

4.26 Palmer Moraine Management Area

Summary of Use and Management

Vegetative management in the Palmer Moraine management area (MA) (Figure 4.26.1) 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 maintaining white pine, red pine and oak especially on rocky outcrops and maintaining wildlife movement corridors along riparian areas. Management activities may be constrained by site conditions and the skewed age-class distributions. Balancing age classes will be an issue for this 10-year planning period.

Introduction

The Palmer Moraine management area is on a bedrock-controlled ground moraine in central Marquette County. The state forest covers over 9,100 acres and is somewhat scattered parcels. The major ownership in this vicinity is non-industrial private. The management area is dominated by the aspen, white pine and jack pine cover types. Other attributes that played a role in the definition of this management area include:

- Dominated by the natural communities: boreal forest, mesic northern forest and dry mesic northern forest;
- Mid-range in site quality;
- The Escanaba River and several tributaries including the Cataract Basin are features in this area;
- This is a popular area for hunting, fishing, paddling and other types of recreation;
- The community of Gwinn is located near this management area;
- Provides multiple benefits including forest products and dispersed recreational activities; and
- Provides a variety of fish and wildlife habitats.

The management priority in this area is to continue to provide these multiple benefit in a sustainable manner while minimizing user conflicts. Additional priorities include promoting mesic-conifers and oak regeneration on appropriate sites.

The predominant cover types, composition and projected harvest areas for the Palmer Moraines management area are shown in Table 4.26.1.

Table 4.26.1. Summary of cover types, composition, limiting factor area manageable area and projected harvest area for the Palmer Moraine management area (2012 Department of Natural Resources inventory data).

Cover Type	Cover %	Current Acreage	Hard Factor Limited	Manageable Acres	10 Year Projected Harvest (Acres)		Projected Acreage in 10	Desired Future Harvest (Acres)	
					Final Harvest	Partial Harvest		Final Harvest	Partial Harvest
Aspen	34%	3,161	512	2,649	75	0	3,161	442	0
Jack Pine	10%	939	108	831	50	0	939	119	0
Paper Birch	2%	217	175	42	0	0	217	7	0
White Pine	6%	512	38	474	59	74	512	30	184
Upland Open/Semi-Open Lands	2%	177	0	177	0	0	177	0	0
Lowland Open/Semi-Open Lands	4%	388	0	388	0	0	388	0	0
Misc Other (Water, Local, Urban)	4%	387	0	387	0	0	387	0	0
Others	37%	3,400	697	2,703	473	522	3,400	295	559
Total		9,181	1,530	7,651	657	596	9,181	893	743

Palmer Moraine

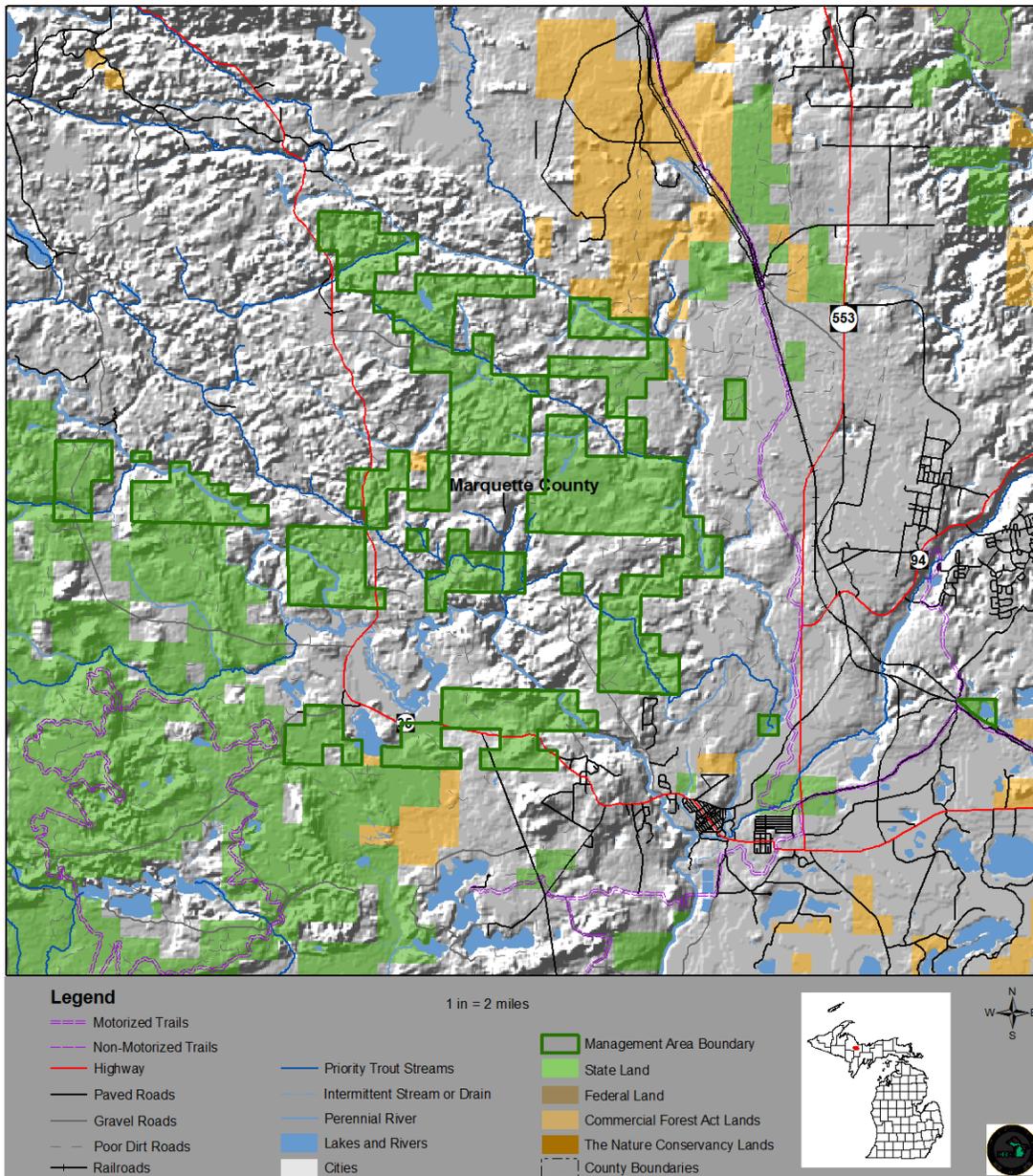


Figure 4.26.1. A map of the Palmer Moraine management area (dark green boundary) in relation to surrounding state forest lands and other ownerships.

4.26.1 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 Palmer Moraine 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.

Aspen Cover Type

Current Condition

The aspen cover type covers 3,161 acres (34%) of state forest land in this management area (Table 4.26.1). Aspen is poorly distributed across age classes with a large portion of the acres in the 0-9 and 10-19 year age classes due to recent harvest and regeneration work (Figure 4.26.2). There are a large number of acres over rotation age and 512 of those acres have limiting factors on them. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

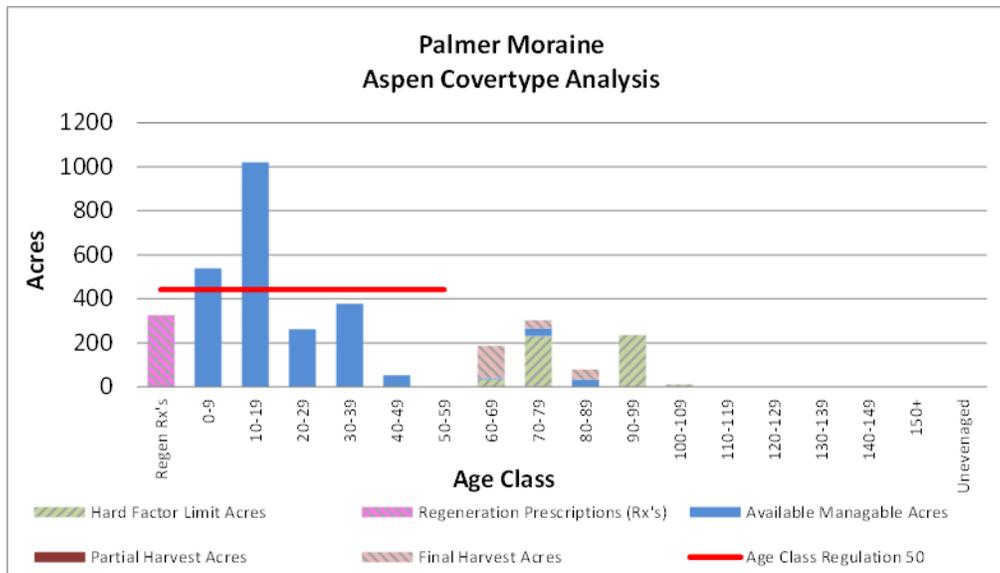


Figure 4.26.2. Graph of the age-class distribution of the aspen cover type on the Palmer Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

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

Long-Term Management Objectives

- Regenerate approximately 442 acres each decade.

10-Year Management Objectives

- The projected 10-year harvest is 75 acres;
- Evaluate younger stands for early harvest to work toward balancing the age classes;
- Harvest stands of 60-110 year-old aspen that are in decline; and
- Maintain mature large-tooth aspen if present as retention.

Jack Pine Cover Type

Current Condition

The jack pine cover type comprises about 939 acres (10%) of the management area (Table 4.26.1). Most of the jack pine is unevenly distributed across age classes, with the majority of the acres in the 0-9, 10-19 and 20-29 year age classes, with a spike in the 70-79 year age class (Figure 4.26.3). There are 108 acres of jack pine that have site conditions limiting their harvest this entry period. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

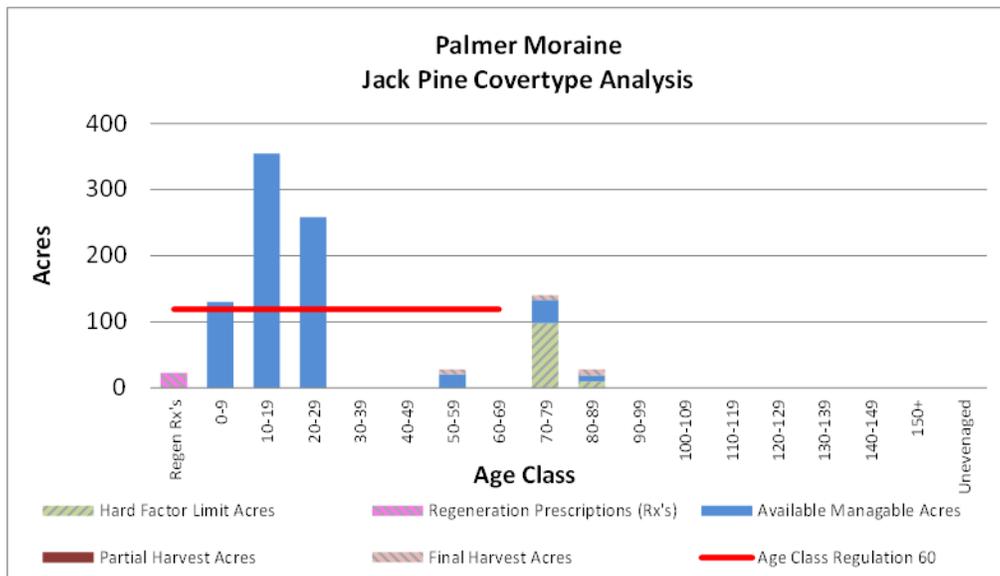


Figure 4.26.3. Graph of the age-class distribution for the jack pine cover type on the Palmer Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Provide a supply of forest products;
- Provide for a mix of habitat conditions for a variety of wildlife; and
- Provide for a variety of hunting-type opportunities.

Long-Term Management Objectives

- Manage jack pine on a 60-year rotation, regenerating approximately 119 acres each decade.

10-Year Management Objectives

- Harvest about 50 acres during this 10-year planning period; and
- More aggressive harvesting in this type maybe needed in this 10-year planning period to reduce mortality losses in the older stands.

Lowland Spruce/Fir Cover Type

Current Condition

Currently there are 817 acres (9%) of the lowland spruce/fir type in the management area (Table 4.26.1). Lowland spruce/fir is often found in association with lowland conifer, cedar and tamarack types. Lowland spruce/fir in this management area does not have a well-balanced age-class distribution (Figure 4.26.4). About 682 acres of the lowland spruce/fir in this area is over 80 years in age, and 453 acres of that has factors limiting harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

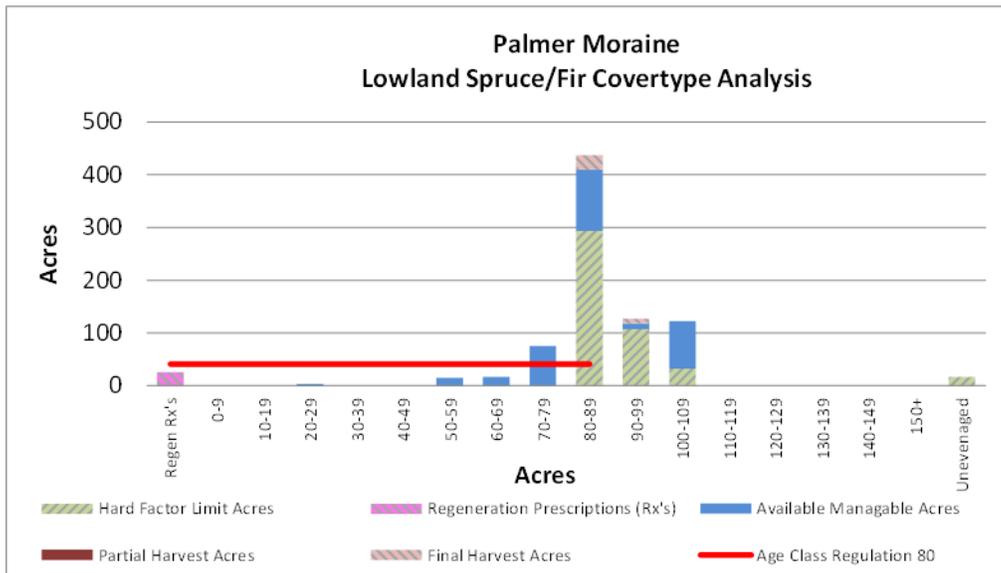


Figure 4.26.4. Graph of the age-class distribution for the lowland spruce/fir cover type on the Palmer Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Maintain approximately the current level of lowland spruce/fir type with stands representing a variety of age classes.

Long-Term Management Objective

- Regenerate mature lowland spruce/fir types on an 80-year rotation allowing 41 acres to be harvested per decade; and
- Resolve factors limiting harvest to increase the allowable harvest level.

10-Year Management Objectives

- Harvest about 107 acres in this 10-year planning period; and
- Aggressively harvest this type in this 10-year planning period to reduce mortality losses in the older stands.

White Pine Cover Type

Current Condition

There are 512 acres (6%) of the state forest in this management area in white pine (Table 4.26.1). This type is poorly distributed across age classes and the majority of the stands have been coded as uneven-aged. Most of the white pine is of natural origin. There are 38 acres of white pine that have factors limiting harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

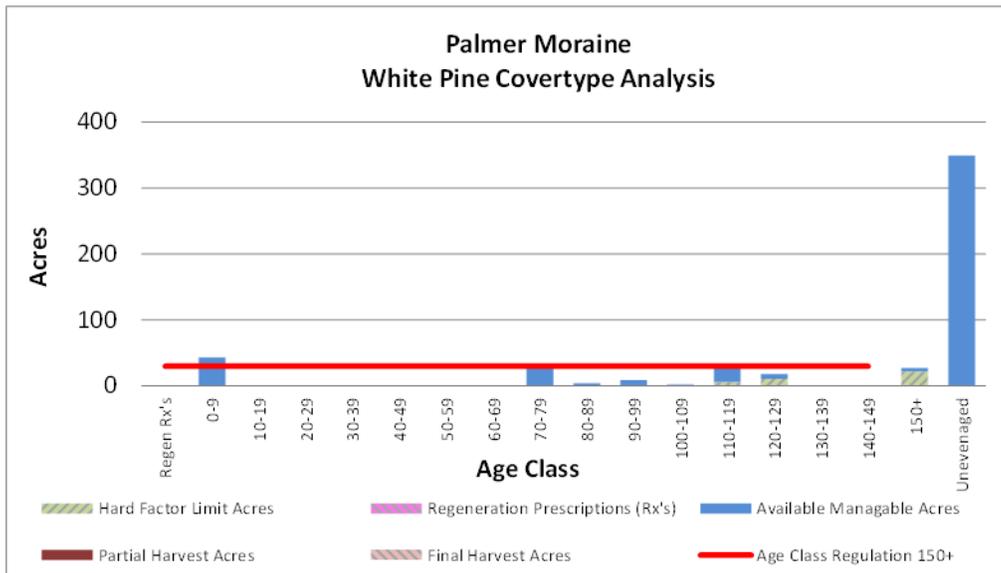


Figure 4.26.5. Graph of the age-class distribution of the white pine cover type on the Palmer Moraine management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Maintain and promote natural origin white pine in this management area.

Long-Term Management Objectives

- Manage natural origin stands on a 150-year rotation using natural regeneration techniques with shelterwood or patch clearcuts and scarification as needed allowing approximately 30 acres to be final harvested per decade; and
- Stands will be thinned as necessary.

10-Year Management Objectives

- Regenerate 59 acres of natural origin stands within the next decade using shelterwood and small patch cuts; and
- Thin about 74 acres this decade.

Other Forested Cover Types

Current Condition

Other forested types make up 2,800 acres and are made up of upland mixed forest (688 acres), Mixed upland deciduous (652 acres), northern hardwoods (219 acres), paper birch (217 acres), natural mixed pines (198 acres), upland spruce/fir (190 acres), red pine (172 acres), upland conifers (172 acres), lowland conifers (130 acres), planted mixed pines (55 acres), cedar (50 acres), lowland mixed forest (40 acres), oak (15 acres) and lowland poplar (two acres). Together these types make up about 30% of the management area (Table 4.26.1).

Approximately 419 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 the presence of the minor cover types within the management area.

Long-Term Management Objectives

- Manage minor cover types to maintain representation using appropriate silvicultural methods;
- Featured species habitat requirements will be taken in to consideration; and
- Maintain hemlock as it occurs.

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; and
- The projected ten-year final harvest in these types is 278 acres and the projected partial harvest is 889 acres.

Other Non-forested Cover Types

Current Condition

The following non-forested cover types are found on this management area: upland open/semi- open lands (177 acres – 2%), lowland open/semi-open lands (388 acres – 4%) and miscellaneous other (water, local, urban) (387 acres – 2%) (Table 4.26.1).

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 Objective

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

4.26.2 – Featured Wildlife Species Management

Wildlife priorities in the Palmer Moraine management area include maintaining white pine, red pine and oak especially on rocky outcrops and maintaining wildlife movement corridors along riparian areas. The primary focus of wildlife habitat management will be to address the habitat requirements identified for the following featured species: American woodcock, black bear, pileated woodpecker and red crossbill. Based on the selected featured species, some of the most significant wildlife management issues in the management area are: early successional forest conditions (associated with alder, riparian zones or forested wetlands), mast (hard and soft); mature forest (coniferous and deciduous stands); retention or development of large living and dead standing trees (for cavities) and mesic conifer. During this 10-year planning period, additional analyses to better define the spatial extent of priority areas for featured species will be performed.

American Woodcock

The western Upper Peninsula goal for woodcock is to maintain or increase woodcock habitat. In priority areas, management should focus on maintaining early successional habitat associated with riparian zones and forested lowlands.

Wildlife habitat specifications:

- Maintain aspen cover type within the management area where associated with alder, riparian zones or forested wetlands;
- Balance aspen age-class distribution within the management area;
- Use silvicultural practices that encourage the aspen component in mixed stands associated with alder, riparian zones or forested wetlands; and maintain or create rough openings associated with alder, riparian zones, regenerating aspen or forested wetlands within the management area.

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

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 in diameter 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 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 in diameter 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, 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.

Red Crossbill

In the western Upper Peninsula, the goal for the red crossbill is to maintain or increase suitable habitat. State forest management should focus on maintaining mature and over mature seed producing trees in priority areas. Declines in red crossbill have been associated with declines in the amount of available conifer seeds which are correlated with age of trees (see species account in Section 3); mostly a result of decreases in conifer across the landscape and a shortening of rotation periods for remaining conifer stands. Mature mesic conifer forests (white/ red pine, spruce, hemlock) will be the primary habitat issue addressed for red crossbill in this management area.

Wildlife habitat specifications:

- Maintain a minimum of 15% of the total acres of appropriate forest types (upland spruce/fir, upland conifers, natural mixed pine and natural red and white pine) in the management area for red crossbill in a mature forest condition. Mature being defined as greater than 150 years for red pine, greater than 130 years for white pine and greater than 80 years for white spruce. This can be accomplished with existing factor-limited stands or alternatively by extending the rotation length of these types to 150, 130 and 80 years respectively.
- Retain large mature and over mature red pine, white pine and spruce in shelter-wood and seed tree cuts.
- 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) Using silvicultural practices that encourage the regeneration of mesic conifer; and c) Where desired/feasible, under planting hemlock, white pine and white spruce in hardwood-dominated stands on suitable sites without a seed source.

4.26.3 – 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 two listed species and no natural communities of note occurring in the management area as listed in Table 4.26.2. 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.

Approximately 278.9 acres of potential old growth have been identified within the Palmer Moraine management area (Figure 4.26.6). 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.

Table 4.26.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Palmer Moraine 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
Mammal								
Tri-colored bat (Eastern pipistrelle)	<i>Perimyotis subflavus</i>	SC/G5/S2S3	Confirmed	PS	Very High	Caves	Caves	N/A
Plant								
Purple clematis	<i>Clematis occidentalis</i>	SC/G5/S3	Confirmed			Volcanic bedrock lakeshore	Upland open/semi-open	N/A
						Dry-mesic northern forest	White Pine	Late
						Volcanic cliff	Upland open/semi-open	N/A
						Floodplain forest	Lowland mixed	Mid
						Boreal forest	Upland & Lowland Sp/F	Mid
						Granite bedrock glade	Upland open/semi-open	N/A
						Granite cliff	Upland open/semi-open	N/A
						Mesic northern forest	Northern Hardwood	Late
						Northern bald	Upland open/semi-open	N/A
						Volcanic bedrock glade	Upland open/semi-open	N/A
						Volcanic lakeshore cliff	Upland open/semi-open	N/A

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

There are no high conservation value areas or ecological reference areas identified in this management area as illustrated in Figure 4.26.6.

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.

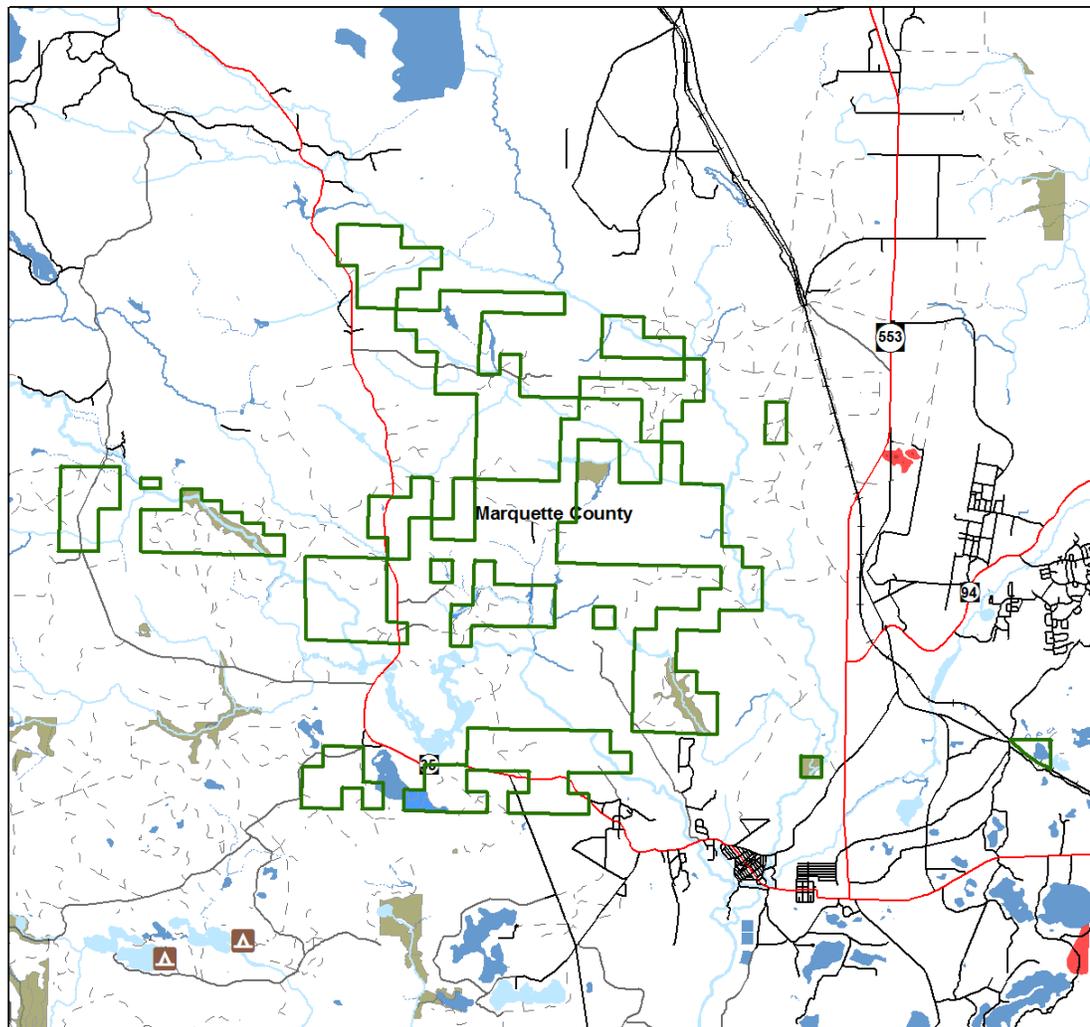
Objective 1-1: Field staff should be trained and aware of the identification characteristics and natural history of rare, threatened, endangered and special concern species.

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 all potential Type 1, potential Type 2 and potential old growth to determine its status as to its special resource status.

Objective 2-1: To evaluate the potential old growth areas by the end of this 10-year planning period.

Palmer Moraine



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 4.26.6. A map of the Palmer Moraine management area showing the special resource areas.

4.26.4 – 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
- Jack pine budworm
- *Diplodia* shoot blight of pine
- *Sirococcus* shoot blight
- 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. There are no known occurrences of species of concern that been documented in or near this management area.

4.26.5 – 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 4.26.1.

4.26.6 – Fire Management

This area is a mixture of mesic and dry-mesic forests with interspersed wetlands. Fire occurrence due to lightning in the recent past indicates the potential for periodic stand-replacement fire in some areas that would have encouraged pine and oak.

- All wildfires are subject to appropriate initial attack suppression response.
- Part of this management area falls within the Sands Plains Zone Dispatch area, which provides plans for initial attack, based on fire danger level. It calls for elevated readiness (additional staffing at Gwinn, Ishpeming and Escanaba Field Offices) and aggressive response to reported wildfires during periods of VERY HIGH and EXTREME fire danger.

4.26.7 – Public Access and Recreation

This area is very remote and there are few public access roads. There are no state forest campgrounds or boating access sites in this area.

- Work to establish legal access for management and public use as opportunities arise.

4.26.8 – 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. No economic oil and gas production has been found in the Upper Peninsula.

Surface sediments consist of glacial outwash sand and gravel and postglacial alluvium, medium and coarse-textured till in places thin to discontinuous. The glacial drift thickness varies between 100 and 200 feet. Sand and gravel pits are located in the management area and there should be some potential for additional pits.

The Precambrian Archean Granite/Gneiss and Oak Bluff and Bijiki Iron Formations subcrop below the glacial drift. The Bijiki has been mined for iron ore in the past.

Old iron mines are located along the south edge of the management area. Other metallic mineral exploration has occurred in the management area in the past and there could be additional potential.