

## 4.29 MA 29 – Tahquamenon River Basin Wetlands Management Area

### Summary of Use and Management

Management in the Tahquamenon River Basin Wetlands management area (MA) will emphasize sustainably producing timber products, enhancing wildlife habitat and providing for forest-based recreational uses. Management activities may be limited by poor access and the low wet ground in this area. Expected issues in this 10-year planning period are increased recreational pressure, introduced pests and diseases, including beech bark disease and emerald ash borer and non-native invasive species.

#### Introduction

The Tahquamenon River Basin Wetlands management area is located in the north central portion of the eastern Upper Peninsula in Luce and Chippewa Counties. It has 83,326 acres of state-owned land. The primary attribute for this management area is the landforms of the Tahquamenon River basin which lead to a variety of unique values. 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 dominant landform consists of the Tahquamenon River Drainage. This land form is characterized by glacial moraine fragments, lacustrine lowlands and glacial outwash features. Much of this area was flooded by ancient Lake Superior at various times in history. This area contains the largest expanse of wetlands in the state.
- This area is associated with the Sage and Hendrie River systems and the Tahquamenon River corridor in Luce, Chippewa and Mackinac Counties.
- The Dollarville flooding is used extensively by nesting and migrating shorebirds, waterfowl, eagles, osprey and aquatic furbearers. Wild rice grows in the flooding and within the channel of the Tahquamenon River and is harvested by Native American residents.
- Recreational opportunities including snowmobiling, hunting and fishing.

In an attempt to alter the hydrology of the area and promote farming a few of the larger streams such as the Sage River, Hendrie River and McLeod Ditch were ditched and channelized. This did not drain the swamps as intended though the channels remain. The Soo Line/Soo Junction railroad was established in 1910 to access a mill on the mainstream of the Tahquamenon River. The Betty B landing, where the railroad ended at the river, was the location of a tugboat named “*Betty B*” that towed barges up the river full of tourists to enjoy the scenery in the 1930s. The southern end of the Charcoal railroad grade, which transported hardwood timber to the Vulcan Furnace Company charcoal kiln, as well as the historical Kneeland-Bigelow Logging camp and associated railroad grade are within the management area.

The state owned lands in this management area are concentrated with some private parcels interspersed throughout. The management area falls within the Newberry Forest Management Unit. The predominant cover types, acreages and projected harvest acres in the management area are shown in Table 4.29.1.

# Tahquamenon Basin Wetlands

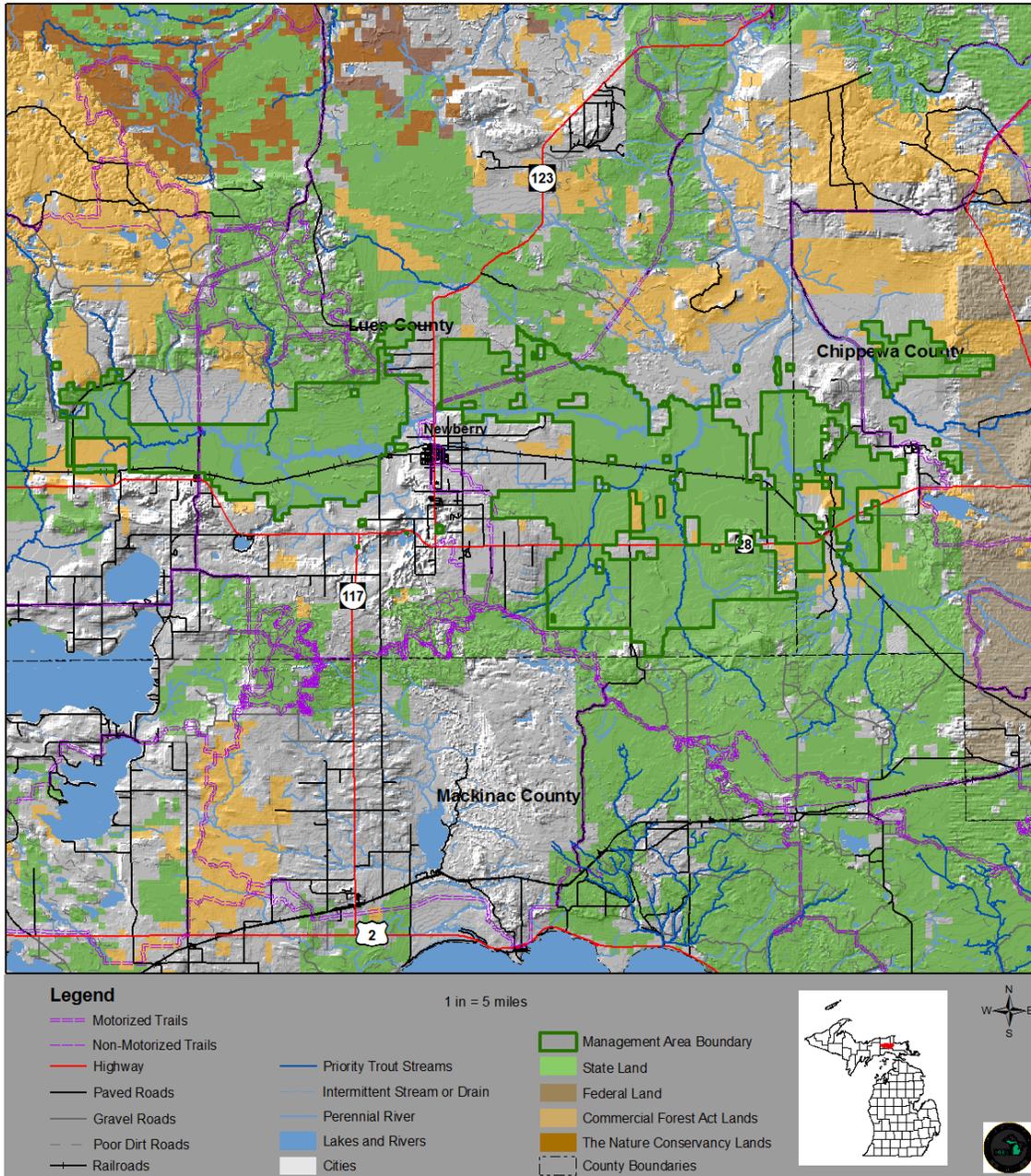


Figure 4.29.1. Location of the Tahquamenon River Basin Wetlands management area (dark green boundary) in relation to surrounding state forest lands, other ownerships and the town of Newberry.

Table 4.29.1. Current cover types, acreages, projected harvest acres and projected ten-year cover type acreage for the Tahquamenon River Basin Wetlands 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	33%	27,372	0	27,372	0	0	27,372	0	0
Cedar	16%	13,676	406	13,270	100	0	13,676	829	0
Lowland Conifers	15%	12,349	5,476	6,873	764	0	12,349	764	0
Lowland Spruce/Fir	6%	5,358	1,715	3,643	405	0	5,358	405	0
Aspen	6%	5,245	672	4,573	374	0	5,245	762	0
Lowland Deciduous	6%	4,593	815	3,778	420	0	4,593	420	0
Northern Hardwood	4%	3,645	99	3,546	0	1,553	3,645	0	1,584
Lowland Aspen/Balsam Poplar	4%	3,074	592	2,482	270	0	3,074	414	0
Upland Open/Semi-Open Lands	1%	662	0	662	0	0	662	0	0
Misc Other (Water, Local, Urban)	2%	1,452	0	1,452	0	0	1,452	0	0
Others	7%	5,900	1,484	4,416	763	427	5,900	522	538
<b>Total</b>	<b>100%</b>	<b>83,326</b>	<b>11,259</b>	<b>72,067</b>	<b>3,096</b>	<b>1,980</b>	<b>83,326</b>	<b>4,116</b>	<b>2,122</b>

Others include: tamarack, jack pine, lowland mixed forest, white pine, upland spruce/fir, paper birch, hemlock, upland conifers, mixed upland deciduous, upland mixed forest and red pine.

#### 4.29.1 Forest Cover Type Management 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 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 and mowing) will be conducted. In other portions of the state forest, passive management resulting in natural succession will achieve ecological objectives. While most stands have a variety of tree species and other vegetation, they are classified by the predominant species.

All of the following cover types are valued commercially for their timber products; ecologically as sources of habitat for numerous species; and for the variety of recreational opportunities they provide. Harvesting these cover types will provide for a continuous flow of forest products and values.

#### Section 4.29.1 Forest Cover Type Management – Lowland Open/Semi-Open Lands

##### Current Condition

This management area contains a large amount of lowland open/semi-open lands totaling 27,373 acres (33%) (Table 4.29.1). This category is a combination of lowland shrub (11,555 acres), treed bog (10,641 acres), marsh (5,143 acres) and bog (33 acres). These wet areas provide important habitat for a large number of wildlife species. Many of these stands are included within the deer wintering complex special concern areas. Most of these types are found in association with streams and rivers and contribute to the access issues in the management area. The large percentage of acres within these and other lowland cover types is what distinguishes this management area and makes access throughout 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 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
- Where possible, protect these areas from harvest operations in adjacent stands.

#### Section 4.29.1.2 Forest Cover Type Management - Cedar

##### Current Condition

Cedar occurs on 13,676 acres (16%) of the management area (Table 4.29.1). Approximately 10% of the cedar stands have been classified as uneven aged reflecting the multi-storied stands found in accessible unmanaged stands (Figure

4.29.2). Cedar stands around McMillan and the Sage and Hendrie Rivers provide critical winter habitat for white-tailed deer (special conservation area deer wintering complexes) and maintaining a closed canopy structure is important. There has been very little recent cedar harvesting in this management area.

There is a need to address future cedar cover within the deer wintering complexes. Reliable and timely regeneration of cedar is a concern from both wildlife and forest management perspectives.

Currently there are 164 acres of cedar prescribed for final harvest. There are 406 acres of cedar 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. Cedar stands in areas inaccessible for harvest will be subject to natural processes, resulting in a range of successional stages.

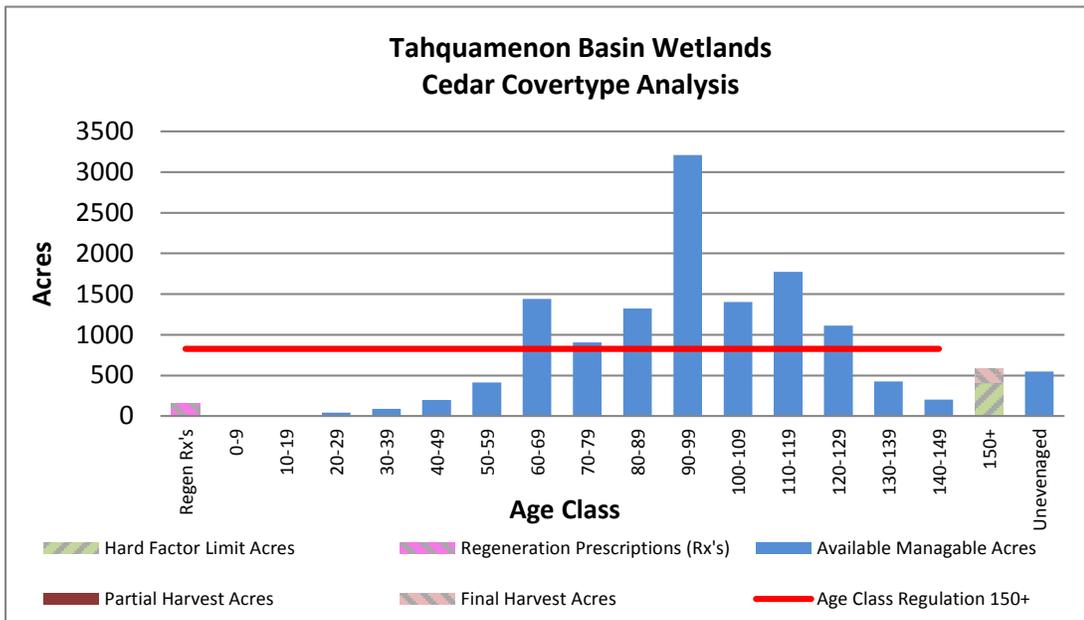


Figure 4.29.2. Age-class distribution of cedar in the Tahquamenon River Basin Wetlands management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

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

10-Year Management Objectives

- The 10-year projected final harvest of cedar is for 100 acres with the reduction from the regulated amount due to the deer wintering complexes.

Long-Term Management Objectives

- Within deer wintering areas, focus cedar management on winter habitat for deer;
- Outside of the deer wintering areas, look for opportunities to test different methods of regenerating cedar, especially outside of the deer wintering areas;
- Consider harvest of cedar before rotation age to begin to diversify the age classes; and
- Using a 150-year regulated rotation would allow approximately 829 acres to be harvested per decade.

### Section 4.29.1.3 Forest Cover Type Management – Lowland Conifers

#### Current Condition

Lowland conifers occur on 12,349 acres (15%) of the management area (Table 4.29.1). Approximately 10% of the lowland conifer stands have been classified as uneven aged as a result of natural processes (Figure 4.29.3). Lowland conifer stands have been successfully harvested and regenerated through natural regeneration resulting in stands in all age classes. The majority of the lowland conifer stands in this area have intermittent drainages and sub-surface flow throughout especially in the Tahquamenon River Basin management area.

Currently there are 238 acres of lowland conifers prescribed for final harvest. There are 5,476 acres of lowland conifers 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. Lowland conifer stands in areas that are inaccessible for harvest will be subject to natural processes, resulting in a range of successional stages.

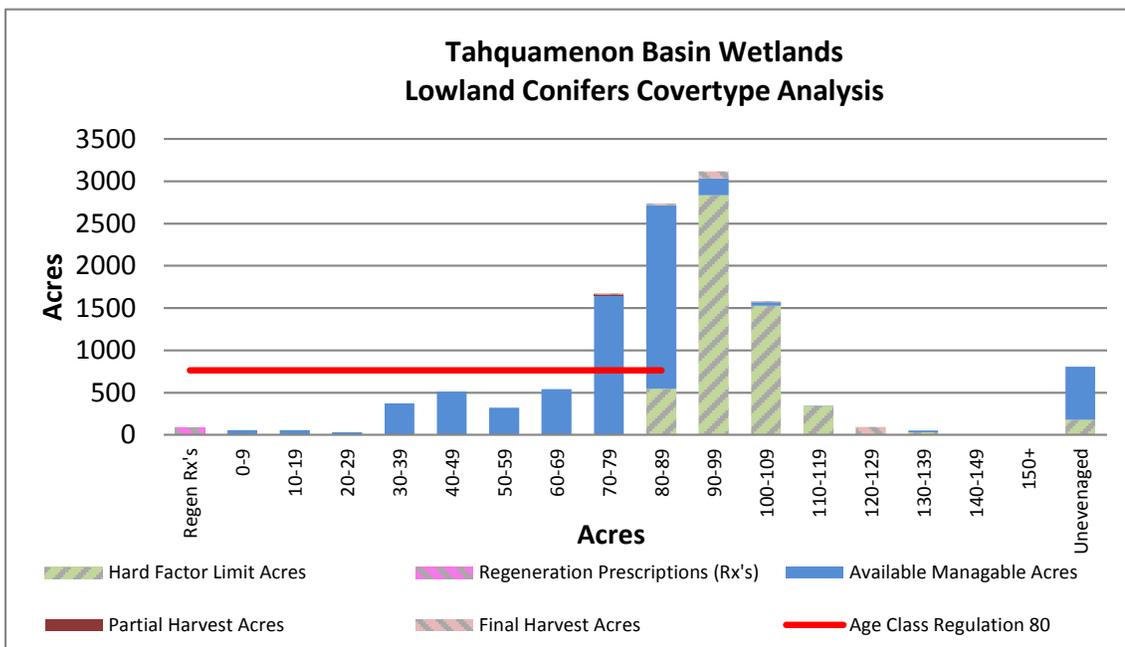


Figure 4.29.3. Age-class distribution of lowland conifers in the Tahquamenon River Basin Wetlands management area (2012 Department of Natural Resources inventory data).

#### 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.

#### 10-Year Management Objectives

- The 10-year projected final harvest of lowland conifers is 764 acres to work toward balancing the age classes.

#### Long-Term Management Objectives

- Balance the age-class structure of available stands providing for a regulated harvest of about 764 acres per decade.

### Section 4.29.1.4 Forest Cover Type Management – Lowland Spruce/Fir

#### Current Condition

Lowland spruce/fir stands are found on 5,358 acres (6%) of the management area (Table 4.29.1). Lowland spruce/fir stands have been successfully harvested and regenerated in the past resulting in stands in most age classes (Figure

4.29.4). The majority of the lowland spruce/fir stands in this area have intermittent drainages and sub-surface flow throughout especially in the Tahquamenon River Basin management area.

Currently there are 572 acres of lowland spruce/fir with a final harvest prescribed. There are 1,715 acres of lowland spruce/fir 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. Inaccessible stands will undergo natural successional processes.

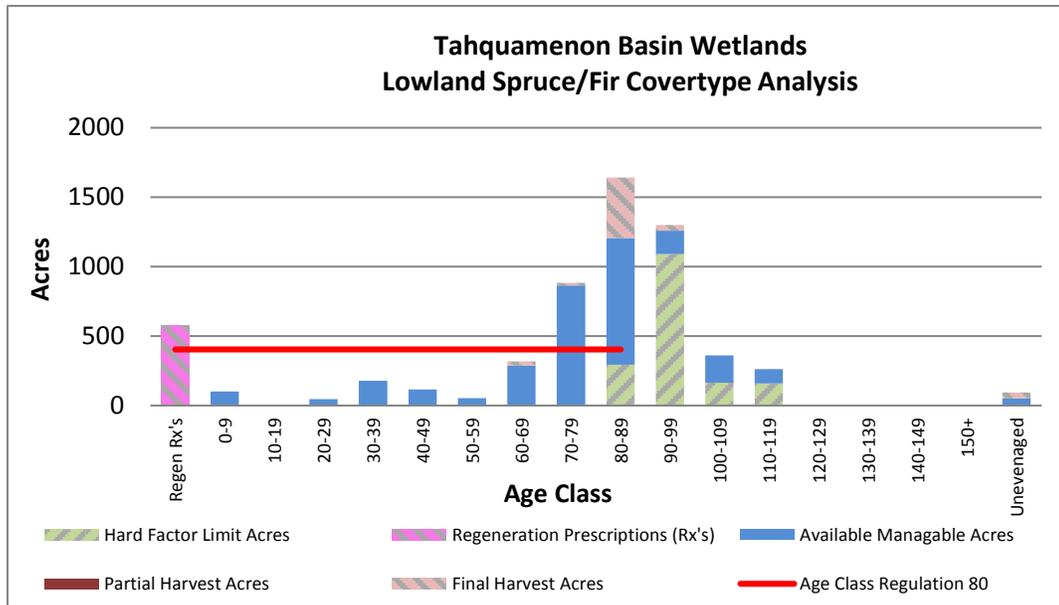


Figure 4.29.4. Age-class distribution of lowland spruce/fir in the Tahquamenon River Basin Wetlands management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Lowland spruce/fir 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 final harvest of lowland spruce/fir is 405 acres to work toward balancing the age classes.

Long-Term Management Objectives

- Balance the age classes of accessible lowland spruce/fir stands providing for a regulated harvest of approximately 405 acres per decade.

**Section 4.29.1.5 Forest Cover Type Management – Aspen**

Current Condition

Aspen occurs on 5,245 acres (6%) of the management area (Table 4.29.1). Aspen stands are distributed throughout the management area on outwash plains and lake plains, on dry- to mesic-poor to medium-nutrient sites with habitat classes of PARVAa, ATFD and AFPo (see appendix E). Accessible aspen has been consistently harvested over the last 40 years, contributing toward balanced age classes (Figure 4.29.5).

There are currently 305 acres of aspen prescribed with a final harvest. Approximately 70 acres of other cover types are expected to convert to aspen after harvest. These acres are shown in the regeneration prescriptions column in Figure 4.29.5. There are 672 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.

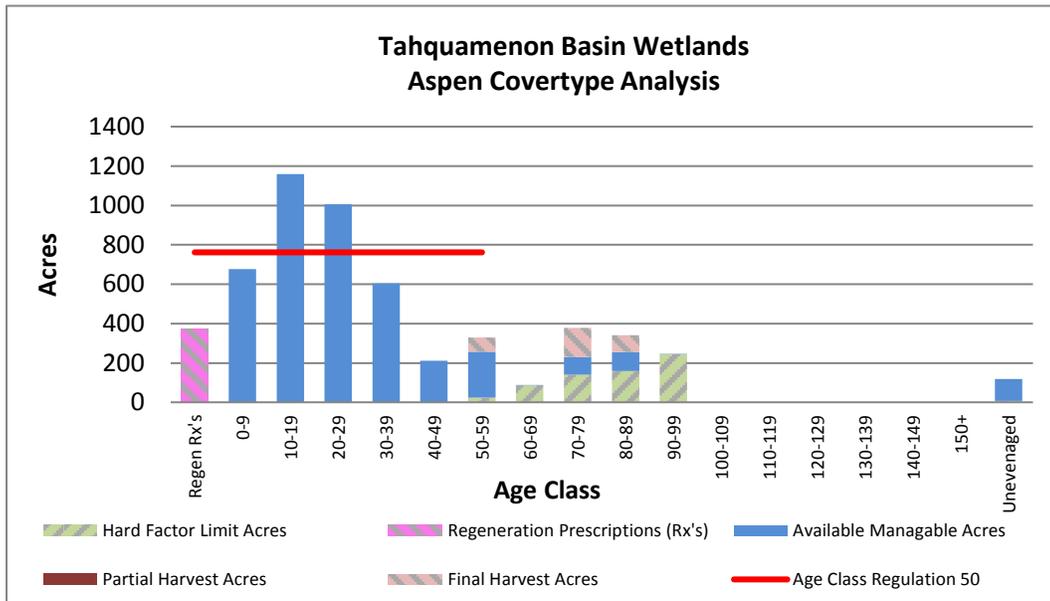


Figure 4.29.5. Age-class distribution of aspen in the Tahquamenon River Basin Wetlands management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Aspen 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 recreational opportunities.

10-Year Management Objectives

- The projected 10-year final harvest of aspen is 374 acres with the decrease from the regulated amount due to the current age-class structure where most of the acres of aspen are in younger age classes.

Long-Term Management Objectives

- Balance the age classes of accessible stands of aspen providing for a regulated harvest of approximately 762 acres per decade.

**Section 4.29.1.6 Forest Cover Type Management – Lowland Deciduous**

Current Condition

Lowland deciduous stands are found on 4,593 acres (6%) of the management area (Table 4.29.1). Lowland deciduous stands in this management area are often found in association with the creeks and drainages making access difficult. Almost half of the acres have been coded as uneven aged due to the variety of ages and sizes of trees within the stands (Figure 4.29.6). In areas that have been recently harvested natural regeneration has been successful.

Currently there are 111 acres of lowland deciduous with a final harvest and 24 acres of lowland deciduous with a partial harvest prescribed. There are approximately 30 acres of other cover types are expected to convert to lowland deciduous after harvest. These acres are shown in the regeneration prescriptions column in Figure 4.29.7. There are 815 acres of lowland deciduous that have site conditions limiting their harvest this entry period. These hard factor limited acres have been removed from harvest calculations. Inaccessible stands will be subject to natural processes, resulting in uneven-aged structure and a shift to late successional species.

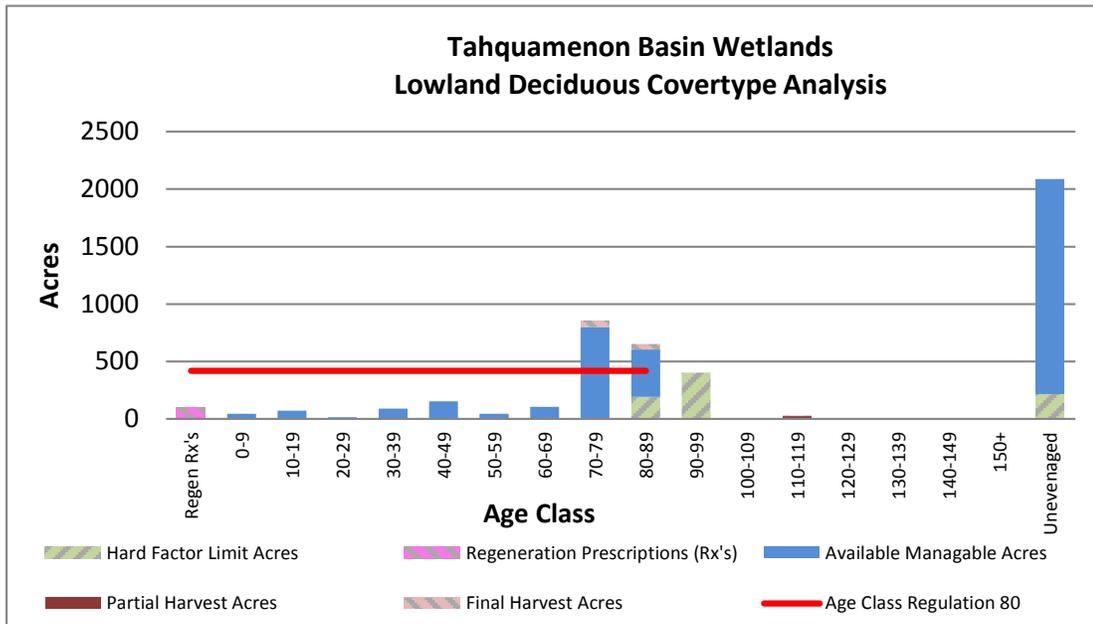


Figure 4.29.7. Age-class distribution of lowland deciduous in the Tahquamenon River Basin Wetlands management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

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

10-Year Management Objectives

- The 10-year projected final harvest of lowland deciduous is 420 acres to work toward balancing the age classes.

Long-Term Management Objectives

- Balance the age classes of accessible lowland deciduous stands providing for a regulated harvest of approximately 420 acres per decade.

**Section 4.29.1.7 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 4.29.1). Northern hardwood (3,645 acres) and lowland aspen/balsam poplar (3,074 acres) each have 4% of the total management area acres. Other types total approximately 5,900 acres (7%) and are spread across the management area. This category is made up of forested cover types with 2% or less of the management area acres. They include: tamarack (1,582 acres), jack pine (917 acres), lowland mixed forest (771 acres), white pine (745 acres), upland spruce/fir (681 acres), paper birch (334 acres), hemlock (301 acres), upland conifers (160 acres), mixed upland deciduous (150 acres), upland mixed forest (137 acres) and red pine (122 acres).

Following general timber management guidelines schedule individual tree selection harvests in uneven-aged stands and regeneration harvests in even-aged cover types using natural regeneration after harvest. Where there is sufficient acreage, balance the age classes of even-aged cover types.

Beech bark disease is found throughout the management area and salvage of affected beech is ongoing. 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.

Approximately 2,175 acres of these other minor cover types have site conditions limiting their harvest this entry. These hard factor limited acres have been removed from the total number of manageable acres available for harvest. Inaccessible stands may never be harvested and will be subject to successional processes.

Upland open/semi-open lands occur on 662 acres (1%) and are comprised of: bare/sparsely vegetated (370 acres), low-density trees (177 acres), herbaceous openland (89 acres) and upland shrub (26 acres). Miscellaneous other types occur on 1,452 acres (2%) and include roads, water and sand/soil.

#### Desired Future Condition

- These cover types may be managed on operable sites contributing to the compositional diversity of the landscape while providing for continual harvest, wildlife habitat and recreation opportunity.

#### 10-Year Management Objectives

- The projected 10-year final harvest is 270 acres of lowland aspen/balsam poplar and 763 acres of other types; and
- The projected 10-year partial harvest is 1,553 acres of northern hardwood and 427 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.

### **4.29.2- Featured Wildlife Species**

The Tahquamenon River and its associated drainages greatly influence the distribution of cover types in this management area. Associated with the river systems are lowland swamp conifers and cedar complexes that are important deer wintering complexes within the management area, including those around the McMillan area and the Sage and Hendrie rivers. The Dollarville flooding is used extensively by nesting and migrating shorebirds, waterfowl, eagles, osprey and aquatic furbearers. Wild rice grows in the flooding and the river channel and provides a source of nutrition for waterfowl. Management in this management area for wildlife should focus on retaining a closed canopy within the deer wintering complexes, promoting hard and soft mast, the retention of structure in boreal forest and the creation of dense undergrowth and woody debris in harvested lowland stands.

#### **Black Bear**

The goal for black bear in the eastern Upper Peninsula is to maintain or improve habitat. Management for the species should focus on improving existing habitat (minimizing fragmentation and maintaining hard and soft mast) to offset potential population declines due to changes in land-use.

#### Wildlife habitat specifications:

- Maintain or increase tree species that provide mast including beech, oak, black cherry and ironwood.
- Beech trees with bear claw scars on the bark are generally good mast producers and should be retained wherever possible.
- Retain some large diameter white pine or hemlock as refuge trees.
- Plant disease resistant beech and red oak where appropriate.
- Maintain or increase mast by providing forest clearings that promote food sources such as pin cherry, juneberry/serviceberry, hazel, raspberry, blackberry and blueberry. Minimize herbicide use that would be detrimental to this resource.
- Discourage land transactions and management activities that facilitate further fragmenting state lands within the management area.

#### **Gray Jay**

The goal for gray jay in the eastern Upper Peninsula is to maintain or increase suitable habitat. Management should focus on maintaining representation of older age classes of timber in appropriate cover types as well as retention of important structural features within harvested stands in priority areas.

#### Wildlife habitat specifications:

- The primary goal is to maintain appropriate cover types (birch, lowland deciduous, fir, lowland conifer, lowland spruce/fir, tamarack and bogs) in the management area in a variety of age classes. Maintain 15% of the total acres in relevant cover types in older age classes (at least 20 years beyond “normal” rotation length for the cover type).
  - This can be accomplished either with stands that are already factor limited or by extending the rotation age. In this management area, older age classes (greater than 100 years) for gray jay habitat are being met by the large number of stands with site conditions that limiting harvesting.
- Patches are preferred over single trees within timber harvest sale boundaries though it is beneficial to have both.
- Offset salvage harvests deemed necessary due to insect, disease or fire within the same cover type and age class (within the compartment, management area or eastern Upper Peninsula ecoregion), to minimize impacts on gray jay habitat. Total allowable harvest in these situations will be evaluated on a case-by-case basis.

#### **Snowshoe Hare**

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

#### 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.
- Maintain young dense jack pine stands.
- 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.
- 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.

#### 4.29.3 – 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.

Past surveys have noted and confirmed six listed species and no natural communities of note occurring in the management area as listed in Table 4.29.2. Any established management guidelines will be followed. Further surveys for special species and natural communities will be carried out as a matter of course during the inventory process and opportunistically for special more focused surveys.

Table 4.29.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Tahquamenon River Basin Wetlands management area.

Common Name	Scientific Name	Status	Status in Management Area	Climate Change Vulnerability Index (CCVI)	Confidence	Natural Community Association	Probable Cover Types	Successional Stage
<b>Birds</b>								
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
Osprey	<i>Pandion haliaetus</i>	SC/G5/S2-3	Confirmed	PS	Low	Coastal fen	Lowland open/semi-open	N/A
						Northern hardwood swamp	Black Ash	Late
						Floodplain forest	Lowland Mixed	Mid
						Hardwood-conifer swamp	Lowland Mixed	Mid
<b>Butterfly</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
<b>Plants</b>								
Goblin moonwort	<i>Botrychium mormo</i>	T/G3/S2	Confirmed			Mesic northern forest	Northern Hardwood	Late
						Boreal forest	Upland & Lowland Sp/F	Mid
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
Satiny willow	<i>Salix pellita</i>	SC/G5/S2S3	Confirmed			Sand and gravel beach	Upland open/semi-open	N/A
						Volcanic bedrock lakeshore	Upland open/semi-open	N/A
						Emergent marsh	Lowland open/semi-open	N/A

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

Special conservation areas in this management area include cold water lakes and streams, high priority trout streams (Figure 4.29.1), several deer wintering complexes, and the Dollarville Flooding State Wildlife Management Area (Figure 4.29.8). In addition, approximately 800 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 (boat access sites and state forest campgrounds) are listed in the Recreation section 4.29.6 below.

No high conservation value areas or ecological reference areas have been identified for this management area as illustrated in Figure 4.29.8.

## Tahquamenon Basin Wetlands

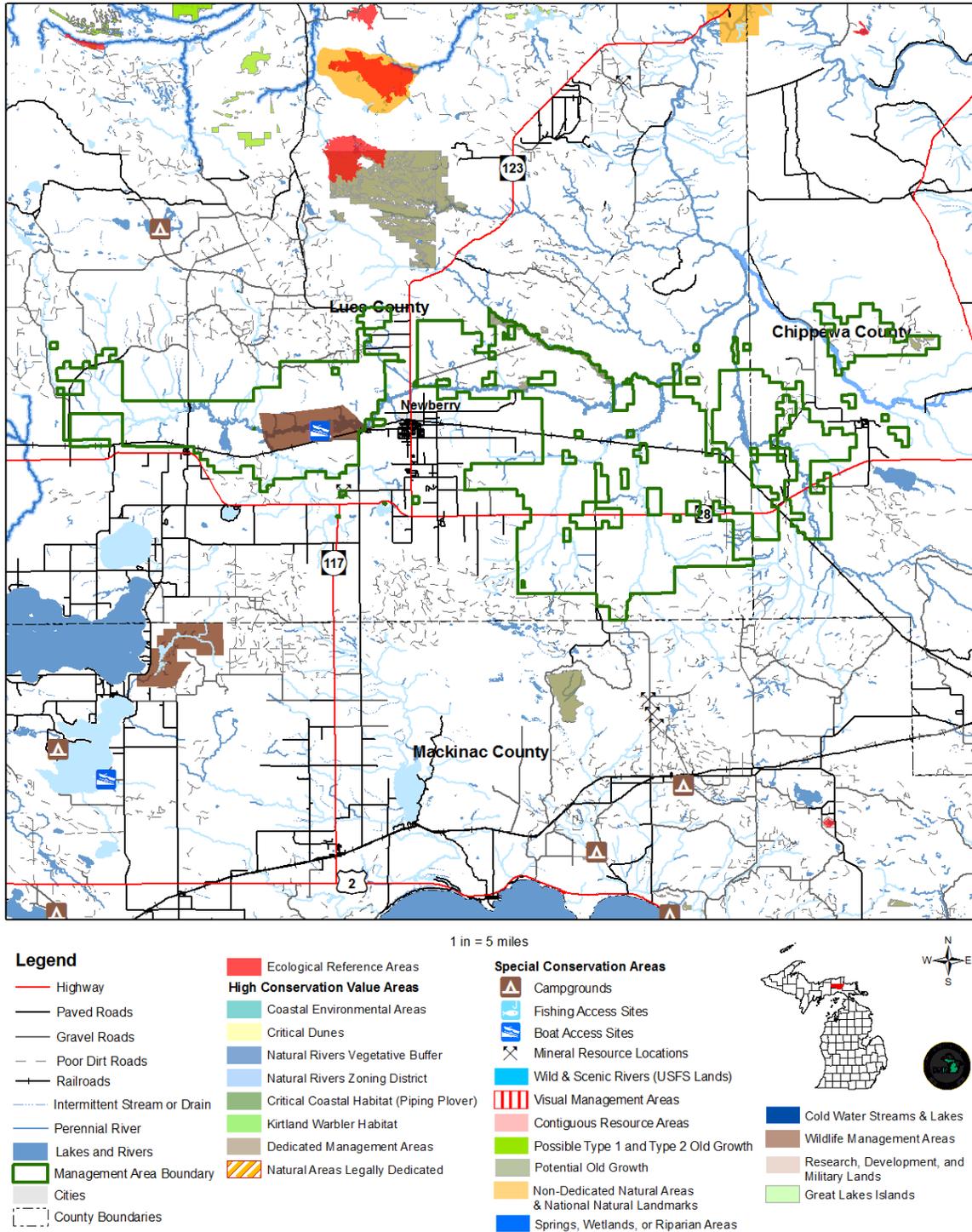


Figure 4.29.8. A map of the Tahquamenon River Basin Wetlands management area showing the special resource areas.

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.

#### 4.29.4 – 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:

- Aspen and lowland aspen/balsam poplar: white trunk rot and *Hypoxylon* canker;
- Lowland deciduous: emerald ash borer; and
- Lowland conifers and lowland spruce/fir: spruce budworm, eastern larch beetle and larch casebearer.

For further information on forest health refer to 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. Leafy spurge, reed canary grass, spotted knapweed and wild parsnip have been documented within a five-mile buffer of the management area (Table 4.29.3) 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.

In addition to the invasive species that have been documented in the Michigan Invasive Plant Identification Network database, there have been recent sightings of purple loosestrife in the management area and *Phragmites* in and around the management area in the Dollarville Flooding area.

Table 4.29.3. Invasive plant species within or near the Tahquamenon River Basin Wetlands management area (Data from the Michigan Invasive Plant Identification Network database).

Tahquamenon River Basin Wetlands - 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	4
Invasive Species within FRD Areas	Occurrences	Invasive Species within 5 Mile Buffer		Occurrences
-	-	Leafy Spurge <i>Euphorbia esula</i>		1
-	-	Reed Canary Grass <i>Phalaris arundinacea</i>		2
-	-	Spotted Knapweed <i>Centaurea stoebe</i>		2
-	-	Wild Parsnip <i>Pastinaca sativa</i>		1

#### 4.29.5 – Fire Management

This area is dominated by lowland swamp conifers and marsh complex. The majority of this area has a fire return interval of 35 – 200 years with mixed severity. Prescribed fire has not been used in this area since prescribed fire records have been kept.

- Modified suppression tactic may be necessary in this management area because of the wet soils.
- Access for fire suppression is very poor in this management area.

#### **4.29.6 – Public Access and Recreation**

Rivers, creeks and low, wet ground limit access to large portions of the management area.

Recreational facilities within the management area include: boat access sites at Natalie, McPhee's Landing and Dollarville Dam; snowmobile trails as shown in Figure 4.29.1 and the Natalie State Forest Campground. There is also the privately owned Toonerville Trolley which follows the Soo Line grade.

Bird watching, hunting, trapping and horse riding are popular. The Dollarville flooding is used heavily by waterfowl hunters, boaters and fishermen.

#### **4.29.7 - 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. The Tahquamenon River system is designated as high priority trout stream in this management area, and is shown in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment and in Figure 4.29.1.

#### **4.29.8 – Minerals**

Surface sediments consist of peat and muck, lacustrine (lake) sand, gravel, clay and silt, glacial outwash sand and gravel and postglacial alluvium and coarse-textured till. There is insufficient data to determine the glacial drift thickness. Sand and gravel pits are located in the management area and there is good potential on the uplands for additional pits.

The Silurian Cabothead Shale and Manitoulin Formation and Ordovician Queenston Shale, Big Hill Dolomite, Stonington Formation, Utica and Collingwood Shales and Trenton Formation subcrop below the glacial drift. The Trenton is 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 (14 in Chippewa and two in Luce). 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.

Charcoal Grade sand pit and Dollarville gravel pit are within the management area.