4.25 MA 25 – Pictured Rocks Buffer Management Area

Summary of Use and Management

Pictured Rocks Buffer management area (MA) (Figure 4.25.1) is located adjacent to the fee boundary of Pictured Rocks National Lakeshore. The management area is largely within the inland buffer zone of the park. Management within this management area is conducted with this geographic context in mind. Vegetative management in the Pictured Rocks Buffer management area will emphasize high-quality hardwood management in the west portion of the management area and pine management in the east portion. Goals also include maintaining or enhancing wildlife habitat, protecting areas of unique character and providing recreational opportunities. Aesthetics on travel routes into the Pictured Rocks National Lakeshore should also be emphasized. Expected issues in this 10-year planning period are increased recreational use due to the recent paving of H-58; introduction and spread of invasive species; and introduced pests and diseases, especially beech bark disease.

Introduction

The Pictured Rocks Buffer management area is located in the northwest part of the eastern Upper Peninsula in Alger County, and has 19,077 acres of state-owned land. Adjacency to the Pictured Rocks National Lakeshore is the primary attribute for this management area. Additional attributes which were important in identifying this management area include:

- The management area falls within the Luce Subsection 8.2 of the eastern Upper Peninsula ecoregion (Albert, 1995).
- The dominant landform consists of sandy ridges of end moraine and pitted outwash and lacustrine deposits of glacial and postglacial origin.
- The state land within the management area is fairly concentrated in two separate blocks. The east block of this management area consists of mainly pine types; while the west block consists mainly of hardwoods. Intensive timber management is very important in this management area.
- This management area provides access to Pictured Rocks National Lakeshore, and therefore receives a high amount of drive-through use by park visitors. Pictured Rocks National Lakeshore and DNR work cooperatively on projects within the inland buffer zone.
- Recreational opportunities include: hiking, camping, blueberry picking, bear and deer hunting, trout fishing, snowmobiling and sightseeing.

The east portion of this management area adjacent to the Danaher Kingston Outwash management area and has logging history from the 1800's similar to that area. Remains of old railroad grades and pine camps are still present.

The management area falls within the Shingleton Forest Management Unit. The current predominant cover types, acreages and projected harvest acres for the management area are shown in Table 4.25.1.

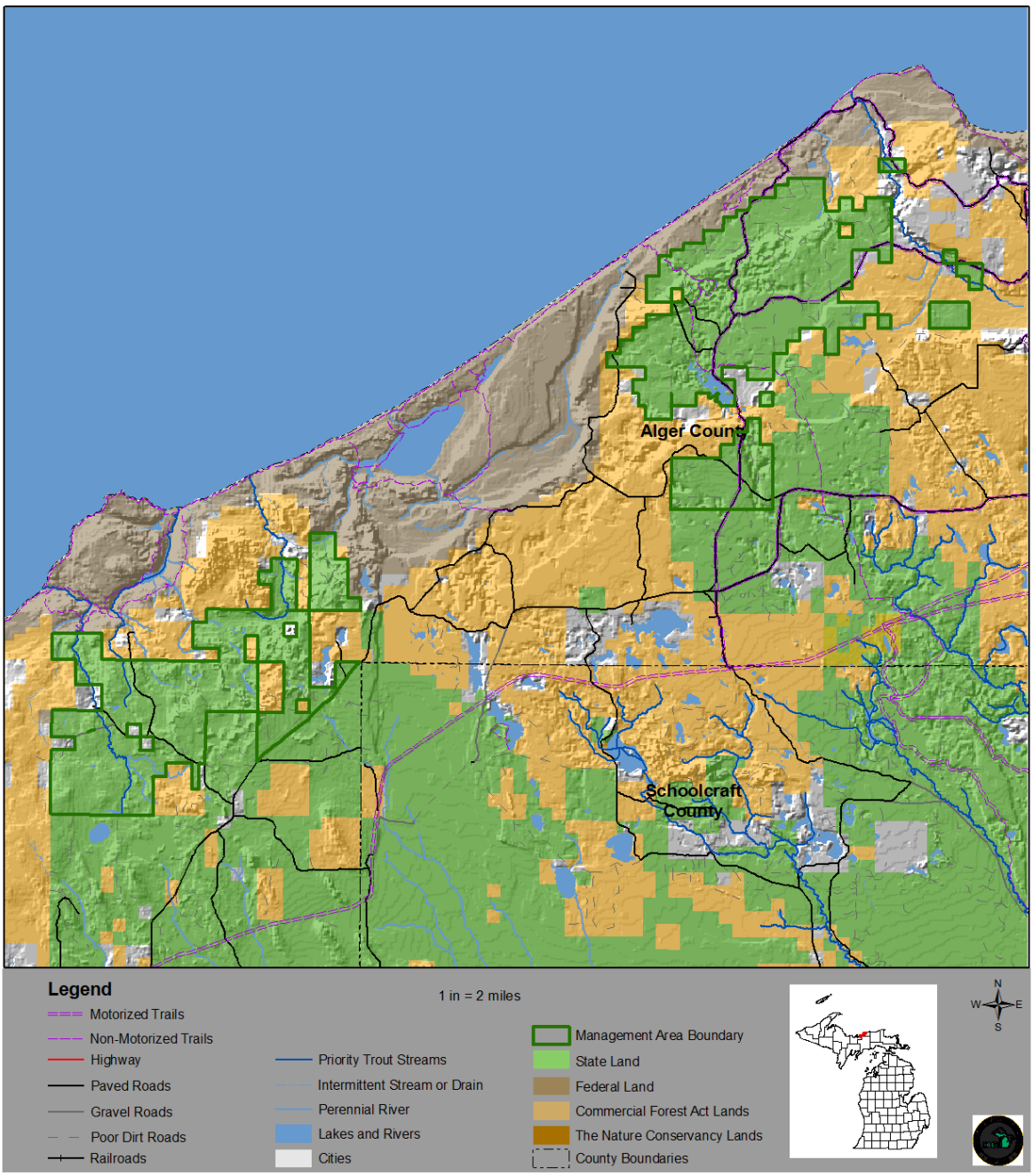

Figure 4.25.1. Location of the Pictured Rocks Buffer management area (dark green boundary) in relation to surrounding state forest lands, other ownerships and Lake Superior.

Table 4.25.1. Current cover types, acreages, projected harvest acres and projected ten-year cover type acreage for the Pictured Rocks Buffer 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
Northern Hardwood	33%	6,306	398	5,908	0	2,059	6,306	0	2,763
Red Pine	16%	3,131	0	3,131	348	967	3,131	348	1,814
White Pine	8%	1,542	0	1,542	140	600	1,542	140	600
Cedar	6%	1,054	140	914	57	0	1,054	57	0
Upland Open/Semi-Open Lands	5%	1,015	0	1,015	0	0	1,015	0	0
Lowland Conifers	5%	957	256	701	95	0	957	78	0
Aspen	5%	951	29	922	0	0	951	154	0
Jack Pine	5%	887	0	887	43	0	887	127	0
Lowland Open/Semi-Open Lands	3%	534	0	534	0	0	534	0	0
Misc Other (Water, Local, Urban)	2%	387	0	387	0	0	387	0	0
Others	12%	2,313	229	2,084	231	83	2,313	234	403
Total	100%	19,077	1,052	18,025	914	3,709	19,077	1,138	5,580

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

4.25.1 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 4.25.1.1 Forest Cover Type Management – Northern Hardwoods

Current Condition

Northern hardwood stands occur on 6,306 acres (33%) of the management area (Table 4.25.1). The majority of the hardwood stands are found in the west part of the management area, and consist of high quality sugar maple stands with a Kotar habitat types of AFOAs and AFPo (see appendix E). Management of the northern hardwood stands in the west block of the management area is intensive. Hardwood stands throughout the management area have generally been managed as uneven-aged stands, with individual tree selection harvests about every 20 years.

In the east portion of the management area, the northern hardwood stands contain more red maple, beech, white pine and hemlock. These stands are less productive than the west block, and have habitat types of ATFD and PArVAa. Where site quality is poor, shelterwood and other even-aged harvesting systems will be considered.

Beech bark disease is prevalent in this management area and many stands have had or will have salvage harvests due to beech bark disease. 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.

Currently, 1,035 acres of northern hardwood have a selection harvest prescription assigned and 16 acres have a final harvest prescribed (Figure 4.25.2). There are 269 acres of other cover types that are expected to convert to northern hardwood after harvest. These acres have already been accounted for in Figure 4.25.2. There are 398 acres of northern hardwood 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.

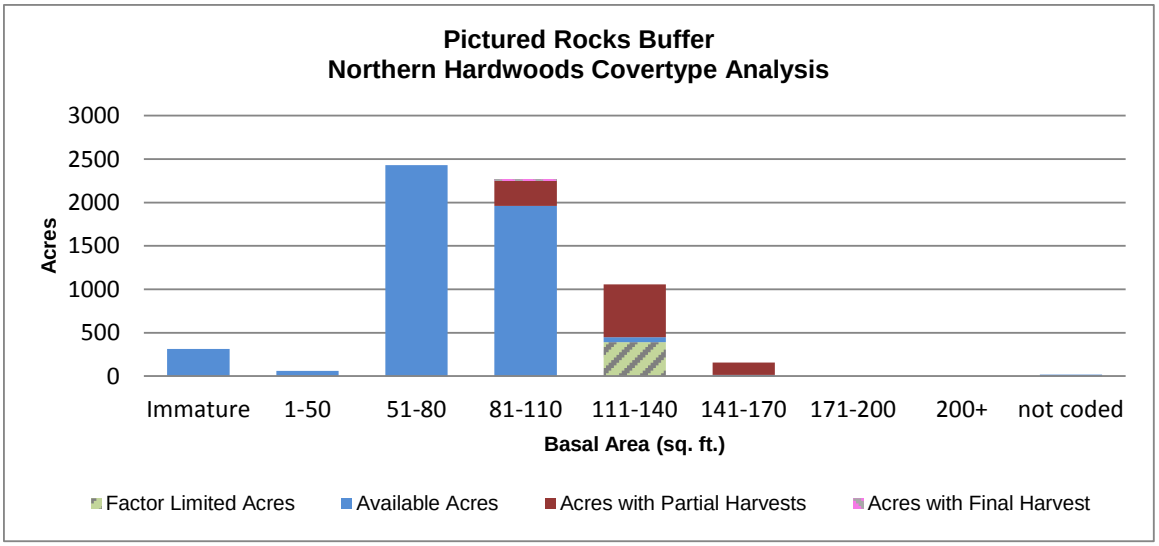

Figure 4.25.2. Basal area distribution of northern hardwood in the Pictured Rocks Buffer management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Northern hardwood stands will be maintained on operable sites using individual tree selection harvests to provide uneven-aged compositionally and structurally diverse stands; and
- Harvesting will provide for a continuous flow of timber products and a variety of wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected partial or selection harvest of northern hardwood is 2,059 acres.
- Evaluate beech dominated forests to determine the impact of beech bark disease on regeneration;
- Track beech regeneration in these stands;
- 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 4.25.1.2 Forest Cover Type Management – Red Pine

Current Condition

Red pine occurs on 3,131 acres (16%) of the management area (Table 4.25.1). Almost all of the red pine stands are found in the east portion of the management area on sandy soils with habitat types PVE and PArV (see appendix E). There are both natural and planted stands. The majority of the planted stands are 40-59 years old, whereas the stands over 70 years of age are of natural origin (Figure 4.25.3). The natural red pine stands have been managed using individual tree selection followed by shelterwood or seed tree harvests. This has developed uneven-aged stands. Many of the natural stands are mixed with white pine and have been managed to maintain the mix. Planted red pine stands are thinned approximately every 10 years starting about age 40-50 depending on site quality and followed by a regeneration harvest at economic maturity. Regenerate these stands by re-planting to red pine or to jack pine on very poor PVE habitat sites.

Currently there are 749 acres of red pine prescribed for with a partial harvest. There are no acres of red pine prescribed for final harvest. There are some acres of other types currently prescribed for harvest that will be converted to red pine after harvest and some acres of red pine that will be converted to other types after harvest. This may slightly increase the red pine acreage this decade. At this time there are no stands with hard factor limits.

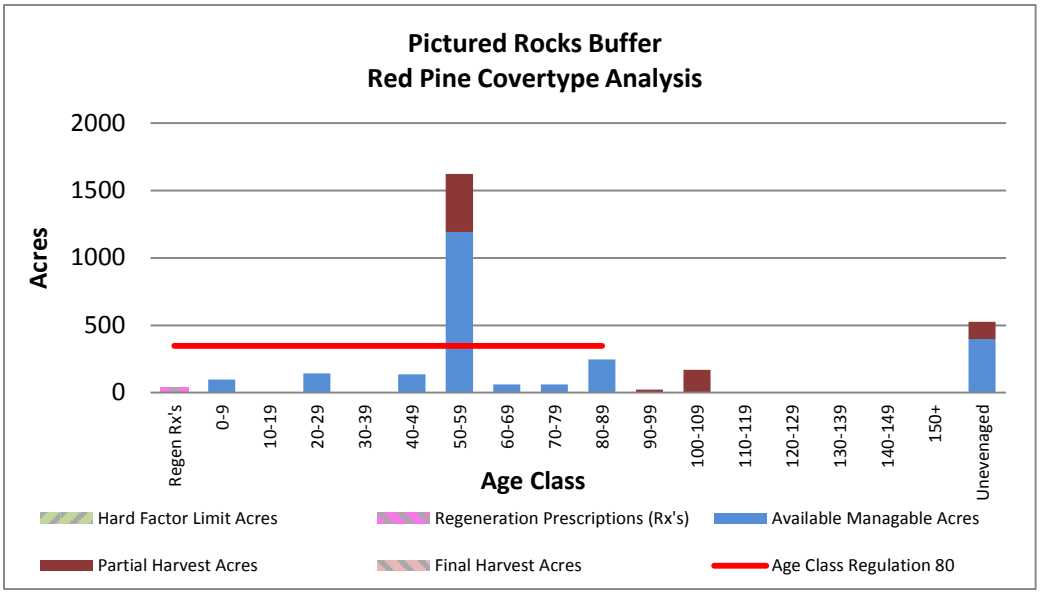

Figure 4.25.3. Age-class distribution of red pine in the Pictured Rocks Buffer management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Red pine will be maintained and managed through thinning until stand replacement harvest at economic maturity with acres balanced between 0-89 years of age to provide for continual harvest, wildlife habitat and recreational opportunity.

10-Year Management Objectives

- The 10-year projected final harvest of red pine is 348 acres to work toward balancing the age classes of red pine; and
- The 10-year projected partial harvest of red pine is 967 acres of thinning in stands 50-80 years old.

Long-Term Management Objectives

- Balance the age-class structure of red pine to provide a regulated harvest of approximately 348 acres of red pine per decade;
- Stands will be continually thinned until they meet silvicultural criteria; and
- While the intent is to maintain existing red pine acreage, conversion to jack pine or grass on lower quality planted sites or to white pine in natural mixed stands may slightly change red pine acreage over time.

Section 4.25.1.3 Forest Cover Type Management – White Pine

Current Condition

White pine occurs on 1,542 acres (8%) of the management area (Table 4.25.1), the majority of which are in the east block. White pine stands in this area are often found on Rubicon sands and have a PVE or PArV habitat type. All white pine stands in this management area are natural stands. Many of these stands are mixes of white and red pine. White pine is also found in association with aspen and hardwood. As white pine reproduces very well in this area natural regeneration is successful after harvesting. Approximately 67% of the white pine stands have been managed as uneven-aged; using individual tree selection harvesting followed by shelterwood or seed tree harvesting at economic maturity. The basal area distribution of white pine is shown in Figure 4.25.4.

There are no acres of white pine currently prescribed for final harvest. There are 21 acres of white pine prescribed for partial harvest or thinning. At this time there are no stands with hard factor limits.

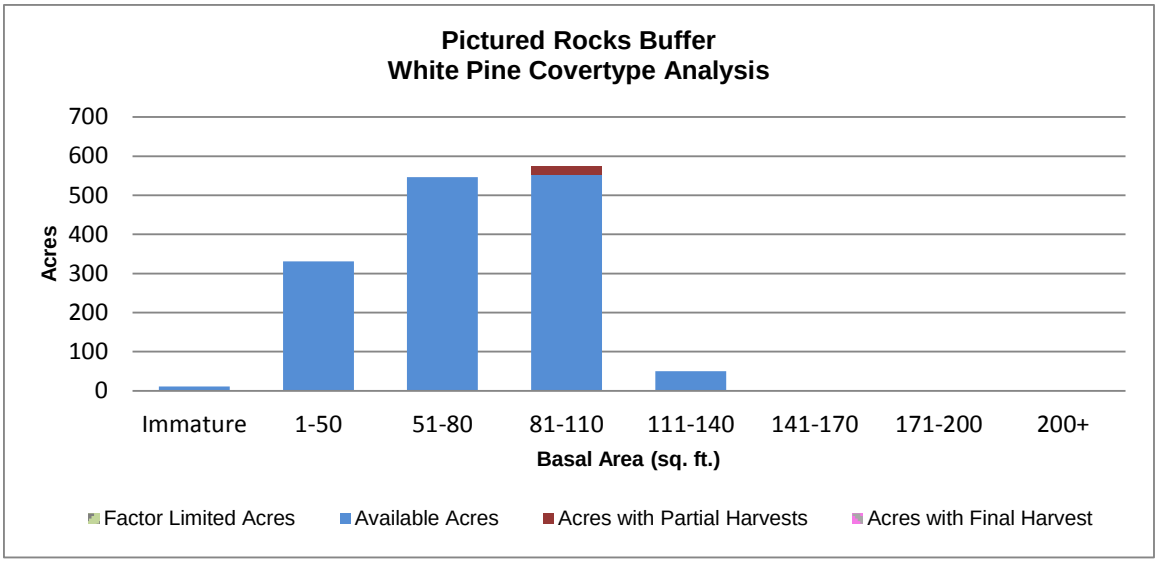

Figure 4.25.4. Age-class distribution of white pine in the Pictured Rocks Buffer management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- White pine stands will be maintained on operable sites with acres balanced between 0-109 years of age to provide for continual harvesting, wildlife habitat and recreational opportunities; and
- White pine stands will be managed through thinning up until rotation age followed by shelterwood or seed tree regeneration harvests.

10-Year Management Objectives

- The 10-year projected final harvest of white pine is 140 acres, generally using seed tree harvesting; and
- The 10-year projected partial harvest of white pine is 600 acres.

Long-Term Management Objectives

- Balance the age classes of available white pine providing for a regulated harvest of approximately 140 acres per decade.

Section 4.25.1.4 Forest Cover Type Management - Cedar

Current Condition

Cedar stands are found on 1,054 acres (6%) of the management area (Table 4.25.1). Generally, these stands are found in riparian zones in the west block of the management area. A portion of the cedar stands are listed as uneven-aged, showing evidence of successful cedar regeneration (Figure 4.25.5). While cedar has not been a focus for harvesting, successful harvesting and regeneration have somewhat diversified the age classes. Consider prescribed burning to aid natural regeneration.

Currently there are no acres of cedar prescribed for harvest. There are 140 acres of cedar 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. Cedar stands in inaccessible areas will be subject to natural processes resulting in a range of successional stages.

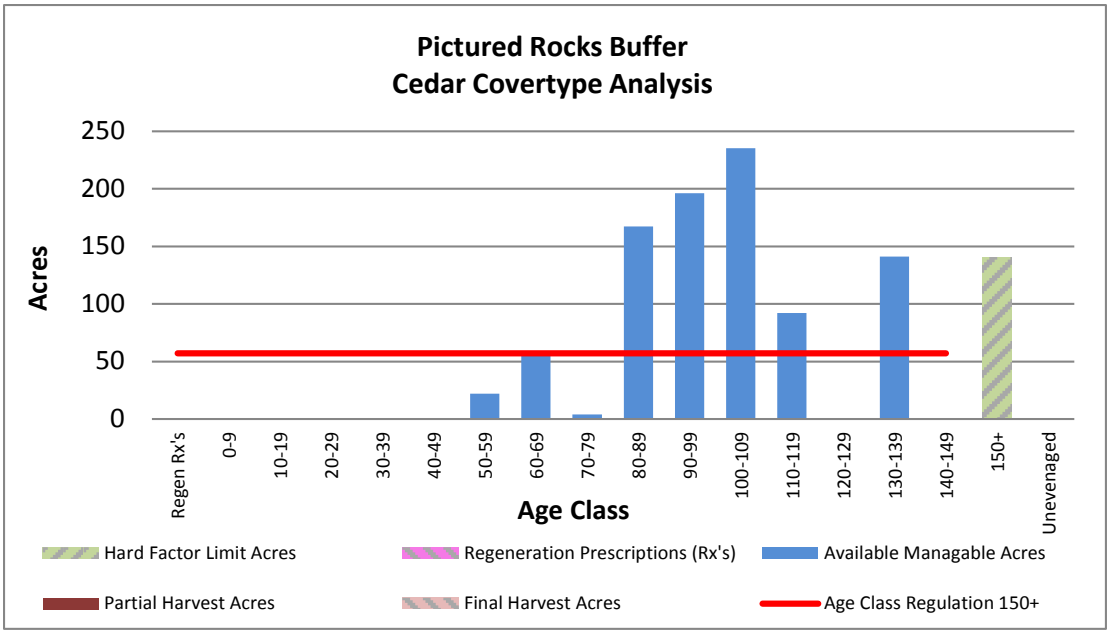

Figure 4.25.5. Age-class distribution of cedar in the Pictured Rocks Buffer management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Where deer wintering is not a concern, cedar communities will be maintained on operable sites through even-aged management balancing the acres between 0-159 years of age to provide for regulated harvest, wildlife habitat and recreational opportunity.

10-Year Management Objectives

- The 10-year projected final harvest of cedar is approximately 57 acres.

Long-Term Management Objectives

- In accessible areas outside of deer wintering areas, balance the age class structure providing for a regulated harvest of approximately 57 acres per decade.

Section 4.25.1.5 Forest Cover Type Management – Upland Open/Semi-Open Lands

Current Condition

Upland open/semi-open lands occur on 1,015 acres (5%) of the management area (Table 4.25.1). This category is a combination of the following non-forested land cover types: herbaceous open land (713 acres), bare/sparsely vegetated (62 acres), low-density trees (183 acres) and upland shrub (128 acres). Most of these stands are on sandy unproductive soils in the east part of the management area at the north end of the Kingston plains. Herbaceous open land is a general term and in this area represents the low vegetation consisting of bracken fern, blueberry, reindeer moss, blue *Cladonia* and black huckleberry. Natural succession of small openings to white pine is occurring where site conditions favor quality white pine and opening maintenance projects are not prescribed.

Red and jack pine in the east portion of the management area were often planted in 10, 20 and 40 acre blocks with grass openings between. Some herbaceous opening stands may be converted to red or jack pine in order to consolidate the acreage of similar types into larger blocks for habitat and ease of management. In other locations, less productive forest stands may be converted to herbaceous opening to offset conversions to forested cover and to allow for consolidated management. The total acreage of herbaceous opening verses pine will be maintained.

Desired Future Condition

- Large openings will be maintained or enhanced on suitable sites benefiting open-land wildlife species.

Long-Year Management Objectives

- Continue to maintain the large openings for wildlife using effective methods including timber harvesting, chipping and prescribed burning.

Section 4.25.1.6 Forest Cover Type Management - Lowland Conifers

Current Condition

Lowland conifers occur on 957 acres (5%) of the management area (Table 4.25.1). Almost 10% of the lowland conifer stands have been classified as uneven aged having trees of varying ages and sizes as a result of natural processes (Figure 4.25.6). Lowland conifer stands have been successfully harvested and regenerated through natural regeneration resulting in a wide range of age classes.

Currently there are five acres of lowland conifers with a final harvest prescribed. There are 256 acres of lowland conifers that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from harvest calculations. Lowland conifer stands in areas inaccessible for harvest will be subject to natural processes resulting in a range of successional stages.

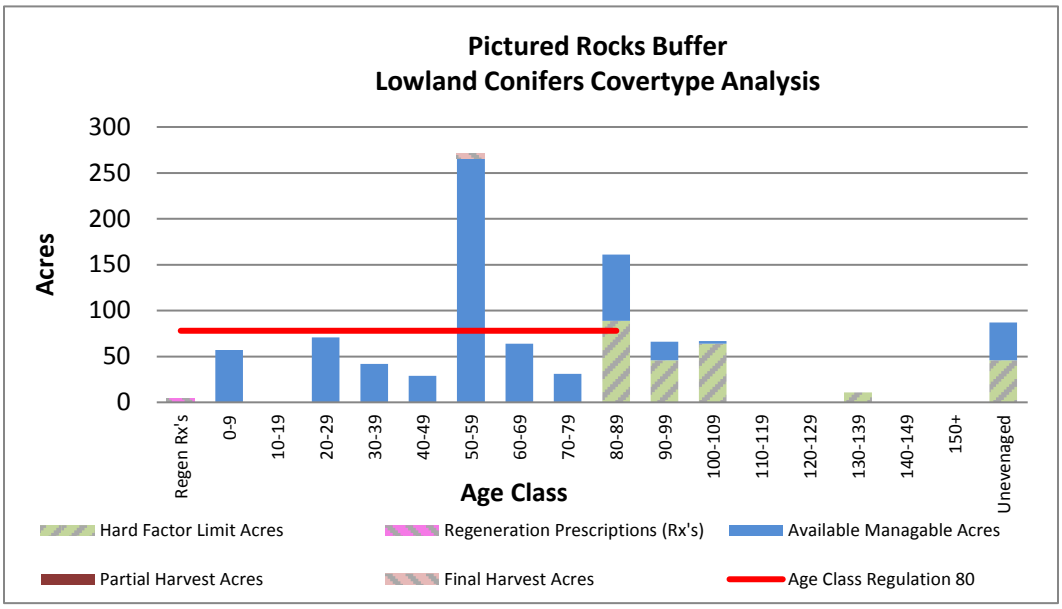

Figure 4.25.6. Age-class distribution of lowland conifers in the Pictured Rocks Buffer management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Lowland conifers 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 recreation opportunities.

10-Year Management Objectives

- The 10-year projected final harvest of lowland conifers is 95 acres which is slightly higher than the regulated amount due to the current age-class structure.

Long-Term Management Objectives

- Balance the age-class structure of accessible lowland conifers providing for a regulated harvest of approximately 78 acres per decade.

Section 4.25.1.7 Forest Cover Type Management - Aspen

Current Condition

Aspen occurs on 951 acres (5%) of the management area (Table 4.25.1). Aspen stands are distributed throughout the management area mainly on Rubicon sands of outwash plains with Kotar habitat types of PVE and PArV in the east block and on ground moraines with Kotar types of AFPo and AFOAs in the west block. Aspen has been consistently harvested and regenerated in recent years resulting in over 80% of the aspen acres in the 0-9, 10-19 and 20-29 year-old age classes (Figure 4.25.7). A portion of the aspen acres have been classified as uneven-aged stands. These aspen stands are generally old open areas that are regenerating with different aged aspen clones.

Currently there are 13 acres of aspen with a final harvest prescribed. Approximately 37 acres of other cover types prescribed with a final cut are expected to convert to aspen after harvest. These acres have been accounted for in Figure 4.25.7. There are 30 acres of aspen that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from harvest calculations. Inaccessible stands of aspen will eventually succeed to late successional species.

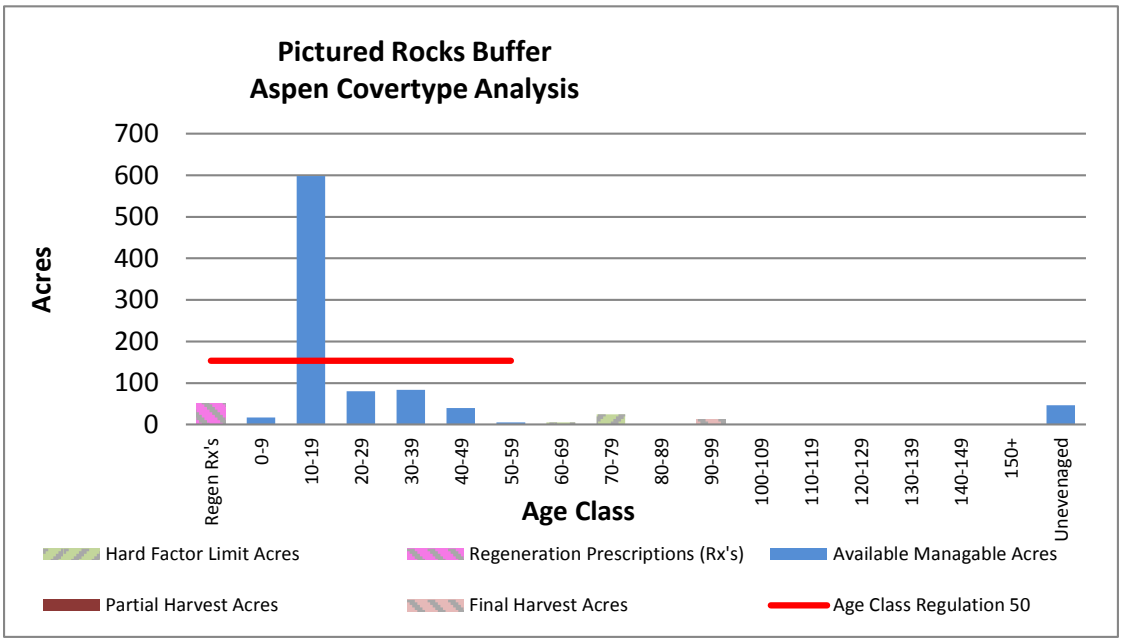

Figure 4.25.7. Age-class distribution of aspen in the Pictured Rocks Buffer management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Aspen will be maintained on operable sites through even-aged management with acres balanced between 0-59 years of age providing for a regulated harvest, wildlife habitat and recreation opportunities.

10-Year Management Objectives

- The 10-year projected final harvest of aspen is zero acres. The reduction in acres from the regulated amount is because the majority of the stands are in young age classes.

Long-Term Management Objectives

- Balance the age-class structure of accessible aspen stands providing for a regulated harvest of approximately 154 acres per decade.

Section 4.25.1.7 Forest Cover Type Management – Jack Pine

Current Condition

Jack pine stands occur on 887 acres (5%) of the management area (Table 4.25.1). There are both planted and natural stands of jack pine; nearly all are in the east block of the management area on sandy soils with a Kotar habitat type PVE. Jack pine has been consistently harvested and regenerated resulting in a variety of age classes. While most of the stands were regenerated naturally through scarification or prescribed fire some were replanted. To take advantage of site conditions and to provide for wildlife habitat, stands of jack pine, red pine and open land may be moved or consolidated. Total acreage of jack pine is expected to remain similar.

Currently there are 118 acres of jack pine with a final harvest prescription assigned (Figure 4.25.7). There are some acres in other cover types that are expected to convert to jack pine after harvest. These acres are accounted for in Figure 4.25.7. There are no acres of jack pine that have site conditions limiting their harvest at this time.

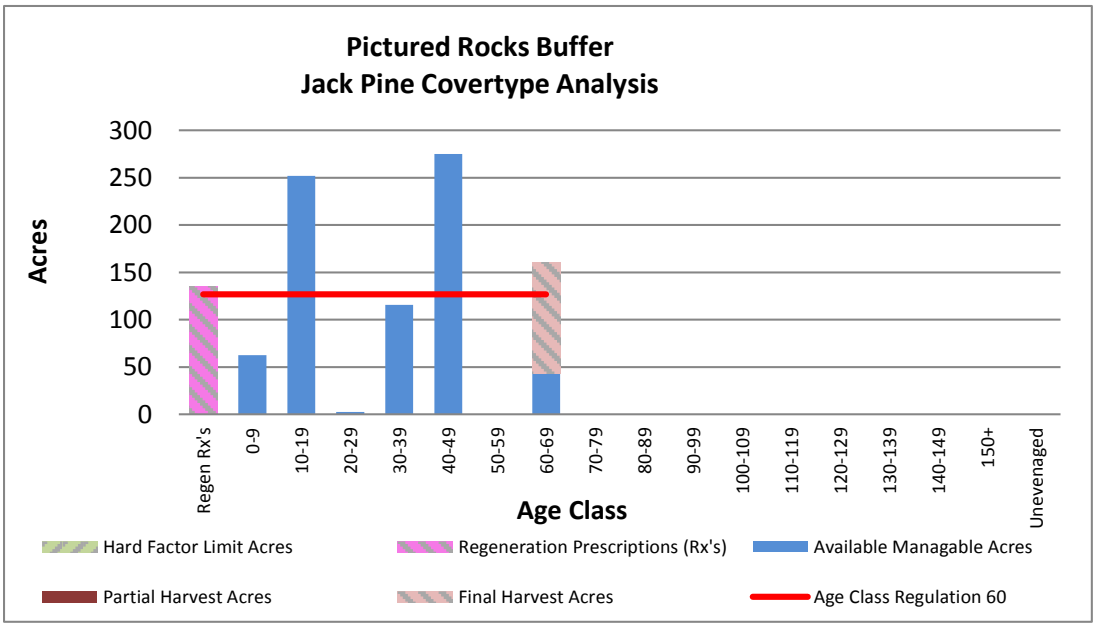

Figure 4.25.7. Age-class distribution of jack pine in the Pictured Rocks Buffer management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

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

10-Year Management Objectives

- The 10-year projected final harvest of jack pine is 43 acres with the decrease from the regulated amount due to the small number of jack pine in older age classes.

Long-Term Management Objectives

- Balance the age classes of jack pine providing for a regulated harvest of approximately 127 acres per decade; and
- Maintain a lower acreage of over-mature stands to lessen the prevalence and severity of jack pine budworm outbreaks.

Section 4.25.1.8 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 4.25.1). The “other forest cover types” category has approximately 2,313 acres (12%) of the management area. This category includes: natural mixed pines (644 acres), lowland deciduous (494 acres), paper birch (437 acres), upland conifers (194 acres), mixed upland deciduous (190), hemlock (150 acres), upland spruce/fir (100 acres), lowland mixed forest (75 acres), upland mixed forest (22 acres) and oak (seven acres). The majority of these forested cover types are managed using even-aged harvesting systems and will be reforested by natural regeneration. For even-aged management types, attempt to balance the acres using standard rotation ages.

There are 229 acres of these other minor cover types 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 may never be harvested and will be subject to successional processes.

Lowland open/semi open lands has 534 acres (3%) and is made up of marsh (226 acres), lowland shrub (179 acres), treed bog (102 acres) and bog (27 acres). Miscellaneous other has 387 acres (2%) and is made up of water, roads and sand/soil.

Desired Future Condition

- These cover types may be managed on operable sites by using even-aged management systems; and
- Harvesting and regenerating these cover types will contribute to the compositional diversity of the landscape in addition to providing wood products, wildlife habitat and recreational opportunity.

10-Year Management Objectives

- The projected 10-year final harvest is 231 acres of other types; and
- The projected 10-year partial harvest is 83 acres of other types.

Long-Term Management Objectives

- Where there is sufficient acreage, balance the age classes of these cover types to provide a sustainable yield of forest products and wildlife habitat.

4.25.2 – Featured Wildlife Species

The primary cover type in this management area is northern hardwoods which have high wildlife values. Balancing timber harvests with the desire for mature forest conditions for some species will be essential.

American Marten

The goal for marten in the eastern Upper Peninsula is to maintain or increase suitable habitat and strive to identify, maintain and connect known populations to facilitate genetic exchange. Management should address the maintenance and improvement of corridors, dead wood and conifer components in priority landscapes.

Wildlife habitat specifications:

- Identify key stands that provide linkages between habitat areas. In these stands, maintain a minimum of 30% canopy cover as marten tend to avoid stands with less canopy cover.
- Identify and maintain corridors between large forested tracts.
- Where coarse woody debris is lacking, increase both standing dead and down dead wood by leaving at least three large diameter (>14 inches in diameter at breast height) live trees to serve as future den trees, snags, coarse woody debris and logs on the ground per acre in harvested stands.
- Increase the within-stand component of mesic conifers in mixed stands. Consider under-planting on suitable sites where a seed source is absent.
- Limit biomass harvesting and whole tree harvesting in key marten areas.

Blackburnian Warbler

The goal for blackburnian warbler is to maintain suitable breeding habitat. Management for the species should focus on within stand diversity, habitat fragmentation and conifer components in this management area.

Wildlife habitat specifications:

- Increase the mesic conifer (e.g., hemlock, white pine, red pine and upland spruce-fir) component on state forests by: a) Retaining a larger percentage of mesic conifer during harvests; b) Using silvicultural practices that encourage the regeneration of mesic conifer; and c) Where desired/feasible, underplanting hemlock, white pine and white spruce in hardwood-dominated stands on suitable sites without a seed source.
- Provide more older mesic conifers, particularly hemlock, in the landscape by: a) Allowing some actively managed stands of mesic conifer to grow beyond standard rotation ages; b) Including mature mesic conifers as within-stand structure retained during harvests by following Within-Stand Retention Guidance during harvests; and c) Maintaining mature mesic conifer stands within travel corridor and riparian zone or Type 1 or 2 old growth special conservation areas.
- Use silvicultural practices that retain and expand multi-story hemlock stands and hemlock inclusions within hardwood complexes through group selection, scarification and/or direct planting.

Northern Goshawk

The goal for northern goshawk in the eastern Upper Peninsula is to maintain or improve suitable habitat. Management should focus on maintaining contiguous blocks of suitable habitat, providing structural diversity within stands and limiting disturbance to nesting birds in priority areas.

Wildlife habitat specifications:

- All known woodland raptor nests should be reported to local wildlife staff and included in Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment. For northern goshawk nests, the wildlife habitat specifications contained within Michigan DNR's *Interim Management Guidelines for Red-Shouldered Hawks and Northern Goshawk on State Forest Lands* (August 2012) will be followed until the workgroup has completed the guidance that will permanently replace the interim guidelines.

Pileated Woodpecker

The goal for pileated woodpecker is to maintain or improve habitat. Management should focus on maintaining large diameter deciduous trees in timber sales in priority areas.

Wildlife habitat specifications:

- Identify and retain large (>15 inches in diameter at breast height) snags and cavity trees, coarse woody debris and reserve trees, as possible to ensure a sustainable supply of future cavity and foraging trees and associated coarse woody debris. Poorly formed trees and those damaged by natural disturbance or earlier harvests, particularly deciduous trees, are good candidates for future snags and cavity trees; trees damaged by beech bark disease that were not salvaged are contributing towards this goal. Large diameter aspen and other soft hardwoods are preferred reserve trees.
- Even-aged managed stands: Leave scattered retention patches around some 18 inches in diameter at breast height or greater secure trees as a nucleus, using the upper end of the Within Stand Retention Guidance.
- Uneven-aged managed stands: Retain a minimum of three secure cavity or snags per acre with one exceeding 18 inches in diameter at breast height. If snags or cavity trees are lacking, leave trees with defects of the maximum available size that will likely develop cavities.
- Salvage harvests deemed necessary to remove dead trees due to insect, disease, or fire will be offset within the same cover type and age class (within the compartment, management area or eastern Upper Peninsula ecoregion) to minimize impacts on pileated woodpecker habitat. Total allowable harvest in these situations will be evaluated on a case-by-case basis.

4.25.3 – Rare Species and Special Conservation Area Management

All forest operations must be reviewed for potential conflicts between rare species and proposed forest operations following the guidance in "*DNR's Approach to the Protection of Rare Species on State Forest Lands*" (IC4172). This is especially important when listed species are present or past surveys have indicated a possibility of their presence.

Past surveys have noted and confirmed two listed species as well as one natural communities of note occurring in the management area as listed in Table 4.25.2. 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.

Special conservation areas include: cold water streams and lakes, high priority trout streams, a visual management area covering the majority of the management area for Pictured Rocks National Lakeshore and the Pictured Rocks Inland Buffer Zone Contiguous Resource Area (Figure 4.25.8). Concentrated recreation area special conservation areas (boat access sites and state forest campgrounds) are listed in the Recreation section 4.25.6 below.

Table 4.25.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Pictured Rocks Buffer 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
Natural Community								
Rich conifer swamp		S3/G4	Confirmed				Tamarack	Late
Birds								
Common loon	*Gavia immer*	T/G5/S3-4	Confirmed	HV	Very High	Emergent Marsh	Lowland open/semi-open	N/A
						Bog	Lowland open/semi-open	N/A
Plants								
American dune wild-rye	*Leymus mollis*	SC/G5/S3	Confirmed			Open dunes	Upland open/semi-open	N/A

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

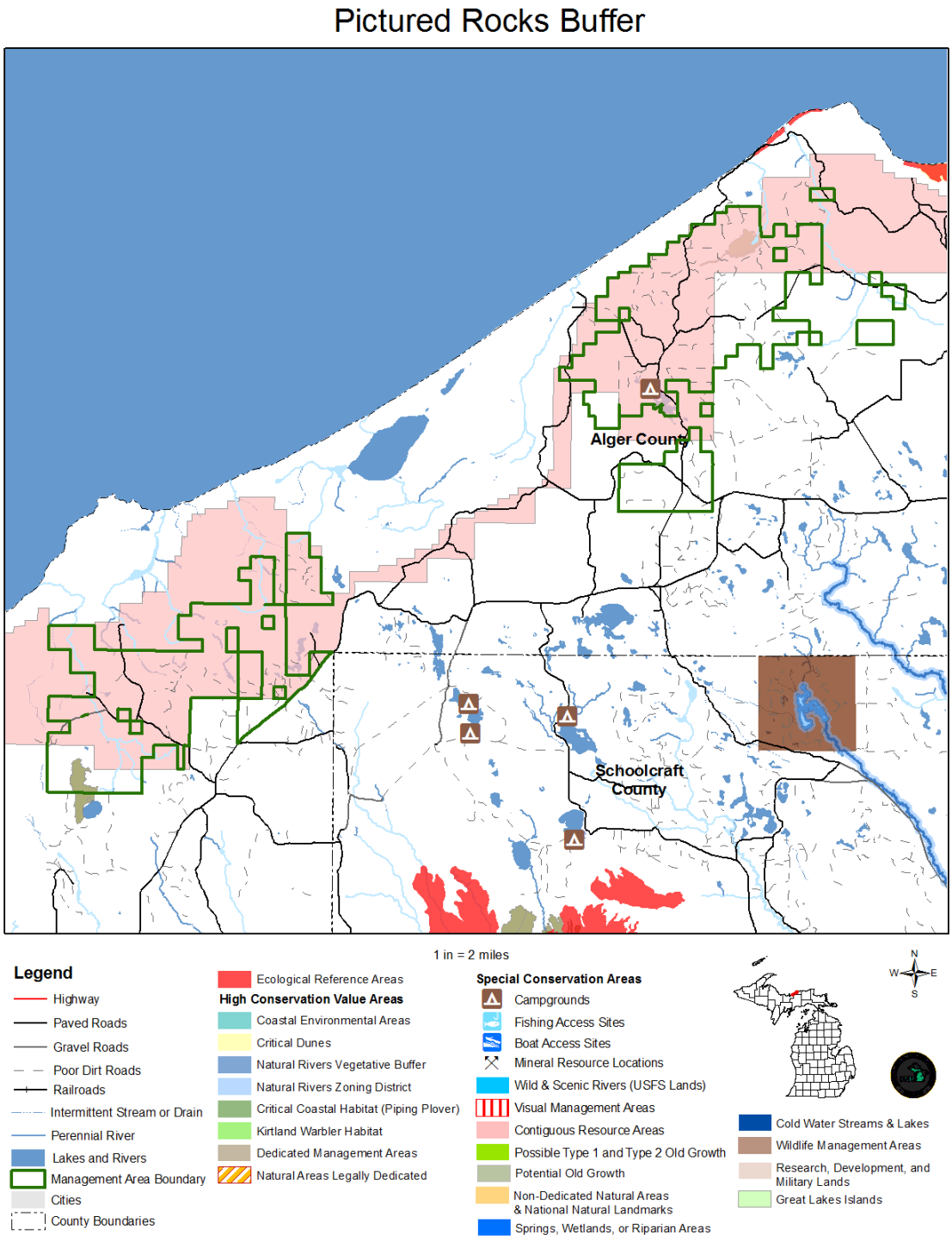

Figure 4.25.8. A map of the Pictured Rocks Buffer management area showing the special resource areas.

There have been no high conservation value areas or ecological reference areas identified for the Pictured Rocks Buffer management area as illustrated in Figure 4.25.8.

The management goal during this planning period is:

- 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.

4.25.4 – 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:

- Northern hardwoods: beech bark disease;
- Red and jack pine: jack pine budworm, pine engraver and pine engraver beetles;
- White grubs (Found in the Kingston Plains) and *Scleroderris* canker (The nearby Deer Park management area has a history of *Scleroderris* canker impacting young red and jack pine plantings); and
- White pine: white pine blister rust (Kingston Plains).

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. The statewide database of invasive plant species does not yet document any known species or locations within or surrounding the management area. Absence of data is likely due to lack of surveys, and it should not be assumed there are no species present. Monitoring efforts should specifically look for new populations of the 10 priority invasive plant species identified in Section 3 of this plan. Prescribe eradication treatments to any new populations of priority invasive plant species found in the management area.

4.25.5 – Fire Management

Because the key feature of this management area is its proximity to the National Lakeshore instead of any unifying ecological context there are two distinct fire regimes represented. The eastern portion is dominated by barrens and dry forest soils which were subject to more frequent fires. The western portion, dominated by mesic and wet soils, was probably not significantly modified by fire disturbance under natural fire regimes.

Three burns have been conducted in the past to promote pine regeneration on the Kingston plains. Burns in 1983 and 1987 were conducted to remove lichen cover to allow pine establishment. An under-burn was conducted in red pine 1996.

- The Kingston Lake Campground and Fox River Pathway trailheads provide good locations to provide fire prevention information aimed at campers, hikers and berry pickers.
- Prescribed fire may be used to maintain the pine communities in this management area.

4.25.6 – Public Access and Recreation

Gravel county roads and dirt two-track roads provide good access for management and recreation to most of the management area. H-58, the main access route, has been recently paved which has greatly increased the amount of recreational traffic in this area.

Trail facilities include snowmobile trails and the Fox River Pathway (Figure 4.25.1). Other recreational facilities include the Kingston Lake State Forest Campground and public boat access site (Figure 4.25.8).

Blueberry picking is popular in the Kingston Plains area. The entire management area is used for hunting and fishing.

Access to Pictured Rocks National Lakeshore is through this management area. When Pictured Rocks National Lakeshore campgrounds are full, park visitors often camp at nearby Kingston Lake State Forest Campground. People frequently hike the Fox River pathway from Kingston Lake State Forest Campground to Twelve Mile Beach campground in the national lakeshore.

4.25.7 – 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 Hurricane, Chapel, Mosquito and Spray creeks are designated high priority trout streams and are identified in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment and in Figure 4.25.1.

4.25.8 – Minerals

Surface sediments consist of lacustrine (lake) sand and gravel, an end moraine of medium-textured till, and glacial outwash sand and gravel and postglacial alluvium. 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 for additional pits on the uplands.

The Ordovician Prairie du Chien and Cambrian Trempealeau Formation and Munising Group subcrop below the glacial drift. The Prairie du Chien and Trempealeau could be used for stone.

Exploration and development for oil and gas has been limited to a few wells drilled in the Upper Peninsula (one mineral well in Alger County). 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.