4.28 MA 28 – Ogemaw Hills Management Area

Summary of Use and Management

Vegetation management in the Ogemaw Hills management area (MA) (Figure 4.28.1) will provide timber products; maintain or enhance wildlife habitat; protect areas of unique threatened, endangered and special concern species; and provide for forest-based recreational uses. Timber management for this 10-year planning period will focus on harvesting older jack pine, balancing the age-class distributions of oak and aspen and regenerating red pine. Wildlife habitat management objectives include perpetuating early-successional communities for species adapted to young forests for hunting and other wildlife-related recreation opportunity. Expected trends within this 10-year planning period are the need to regenerate oak and red pine, continue to balance aspen age-class distributions, an expected increase in recreation pressure and continued wildfire prevention and suppression.

Introduction

There are 61,965 acres of state forest land in the Ogemaw Hills management area located in Roscommon and Ogemaw Counties near the town of St. Helens with smaller portions in Crawford and Oscoda counties. The primary attributes which identify the Ogemaw Hills management area include:

- The dominant landform consists of large ridges of ice-contact sands surrounded by poorly drained outwash channels and plains.
- The management area falls within Grayling Outwash Plain sub-region as classified by Albert (1995).
- Some of the land is under short-term military lease.
- This area is popular for hunting and mushroom hunting and other activities for the nearby communities of Grayling, West Branch, Houghton Lake, Roscommon and Mio.
- This use, combined with the quantity and availability of wood fiber contributes significant social and economic values to the area.
- Threatened, endangered or species of special concern located by Michigan Natural Features Inventory surveys include eastern massasauga rattlesnake, Hill's thistle, prairie *agoseris,* secretive locust, Kirtland's warbler, great blue heron colony, red-legged spittlebug, rough fescue and Henry's elfin.

The current predominant cover types, acreages and projected harvest acres in the management area are shown in Table 4.28.1.

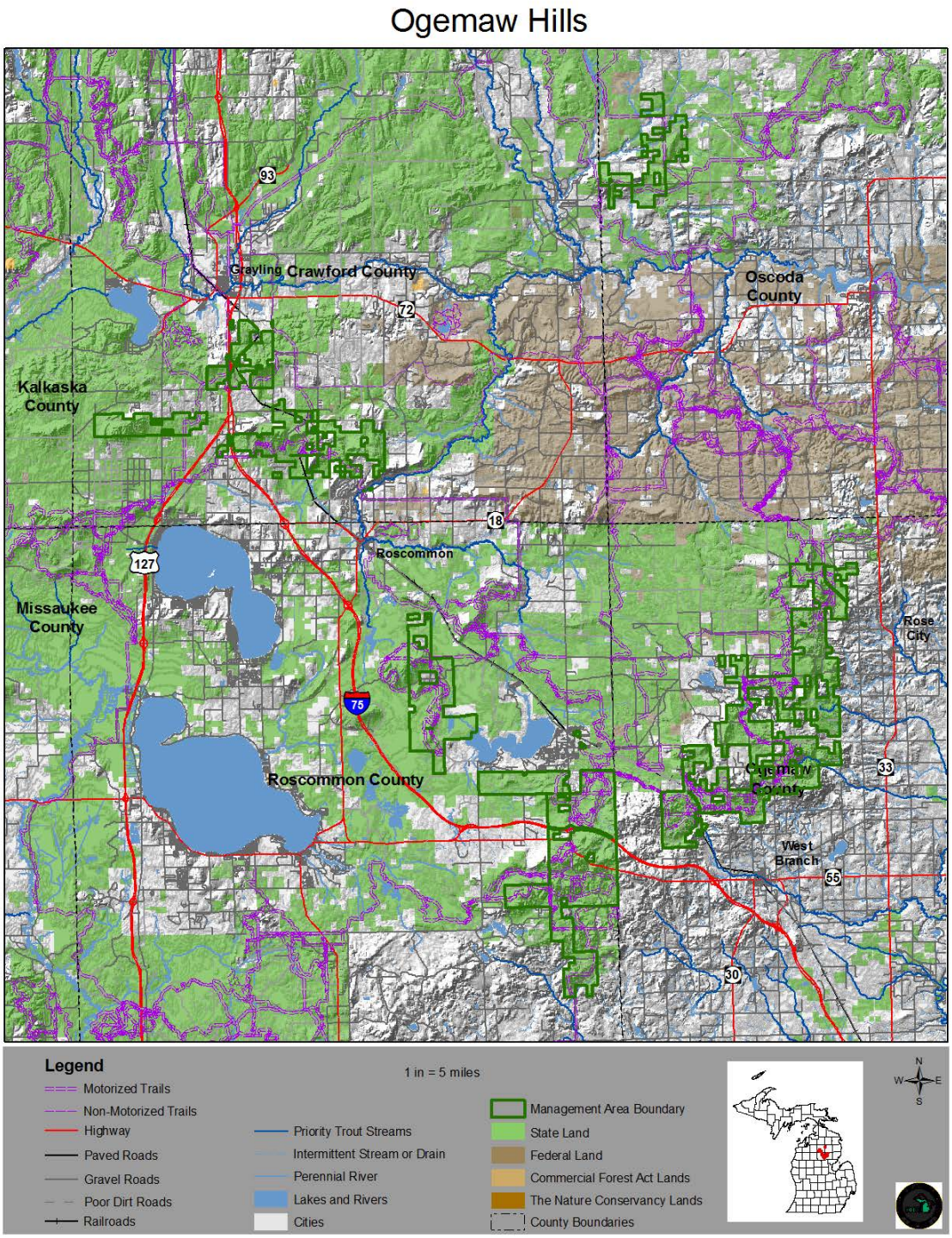

Figure 4.28.1. A map of the Ogemaw Hills management area (dark green boundary) in relation to surrounding state Forest and other lands in Ogemaw, Roscommon, Oscoda and Crawford counties, MI.

Table 4.28.1. Current cover types, acreages, projected harvests and projected acreages at the end of this ten-year planning period for the Ogemaw Hills management area, northern Lower Peninsula ecoregion (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
Aspen	40%	24,575	446	24,129	3,525		24,575	3,447	
Oak	23%	14,098	4,619	9479		2,458	14,098	1,053	2,458
Jack Pine	9%	5,382	511	4871	93		5,382	696	
Mixed Upland Deciduous	7%	4,098		4098		446	4,098	585	446
Red Pine	4%	2,716	438	2278	503	429	2,716	253	1,098
Northern Hardwood	3%	1,846	43	1803		388	1,846		388
White Pine	2%	969	78	891	196	339	969	81	388
Lowland Conifers	2%	961	781	180	20		961	20	
Cedar	2%	944	944				944		
Upland Open/Semi-Open Lands	3%	1,627		1627			1,627		
Lowland Open/Semi-Open Lands	2%	1,373		1373			1,373		
Misc Other (Water, Local, Urban)	1%	674		674			674		
Others	4%	2,702	749	1953	256	429	2,702	223	450
Total		61,965	8,609	53,356	4,594	4,489	61,965	6,358	5,228

4.28.1 Forest Cover Type Management Direction

The following sections contain information on vegetation management direction in the form of **Current Conditions, Desired Future Conditions, 10-Year Management Objectives and Long-Term Management Objectives** for each of the major cover types or forest communities within the management area. 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, natural succession will achieve ecological objectives. Management areas consist of stands that are defined by their predominant vegetative cover type, landform and other similar attributes. While most stands have a variety of trees species and other vegetation, they are classified by the predominant species.

Section 4.28.1.1 Forest Cover Type Management - Aspen

Current Condition

Aspen acres total 24,575 acres or 40% of the management area (Table 4.28.1). Aspen is distributed throughout the management area including the till areas on dry to mesic/poor (habitat classes: PArVHa, PArVVb) sites. There are 446 acres of aspen have met harvest criteria (Figure 4.28.2), but have site conditions that limit harvest (hard factor limit acres).

There are 1,637 acres of stands that have a regeneration harvest pending and these acres are included in the regeneration prescription class.

Desired Future Condition

- Aspen will be located on suitable sites with acres balanced within the 0-69 year age-class rotation to provide early successional habitat for species viability and a sustainable level of wood fiber.

10-Year Management Objectives

- Conduct stand regeneration harvests on a projected 3,525 acres in this 10-year planning period;
- Concentrate harvests on the oldest age classes first; and
- Where necessary and feasible, consider harvesting stands below the rotation age to expedite the balancing of age-class distributions.

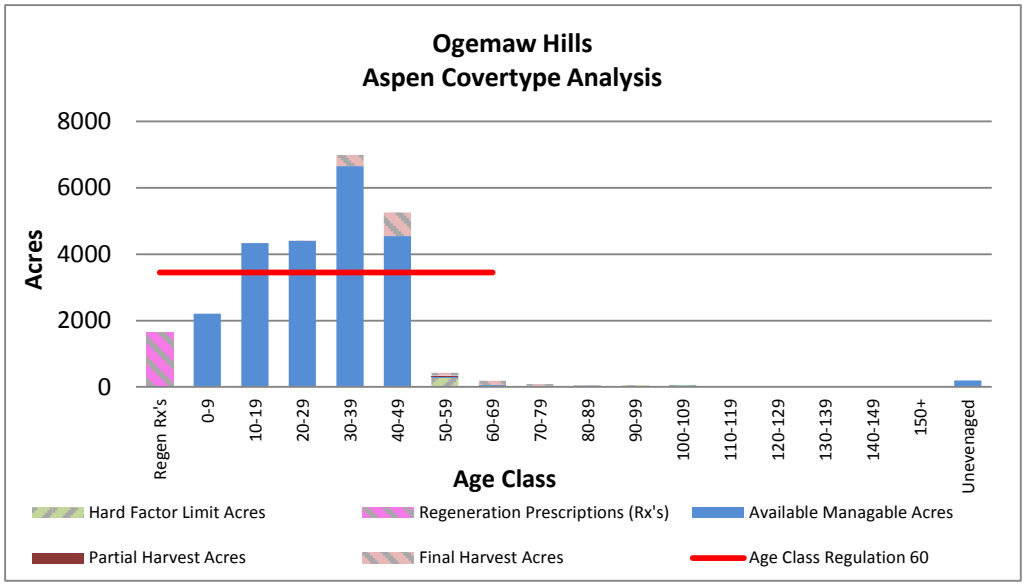

Figure 4.28.2. Age-class distribution for aspen in the Ogemaw Hills management area (2012 Department of Natural Resources inventory data).

Long-Term Management Objectives

- Continue to manage aspen at current levels for a balanced age-class distribution for sustainable fiber production and habitat; and
- A desired future harvest level is projected at 3,447 acres for final harvest per 10-year period.

Section 4.28.1.2 Forest Cover Type Management – Oak

Current Condition

Oak acres total 14,098 or 23% of the management area (Table 4.28.1) including the till areas on very dry to mesic/poor-medium sites (habitat classes: PArVHA, PArVVb). Oak is well represented in the 0-9 year-old age classes and the 70-89 year-old age classes (Figure 4.28.3). However, there is a lack of acres in the 10-69 year-old age classes. Although oak has been regenerated, on most sites red maple is a significant competitor for oak regeneration. A thick sedge groundcover may also hinder seedling regeneration and exposed oak in frost pockets is prone to late spring freezes. There are 4,619 acres of oak that have met harvest criteria, but have site conditions that limit harvest (hard factor limit acres).

There are 997 acres of stands that have a regeneration harvest pending and these acres are included in the regeneration prescription class. There are 688 acres with a partial harvest pending and these acres are included in their current age class. The graph includes the projected number of acres converted to the cover type as a result of treatments that remove an overstory species resulting in release of oak. These acres are included in the regeneration prescription class.

Desired Future Condition

- Oak in stands and as a component in stands throughout the management area will be maintained through management to provide for timber products, wildlife habitat and recreational opportunities.

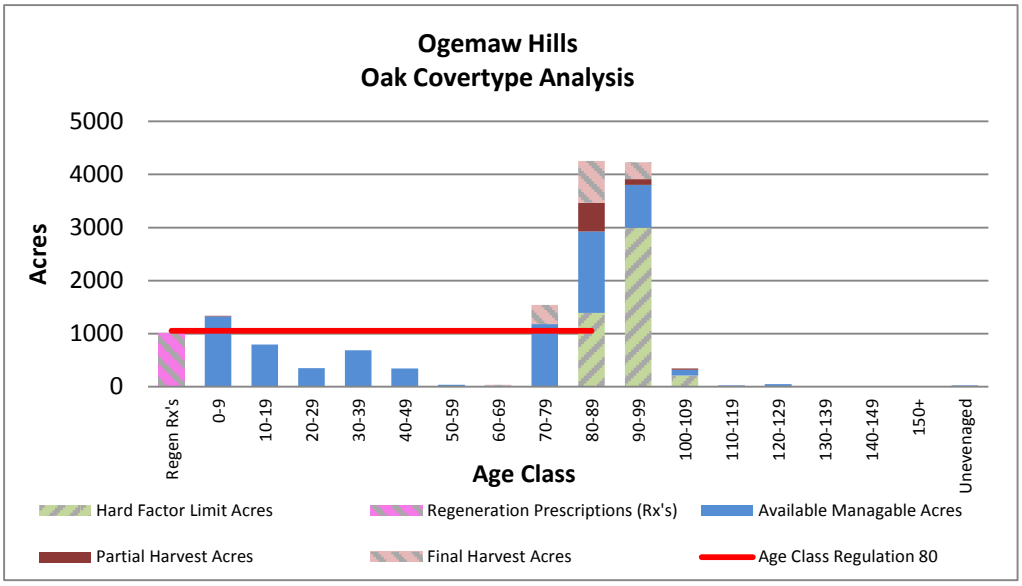

Figure 4.28.3. Age-class distribution for oak in the Ogemaw Hills management area (2012 Department of Natural Resources inventory data).

10-Year Management Objectives

- Conduct partial harvests on a projected 2,458 acres with a concentration on acres in the oldest age groups;
- Maintain or expand oak as a component in stands throughout the management area through retention and management for natural regeneration in other cover types;
- Consider opportunities to plant oak to increase oak throughout the management area;
- In areas of oak wilt or in proximity to oak wilt areas, consider favoring white oak where present; and
- Consider opportunities to selectively remove the conifer cover to release understory oak on mesic/poor sites.

Long-Term Management Objectives

- Continue aggressive management efforts outlined above to regenerate and establish oak on mesic/poor (PArVVb) sites; and
- A desired future harvest level is projected at 1,053 acres for final harvest and 2,458 acres for partial harvest per 10-year period.

Section 4.28.1.3 Forest Cover Type Management – Jack Pine

Jack pine acres total 5,382 or 9% of the management area (Table 4.28.1). Jack pine is found on PArVHa/PArVVb and PArVHa habitat class sites. Forest communities dominated primarily by jack pine in this management area are valued ecologically as sources of habitat for numerous species of wildlife including bear, white-tailed deer and various song birds; commercially for pulp and saw logs; and for a wide range of forest recreation. There are 467 acres of jack pine have met harvest criteria (Figure 4.28.4) but have site conditions that limit harvest (hard factor limited acres). There are 165 acres of stands that have a regeneration harvest pending and these acres are included in the regeneration prescription class.

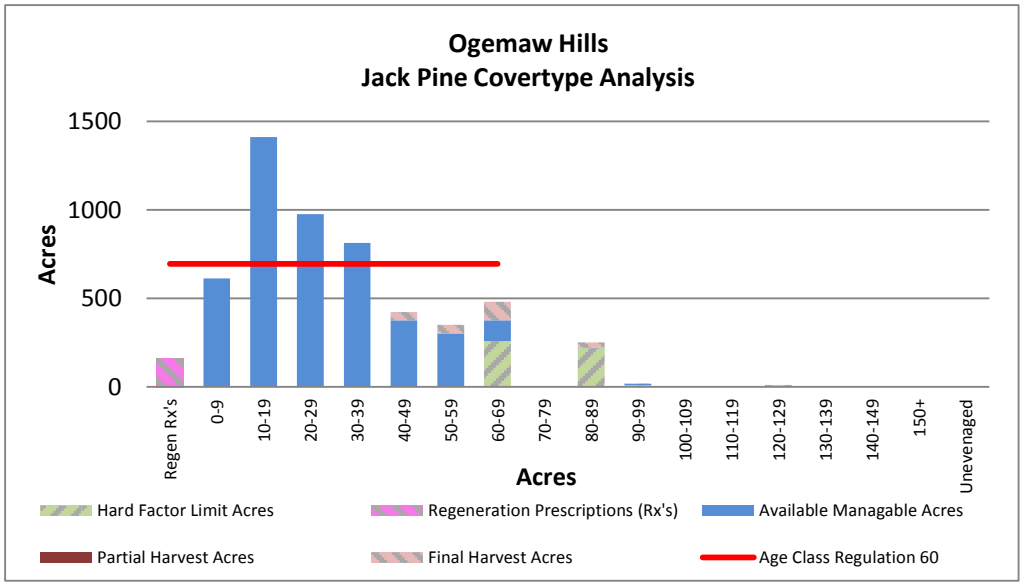

Figure 4.28.4. Age-class distribution for jack pine in the Ogemaw Hills management area (2012 Department of Natural Resources inventory data).

The graph includes the projected acres converted to the cover type as a result of treatments that remove an overstory and planting to jack pine. These acres are included in the regeneration prescription class.

Desired Future Condition

- Jack pine dominated forest communities will be maintained on operable sites through even-aged management with acres balanced between 0-69 years of age to provide for regulated harvest, wildlife habitat and recreation opportunity.

10-Year Management Objectives

- Conduct final harvests on a projected 93 acres.

Long-Term Management Objectives

- Consider the potential impacts of jack pine budworm outbreaks in management decisions;
- Continue harvests to balance age-class distributions; and
- A desired future harvest level is projected at 696 acres for final harvest per 10-year period.

Section 4.28.1.4 Forest Cover Type Management – Red Pine

Current Condition

Natural and planted red pine acres total 2,716 acres or 4% of the management area (Table 4.28.1) on till areas. The habitat classes for red pine sites range from PArVHa to PArVVb. There is a pronounced spike in the 70-89 year-old age classes which represents a previous era of active planting (Figure 4.28.5).

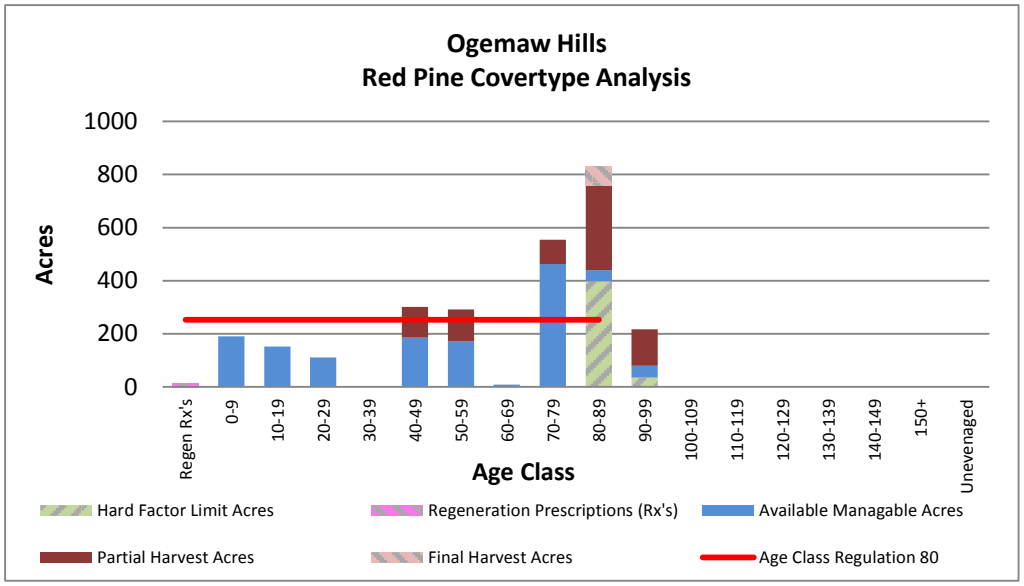

Figure 4.28.5. Age-class distribution for red pine in the Ogemaw Hills management area (2012 Department of Natural Resources inventory data).

Red pine plantations in this management area are commercially valued for pulp, saw logs and utility poles. There are 438 acres of red pine that have met harvest criteria, but have site conditions that limit harvest (hard factor limit acres). There are 12 acres that have a regeneration harvest pending and these acres are included in the regeneration prescription class. There are 783 acres with a partial harvest pending and these acres are included in their current age class. The graph includes the projected number of acres converted to red pine as a result of treatments that remove an overstory species and planting to red pine. These acres are included in the regeneration prescription class.

Desired Future Condition

- Red pine of either natural origin or in planted stands will be located on suitable sites with acres balanced in the 0-89 year age classes to provide a steady flow of forest products.

10-Year Management Objectives

- Follow the Red Pine Management Guidelines, which recommends growing red pine on suitable sites and balancing the age-class distributions;
- Conduct partial harvests on a projected 429 acres, concentrating on stands of better-quality red pine that has the potential for a higher product value in larger size classes; and
- Conduct regeneration harvests on a projected 503 acres of red pine beginning with the oldest age-classes and with a concentration on stands with less potential for a higher product value.

Long-Term Management Objectives

- In identified special conservation areas, especially those with natural red pine on dry-mesic sites, consider management of red pine to a biological rotation of 200+ years;
- Continue management to balance the age-class distributions; and
- A desired future harvest level is projected at 253 acres for final harvest and 1,098 acres for partial harvest per 10-year period.

Section 4.28.1.5 Forest Cover Type Management – Lowland Open/Semi-Open Lands

Current Condition

Lowland open/semi-open lands (lowland shrub, marsh, treed bog and bog) communities in this management area are valued ecologically as sources of habitat for numerous species of wildlife. Lowland open/semi-open acres total 1,373 acres or 2% of the management area (Table 4.28.1).

Desired Future Condition

- Lowland open/semi-open lands sites will be maintained at or above current levels to provide wildlife habitat.

10-Year Management Objectives

- Management in lowland open/semi-open lands will be minimal. What little maintenance that will be done will be to maintain the hydrology and open characteristics.

Long-Term Management Objectives

- Continue management to maintain upland open/semi-open lands at or above current levels;
- Continue to protect stands from illegal off-road vehicle use; and
- Where feasible and necessary, use control methods on invasive non-native species.

Section 4.28.1.6 Forest Cover Type Management – Mixed Upland Deciduous

Current Condition

Mixed upland deciduous (primarily aspen, oak and red maple) acres total 4,098 acres or 7% of the management area (Table 4.28.1). Due to the age-classes of this type (Figure 4.28.7); it would appear that these stands are mixed oak stands (older age classes) with aspen and red maple (younger age classes). The community is distributed throughout the management area on habitat class PArVHa sites. Forest communities classed as mixed upland deciduous in this management area are valued ecologically as sources of habitat and mast for numerous species of wildlife including bear, white-tailed deer, squirrels and various birds and commercially for firewood and industrial lumber.

Desired Future Condition

- These communities will be managed on operable sites, contributing to the compositional diversity of the landscape while providing for continual harvest and to contribute to the preservation of regional biodiversity by providing habitat for a unique suite of plants and wide variety of animal species.

10-Year Management Objectives

- These areas will be managed primarily through selection harvests that may select an individual species for harvest; and
- Conduct regeneration harvests on a projected 446 acres to regenerate those species which meet silvicultural criteria.

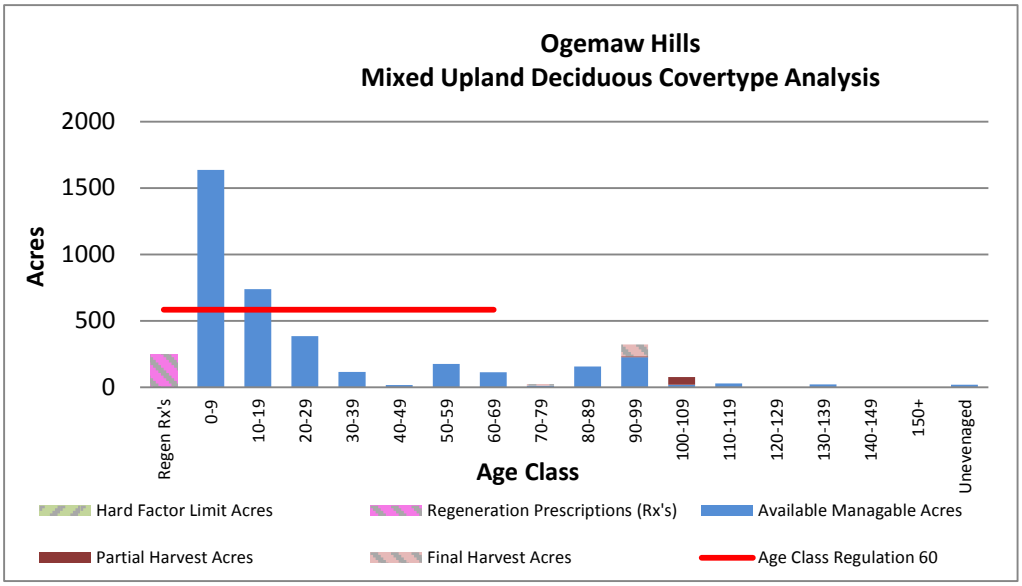

Figure 4.28.6. Age-class distribution for mixed upland deciduous in the Ogemaw Hills management area (2012 Department of Natural Resources inventory data).

Long-Term Management Objectives

- Maintain these mixed types through continued management to provide a diverse cover type that provides habitat and forest products on a sustainable basis; and
- A desired future harvest level is projected at 585 acres for final harvest and 446 acres for partial harvest per 10-year period.

Section 4.28.1.5 Forest Cover Type Management – Upland Open/Semi- Open Lands

Current Condition

Upland open/semi-open lands acres total 1,627 acres or 3% of the management area (Table 4.28.1). This category is a combination of the following non-forested land cover types: herbaceous openland, upland shrub, low density trees and bare/sparsely vegetated. These non-forested areas are a result of natural processes of fire, frost or other disturbances which create openings in the forest canopy along with the past management practices to maintain these areas. These communities are valued ecologically as sources of open land habitat for numerous species of wildlife.

Desired Future Condition

- Maintain upland open/semi-openlands at or above the current level to provide habitat for species which use openings.

10-Year Management Objectives

- Consider management to maintain upland open/semi-open lands.

Long-Term Management Objectives

- Continue management to maintain upland open/semi-openlands at or above current levels;
- Continue to protect stands from illegal off-road vehicle use; and
- Where feasible and necessary, use control methods on invasive non-native species.

Section 4.28.1.6 Forest Cover Type Management – Other Types

Current Condition

Cover types which may cover less than 5% of the management area include: northern hardwood 1,846 acres or 3% of the management area, white pine 969 acres (2%), lowland conifers 961 acres (2%) and cedar 944 acres (2%). Other forested and non-forested communities total 2,702 acres or 4% of the management area and are spread across the management area. All of the timbered and non-timbered communities have important ecological values and are important habitat for numerous wildlife species.

Desired Future Condition

- These cover types will be maintained on suitable sites and contribute to the compositional species diversity of the landscape.

10-Year Management Objectives

- Seek opportunities to harvest, where appropriate, the scattered acreages of upland and lowland minor types where access and operability will not adversely impact sensitive areas;
- Conduct regeneration harvests on a projected 20 acres of lowland conifer;
- Consider methods to ensure adequate cedar and lowland conifer regeneration;
- Additional opportunities to increase harvest prescriptions in lowland forest types will be assessed, both in and outside (due to forest health issue) of normal years of entry;
- The following species are projected for restarting or regeneration harvests: 196 acres of white pine, 26 acres of upland mixed forest, 53 acres of natural mixed pines, 133 acres of upland spruce/fir and 44 acres of planted mixed pines; and

- Partial harvests are projected for 388 acres of northern hardwood, 339 acres of white pine, 197 acres of upland mixed forest, 157 acres of natural mixed pines and 68 acres of planted mixed pines.

Long-Term Management Objectives

- Continue efforts to regenerate lowland types;
- Continue to manage these other types to provide forest products, wildlife habitat and recreational opportunities; and
- Desired future harvest levels for final harvest are projected at 40 acres of lowland conifer per 10-year period.

4.28.2 Featured Wildlife Species

Each of the featured species outlined below includes recommended practices with regard to forest and/or wetland management.

A more detailed overview of featured species is included in Section 3.

The following have been identified as featured species for this management area during this cycle of state forest planning:

- American bittern (Robinson Creek Flooding State Wildlife Management Area)
- American woodcock
- Beaver
- Black bear
- Pileated woodpecker
- Red-headed woodpecker
- Ruffed grouse
- Snowshoe hare
- Wild turkey
- White-tailed deer
- Wood duck (Robinson Creek Flooding State Wildlife Management Area)

The primary focus of wildlife habitat management in the Ogemaw Hills management area will be to address the habitat requirements identified for the listed featured species. Based on the selected featured species, some of the most significant wildlife management issues in the management area the maintenance of young forest; large open grassland complexes and marsh/grassland complexes; the retention of large over-mature trees and snags; and the maintenance and expansion of hard mast and mesic conifer components.

American Bittern

The goal for American bittern in the northern Lower Peninsula is maintain or increase available habitat. American bittern prefer large (>10 acre), shallow (average depth four inches) wetlands with open water in the center, a band of emergent vegetation around periphery and idle grassland in the adjacent uplands (4:1 grassland to wetland ratio). State forest management should focus on priority wildlife management areas with suitable shallow water marsh (hemi-marsh).

Wildlife Habitat Specifications:

- Maintain priority wetlands in hemi-marsh condition, with 50/50 open water to emergent marsh, for both breeding and non-breeding habitat. Ideal wetland/upland complexes are greater than 50 acres.
    - Implementation of the wildlife management area master plan for Robinson Creek Flooding State Wildlife Management Area and application of the beaver wildlife habitat specifications will be sufficient to meet this mallard habitat specification.
- Maintain water levels from the April through August breeding season.

American Woodcock

The goal for American woodcock in the northern Lower Peninsula is to maintain or increase available habitat. American woodcock use young aspen stands having stem densities ranging from 6,000-20,000 stems per acre for feeding, nesting and brood-rearing. State forest management should address the maintenance of adequate early successional habitat to provide feeding, nesting and brood-rearing habitat and opportunity for hunting.

Wildlife Habitat Specification:

- Maintain the aspen cover type and the aspen component in mixed stands within the management area.
  - Implementation of 10-year management direction for aspen, lowland aspen, and lowland deciduous will be sufficient to meet this woodcock habitat specification.
- Move to balance the age-class distribution of aspen and continue management to regenerate oak to maintain young forests across the management area.
  - Implementation of 10-year management direction for aspen, lowland aspen, and lowland deciduous will be sufficient to meet this woodcock habitat specification.
- Identify commercial and non-commercial treatment opportunities in aspen and alder stands associated with non-high priority trout stream riparian zones or forested wetlands.

Beaver

The goal for beaver in the northern Lower Peninsula is to maintain available habitat. Consideration will be given to best management practices, trout stream management and trends in beaver nuisance permits issued. State forest management for the species should focus on providing favorable food within 100 feet of streams that are not designated high priority trout streams.

Wildlife Habitat Specifications:

- Maintain or promote alder, aspen, birch, maple or willow cover types within 100 feet of non-high priority trout streams with gradients of less that 15% and other inland bodies of water.
  - Implementation of 10-year management direction for aspen, lowland aspen and lowland deciduous will be sufficient to meet this habitat specification.

Black Bear

The goal for black bear in the northern Lower Peninsula is to maintain or improve habitat. Black bears have large home ranges and require large contiguous tracts of diverse forests with a mixture of cover types. They tend to use forested riparian corridors in their movements (which can be extensive). Hard mast is critical in the fall for bears to achieve adequate weight gains before denning. State forest management for the species should focus on improving existing habitat by minimizing forest fragmentation and maintaining oak to offset potential population declines due to changes in land-use.

Wildlife Habitat Specifications:

- Identify, maintain, develop, or restore forested corridors that connect larger forested tracts, paying particular attention to riparian zones.
  - Implementation of riparian guidance (best management practices) will be sufficient to meet the black bear habitat specifications related to preventing fragmentation and maintaining corridors.
- Conduct silvicultural practices that maintain or increase oak-dominated stands and the oak component of mixed stands.
  - Implementation of the 10-year management direction for oak will be sufficient to meet black bear habitat specifications.

Pileated Woodpecker

The goal for pileated woodpecker in the northern Lower Peninsula is to maintain available habitat. Pileated woodpeckers prefer stands greater than 40 years old for foraging and greater than 70 years old for nesting and roosting and abundance is positively related to the density of trees greater than 12 inches in diameter at breast height. State forest management should focus on the maintenance of a component of large diameter trees (>12 inches in diameter at breast height) at the landscape scale.

Wildlife Habitat Specifications:

- Maintain a component of large diameter trees greater than 12 inches in diameter at breast height.
  - Implementation of Within-Stand Retention Guidance, factor-limited acres, uneven-aged management in the northern hardwoods type, special conservation areas with objectives for big tree management and continued mortality from insect and disease will be sufficient to meet the pileated woodpecker habitat specifications for large trees in this management area.

Red-headed Woodpecker

The goal for red-headed woodpecker in the northern Lower Peninsula is to maintain or increase available habitat. Red-headed woodpecker are limited by the availability of snags for nesting, roosting and feeding and prefer areas with groupings of snags caused by beaver girdling, flooding, fire, disease or insect outbreaks. Preferred sites are greater than 5 acres in size with a savannah-like dispersion of large trees (< 50% canopy cover) with open under story and include tall trees or snags of large (> 12 inches) diameter at breast height. State forest management for the species should focus on the maintenance of snags in timber sales and salvage in priority landscapes.

Wildlife Habitat Specifications:

- Retain patches of dead wood left by beaver floodings, fire, disease, and insect outbreaks by minimizing salvage cuts within the management area with preference for snags greater than12 inches in diameter at breast height.
  - Implementation of beaver wildlife habitat specifications, Within-Stand Retention Guidance, factor-limited acres and continued mortality from insect and disease will be sufficient to meet the red-headed woodpecker habitat specifications for snags in this management area.

Ruffed Grouse

The goal for grouse in the northern Lower Peninsula is maintain available habitat. Ruffed grouse prefer young (6-15 year old); even-aged deciduous stands that typically support 8,000-10,000 woody stems per acre. Although ruffed grouse use many different forest types (aspen, birch, oak-hickory) aspen can support higher densities than those attained in other forest types. The juxtaposition of different age classes allows for different life history requirements to be met within a small area and promotes higher grouse densities. Ideal aspen stands will be of 40-160 acres under a 40-year rotation with staggered harvests of 25% every ten years in 10-40-acre harvest units. Larger harvest units should have irregular boundaries and include one or two, 1-3-acre unharvested inclusions. State forest management should focus on maintaining and balancing the age-class distribution for aspen and oak cover types in priority landscapes.

Wildlife Habitat Specifications:

- Maintain the aspen cover type and the aspen component in mixed stands within the management area.
  - Implementation of 10-year management direction for aspen and oak will be sufficient to meet this grouse habitat specification.
- Move to balance the age-class distribution of aspen and continue management to regenerate oak to maintain young forests across the management area.
  - Implementation of 10-year management direction for aspen and oak will be sufficient to meet this grouse habitat specification.
- Maintain the upland shrub cover type specifically juneberry, hawthorn, cherry and other mast producing shrub components.
  - Implementation of 10-year management direction for upland brush will be sufficient to meet this grouse habitat specification.

Snowshoe Hare

The goal for snowshoe hare in the northern Lower Peninsula is to maintain or increase available habitat. Hare populations use areas of dense, young (sapling/pole) forest and shrub communities and prefer alder and coniferous swamps. Dense understory cover is the primary limiting factor as escape/thermal cover is more important than food availability. In mature forests, hare are associated with beaver ponds and aspen harvests, feeding upon available cuttings and finding cover in the resulting re-vegetation. State forest management should focus on maintaining young aspen adjacent to lowlands, maintaining jack pine, retaining slash, increasing mesic conifer components and increasing beaver.

Wildlife Habitat Specifications:

- Maintain young aspen and lowland shrub (alder or willow) communities that have a conifer understory or young aspen stands that are adjacent to lowland/swamp conifer and mesic conifers. Conduct silvicultural practices that maintain or increase mesic conifer components in aspen stands.
  - Implementation of beaver wildlife habitat specifications and the 10-year management direction for aspen, lowland aspen and lowland deciduous will be sufficient to meet this hare habitat specification.
- When conducting site-prep herbicide treatments, encourage more diverse stands by using application-skips in pockets or along stand edges.
- In snowshoe hare habitat, limit biomass harvesting and whole-tree chipping operations, retain slash and create brush piles.

Wild Turkey

The goal for turkey in the northern Lower Peninsula is maintain available habitat. In northern Lower Peninsula, snow depth is the primary limiting factor that restricts turkey population expansion as deep snow limits access to winter food. The availability of acorns can help mediate the impacts of deep snow. A secondary limiting factor throughout their range is good brood cover. Openings with grasses and forbs and little or no overstory trees are preferred. State forest management should focus on providing natural winter food, maintaining and regenerating oak and maintaining brood-rearing openings to improve brood-production and winter survival.

Wildlife Habitat Specifications:

- Maintain and increase the number of brood-rearing openings (forest openings, savannas, barrens, hayfields, etc.).
  - Implementation of 10-year management direction for upland openland will be sufficient to meet this turkey habitat specification.
- Through opening maintenance, planting, and pruning, provide sources of winter food that are accessible above the snow (food plots, annual grains, fruit-bearing trees or shrubs).
  - Implementation of 10-year management direction for upland openland will be sufficient to meet this turkey habitat specification.
- Conduct silvicultural practices that conserve the oak component in forest stands and promote oak regeneration.
  - Implementation of 10-year management direction for oak will be sufficient to meet this turkey habitat specification.

White-tailed Deer

The goals for white-tailed deer habitat in the northern Lower Peninsula are to: 1) Maintain spring and summer forage and improve recreational access through openings management; 2) Maintain the overall proportion of potential woody browse such as aspen; 3) Maintain or increase the oak component in forest stands and promote oak regeneration; and 4) Maintain and promote functional shelter in wintering complexes.

Wildlife Habitat Specifications:

- Annual manage at least 3,000 acres of forest openings across the ecoregion to provide spring and summer forage and recreational opportunities.
  - Implementation of 10-year management direction for upland openland and upland shrub will be sufficient to meet this deer habitat specification.
- Maintain the aspen cover type and the aspen component in mixed stands within the management area.
  - Implementation of 10-year management direction for aspen, lowland aspen and lowland deciduous will be sufficient to meet this deer habitat specification.
- Move to balance the age-class distribution of aspen and continue management to regenerate oak to maintain young forests across the management area.
  - Implementation of 10-year management direction for aspen, lowland aspen, lowland deciduous and oak will be sufficient to meet this deer habitat specification.
- Conduct silvicultural practices that conserve the oak component in forest stands and promote oak regeneration.
  - Implementation of 10-year management direction for oak will be sufficient to meet this deer habitat specification.

- Manage cedar and hemlock with the main objectives of regeneration and providing future functional cover.
  - Implementation of 10-year management direction for cedar and lowland conifer will be sufficient to meet this deer habitat specification.
- Promote hemlock on appropriate sites using silviculture to increase within-stand hemlock components.

Wood Duck

The goal for wood duck in the northern Lower Peninsula is to maintain or increase available habitat. Wood ducks are most limited by available nesting and brood rearing habitat. Wood ducks nest in tree cavities near rivers, streams, swamps, beaver ponds, and marshes. Nests require mature hardwood trees with 10 inches or larger in diameter at breast height. Brood rearing habitat is composed of wetland areas such as forested wetlands, shrub-scrub wetlands and emergent marshes that maintain adequate water through the brood rearing period. Hemi-marshes with nearby shrub-scrub or forest are important, where marshes are typically within 100 yards of woody cover. Optimal breeding habitat includes 1.25 acres or larger hemi-marsh and/or swamp (forested and shrub-scrub wetlands) located within 1,100 yards of mature hardwood forest. State forest management should focus on the protection of forest wetlands and adjacent snags and the management of priority wildlife management areas with suitable habitat.

Wildlife Habitat Specifications:

- Maintain priority wetlands in hemi-marsh condition, with 50/50 open water to emergent marsh, for both breeding and non-breeding habitat.
  - Implementation of the wildlife management area master plan for Robinson Creek Flooding State Wildlife Management Area and application of the beaver wildlife habitat specifications will be sufficient to meet this wood duck habitat specification.
- Maintain stable water levels at managed floodings from April through August.

4.28.3 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 or past surveys have indicated a possibility of their presence.

Past surveys have noted and confirmed no listed species or natural communities of note occurring in the management area. 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. There have been no special resource areas, high conservation value areas or ecological reference areas identified in the Ogemaw Hills management area as illustrated in Figure 4.28.7.

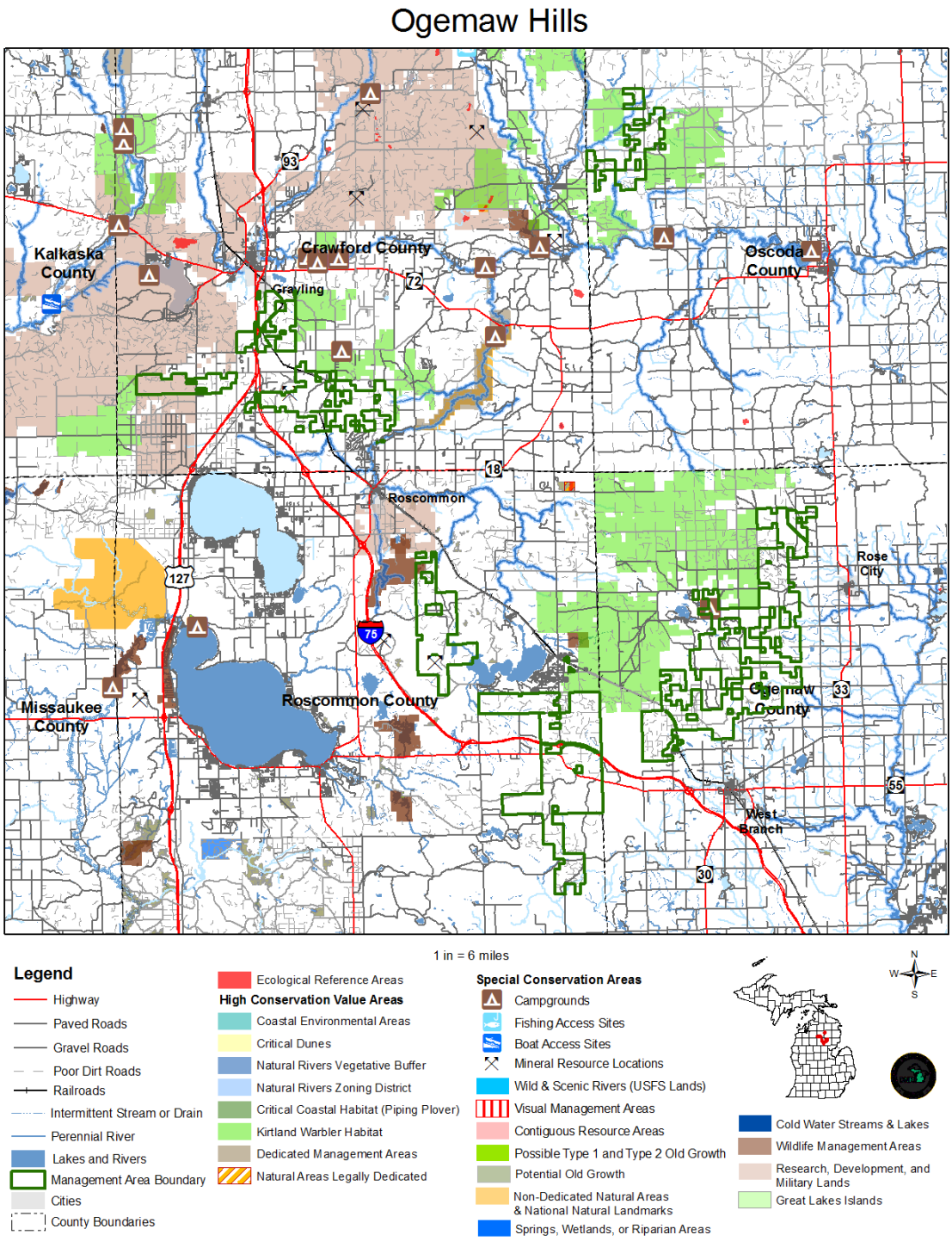

Figure 4.28.7. A map of the Ogemaw Hills management area showing the special resource areas.

Management goals during this planning period:

- Document occurrences of rare, threatened, endangered and special concern species and natural communities for the management area through the inventory process or with occasional focused surveys.
- Evaluate all potential Type 1, potential Type 2 and potential old growth areas to determine their status as a special resource area.
- Develop and maintain management and monitoring plans for ecological reference areas on state forest land.

4.28.4 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 include oak decline and oak wilt and management should be adapted as follows:

- Oak decline is most prevalent on frost-prone, nutrient poor outwash plains. Old age and drought predispose areas to two-lined chestnut borer and *Armillaria* root rot. Shorter rotations will reduce risk of decline.
- Oak wilt is found in this area. Epicenters need to be identified and treated. Timber sale restrictions which prevent wounding of oaks from April 15 to July 15 need to be enforced. Other management activities that can lead to damage of residual red oak trees, such as oil and gas development, recreational trail improvement, etc., should be not be conducted during this high-risk period.

Invasive Species

Invasive species pose a major threat to forest resources. They impact timber production, wildlife habitat and recreational access. Currently there are no invasive species mapped within the management area or within the five-mile buffer of the management area. This information was compiled from the Midwest Invasive Species Information Network database, but it should not be considered complete. This information and other sources that show the extent and location of invasives should be used to inform of the potential for additional sightings that should be documented. Invasives that merit eradication efforts are those species that threaten sensitive sites due to their location or growth characteristics and have population levels that may be successfully controlled.

4.28.5 Aquatic Resources

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 for this management area are shown in Figure 4.28.1 and listed in Appendix F.

4.28.6 Fire Management

Historically, disturbance through fire has played an important role in the initial propagation and maintenance of oak and natural oak/pine types, small inclusions of aspen or grass/upland brush types. Wildfire risk and fuel loading is increased in young dense conifer plantations and mature jack pine affected by jack pine budworm.

The Michigan DNR has a prescribed fire program and maintains a well-trained staff to conduct prescribed burns for silviculture, habitat maintenance or habitat restoration. Each year, all burns prescribed on state forests, parks and wildlife game lands are evaluated and ranked, with funding allocated to the highest priority burns. The ability to fund prescribed burns is based on available funding, the total acres prescribed for burning and the prioritized ranking of individual burns. The demand for prescribed burning money frequently exceeds the amount of funding and some recommended burns may not be funded for that fiscal year. Once funded, the ability to implement a burn is dependent on suitable prescribed burning weather, a suitable fuel (vegetation) condition, local staffing and other resources.

The following fire management concepts should be applied in the management area:

- Consider opportunities to re-introduce fire in the oak/pine areas to encourage pine and oak regeneration and to discourage competition;
- Consider opportunities to incorporate fire as a tool to restore or maintain managed openings;
- Reduce fuel loading and therefore the risk of wildfire in jack pine stands by harvesting at maturity; and
- Recognize that increased urbanization in close proximity to the management area will present more wildland/urban interface challenges to wildfire suppression.

4.28.7 Public Access and Recreation

Access for management and/or recreation is generally very good throughout this management area as there is very little lowland and a well-developed road/trail system. In accordance with the department's *Sustainable Soil and Water Quality Practices on Forest Land*, upon completion of harvesting, temporary spur and seasonal roads will be closed and stabilized.

Recreation opportunities within this management area are predominantly associated with motor sport activities. Numerous off-road vehicle trails traverse and wind thru this management area (Figure 4.28.7). Improved in 2007, the Ambrose Lake State Forest Campground (Figure 4.28.7) was designed with the off-road vehicle enthusiasts in mind with large sites and access to the many off-road vehicle trails, along with a new boating access site serving beautiful Ambrose Lake. Snowmobile trails within this management area (Figure 4.28.1) offer users the experience of riding thru large red pine stands. Those recreationalists interested in hiking and cross country skiing on groomed trails can use the Ogemaw Hills Pathway (Figure 4.28.1), which is located in a forest cover type dominated by northern hardwoods. The recreation features provided in this management area are listed below:

Campgrounds

- Ambrose Lake State Forest Campground

Boating Access Sites

- Ambrose Lake Boating Access Site

Off-Road Vehicle Trails

- Rose City Trail
- Beaver Creek Michigan Cycle Conservation Club Trail
- Geels Trail
- St. Helen Trail and Route
- St. Helen to Ogemaw Hills Michigan Cycle Conservation Club Trail
- Ogemaw Hills to Ambrose Lake Michigan Cycle Conservation Club Trail
- Ambrose Lake Trail
- M-30 to St. Helen Michigan Cycle Conservation Club Trail
- Ogemaw Hills Trail and Route

Snowmobile Trials

- Various

Non-Motorized Trails

- Ogemaw Hills Pathway

Although managing recreational opportunities is the primary responsibility of Parks and Recreation Division, timber management activities may impact the quality of recreational opportunities and management modifications will be considered to minimize these impacts.

Management modifications that may minimize possible recreational trail and other infrastructure impacts are agreed upon by recreation staff in Parks and Recreation Division and Forest Resources Division staff through the compartment review process. Public input received through meetings, including the compartment review process and other forums, will also be considered. Trail protection specifications can be applied through the vegetative management system in the design and administration of timber management activities. Guidance for within stand retention may also be used along trails to minimize impacts which may include modifications to management such as maintaining conifers to shade winter snow trails or retaining trees along single track off-road vehicle trails to maintain the integrity of narrow trails. Where modifications to management may not be compatible with timber management objectives, opportunities to educate the public on the department's timber management policies may be considered. Specifications and guidance for management around trails may include, but is not limited to: vegetative management system sections 5.2.39, 5.2.40, 5.2.41 and 5.2.42, and the Department of Natural Resources Within Stand Retention Guidelines.

4.28.8 Oil, Gas and Mineral Development

Surface sediments consist of glacial outwash sand and gravel and postglacial alluvium and ice-contact outwash sand and gravel. The glacial drift thickness varies between 100 and 1,000 feet. Sand and gravel pits are located in this management area, including state leased pits and there is good potential for additional pits.

The Pennsylvanian Saginaw Formation, Mississippian Bayport limestone and Michigan Formation and the Devonian Marshall Sandstone and Coldwater Shale subcrop below the glacial drift. The Saginaw is quarried for clay in brick making, the Bayport for Limestone and the Michigan for gypsum elsewhere in the state.

Exploration and development for oil and gas from the shallow Mississippian Stray Sandstone to the deep Ordovician Prairie du Chien has occurred in this management area. Well spacing ranges from 40 acres up to 640 acres for the deeper formations. There is potential for additional development for these formations in this management area. The Collingwood Formation's first well was drilled for gas in Missaukee County and additional wells have been permited. Spacing will most likely be 640 acres or larger. The west half of the management area is currently leased, either for the known producing formations and other areas most likely for Collingwood development. If drilling is successful for the Collingwood Formation additional leasing and drilling will continue in this management area.

Metallic mineral production is not supported by the geology given the depth to known metallic bearing formations.

Administration of oil and gas development on state forest land is provided by both the DNR and Department of Environmental Quality to ensure that minerals shall be developed in an orderly manner to optimize revenue consistent with other public interest and natural resource values.

Lease classification of state lands is guided by DNR Oil and Gas Lease Classification Procedure No. 27.23-15. Contained within each DNR Oil and Gas Lease Agreement are environmental terms which detail requirements for permits to drill issued by the Department of Environmental Quality, supervisor of wells pursuant to Part 615, 1994 PA 451, as amended. No operations are to take place in a wetland (as defined in Part 303 of 1994 PA 451, as amended) habitat critical to the survival of an endangered species and designated under provisions of Part 365 of 1994 PA 451, as amended or a site designated by the secretary of state to be of historical or archeological significance unless a plan to eliminate negative impacts to archeological or historical resources is agreed upon. In areas identified as having special wildlife, environmental, recreational significance and/or state surface require a development plan which will minimize negative impacts and will minimize surface waste while remaining consistent with the spacing requirements established by the supervisor of wells. All pipelines from the well site are required to follow existing well roads or utility corridors and that all pipelines are to be buried below plow depth. Abandoned well sites should be incorporated back into state forest stands as either forest openings or re-forested areas, as determined by the vegetation plan contained in the lease agreement or as subsequently decided in compartment review.