4.9 Chatham/AuTrain Moraines Management Area

Summary of Use and Management

Vegetative management in the Chatham/AuTrain Moraines management area (MA) (Figure 4.9.1) 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 improving the age-class distribution of aspen; maintaining the conifer component in northern hardwood stands; maintaining the presence of minor cover types on the landscape; and maintaining non-forest vegetation types. Wildlife management objectives include managing for large grasslands and associated wildlife species. Management activities may be constrained by site conditions and the skewed age-class distributions. Balancing age classes, maintaining upland grass openings, and potential insect (emerald ash borer) and disease (beech bark disease) infestations will be issues for this 10-year planning period.

Introduction

The Chatham/AuTrain Moraines management area is located in northeastern Marquette County and western Alger County on a fluted ground moraine. The management area covers about 16,283 acres, in two distinct blocks. The block to the west on the Marquette/Alger County line is primarily hardwood on mesic, medium to high quality upland sites interspersed with poorly drained lowland conifer types. The east block is on the west side of the AuTrain Basin and is characterized by aspen, northern hardwood and large grass openings on dry-mesic to mesic sites. Other attributes that played a role in the definition of this management area include:

- Dominated by mesic northern forest interspersed with poor conifer swamp;
- High- to medium-site quality;
- Contains the AuTrain Basin Waterfowl Project; and
- Provides multiple benefits including forest products, dispersed recreational activities and a variety of fish and wildlife habitats.

The management priority in this area is to continue to provide these multiple benefits while minimizing user conflicts.

The predominant cover types, composition and projected harvest areas for the Chatham/AuTrain Moraines management area are shown in Table 4.9.1.

Table 4.9.1. Summary of cover types, composition, limited factor area, manageable area and projected harvest area for the Chatham-AuTrain Moraines 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	44%	7,107	225	6,882	0	1,885	7,107	0	3,261
Aspen	20%	3,275	203	3072	615	0	3,275	439	0
Cedar	8%	1,355	0	1355	0	0	1,355	85	0
Lowland Conifers	8%	1,320	623	697	77	0	1,320	77	0
Upland Open/Semi-Open Lands	8%	1,323	0	1323	0	0	1,323	0	0
Lowland Open/Semi-Open Lands	4%	730	0	730	0	0	730	0	0
Misc Other (Water, Local, Urban)	1%	93	0	93	0	0	93	0	0
Others	7%	1,080	353	727	105	54	1,080	84	66
Total		16,283	1,404	14,879	797	1,939	16,283	685	3,327

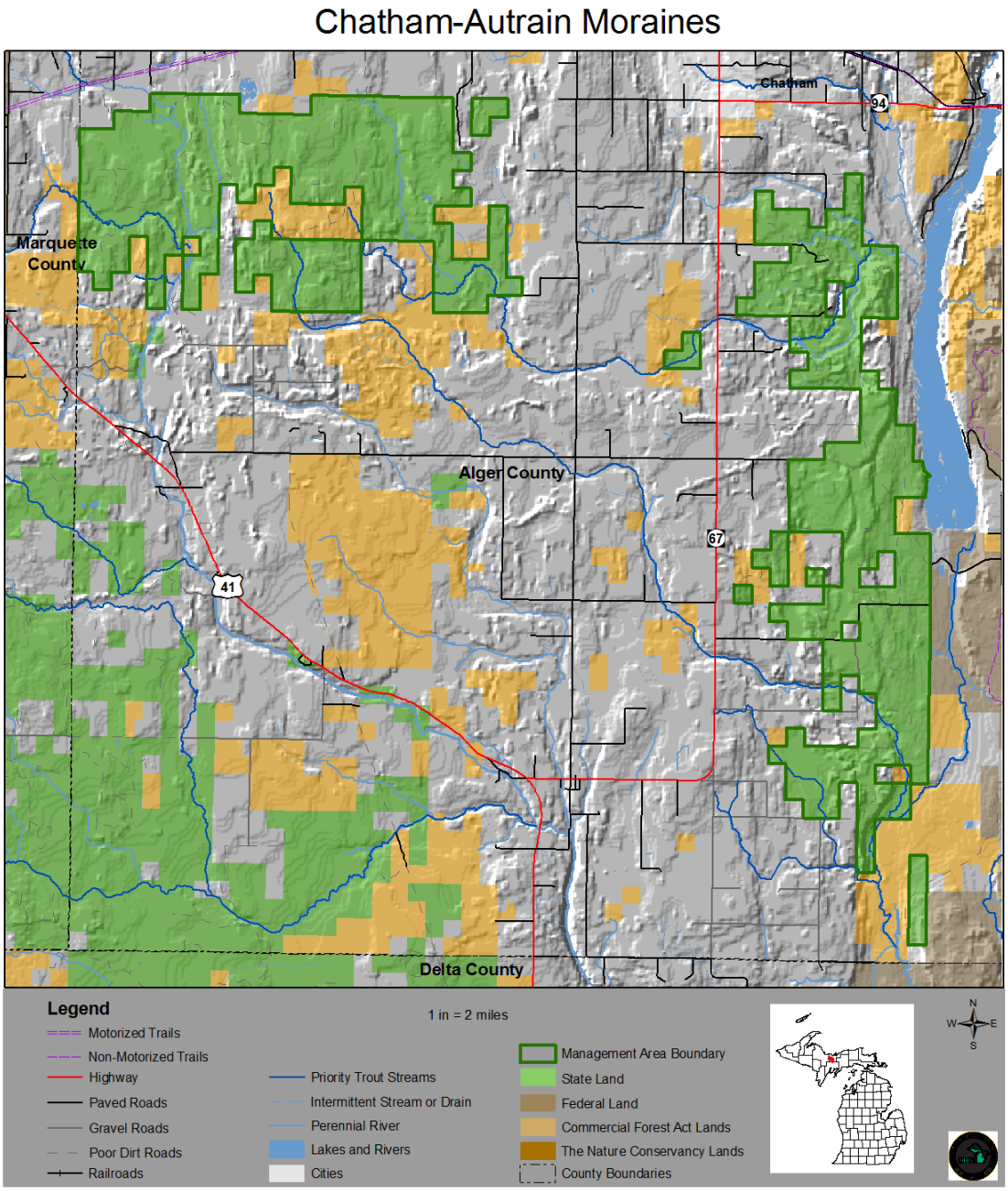

Figure 4.9.1. A map of the Chatham/AuTrain Moraines management area (dark green boundary) in relation to surrounding state forest and other lands in Marquette and western Alger Counties, Michigan.

4.9.1 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 Chatham-AuTrain 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 (e.g., 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 that dominant the canopy.

The following cover types are valued commercially for their forest 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 Hardwood Cover Type

Current Condition

Northern hardwood stands make up 7,107 acres (44%) of this management area (Table 4.9.1). The bulk of the hardwood acres are in the 51-80 basal area class and will not be available for harvest in the next decade. The majority of these stands will be fully stocked within 20 years. Stands occur mostly on mesic sites producing medium to high-quality hardwoods. Most stands have been managed on a selection harvest basis and are in good condition. Due to low deer numbers in this area, there are few problems with seedling 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 4.9.2).

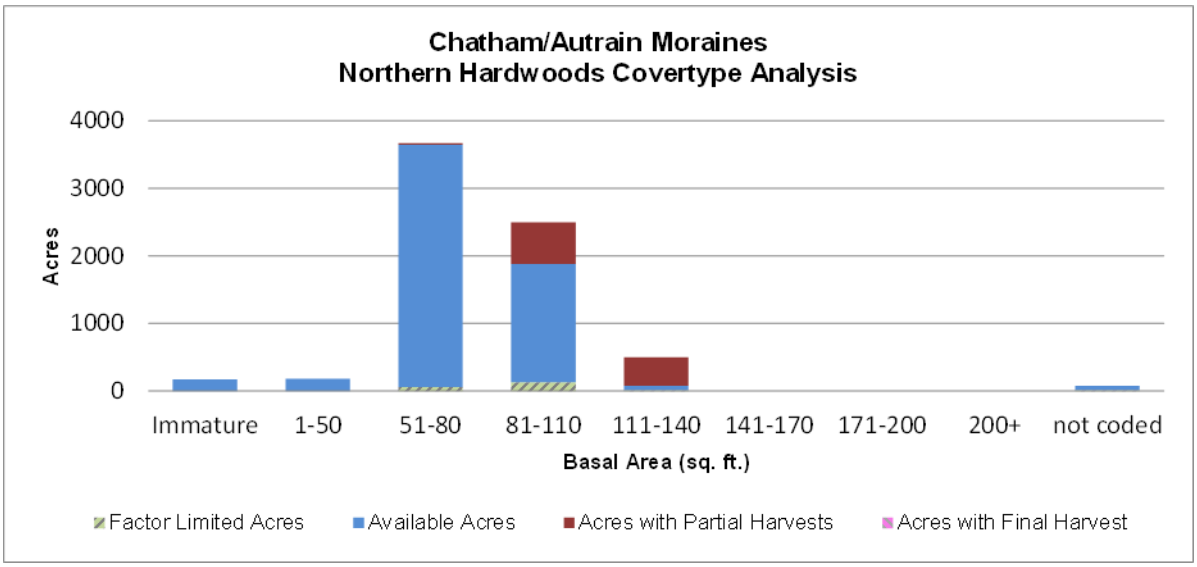

Figure 4.9.2. Graph of the basal area distribution for the northern hardwood cover type on the Chatham/AuTrain Moraines management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Sustainable regeneration and recruitment of northern hardwood species leading to an all-age structure with high-value sugar maple sawlogs and a full complement of tree seedlings recruiting into the overstory with well-developed shrub and herbaceous layers.

Long-Term Management Objectives

- Using an uneven-aged system, selective harvest high-quality northern hardwood stands on a 20-year cycle. The harvest cycle will be optimized to maintain high growth rates and minimize stagnant growth periods. To accomplish this objective, harvest cycles may vary slightly from the nominal 20-year cycle. In time this will result in 3,261 acres harvested each decade.
- Low quality hardwood stands will be managed on an even-aged system with an 80-year rotation.

10-Year Management Objectives

- A target harvest of 1,885 acres is planned for the next decade; and
- Maintain or promote hemlock, white pine and upland cedar where possible in stands that are harvested.

Aspen Cover Type

The aspen cover type covers 3,275 acres (20%) of the management area (Table 4.9.1) and is poorly distributed across age classes (Figure 4.9.3). Aspen is growing on mesic sites which are highly productive for the species. Aspen will be managed on a 60 year rotation to a balanced age-class structure indicated by the red line in Figure 4.9.3. Of the relatively few acres over the rotation age of 60 years (60-69 years Figure 4.9.3) most are in the hard factor limited category. With

the deficit of aspen in the 40+ age classes, early entry into younger age classes is unlikely during this 10-year planning period because aspen in these age classes are not of merchantable size.

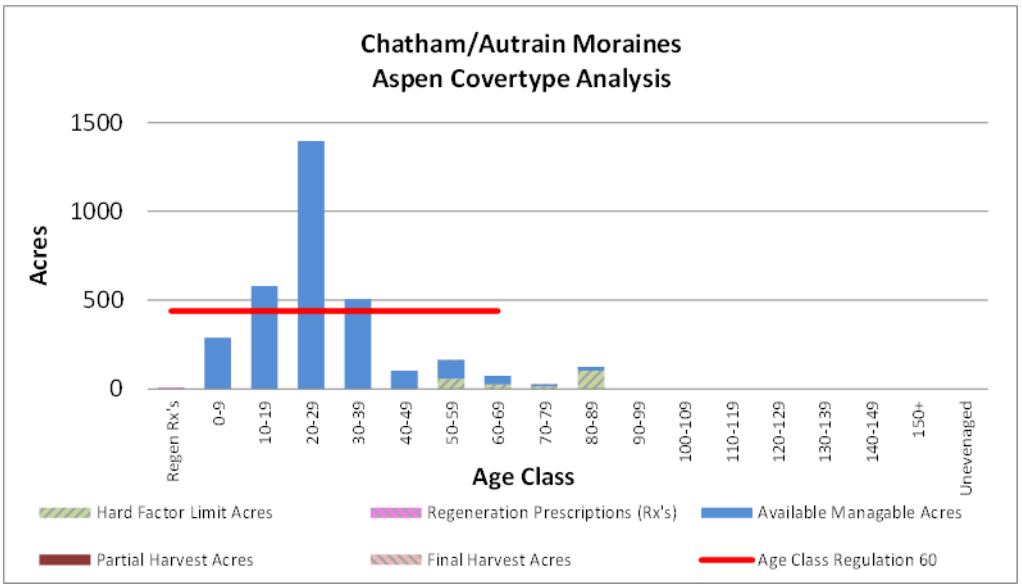

Figure 4.9.3. Graph of the age-class structure for the aspen cover type on the Chatham/AuTrain Moraines management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Balanced acres in each age-class over a 60-year rotation (indicated by the red line in Figure 4.9.3);
- Provide an even supply of forest products; and
- Provide a balanced mix of habitat conditions for a variety of wildlife as well as a variety of hunting-type opportunities.

Long-Term Management Objectives

- Harvest and regenerate aspen stands using a 60-year rotation;
- Once balanced age classes are achieved, harvest and regenerate 439 acres each decade; and
- Over the next 20 years, few acres will be available for harvest because of the absence of aspen in merchantable size and age classes.

10-Year Management Objectives

- Harvest available stands that are over age 60;
- Based on the current age-class structure few acres will be available for harvest in the next decade;
- Identify stands on high-quality sites that have the potential to be managed for quality northern hardwoods; and
- Maintain mature large-tooth aspen if present as retention, because these softwood trees are longer lived, provide opportunities for woodpecker species and other cavity nesters, and generally provide forked/bowl shaped crowns that provide nesting sites for raptors

Cedar Cover Type

Current Condition

The cedar cover type covers 1,355 acres (8%) of the management area (Table 4.9.1). Cedar historically does not regenerate reliably in this management area as illustrated in Figure 4.9.4. The absence of any age classes below 80-89 years indicates that little harvesting has occurred due to regeneration challenges.

Although there will be no harvesting of cedar within deer wintering complexes, there is a need to address future cedar cover. Limited cedar harvests will occur outside the wintering complexes recognizing that cedar takes many years to regenerate and escape deer browsing. Reliable and timely regeneration of cedar is a concern from both wildlife and forest management perspectives.

Desired Future Condition

- Maintain the cedar cover type at the current acreage level.

Long-Term Management Objective

- Explore techniques for regenerating the cedar cover type under high deer browsing pressures.

10-Year Management Objective

- While no active management activities are planned in this type in this 10-year planning period, limited harvesting may occur to test methods of cedar regeneration.

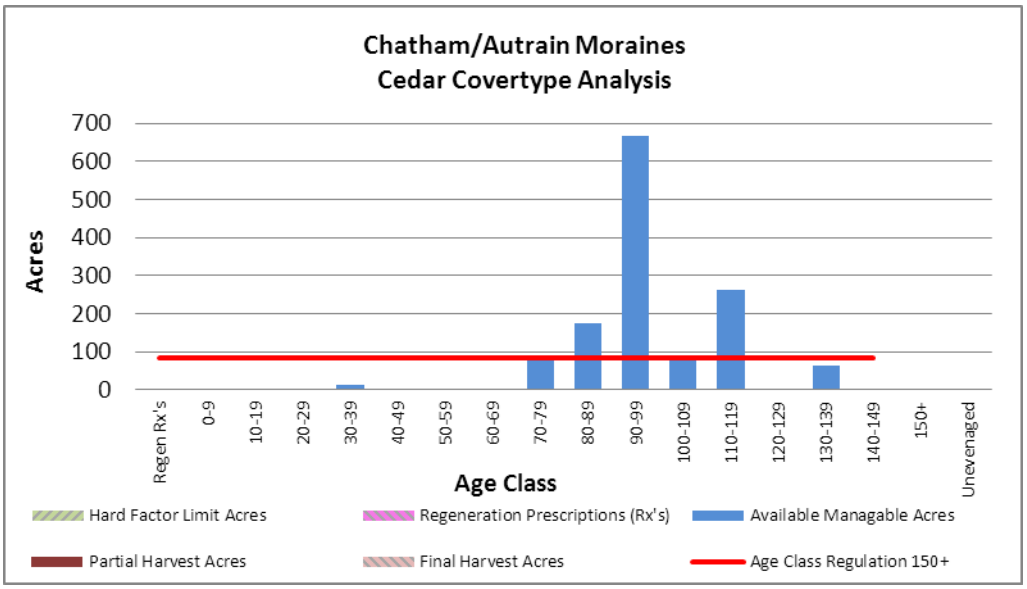

Figure 4.9.4. Graph of the age-class structure for the cedar cover type on the Chatham/AuTrain Moraines management area (2012 Department of Natural Resources inventory data)**.**

Lowland Conifers Cover Type

Current Condition

The lowland conifer cover type covers 1,320 acres (8%) of the management area (Table 4.9.1) and occurs on poorly drained sites supporting mixed stands of cedar, black spruce, tamarack, balsam fir, white birch and balsam poplar. Mixed lowland conifers have poor age-class distribution, with most of the stands ranging between 80 and 110 years old. As these older stands age, they will become increasingly susceptible to insect and disease problems. Mixed lowland conifer stands provide important winter habitat for deer. Most of these stands have a hard factor limit associated with them making them unavailable for harvesting in the next decade (Figure 4.9.5).

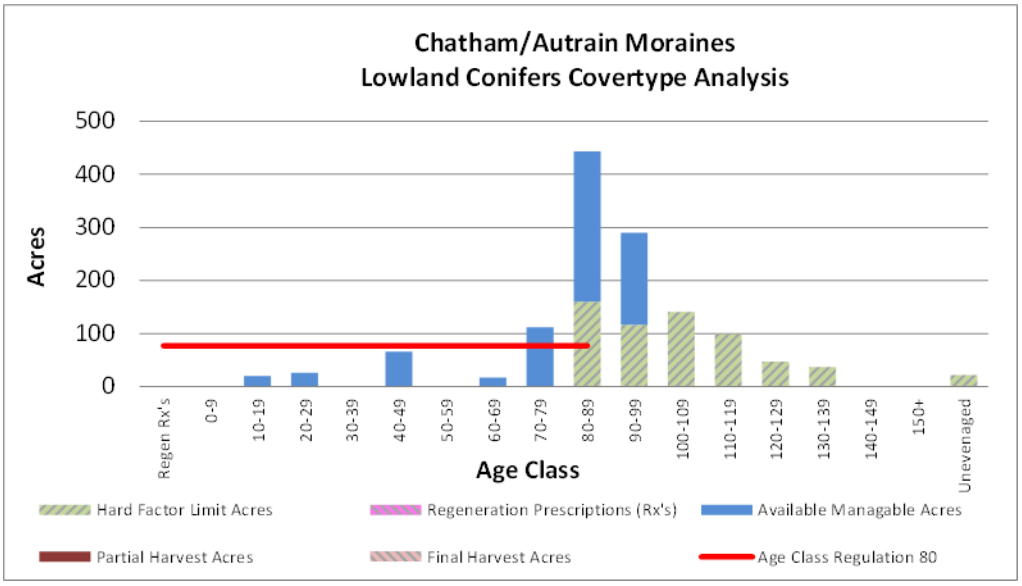

Figure 4.9.5. Graph of the age-class structure for the lowland conifer cover type on the Chatham/AuTrain Moraines management area (2012 Department of Natural Resources Inventory data).

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 this cover type on an 80-year rotation, leading to harvesting 77 acres per decade in those stands without hard factor limits;
- Regenerate stands to species mixes similar to the pre-harvest conditions with preference for cedar, black spruce and balsam fir;
- Harvesting will be done using small clearcuts with clumped retention or strips; and
- Lowland conifer stands in areas inaccessible for harvest will be subject to natural processes, resulting in a range of successional stages.

10 Year Management Objectives

- Harvest 77 acres over the next decade focusing on the use of “low impact” harvesting systems and successful, reliable regeneration techniques;
- Use appropriate silvicultural techniques to assure adequate regeneration; and
- Monitor harvested sites.

Other Forested Cover Types

Current Condition

Other forested types make up 1,080 acres and are made up of lowland deciduous (390 acres), upland spruce/fir (119 acres), mixed upland deciduous (102 acres), lowland poplar (100 acres), red pine (53 acres), upland mixed forest (50 acres), upland conifer (49 acres), hemlock (48 acres), tamarack (45 acres), white pine (45 acres), lowland spruce/fir (34 acres), lowland mixed forest (29 acres) and paper birch (16 acres). Together these types make up about 7% of the management area (“Others” in Table 4.9.1).

Desired Future Condition

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

Long-Term Management Objectives

- Manage minor cover types to maintain representation using appropriate silvicultural methods;
- Use appropriate silvicultural techniques to assure adequate regeneration of desired species;
- Monitor harvested sites; and
- Featured species habitat requirements will be taken into consideration.

10-Year Management Objectives

- Harvest those stands without harvest limitations adjacent to other planned harvest activities and where stand and habitat conditions indicate that harvesting is appropriate;
- Expected harvests in these types will be less than 159 acres over this 10-year planning period;
- Leave all hemlock for retention; and
- Maintain and promote oak in this management area through retention and regeneration.

Other Non-forested Cover Types

Current Condition

Non-forested cover types found on this management area include: upland open/semi-open lands (1,323 acres – 8%), lowland open/semi-open lands (730 acres – 4%) and other (water, local, urban) (93 acres – 1%) (Table 4.9.1).

Desired Future Condition

- These areas will be maintained in the current condition.

Long-Term Management Objective

- Grass will be burned or mowed to prevent forest encroachment.

10-Year Management Objectives

- Grass-types will be treated for opening maintenance as needed; and
- Wildlife Division will maintain portions of this area through share-cropping agreements - cutting grass and small grains on a yearly basis.

4.9.2 – Featured Wildlife Species Management

The Chatham/AuTrain Moraines management area provides the best opportunity within the western Upper Peninsula state forest system to manage for large grasslands and associated wildlife species. Large opening management, along with sharecropped agricultural practices will continue to be a high priority. The primary focus of wildlife habitat management in the management area will be to address the habitat requirements identified for the following featured species: black bear, bobolink, Canada goose, sharp-tailed grouse and northern goshawk. Some of the most significant wildlife management issues in the management area are:

- Large open land complexes; habitat fragmentation (patch size for openings); mowing and burning practice modifications (for the eastern compartments); and
- Mature forest (upland deciduous, especially aspen and mixed forest with little understory); habitat fragmentation; coarse woody debris (for the western compartments).

A continued focus on managing for huntable goose populations will be implemented by following the master plan written for the AuTrain Basin Waterfowl Management Project and should guide management activities at a finer scale. During this 10-year planning period, additional analyses to better define the spatial extent of priority areas for featured species will be performed.

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:

- 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 for cubs (e.g., white pine and hemlock).

Bobolink

The western Upper Peninsula goal for bobolink is to maintain or increase habitat in select landscapes (management areas). Management should focus on discouraging habitat fragmentation, increasing small grassland fields to a minimum size of 75 acres where feasible and mowing or burning (outside the nesting season) to discourage woody vegetation.

Wildlife habitat specifications:

- Increase grassland (stand) patch size to a minimum of 75 acres and decrease the forest to opening edge ratio;
- Mow or burn patches every 2-3 years to eliminate woody encroachment. May only need to burn every 10 years to reduce woody encroachment;
- Avoid mowing or burning during the breeding and fledging seasons (May through July). Treatments can be done several weeks prior to arrival of migrants in the spring; and
- Mow or burn no more than one third of grassland patches per year to allow for undisturbed refuge where birds can nest while disturbed areas recover.

Canada Goose

The western Upper Peninsula Canada goose goal is to provide recreational opportunities by attracting migrating geese to appropriate state forest lands. The focus of such management is to provide favorable water features and fields.

Wildlife habitat specifications:

- Attract geese to huntable areas during the fall season:
    - Plant green browse such as winter wheat or rye;
    - Manage water features (natural or impounded) as necessary; and
    - Manage small grain fields, leaving the maximum possible amount of waste grain.

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.

Sharp-tailed Grouse

In the western Upper Peninsula, the goal for sharp-tailed grouse is to provide suitable habitat within the ecoregion. Management should focus on enhancing large opening complexes so there is an increase of available habitat.

Wildlife habitat specifications:

- Maintain or expand herbaceous open-lands where existing or potential leks could occur;
- Manage adjacent forest to maintain young regenerating forest adjacent to permanent openings to maximize use by sharp-tailed grouse;
- Consolidate grass openings to increase the opening size; and
- Use mechanical, herbicide or prescribed fire treatments where appropriate to maintain openings.

4.9.3 – 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 six listed species and no natural communities of note occurring in the management area as listed in Table 4.9.2. 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 AuTrain Basin Waterfowl Project (a wildlife management area) and the East Branch Whitefish River (a wild and scenic river) are special conservation areas within this management area as shown in Figure 4.9.6.

Approximately 580 acres of potential old growth have been identified within the Chatham-AuTrain management area (Figure 4.9.6). 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.

There are no high conservation value areas or ecological reference areas identified in this management area.

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.

Table 4.9.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Chatham-AuTrain Moraines 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
Birds								
Grasshopper sparrow	*Ammodramus savannarum*	SC/G5/S3S4	Confirmed	PS	Moderate	Dry sand prairie	Upland open/semi-open	N/A
						Mesic prairie	Upland open/semi-open	N/A
						Lakeplain wet prairie	Lowland open/semi-open	N/A
						Lakeplain wet-mesic prairie	Lowland open/semi-open	N/A
						Wet prairie	Lowland open/semi-open	N/A
						Wet-mesic sand prairie	Lowland open/semi-open	N/A
						Hillside prairie	Upland open/semi-open	N/A
						Mesic sand prairie	Upland open/semi-open	N/A
Common loon	*Gavia immer*	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	*Haliaeetus leucocephalus*	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
Osprey	*Pandion haliaetus*	SC/G5/S2-3	Confirmed	PS	Low	Coastal fen	Lowland open/semi-open	N/A
						Northern hardwood swamp	Black Ash	Late
						Floodplain forest	Lowland Mixed	Mid
						Hardwood-conifer swamp	Lowland Mixed	Mid
Dickcissel	*Spiza americana*	SC/G5/S3	Confirmed	IL	Very High	Mesic prairie	Upland open/semi-open	N/A
						Mesic sand prairie	Upland open/semi-open	N/A
						Wet-mesic sand prairie	Lowland open/semi-open	N/A
						Lakeplain wet-mesic prairie	Lowland open/semi-open	N/A
						Dry sand prairie	Upland open/semi-open	N/A
						Lakeplain wet prairie	Lowland open/semi-open	N/A
						Wet prairie	Lowland open/semi-open	N/A
Plant								
Canadian milk vetch	*Astragalus canadensis*	T/G5/S1S2	Confirmed			Alvar	Upland open/semi-open	N/A
						Floodplain forest	Lowland mixed	Mid
						Northern shrub thicket	Upland open/semi-open	N/A
						Boreal forest	Upland & Lowland Sp/F	Mid
						Dry-mesic northern forest	White Pine	Late
						Dry-mesic prairie	Upland open/semi-open	N/A
						Hillside prairie	Upland open/semi-open	N/A
						Limestone bedrock glade	Upland open/semi-open	N/A
						Limestone cobble shore	Upland open/semi-open	N/A
						Mesic northern forest	Northern Hardwood	Late
						Mesic prairie	Upland open/semi-open	N/A
						Oak-pine barrens	Oak	Mid
						Pine barrens	Jack Pine	Early

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

4.9.4 – 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
- *Hypoxylon* canker
- Spruce budworm
- Emerald ash borer.

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.

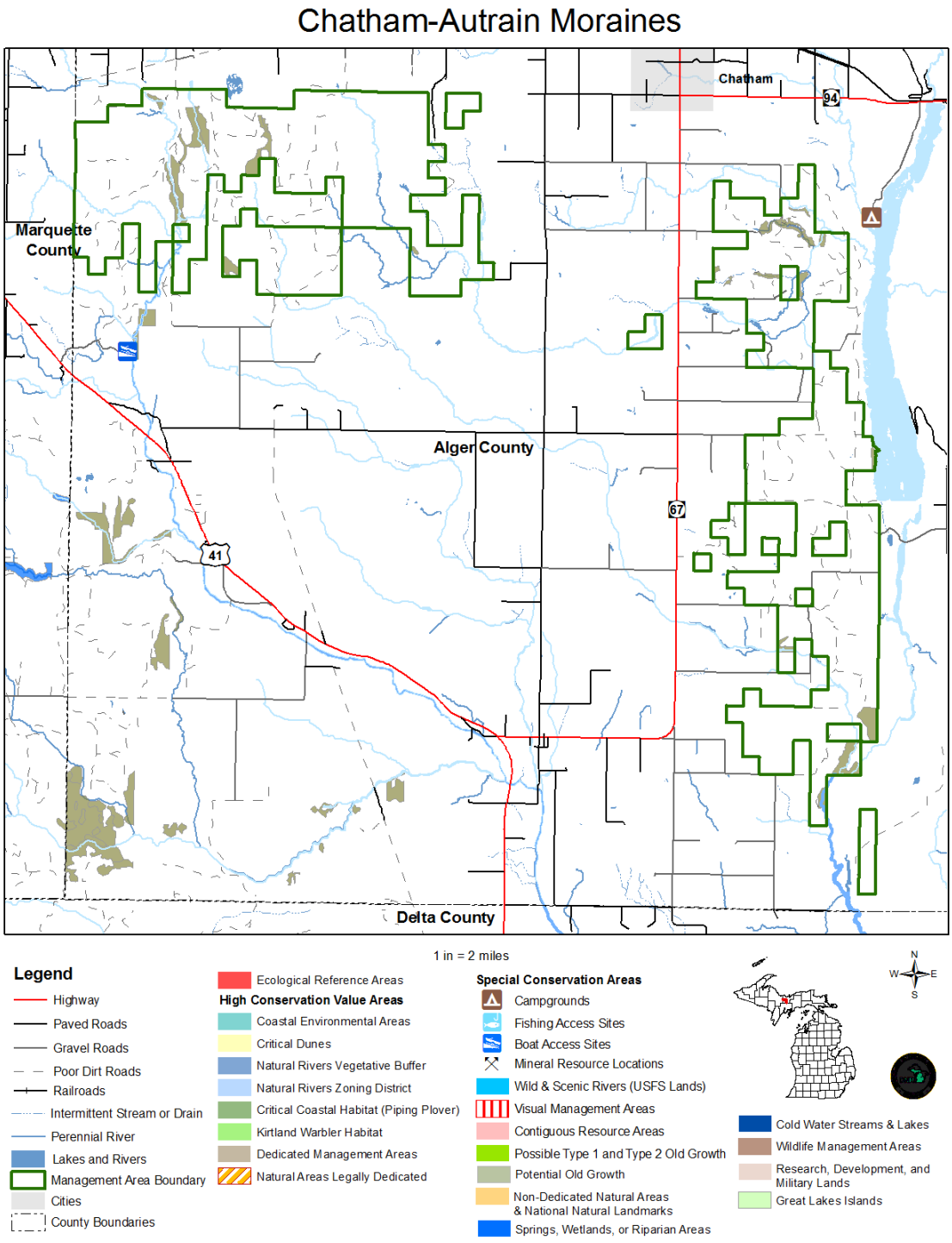

Figure 4.9.6. A map of the Chatham-AuTrain management area showing the special resource areas.

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. Garlic mustard is the only plant species of concern that has been documented in or near this management area.

4.9.5 – 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 4.9.1.

4.9.6 – Fire Management

Fire probably did not play a significant role in this mesic northern forest community and associated wetlands, especially due to its proximity to the lake and heavy winter snowfall.

- All wildfires within the management area should be subject to appropriate initial attack response;
- Public use of the waterfowl management area and its access to the AuTrain Basin provide potential for fire prevention messages on information boards; and
- Use prescribed fire to maintain large openings and prepare for no-till agricultural methods in the AuTrain Basin Waterfowl Project area.

4.9.7 – Public Access and Recreation

This area has limited public and management access. No recreational facilities are located on state forest lands. The department maintains and operates a campground on the Cleveland Cliffs Basin.

- Work to expand public and management access as opportunities arise.

4.9.8 – 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 medium-textured till, glacial outwash sand and gravel and postglacial alluvium and peat and muck. The glacial drift thickness varies between 10 and 50 feet. Sand and gravel pits are located in the management area and there is good potential for additional pits.

The Ordovician Tenton and Black River Formations, Prairie du Chien and the Cambrian Trempealeau Formation subcrop below the glacial drift. The Trenton and Black River are quarried for dolostone/stone in the Upper Peninsula.

Metallic mineral exploration is not known to have occurred in the management area in the past and the likelihood of metallic mineral potential is limited due to the depth of the Precambrian rocks.