

## 4.27 MA 27 – Seney Manistique Swamp Management Area

### Summary of Use and Management

Vegetative management in the Seney Manistique Swamp management area (MA) (Figure 4.27.1) will provide timber products; maintain or enhance wildlife habitat; protect areas of unique character including rich conifer swamp, patterned fen and dry-mesic northern forest ecological reference areas and deer wintering special conservation areas; and provide for forest based recreational uses. Timber management objectives for this 10-year planning period include: improving the age-class distribution of jack pine, aspen and red pine; and continued selective harvesting of northern hardwoods to achieve an all-age class structure. Wildlife management objectives include increasing the structural complexity of northern hardwood communities for interior forest species; perpetuating early-successional communities to promote wildlife populations adapted to young forests; and providing for hunting and other wildlife related recreation. Management activities may be constrained due to poor access in this swampy area. Expected issues for this 10-year planning period include the need to regenerate natural stands of red pine and introduced insect and disease concerns (especially emerald ash borer and beech bark disease).

### Introduction

The Seney Manistique Swamp management area is located in the west part of the eastern Upper Peninsula in Schoolcraft County between the communities of Seney, Shingleton and Manistique. The management area has 148,134 acres of state forest land. The primary attribute of this management area is the large mosaic of wetland features associated with dry uplands. Additional attributes which were important in identifying this management area include:

- The management area falls primarily within the Luce subsection 8.2 of the eastern Upper Peninsula ecoregion (Albert, 1995).
- The management area is dominated by conifers and non-forested areas. Despite highways M-94 and M-28 going through the management area this is a remote area with few secondary roads. Access between roads is difficult due to the large expanses of wetlands.
- The dominant landform consists of the Seney Lake Plain with the Manistique River corridor flowing through.
- This management area contains one of the Upper Peninsula Grouse Enhanced Management Systems areas. This area plan will emphasize balanced age classes of aspen for timber production and ruffed grouse habitat.
- A large number of rare species and ecological reference areas and special conservation areas are found here.
- The 1976 Seney Fire occurred in a large portion of this management area both north and south of M-28 and west of Seney. The fire began on the Seney National Wildlife Refuge and spread onto state forest lands. At approximately 78,000 acres this was the largest wildfire in Michigan's recorded post-logging era history.

This is the largest management area in the eastern Upper Peninsula and falls within the Shingleton Forest Management Unit. The Seney National Wildlife Refuge is on the east border of the management area and the Hiawatha National Forest is on the west side. The predominant cover types, acreages and projected harvest acres in the management area are shown in Table 4.27.1.

# Seney Manistique Swamp

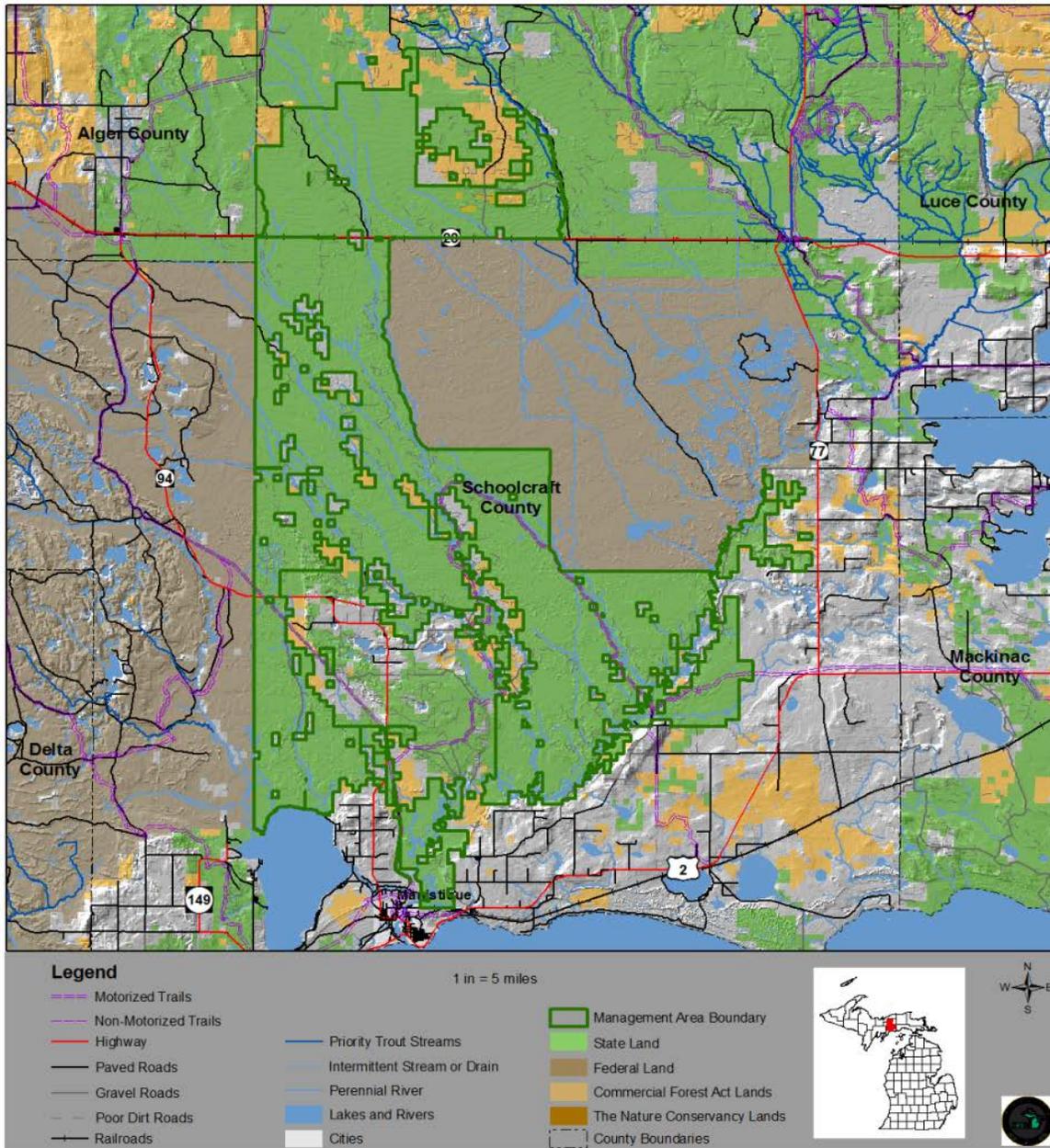


Figure 4.27.1. Location of the Seney Manistique Swamp management area (dark green boundary) in relation to surrounding state forest lands, other ownerships and the city of Manistique.

Table 4.27.1. Current cover types, acreages, projected harvest acres and projected ten-year cover type acreage for the Seney Manistique Swamp management area, eastern Upper 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
Lowland Open/Semi-Open Lands	37%	54,825	0	54,825	0	0	54,825	0	0
Jack Pine	15%	22,425	1,670	20,755	1,287	0	22,425	2,965	0
Lowland Conifers	6%	9,099	2,736	6,363	1,050	0	9,099	707	0
Lowland Spruce/Fir	5%	7,876	1,156	6,720	466	0	7,876	747	0
Aspen	5%	7,870	180	7,690	301	0	7,870	1,282	0
Northern Hardwood	5%	7,709	293	7,416	0	4,050	7,709	0	3,439
Red Pine	5%	7,582	1,097	6,485	721	1,671	7,582	721	2,541
Cedar	5%	7,494	79	7,415	100	0	7,494	463	0
Lowland Deciduous	4%	5,785	1,022	4,763	529	0	5,785	529	0
White Pine	2%	2,715	140	2,575	234	573	2,715	234	692
Upland Open/Semi-Open Lands	1%	1,429	0	1,429	0	0	1,429	0	0
Misc Other (Water, Local, Urban)	2%	2,462	0	2,462	0	0	2,462	0	0
Others	7%	10,863	2,218	8,645	629	927	10,863	925	1,152
<b>Total</b>	<b>100%</b>	<b>148,134</b>	<b>10,592</b>	<b>137,542</b>	<b>5,317</b>	<b>7,221</b>	<b>148,134</b>	<b>8,573</b>	<b>7,824</b>

Others include: tamarack, natural mixed pines, upland conifers, hemlock, lowland mixed forest, upland mixed forest, lowland aspen/balsam poplar, upland spruce/fir, paper birch, mixed upland deciduous, oak and planted mixed pines.

#### 4.27.1 Forest Cover Type Direction

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

##### Section 4.27.1.1 Forest Cover Type Management – Lowland Open/Semi-Open Lands

###### Current Condition

The management area contains a large amount of lowland open/semi-open lands totaling 54,825 acres (37%) (Table 4.27.1). This category is a combination of marsh (25,003 acres), lowland shrub (25,102 acres), treed bog (4,462 acres) and bog (258 acres). The three patterned fen ecological reference areas in the management area contain a significant amount of marsh and lowland shrub stands. Deer wintering complex special conservation areas are also found in these cover types. The large lowland shrub and marsh stands contain many ridges and islands of pine. Most of the lowland open/semi-open lands are found in association with streams and rivers. The large percentage of acres within these lowland cover types is a distinguishing feature of this management area. The large wetland complexes and the lack of roads and bridges make access throughout this management area difficult.

###### Desired Future Condition

- Lowland open/semi-open lands will be retained in their large roadless state to ensure an adequate level of wildlife habitat and recreational opportunity while protecting the ecological reference area and special conservation area values found in these cover types.

###### Long-Term Management Objectives

- In general, these stands will be maintained without active management to protect their ecological values; and
- Evaluate the need for prescribed fire to discourage excessive shrub growth in sedge peatlands to maintain habitat for open-land wildlife.

## Section 4.27.1.2 Forest Cover Type Management – Jack Pine

### Current Condition

Jack pine occurs on 22,425 acres (15%) of the management area (Table 4.27.1). Jack pine is found throughout the management area on outwash plains, lake plains and stream terraces. Most of these stands are found on wetter sites, often with a component of black spruce. A large portion of the jack pine acres in the older age classes are either inaccessible or otherwise unavailable for intensive management. Lowland jack pine stands on wet sandy soils topped by a thin organic layer have unique plant assemblages. Jack pine is generally managed on a 60-year rotation in this management area to produce quality pulpwood. Accessible jack pine stands have been consistently harvested and regenerated in recent years (Figure 4.27.2). Natural regeneration using scarification or prescribed burning is used to regenerate stands followed by planting where necessary.

Currently there are 3,007 acres of jack pine with a final harvest prescription assigned and 65 acres with a partial harvest assigned. There are 141 acres of other cover types with a harvest prescribed that are expected to convert to jack pine after harvest. These acres are shown in the regeneration prescriptions column of Figure 4.27.2. There are 1,670 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. Inaccessible islands of jack pine within the large marshes will undergo natural succession.

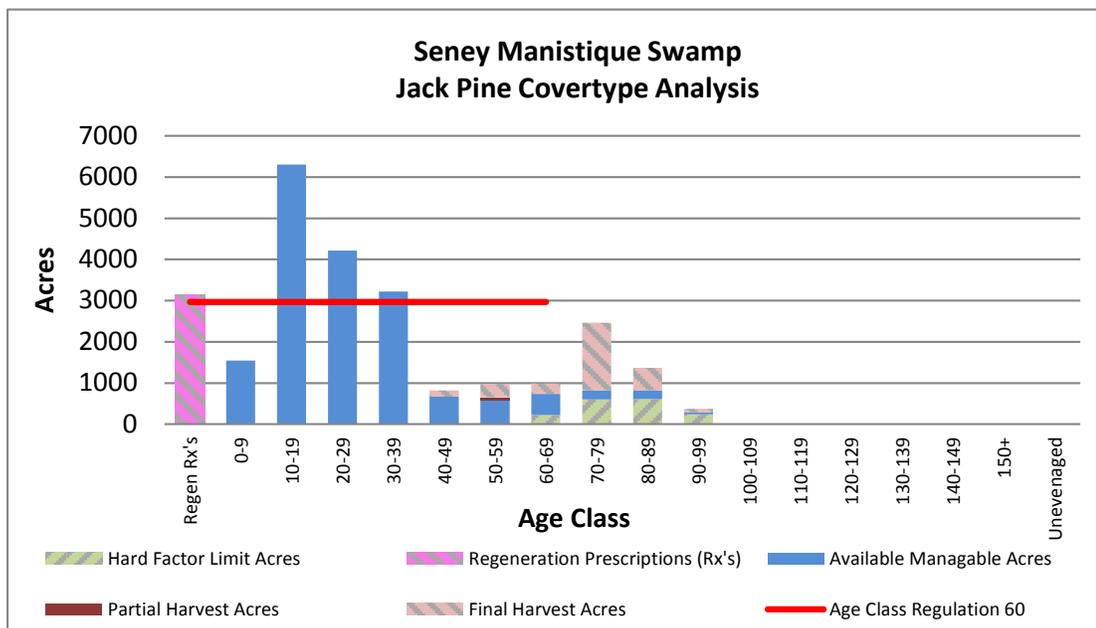


Figure 4.27.2. Age-class distribution of jack pine in the Seney Manistique Swamp management area (2012 Department of Natural Resources inventory data).

### Desired Future Condition

- Jack pine will be maintained on operable sites through even-aged management with acres balanced between 0-69 years of age to provide for continual harvest, wildlife habitat and recreational opportunities.

### 10-Year Management Objectives

- The 10-year projected regeneration harvest is for 1,287 acres of jack pine (Table 4.27.1) which is lower than the regulated amount because of the low number of acres over 39 years of age.

### Long-Term-Management Objectives

- Balance the age classes of accessible jack pine providing for a regulated harvest of approximately 2,965 acres every decade (the red age class regulation line in Figure 4.27.2); and
- Maintain a lower acreage of over-mature stands to lessen the prevalence and severity of jack pine budworm outbreaks and to reduce the threat of damaging wildfire.

### Section 4.27.1.3 Forest Cover Type Management – Lowland Conifers

#### Current Condition

Lowland conifer cover types occur on 9,099 acres (6%) of the management area (Table 4.27.1). These stands are often inaccessible and many are found within deer wintering complex special conservation areas or other special designations. Approximately 10% of the lowland conifer stands have been classified as uneven-aged as a result of natural processes (Figure 4.27.3). Lowland conifer stands have been successfully harvested and regenerated through natural regeneration resulting in a wide range of age classes.

Currently there are 638 acres with a final harvest prescribed. In addition, there are approximately 29 acres in other cover types that are currently prescribed for harvest that are expected to convert to lowland conifers. These acres are shown in the regeneration prescriptions column in Figure 4.27.3. There are 2,736 acres of lowland conifers 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. Lowland conifer stands in areas inaccessible for harvest will be subject to natural processes, resulting in a range of successional stages.

#### Desired Future Condition

- Lowland conifer stands will be maintained on operable sites through even-aged management with acres balanced between 0-89 years of age to provide for continual harvest, wildlife habitat and recreational opportunities.

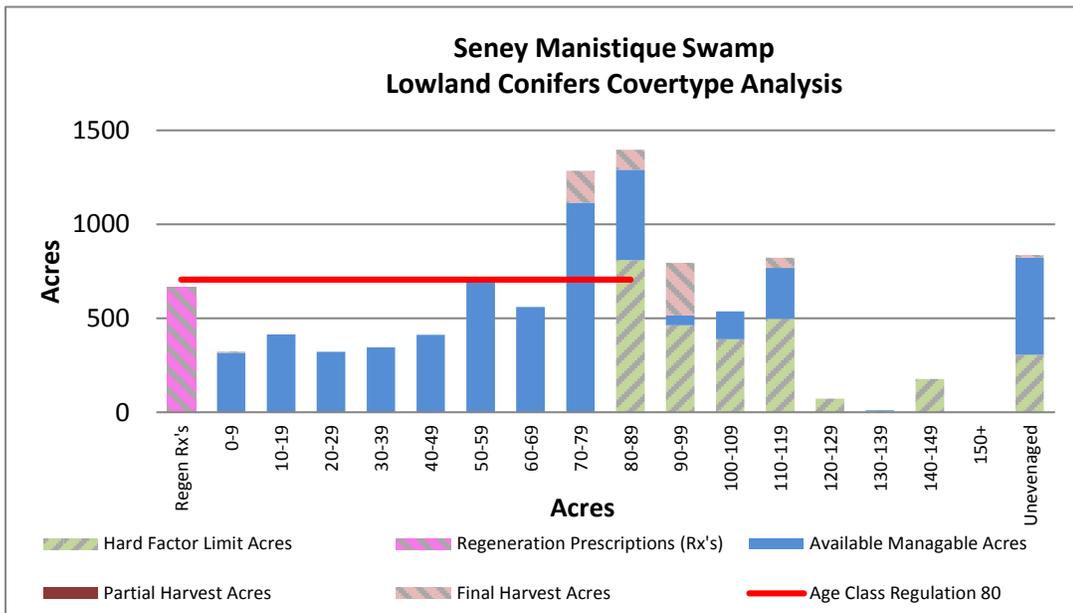


Figure 4.27.3. Age-class distribution of lowland conifer in the Seney Manistique Swamp management area (2012 Department of Natural Resources inventory data).

#### 10-Year Management Objectives

- The 10-year projected harvest is 1,050 acres of regeneration harvest in lowland conifers which is slightly higher than the regulated amount due to the large number of acres that are mature and over-mature.

#### Long-Term Management Objectives

- Balance the age-class structure of accessible stands providing for a regulated harvest of approximately 707 acres per decade.

## Section 4.27.1.4 Forest Cover Type Management – Lowland Spruce/Fir

### Current Condition

The lowland spruce/fir cover type is found on 7,876 acres (5%) of the management area (Table 4.27.1). Many of these lowland spruce/fir stands are a combination of black spruce and jack pine. Lowland spruce/fir stands have been successfully harvested and naturally regenerated in the past resulting in stands in all age classes.

Currently there are 913 acres with a final harvest prescribed (Figure 4.27.4). There are 1,156 acres of lowland spruce/fir 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. Lowland spruce/fir stands in areas inaccessible for harvest will be subject to natural processes resulting in a range of successional stages.

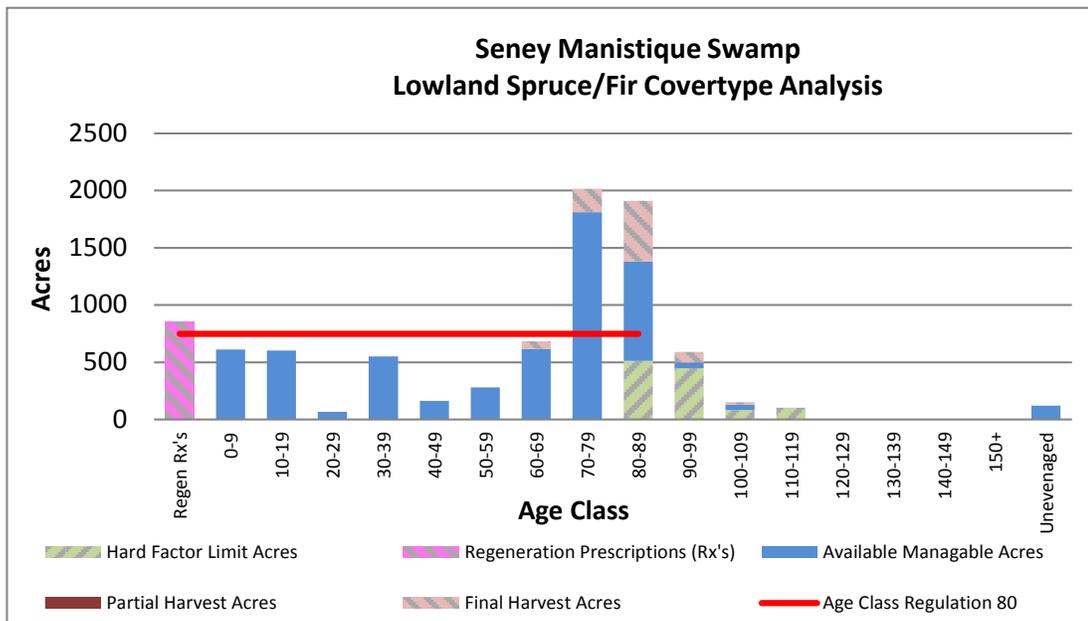


Figure 4.27.4. Age-class distribution of lowland spruce/fir in the Seney Manistique Swamp management area (2012 Department of Natural Resources inventory data).

### Desired Future Condition

- Lowland spruce/fir stands will be maintained on operable sites through even-aged management with acres balanced between 0-89 years of age providing for a regulated harvest, wildlife habitat and recreational opportunities.

### 10-Year Management Objectives

- The 10-year projected regeneration harvest is 466 acres. The projected harvest is lower than the regulated harvest due to the large number of acres in the regeneration prescriptions age class.

### Long-Term Management Objectives

- Balance the age classes of available stands providing for a regulated harvest of approximately 747 acres per decade.

## Section 4.27.1.5 Forest Cover Type Management – Aspen

### Current Condition

Aspen occurs on 7,870 acres (5%) of the management area (Table 4.27.1). Aspen is found throughout the management area on outwash plains, lake plains, stream terraces and dunes. Accessible aspen has been harvested resulting in 90% of the acres less than 40 years of age (Figure 4.27.5). Many of the stands over rotation age are located on ridges within the

large marsh complexes and are inaccessible for harvest at this time. Aspen within the Mint Farm Grouse Enhanced Management System area may be managed slightly different than the rest of the aspen within the management area through shorter rotation ages and smaller harvest areas.

There are currently 107 acres of aspen prescribed for final harvest. Approximately 130 acres of other cover types that are currently prescribed for harvest are expected to convert to aspen after harvest. These acres are shown in the regeneration prescriptions column in Figure 4.27.5. There are 180 acres of aspen that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Inaccessible stands of aspen will succeed to more shade tolerant species.

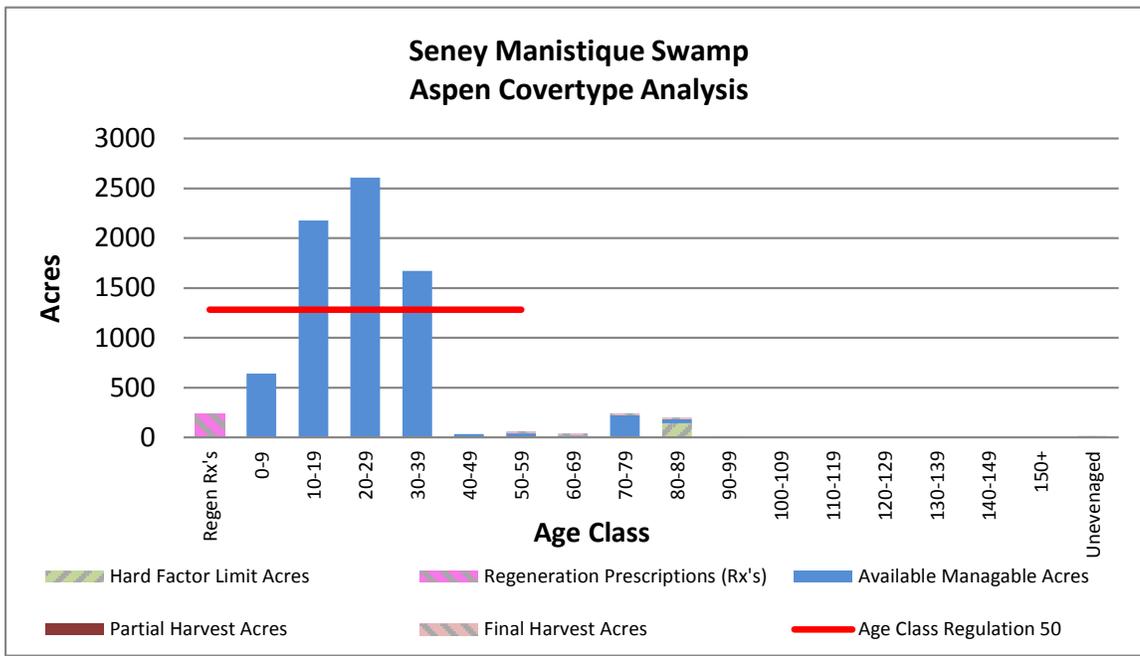


Figure 4.27.5. Age-class distribution of aspen in the Seney Manistique Swamp management area (2012 Department of Natural Resources inventory data).

#### Desired Future Condition

- The aspen cover type will be maintained on operable sites through even-aged management with acres balanced between 0-59 years of age to provide for regulated harvest, wildlife habitat and recreation opportunity.

#### 10-Year Management Objectives

- The projected 10-year final harvest of aspen is for 301 acres and because of the current age-class structure, it is not possible to harvest at the regulated level for some time.

#### Long-Term Management Objectives

- Balance the age-class structure of accessible aspen stands providing for a regulated harvest of approximately 1,282 acres per decade.

### **Section 4.27.1.6 Forest Cover Type Management – Northern Hardwood**

#### Current Condition

Northern hardwood cover types occur on 7,709 acres (5%) of the management area (Table 4.27.1). Northern hardwood stands are found throughout the management area mainly on outwash plains and lake plains with Kotar habitat types of ATFD, AFPo and PARVAa (see appendix E). Hardwood stands in this management area are dominated by red maple. About 75% of the hardwood stands have been classified as uneven-aged (Figure 4.27.6). In general, most of the uneven-aged hardwood stands are selectively harvested every 20 years. Where site quality is poor shelterwood and other even aged harvesting systems have been used. This has resulted in some acres of immature hardwoods (Figure 4.27.6).

Beech bark disease is found throughout the management area and salvage of affected beech is ongoing. Northern hardwood stands that had a component of beech now have decreased stocking levels due to beech bark disease mortality and salvage harvesting. Further selection harvesting will be delayed due to resultant lower than normal residual basal area. Follow emerald ash borer and ash management guidelines for salvage in stands with ash trees.

Currently there are 843 acres with a partial harvest prescription assigned. In addition, 65 acres of northern hardwood have a final harvest prescribed. There are 293 acres of northern hardwoods that have site conditions limiting their harvest. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

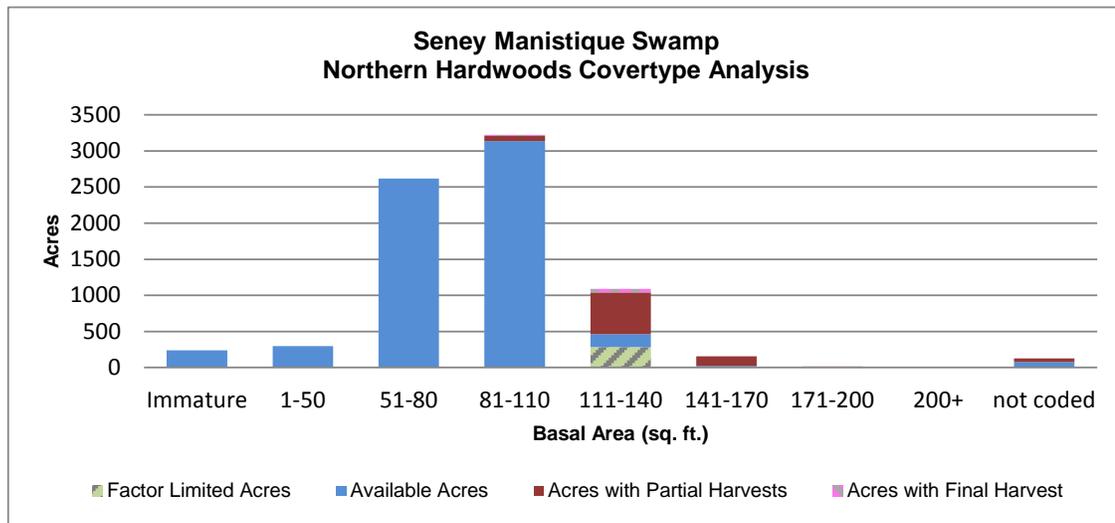


Figure 4.27.6. Basal area distribution of northern hardwoods in the Seney Manistique Swamp management area (2012 Department of Natural Resources inventory data).

#### Desired Future Condition

- Northern hardwoods will be maintained on operable sites, generally by using individual tree selection harvesting providing uneven-aged composition and structurally diverse stands which will be of benefit to a variety of wildlife habitat and will provide recreational opportunities and a continuous supply of timber.

#### 10-Year Management Objectives

- The projected 10-year partial or selection harvest of northern hardwood is 4,050 acres;
- Evaluate stands previously dominated by beech to determine the impact of beech bark disease on regeneration;
- Track beech regeneration in these stands;
- To favor regeneration of hardwood other than beech, consider herbicide application on beech regeneration to promote regeneration of other species; and
- In areas that are losing beech to beech bark disease, consider planting disease resistant beech or oak after harvesting to increase the availability of hard mast.

#### Long-Term Management Objectives

- Select harvest northern hardwood stands on a 20-year cycle.

### **Section 4.27.1.7 Forest Cover Type Management – Red Pine**

#### Current Condition

Red pine is found on 7,582 acres (5%) of the management area (Table 4.27.1). The majority of these stands are of natural origin, often on inaccessible islands within large marsh complexes. Uneven-aged stands have developed as a result of past harvesting practices such as selection and shelterwood or seed tree cuts in mature stands (Figure 4.27.7). In some of the hard to access stands red pine regeneration has not always been adequate and harvests have resulted in a mix of regenerating species. Natural red pine stands will be regenerated naturally through shelterwood and seed tree harvesting when possible and planted if natural regeneration is not adequate.

Red pine stands are thinned as soon as products can be harvested, generally once they reach age 40. On good sites stands are thinned approximately every ten years, with longer intervals on poor sites, until stand replacement harvest at economic maturity at approximately age 80. Red pine will be maintained and managed on operable sites through thinning until stand replacement harvest at economic maturity which is approximately 80 years of age.

Currently 775 acres of red pine have a partial harvest prescribed and 167 acres have a final harvest prescribed. There are 1,097 acres of red pine that 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. Red pine in areas that are not accessible will be subject to natural processes.

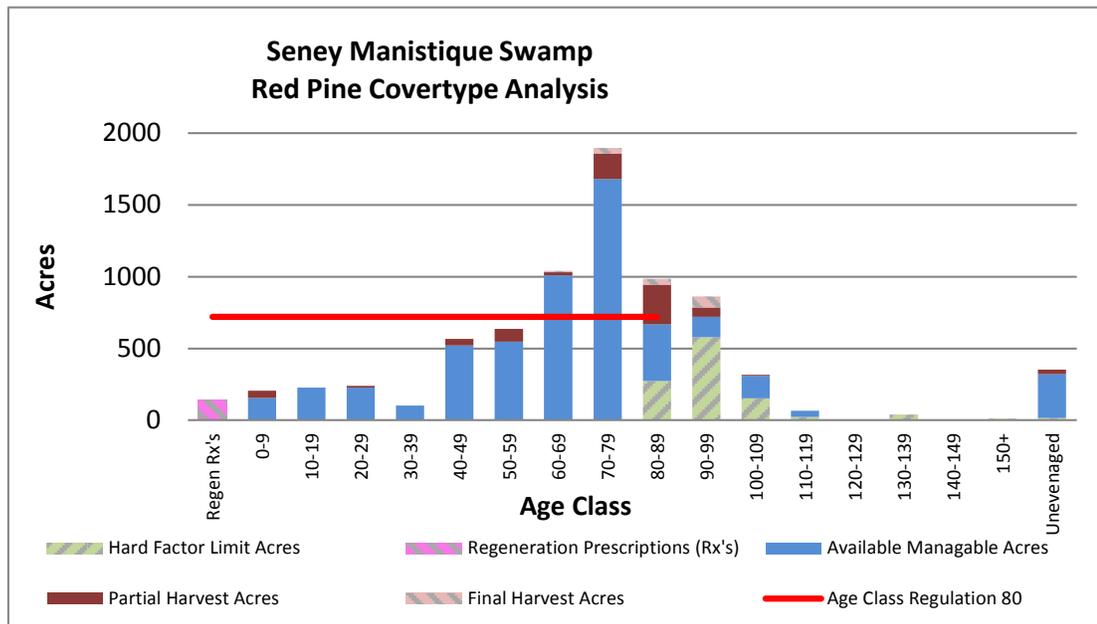


Figure 4.27.7. Age-class distribution of red pine in the Seney Manistique Swamp management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Balancing acres between 0-89 years of age will provide for continual harvesting, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The projected 10-year final harvest of red pine is 721 acres to work toward balancing the age classes of red pine; and
- The projected 10-year partial harvest or thinning of red pine is 1,671 acres in younger age classes.

Long-Term Management Objectives

- Balance the age-class distribution of accessible stands of red pine providing for a regulated harvest of 721 acres per decade.

**Section 4.27.1.8 Forest Cover Type Management – Cedar**

Current Condition

Cedar occurs on 7,494 acres (5%) of the management area (Table 4.27.1). Many of the cedar stands in this management area fall into special conservation areas for wintering deer or stream corridors. Cedar communities provide valuable habitat for wildlife. Cedar trees are very long lived and generally provide excellent closed canopy habitat. Within the special conservation area deer wintering areas, maintain a closed canopy for winter habitat to provide important cover for deer and reduce snow depth within the stands. Very little harvesting has been done in cedar stands in this management area and the majority of the stands are over 80 years old (Figure 4.27.8).

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.

Currently, there are 93 acres assigned for final harvest. There are 79 acres of cedar that 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. Cedar stands in areas inaccessible for harvest will be subject to natural processes.

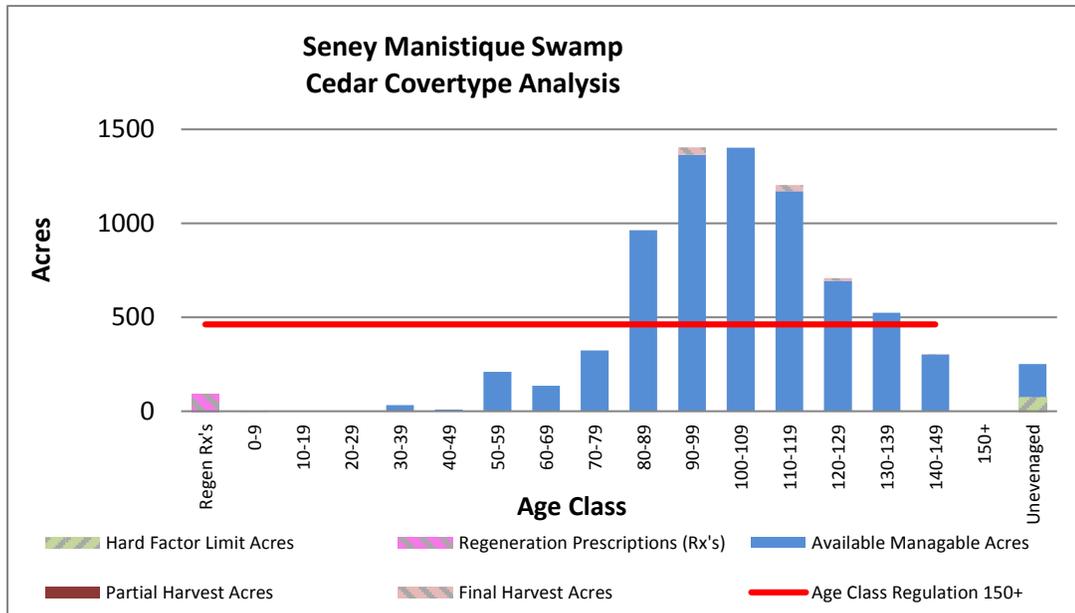


Figure 4.27.8. Age-class distribution of cedar in the Seney Manistique Swamp management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Where deer wintering activities are not a concern, cedar will be maintained on operable sites through even-aged management; and
- Balance the age classes between 0-159 years of age to provide for regulated harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected harvest is for 100 acres of regeneration harvest. This is lower than the regulated amount due to the use of cedar stands by wintering deer and concern of adequate regeneration.

Long-Term Management Objectives

- Within the deer wintering areas, focus cedar management on winter habitat for deer;
- Outside the deer wintering areas, focus on using different methods of harvesting with the goal of regenerating cedar;
- Consider harvest of cedar before rotation age to begin to diversify the age classes;
- Use a 150-year regulated rotation to allow approximately 463 acres to be final harvested per decade.

**Section 4.27.1.9 Forest Cover Type Management – Other Types**

Current Condition

There are many other forest cover types spread across the management area that have less than 5% of the total management area acres (Table 4.27.1). Lowland deciduous (5,785 acres or 4%) and white pine (2,715 acres or 2%) are two of the larger ones. The “other forest cover types” category has 10,863 acres (7%) of the management area. This category includes: tamarack (2,023 acres or 1%), natural mixed pines (1,755 acres or 1%), upland conifers (1,399 acres

or 1%), hemlock (1,287 acres or 1%), lowland mixed forest (926 acres or 1%), upland mixed forest (789 acres or 1%) and upland open/semi-open lands (1,429 acres or 1%); and the following cover types with less than 1% of the total acres in the management area: lowland aspen/balsam poplar, upland spruce/fir, paper birch, mixed upland deciduous, oak and planted mixed pines. In addition there are 2,462 acres (2%) of “miscellaneous other” stands, which includes water, sand/soil and roads.

With the exception of white pine the majority of these cover types are managed as even-aged stands following general timber management guidelines regarding harvest. Natural regeneration of species currently on site is expected after harvest. Age classes will be balanced where possible. Mixed cover types with high basal area may be thinned depending on the species composition prior to final harvest. Periodically thin white pine stands with high basal area prior to regeneration harvest.

Approximately 3,380 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

- These cover types will be managed on operable sites through even-aged management attempting to balance age-classes through rotation age; and
- This will contribute to the compositional diversity of the landscape while providing for continual harvest, wildlife habitat and recreational opportunities.

#### 10-Year Management Objectives

- The projected 10-year final regeneration harvest includes: 529 acres of lowland deciduous, 234 acres of white pine and 629 acres of other types; and
- The projected 10-year partial harvest includes: 573 acres of white pine and approximately 927 acres of other types.

#### Long-Term Management Objectives

- Continue management of these other cover types to provide a sustainable yield of forest products and wildlife habitat.

### **4.27.2 – Featured Wildlife Species**

Aspen management for early successional species is an important wildlife goal in this management area. The creation of dense understory and retention of woody debris in jack pine and lowland types will be important management objectives. This management area borders the Seney National Wildlife Refuge, therefore efforts to coordinate wildlife management activities on state land with those conducted on the Seney National Wildlife Refuge frequently occur. During this 10-year planning period additional analyses to better define the spatial extent of priority areas for each featured species will be performed.

This management area includes an Upper Peninsula Grouse Enhanced Management System. The area boundary will be delineated during this planning period. Aspen stands that fall within the boundary will be managed to enhance habitat and hunting opportunities for ruffed grouse, woodcock, deer, turkey and hare. Habitat treatments may include managing aspen on a shortened rotation with multiple age classes and smaller stand sizes. The remainder of the management area (outside the boundary) will be managed based on the direction in the management area write up.

#### **Beaver**

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

#### Wildlife habitat specifications:

- Maintain or promote alder, aspen, birch, maple or willow within 100 feet of non-high priority trout streams with gradients of less than 15% and other inland bodies of water.

#### **Moose**

The goal for moose in the eastern Upper Peninsula is to maintain or increase habitat. Management for moose should focus on providing early successional browse adjacent to lowland conifer complexes, the maintenance of hemlock within stands and protecting willow, a valuable food source, along riparian and wetland edges.

#### Wildlife habitat specifications:

- Encourage early successional for hardwood browse (in the 0-9 and 10-19 year-old age classes) in close proximity to closed canopy lowland conifer swamps.
- Balance the aspen age-class distribution to ensure a more sustainable supply of browse.
- Maintain or promote thermal refugia in harvested stands by retaining hemlock and other conifers.

#### **Ruffed Grouse**

The goal for ruffed grouse in the eastern Upper Peninsula is to maintain or improve habitat. Management should focus on maintaining and balancing the age-class distribution for aspen in priority landscapes during this planning cycle.

#### Wildlife habitat specifications:

- Maintain the aspen cover type and increase the aspen component in mixed stands within the management area.
- Balance the age-class distribution of aspen and birch cover type to maintain young forests across the management area.
- Ideal aspen stands will be of 40-160 acres under a 50-60 year rotation.
- Larger harvest units should have irregular boundaries and include one or two 1-3 acre un-harvested inclusions for every 40 acres exceeding 40 acres in size.
- Evaluate the conifer component in aspen stands, holding or increasing where desirable. Leave conifer under four inch diameter at breast height in mixed stands and aspen types as immediate residual escape cover and to promote corridors.
- Maintain cherry production for soft mast.

#### **Sharp-tailed Grouse**

In the eastern Upper Peninsula, the goal for sharp-tailed grouse is to maintain or improve habitat. Management should focus on maintaining large opening complexes so there is an increase of available habitat.

#### Wildlife habitat specifications:

- Maintain or expand herbaceous open-lands where existing leks occur.
- Manage to maintain young regenerating forest (jack pine, aspen and spruce) adjacent to permanent openings to maximize use by sharp-tailed grouse.
- Use prescribed fire where appropriate to maintain openings.
- Within open-land complexes maintain connectivity of openings across the landscape.

#### **Snowshoe Hare**

The goal for snowshoe hare in the eastern Upper Peninsula is to increase available habitat in the ecoregion. In priority landscapes, management should focus on maintaining young aspen adjacent to lowlands, maintaining jack pine, retaining slash and increasing mesic conifer components within stands.

#### Wildlife habitat specifications:

- Maintain young aspen and lowland shrub communities such as alder or willow that have a conifer understory or young aspen stands that are adjacent to lowland/swamp conifer and mesic conifers. Hold or increase the conifer component in aspen stands; leave conifers under four inch diameter at breast height.

- Regenerate black spruce stands to young, dense stocking adjacent to uplands.
- Balance age classes in the jack pine cover type to provide young, dense jack pine stands.
- When using herbicide treatments to prepare sites for planting red and jack pine in snowshoe hare habitat, encourage more diverse stands of pine and aspen by using application skips in pockets or along stand edges.
- In hare habitat, discourage biomass harvesting and chipping operations in this management area.
- Retain down coarse woody debris already present (before cutting) and resulting from incidental breakage of tops and limbs in the general harvest area, except on skid trails and landings, to the extent feasible. Retain slash and create brush piles within timber sales associated with hare habitat. In biomass timber sales, apply Michigan Biomass Harvesting Guidance and retain the maximum residual amount.

## White-tailed Deer

The eastern Upper Peninsula goals for white-tailed deer are to: 1) Maintain existing deer wintering complexes and 2) Expand the extent of areas suitable as winter deer habitat, especially in the medium and high snowfall zones. Management should focus on maintaining habitat quality in priority wintering complexes. DNR Department procedure 32.22-07 states “Coniferous swamps are important as winter deeryards and shall be managed primarily for deer. The objective shall be to maintain them for this purpose and through commercial cuttings and silvicultural practices, improve these areas to provide winter cover and food for deer.” There is a complex relationship between deer abundance; available summer and winter habitat; timber management; and regeneration tree species, particularly white cedar and hemlock. It is recognized that meeting both timber management and deer goals presents challenges for the department and our stakeholders. Information on deer wintering complexes is currently being updated and new management guidelines are being developed. When completed, these will provide additional direction for managing these critical areas for white-tailed deer.

### Wildlife habitat specifications for deer wintering complexes:

- Strive to maintain > 50% of the land area within deer wintering complexes in mixed or pure stands of cedar, hemlock, white and black spruce, white and natural red pine, balsam fir, mixed swamp conifer and mixed upland conifer-hardwood.
- In northern white cedar and hemlock cover types that are commonly occupied by deer during severe winters, especially in medium and high snowfall zones, maintain canopy closure of >65%.
- In deer wintering complexes in low snowfall areas and within ¼-mile of severe-winter cover in the higher snowfall zones, write prescriptions that strive to maintain canopy closure of 40-65%, favoring cedar, hemlock, white spruce, black spruce, balsam fir and white pine.
- Provide winter forage in deer wintering complexes through stands of regenerating hardwood or brush, including preferred species of red maple, sugar maple, aspen, yellow birch, ashes, oaks, dogwood, crabapple, elderberry, high-bush cranberry, sumac and hazel.
- Enhance accessibility to winter browse within deer wintering complexes by maintaining mature mesic conifer components within upland hardwood stands or by maintaining or enhancing sheltered travel corridors between areas of conifer cover and browse.
- Provide spring break out areas by maintaining open hardwood stands on southern exposures and herbaceous openings adjacent to deer wintering complexes.
- When possible, timber harvests within deer wintering complexes should be carried out only during winter months and tops should be left. Chipping of non-bole wood and whole-tree harvesting in the deer wintering complexes should be avoided, but will be discussed on a case-by-case basis through the compartment review process.
- Harvests of cedar and hemlock may only be conducted when:
  - There is reasonable confidence of successful recruitment/regeneration of the cover types; or
  - There is a forest health issue (e.g., hemlock wooly adelgid); or
  - Part of an approved research project; or
  - Removal of selected trees will facilitate a reduction of harvest trails, landings, etc. to minimize soil sedimentation and possible soil compaction issues.
- Provide fall foods in the form of hard and soft mast, and provide dense escape cover or bedding areas in the form of early successional forests, brush and warm-season grasses that will encourage fall deer use in areas open to public hunting. Where habitat types are appropriate, increase diversity of hard mast by planting oak.

### 4.27.3 – Rare Species and Special Conservation Area Management

All forest operations must be reviewed for potential conflicts with rare species 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. When listed species are present or past surveys have indicated their presence, management will follow established species management guidelines.

Past surveys have noted and confirmed twenty-four listed species as well as six natural communities of note occurring in the management area as listed in Table 4.27.2. A colony of great blue herons has also been identified. 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 are several special conservation areas in this management area including the Rainy Wildlife Viewing Area visual management area near Indian Lake. Deer wintering area special conservation areas, including the Sturgeon Hole Deeryard, are also found in the management area. Other special conservation areas include cold water streams and lakes and high priority trout streams (Figure 4.27.1). Within the Seney Manistique Swamp management area there are 164 acres (Figure 4.27.9) identified as potential Type 1 or Type 2 old growth special conservation areas. In addition, approximately 18,000 acres were identified as potential old growth and these stands are also special conservation areas until they are evaluated. Concentrated recreation area special conservation areas (state forest campgrounds) are listed in the Recreation section 4.27.6 below.

Although there are currently no identified high conservation value areas, there are three patterned fen ecological reference areas (104 acres, 4,548 acres and 6,945 acres) within the management area as shown in Figure 4.27.9. Ecological reference areas will be managed to protect and enhance their natural vegetative and wildlife communities as directed by ecological reference area-specific management plans.

Management goals during this planning period are:

- 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.

Table 4.27.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Seney Manistique Swamp management area.

Common Name	Scientific Name	Status	Status in Management Area	Climate Change Vulnerability Index (CCVI)	Confidence	Natural Community Association	Probable Cover Types	Successional Stage
<b>Natural Communities</b>								
Dry-mesic northern forest		S3/G4	Confirmed				White Pine	Late
Dry northern forest		S3/G3?	Confirmed				Jack Pine, Red Pine	Late
Northern wet meadow		S4/G4	Confirmed				Lowland open/semi-open	N/A
Patterned fen		S2/GU	Confirmed				Lowland open/semi-open	N/A
Poor fen		S3/G3	Confirmed				Lowland open/semi-open	N/A
Rich conifer swamp		S3/G4	Confirmed				Tamarack	Late
<b>Birds</b>								
Northern goshawk	<i>Accipiter gentilis</i>	SC/G5/S3	Confirmed	PS	Very High	Mesic northern Forest	Northern Hardwood	Late
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Northern hardwood swamp	Black Ash	Late
						Floodplain forest	Lowland mixed	Mid
						Dry northern forest	Jack Pine, Red Pine	Late
						Dry-mesic northern forest	White Pine	Late
						Boreal forest	Upland & Lowland Sp/F	Mid
Yellow rail	<i>Catamixops noveboracensis</i>	T/G4/S1S2	Confirmed	MV	Moderate	Northern wet meadow	Lowland open/semi-open	N/A
Kirtland's warbler	<i>Dendroica kirtlandii</i>	LE/E/G1/S1	Confirmed	PS	Very High	Pine barrens	Jack Pine	Early
						Dry northern forest	Jack Pine, Red Pine	Early
Merlin	<i>Falco columbarius</i>	T/G5/S1S2	Confirmed	PS	Very High	Boreal forest	Upland & Lowland Sp/F	Mid
						Great Lakes barrens	Upland open/semi-open	N/A
Bald eagle	<i>Haliaeetus leucocephalus</i>	SC/G5/S4	Confirmed	IL	Moderate	Bog	Lowland open/semi-open	N/A
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Northern hardwood swamp	Black Ash	Late
						Poor conifer swamp	Tamarack	Late
						Floodplain forest	Lowland mixed	Mid
						Dry northern forest	Jack Pine, Red Pine	Early
						Dry-mesic northern forest	White Pine	Late
						Mesic northern Forest	Northern Hardwood	Late
<b>Butterflies</b>								
Frigga fritillary	<i>Boloria frigga</i>	SC/G5/S3S4	Confirmed	HV	Low	Bog	Lowland open/semi-open	N/A
						Patterned fen	Lowland open/semi-open	N/A
Northern blue	<i>Lycaeides idas nabakovi</i>	T/GSTU/S2	Confirmed	HV	Very High	Dry northern forest	Jack Pine, Red Pine	Late
						Pine barrens	Jack Pine	Early
						Oak-pine barrens	Oak	Mid
Hoary comma	<i>Polygonia gracilis</i>	SC/G5/S3	Confirmed	HV	Low	Boreal forest	Upland & Lowland Sp/F	Mid
<b>Dragonfly</b>								
Ebony boghaunter	<i>Williamsonia fletcheri</i>	SC/G4/S1S2		MV	Low	Inland lake	Lowland open/semi-open	N/A
						Bog	Lowland open/semi-open	N/A
						Northern fen	Lowland open/semi-open	N/A
						Patterned fen	Lowland open/semi-open	N/A
						Poor fen	Lowland open/semi-open	N/A
						Prairie fen	Lowland open/semi-open	N/A
						Muskeg	Lowland open/semi-open	N/A
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Inundated shrub swamp	Lowland open/semi-open	N/A
						Coastal fen	Lowland open/semi-open	N/A
<b>Fish</b>								
Lake sturgeon	<i>Acipenser fulvescens</i>	T/G3G4/S2		HV	Moderate	Great Lakes	Aquatic	N/A
						Rivers	Aquatic	N/A
						Mainstem streams	Aquatic	N/A
<b>Snails</b>								
Hubricht's vertigo	<i>Vertigo hubrichti</i>	E/G3/S2	Confirmed	EV	Moderate	Alvar	Upland open/semi-open	N/A
						Limestone bedrock glade	Upland open/semi-open	N/A
						Limestone bedrock lakeshore	Upland open/semi-open	N/A
Mystery vertigo	<i>Vertigo paradoxa</i>	SC/G4G5Q/S3	Confirmed	HV	Low	Volcanic bedrock lakeshore	Upland open/semi-open	N/A
						Volcanic bedrock glade	Upland open/semi-open	N/A
						Limestone bedrock glade	Upland open/semi-open	N/A
						Rich conifer swamp	Tamarack	Late
						Northern fen	Lowland open/semi-open	N/A
						Mesic northern forest	Northern Hardwood	Late
						Dry-mesic northern forest	White Pine	Late
						Limestone lakeshore cliff	Upland open/semi-open	N/A
<b>Reptile</b>								
Wood turtle	<i>Glyptemys insculpta</i>	SC/G4/S2S3	Confirmed	MV	Moderate	Northern wet meadow	Lowland open/semi-open	N/A
						Bog	Lowland open/semi-open	N/A
						Rich conifer swamp	Tamarack	Late
						Hardwood-conifer swamp	Lowland Mixed	Mid
						Northern shrub thicket	Upland open/semi-open	N/A
						Mesic northern forest	Northern Hardwood	Late
<b>Plants</b>								
Black sedge	<i>Carex nigra</i>	E/G5/S1	Confirmed			Poor fen	Lowland open/semi-open	N/A
						Wooded dune & swale complex	Upland open/semi-open	N/A
English sundew	<i>Drosera anglica</i>	SC/G5/S3	Confirmed			Northern wet meadow	Lowland open/semi-open	N/A
						Prairie fen	Lowland open/semi-open	N/A
						Coastal fen	Lowland open/semi-open	N/A
						Patterned fen	Lowland open/semi-open	N/A
						Northern fen	Lowland open/semi-open	N/A
						Bog	Lowland open/semi-open	N/A
						Interdunal wetland	Lowland open/semi-open	N/A
						Poor fen	Lowland open/semi-open	N/A
						Volcanic bedrock lakeshore	Upland open/semi-open	N/A
Slender spike rush	<i>Eleocharis nitida</i>	E/G4/S1	Confirmed			Poor fen	Lowland open/semi-open	N/A
Vasey's rush	<i>Juncus vaseyi</i>	T/G57/S1S2	Confirmed			Intermittent wetland	Lowland open/semi-open	N/A
						Lakeplain wet prairie	Lowland open/semi-open	N/A
						Lakeplain wet-mesic prairie	Lowland open/semi-open	N/A
Auricled twayblade	<i>Listera auriculata</i>	SC/G3G4/S2S3	Confirmed			Northern shrub thicket	Upland open/semi-open	N/A
Canada rice grass	<i>Oryzopsis canadensis</i>	T/G5/S2	Confirmed			Pine barrens	Jack Pine	Early
Sweet coltsfoot	<i>Petasites sagittatus</i>	T/G5/S1S2	Confirmed			Patterned fen	Lowland open/semi-open	N/A
						Poor fen	Lowland open/semi-open	N/A
Dwarf raspberry	<i>Rubus acaulis</i>	E/G5T5/S1	Confirmed			Northern fen	Lowland open/semi-open	N/A
						Patterned fen	Lowland open/semi-open	N/A
						Poor fen	Lowland open/semi-open	N/A
Clinton's bulrush	<i>Scirpus clintonii</i>	SC/G4/S3	Confirmed			Intermittent wetland	Lowland open/semi-open	N/A
						Lakeplain wet prairie	Lowland open/semi-open	N/A
						Wet-mesic sand prairie	Lowland open/semi-open	N/A
Dwarf bilberry	<i>Vaccinium cespitosum</i>	T/G5/S1S2	Confirmed			Dry sand prairie	Upland open/semi-open	N/A
						Volcanic bedrock lakeshore	Upland open/semi-open	N/A
						Sandstone lakeshore cliff	Upland open/semi-open	N/A
						Sandstone cliff	Upland open/semi-open	N/A
						Dry northern forest	Jack Pine, Red Pine	Late

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

# Seney Manistique Swamp

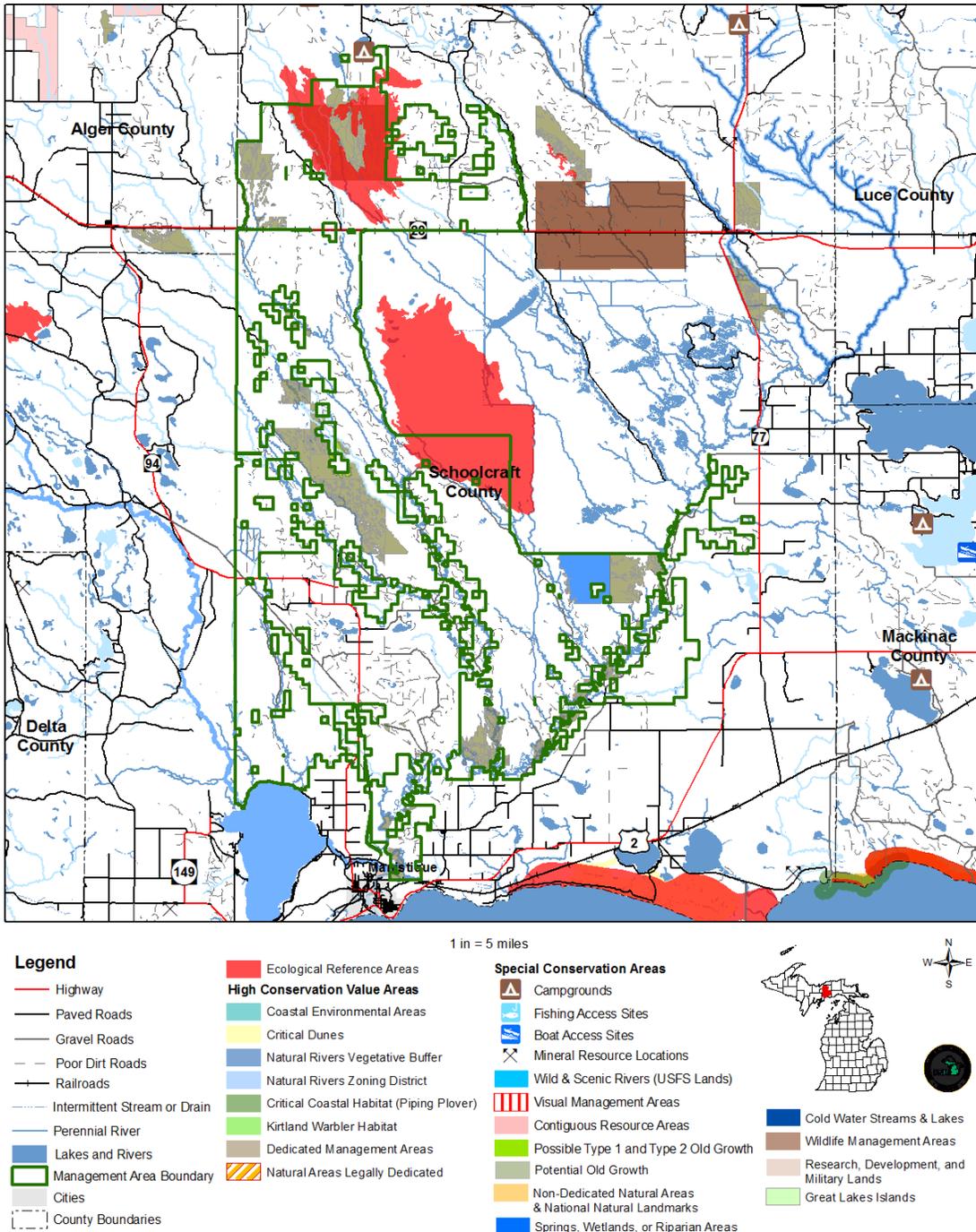


Figure 4.27.9. A map of the Seney Manistique Swamp management area showing the special resource areas.

#### 4.27.4 – 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 management area by major cover type include:

- Red and jack pine: jack pine budworm, red-headed pine sawfly, pine engraver and *Scleroderris* canker;
- Aspen: white trunk rot and *Hypoxylon* canker;
- Northern hardwoods: beech bark disease; and
- Lowland conifers and lowland spruce/fir: spruce budworm, eastern larch beetle and larch casebearer.

Further information on forest health can be found in Section 3.

#### Invasive Species

Invasive exotic species, specifically plants, may pose a significant forest health threat to forested and non-forested areas throughout the management area. No invasive plant species have yet been documented within the management area, but leafy spurge, Japanese knotweed and glossy buckthorn have been documented within a five-mile buffer of the management area (Table 4.27.3), and monitoring efforts should specifically look for new populations of this species. Evaluate eradication treatments of any new populations of invasive plant species found in the management area. Invasive species 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.

Table 4.27.3. Invasive plant species within or near the Seney Manistique Swamp management area (Data from the Michigan Invasive Plant Identification Network database).

Seney Manistique Swamp - FRD Management Areas	Cases within FRD Areas	Cases within 5 Mile Buffer	Total number of cases	Total number of different Invasive Species
	0	6	6	3
Invasive Species within FRD Areas	Occurrences	Invasive Species within 5 Mile Buffer	Occurrences	
-	-	Glossy Buckthorn <i>Rhamnus frangula</i>	4	
-	-	Japanese Knotweed <i>Fallopia japonica</i>	1	
-	-	Leafy Spurge <i>Euphorbia esula</i>	1	

#### 4.27.5 – Fire Management

Dominated by lowland soils, this management area may have been subjected to a higher fire frequency than normally would be expected. Small changes in elevation can bring about significant changes in soils and fire regime. This area is subject to severe stand replacement fires during periods of extended drought. The 1976 Seney Fire is an example of such a fire that occurred in this management area.

Organic soils limit the opportunities for prescribed fire over much of the management area and access for fire suppression or for implementing prescribed fire is poor.

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

- Fire suppression and prescribed fire activities should be coordinated with the Seney National Wildlife Refuge.
- Reintroduce prescribed fire to the natural pine ridges in this management area, where opportunities exist.

#### **4.27.6 – Public Access and Recreation**

Much of this very large management area is remotely located, and without roads. Many of the timber sales in this management area are harvested in the winter due to need for frozen soil conditions to cross large marshes and the need to improve the existing road infrastructure. Although there are many water crossings in this management area harvesting and recreational activities may be constrained due to lack of bridges and culverts. Condition of water crossings is continually monitored and some bridges and culverts may be temporarily closed due to unsafe conditions. Roads and water crossings for public access will be reviewed during the planning of forest operations.

Some of the private hunting camps which are surrounded by state forest land have locked gates limiting access.

Recreational facilities in the management area include: Mead Creek State Forest Campground, Merwin Creek State Forest Campground (managed by Schoolcraft County), the Rainey Wildlife viewing area and several snowmobile trails (Figure 4.27.1).

Hunting, trapping, fishing and ORV-riding are popular in this area. Private canoe outfitters operate on the Manistique River.

#### **4.27.7 – 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. Portions of the Manistique River watershed are listed as a designated high priority trout stream and are shown in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment and in Figure 4.27.1.

#### **4.27.8 – Minerals**

Surface sediments consist primarily of lacustrine (lake) sand and gravel, coarse-textured till and peat and muck. The glacial drift thickness varies up to 200 feet. Sand and gravel pits are located in the management area and potential is excellent on the uplands to the east for additional pits.

The Silurian Burnt Bluff Group, Cabothead Shale, Manitoulin Dolomite and Ordovician Queenston Shale, Big Hill Dolomite and Stonington Formation, Utica and Collingwood Shales, Trenton and Black River Formations occur throughout the eastern Upper Peninsula below the glacial drift. The Burnt Bluff, Trenton and Black River formations are quarried for stone in the Upper Peninsula.

Exploration and development for oil and gas has been limited to a few wells drilled in the Upper Peninsula (five in Schoolcraft). No economic oil and gas production has been found in the Upper Peninsula.

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

Oil, gas, mineral production, and quarrying are a minor intrusion on state forest land in the eastern Upper Peninsula and this condition is not expected to change throughout the life of this plan.