests in this area include:

- White trunk rot of aspen
- *Hypoxyylon* canker
- Emerald ash borer
- Spruce budworm

When forest pests are detected, they are to be reported to the forest health specialist for treatment recommendations. The treatment of large outbreaks of forest pests will be coordinated on a state and regional level.

Several invasive exotic species of plants are thought to be located in the vicinity. When invasive species are detected, they will be reported to the forest health specialist and treatment options will be reviewed. Priority for treatment should be given to those species that threaten sensitive sites due to their location or growth characteristics and have population levels that may be successfully controlled. Following is a list of species of concern that been documented in or near this management area:

- Bell's honeysuckle
- Canada thistle
- Crack willow
- European swamp thistle
- Japanese barberry
- Japanese honeysuckle
- Japanese knotweed
- Leafy spurge
- Phragmites
- Purple loosestrife
- Reed canary grass
- Scots pine
- Spotted knapweed
- Tatarian honeysuckle
- Wild parsnip

#### 4.6.5 – Aquatic Resource Management

Fisheries Division management unit biologists will review proposed forest management activities using the compartment review process and will consider the potential impact of proposed prescriptions upon riparian and aquatic values. Management prescriptions will be modified to account for riparian and aquatic values by applying the standards and guidance documents listed in the introduction to this plan section to the unique conditions specific to any given forest stand.

Prescription of riparian management zone widths greater than the minimum widths provided in IC4011 (*Sustainable Soil and Water Quality Practices on Forest Land*) must be justified and documented during the compartment review process.

Forested stands adjacent to designated high priority trout streams will specifically be managed to discourage beaver use in accordance with both DNR Policy and Procedure 39.21-20 Beaver Management and IC 4011. Designated high priority

trout streams are identified in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment. Remove or discourage beaver populations on designated high priority trout streams. High priority trout streams in this management area are shown in Figure 4.6.1.

#### **4.6.6 – Fire Management**

This area is dominated by mesic northern forest. Fire impacts were rare, resulting in very long fire return intervals and now all wildfires are subject to appropriate initial attack.

#### **4.6.7 – Public Access and Recreation**

This area contains a complex network of forest roads supplying public access for hunting and fishing, as well as timber harvest. The roads cross state lands, large industrial ownerships and some small private ownerships. The state forest land is fragmented by large industrial ownerships which is a concern as frequently the new owners limit access across their property. There are motorized vehicle trails as shown in Figure 4.6.1 and there is one state forest campground at Emily Lake as well as several boating access sites scattered around area lakes (Figure 4.6.5). The direction is to maintain current management and public access.

Specific hunting recreation improvements such as parking lots, gates, trail planting and trail establishment, as well as the preparation and dissemination of specific promotional material, may be made as a result of Grouse Enhanced Management Systems areas planning in this management area.

#### **4.6.8 – Oil, Gas and Mineral Resources**

Exploration and development for oil and gas has been limited to a few wells drilled in the eastern Upper Peninsula and no economic oil and gas production has been found anywhere in the Upper Peninsula.

Surface sediments consist of coarse and fine-textured till, an end moraine of fine-textured till, lacustrine sand and gravel and clay and silt, with minor amounts of glacial outwash sand and gravel and postglacial alluvium. There is insufficient data to determine the glacial drift thickness. Sand and gravel pits are located in the management area and there is good potential. There is also a Devonian Bois Blanc outlier located in the area, that is quarried for limestone in Baraga County.

The Precambrian Jacobsville Sandstone, Portage lake Volcanics and Copper Harbor Conglomerate subcrop below the glacial drift. The Jacobsville was used as a building stone in the past.

Old copper mines are located along the northwest edge of the management area. Metallic mineral exploration has occurred in the management area, in the past, and a new nomination is currently in the leasing process in the area of the older mines.