## 4.17 MA 17 – Kincheloe Highlands Management Area

### Summary of Use and Management

Management in the Kincheloe Highlands management area (MA) (Figure 4.17.1) will emphasize timber production; provide for forest based recreational opportunities; maintain or enhance wildlife habitat; and protect areas of threatened, endangered and special concern species. Timber management for this 10-year planning period will focus on thinning red pine plantations and improving the age-class diversity of aspen and oak. Expected issues within the next decade are increased recreational pressure, illegal trash dumping and the introduction and spread of pests, diseases and invasive species.

Introduction

The Kincheloe Highlands management area is located in the east portion of the eastern Upper Peninsula, in Chippewa County, near I-75. It has 7,475 acres of state-owned land. Timber harvesting and recreation are the primary attributes in this management area. Additional attributes which were important in identifying this management area include:

- The management area falls within Niagaran Escarpment and Lake Plain subsection 8.1 of the eastern Upper Peninsula ecoregion (Albert, 1995).
- This is a small area of sand lake plain in the center of a broad clay lake plain. This sand plain consists of a series of ancient beach ridges and swales and is many miles from the present Great Lakes shoreline.
- This is an area of higher ground with upland cover types as compared with the adjacent management area which is comprised mainly of lowland forest cover types.
- Northern red oak is prevalent here. There is a northern red oak seed orchard in the management area.
- This management area is surrounding the former Kincheloe U.S. Air Force Base, now the Chippewa International Airport. A cellulosic ethanol production plant has been proposed in this area.
- There are some known archeological sites in the area; this area had prehistoric human use.
- Recreation use is high, with facilities including: motorcycle, snowmobile and cross country ski trails. The area is heavily used for hunting and fishing, and dispersed camping is popular.

The state land in this management area is fairly concentrated, though surrounded by private ownerships. The Kincheloe Highlands management area falls within the Sault Forest Management Unit. The predominant cover types, acreages and projected harvest acres for the management area are shown in Table 4.17.1.

Table 4.17.1. Current cover types, acreages, projected harvest acres and projected ten-year cover type acreage for the Kincheloe Highlands 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 |
| Aspen | 22% | 1,651 | 37 | 1,614 | 45 | 0 | 1,651 | 269 | 0 |
| Red Pine | 20% | 1,477 | 14 | 1,463 | 0 | 500 | 1,477 | 163 | 860 |
| Northern Hardwood | 13% | 991 | 0 | 991 | 0 | 396 | 991 | 0 | 430 |
| Lowland Open/Semi-Open Lands | 12% | 920 | 0 | 920 | 0 | 0 | 920 | 0 | 0 |
| Oak | 6% | 412 | 0 | 412 | 46 | 50 | 412 | 46 | 150 |
| Lowland Conifers | 3% | 208 | 190 | 18 | 0 | 0 | 208 | 2 | 0 |
| Lowland Spruce/Fir | 3% | 207 | 0 | 207 | 66 | 0 | 207 | 23 | 0 |
| Natural Mixed Pines | 3% | 196 | 0 | 196 | 28 | 76 | 196 | 18 | 76 |
| Upland Open/Semi-Open Lands | 4% | 326 | 0 | 326 | 0 | 0 | 326 | 0 | 0 |
| Misc Other (Water, Local, Urban) | 1% | 77 | 0 | 77 | 0 | 0 | 77 | 0 | 0 |
| Others | 14% | 1,010 | 68 | 942 | 136 | 129 | 1,010 | 91 | 153 |
| Total | 100% | 7,475 | 309 | 7,166 | 321 | 1,151 | 7,475 | 612 | 1,669 |

Others include: cedar, white pine, upland mixed forest, hemlock, lowland deciduous, mixed upland deciduous, jack pine, lowland aspen/balsam poplar, paper birch and upland spruce/fir.

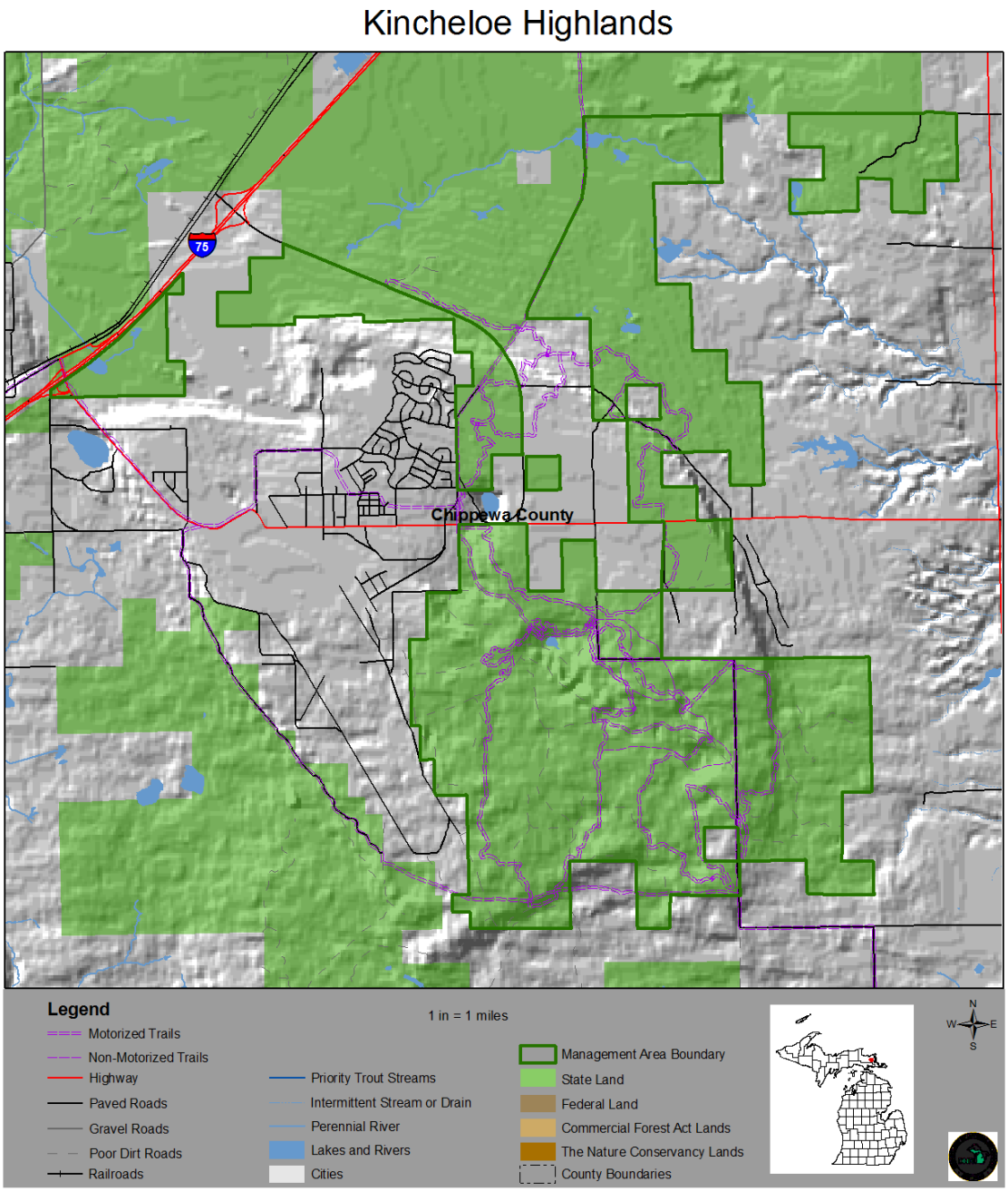


Figure 4.17.1. Location of the Kincheloe Highlands management area (dark green boundary) in relation to surrounding state forest lands, other ownerships and the former Kincheloe Air Force Base.

### 4.17.1 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.

#### 4.17.1.1 Forest Cover Type Management - Aspen

Current Condition

Aspen occurs on 1,651 acres (22%) of the management area (Table 4.17.1). Aspen stands are distributed throughout the management area on sandy, loamy soils with Kotar habitat types of PArVAa, ATFD and AFPo (see Appendix E). Aspen has been consistently harvested and regenerated resulting in stands in all age classes (Figure 4.17.2). Some of the aspen stands over rotation age may be in areas inaccessible to harvest.

There are currently 10 acres prescribed for final regeneration harvest. Currently there are 17 acres prescribed for harvest in a different cover type that are expected to convert to aspen after harvest. These acres are shown in Figure 4.17.2 in the regeneration prescription column. There are 37 acres of aspen 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 stands of aspen will eventually succeed to late successional species.

Desired Future Condition

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

10-Year Management Objectives

- The projected 10-year final harvest is 45 acres which is a reduction from the regulated harvest amount due to the large number of acres less than 30 years old.

Long-Term Management Objectives

- Balance the age classes of accessible aspen providing for a regulated harvest of approximately 269 acres per decade (red line in Figure 4.17.2).

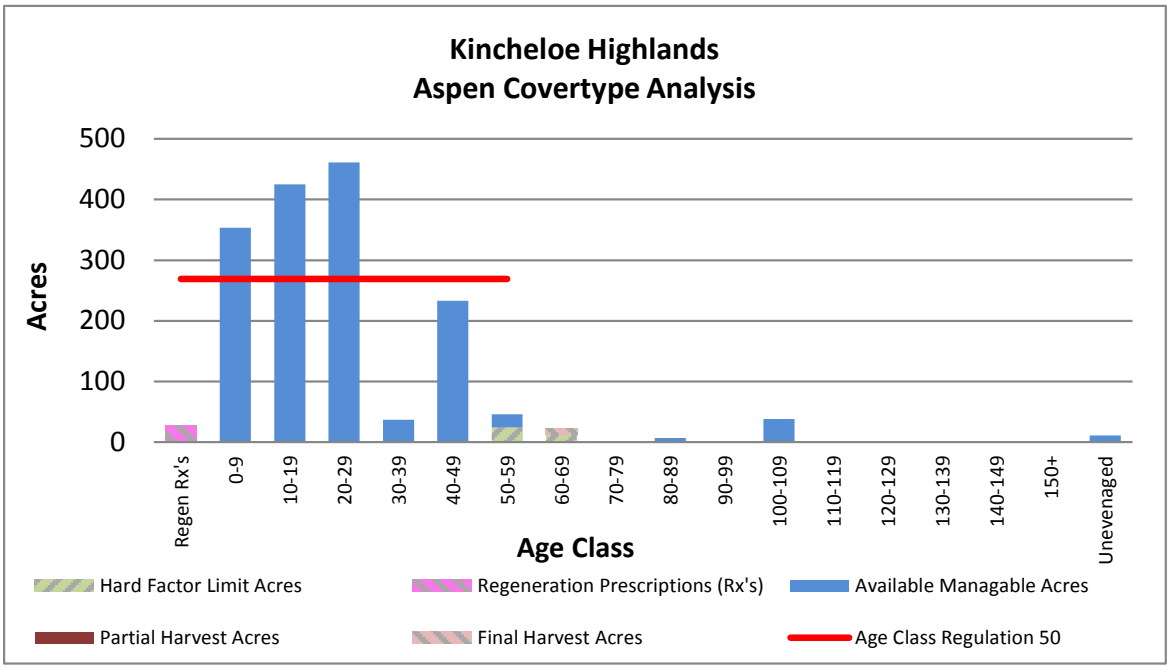

Figure 4.17.2. Age-class distribution of aspen in the Kincheloe Highlands management area (2012 Department of Natural Resources inventory data).

### 4.17.1.2 Forest Cover Type Management – Red Pine

Current Condition

Red pine stands are found on 1,477 acres (20%) of the management area (Table 4.17.1). The majority of the red pine stands in this management area are of planted origin in the 50-59 year age class (Figure 4.17.3). Most of these stands will be available for thinning in the next decade. Following standard guidelines, red pine stands will be thinned as they become available and approximately every ten years after until replacement harvest at economic maturity. At economic maturity, conduct final harvests followed by re-planting. Prescribed burning or the use of herbicide may be necessary to control competing vegetation, thus ensuring successful regeneration.

Currently there are 31 acres prescribed for final harvest, and 211 acres prescribed for partial harvest or thinning. There are a small number of acres currently prescribed in other cover types that are expected to be converted to red pine after harvest and some acres of red pine that will be converted to other cover types after harvest. These acres are shown in the regeneration prescriptions column in Figure 4.17.3. There are 14 acres of red pine 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.

Desired Future Condition

- Red pine stands will be maintained and managed through thinning until stand replacement harvest at economic maturity; and
- Acres will be 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 zero acres which is lower than the regulated harvest amount due to the young ages of the planted stands; and
- The projected partial harvest or thinning of red pine is 500 acres in stands 40-79 years old.

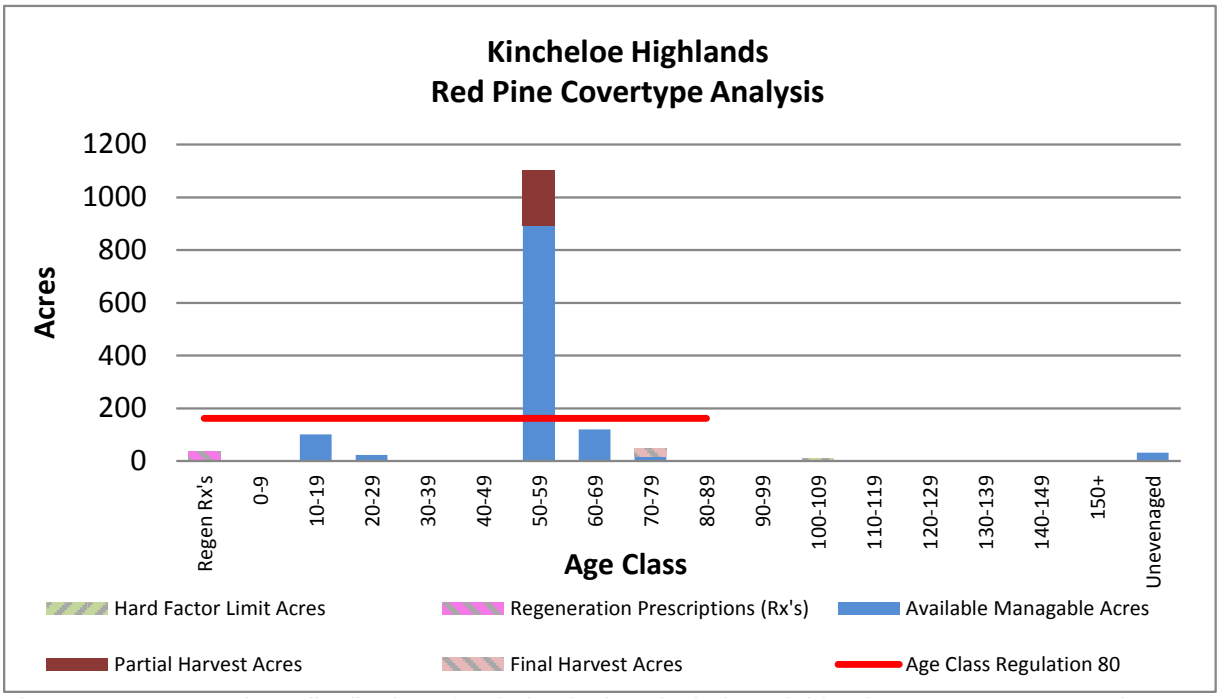

Figure 4.17.3. Age-class distribution of red pine in the Kincheloe Highlands management area (2012 Department of Natural Resources inventory data).

Long-Term Management Objectives

- Balance the age-class structure of red pine providing for a regulated harvest of approximately 163 acres per decade; and
- Stands will be periodically thinned until they meet silvicultural criteria.

**4.17.1.3 Forest Cover Type Management – Northern Hardwoods**

Current Condition

Northern hardwood occurs on 991 acres (13%) of the management area (Table 4.17.1). Northern hardwood stands are distributed throughout the management area on outwash plains and moraines with Kotar habitat types of ATFD and AFPo (see Appendix E). These hardwood stands often contain oak. The majority of the hardwood stands have been managed using individual tree selection to work toward an uneven-aged state. Figure 4.17.4 shows that the basal-area distribution of northern hardwood stands and also shows stands that have been recently harvested through even-aged systems in the immature column. Where stand quality warrants, harvests will use single tree selection maintaining structural and species diversity within the stands. Selection harvest will occur approximately every 20 years. Where site quality is poor shelterwood and other even-aged harvesting systems will be considered.

The majority of these hardwood stands do not contain beech, but beech bark disease is found within this management area. Northern hardwood stands that had a component of beech will now have decreased stocking levels due to beech bark disease mortality and salvage harvesting. Further selection harvesting in these stands will be delayed due to resultant lower than normal basal area.

Currently, six acres have a selection or partial harvest prescription assigned. There are no acres of northern hardwood with site conditions limiting harvest.

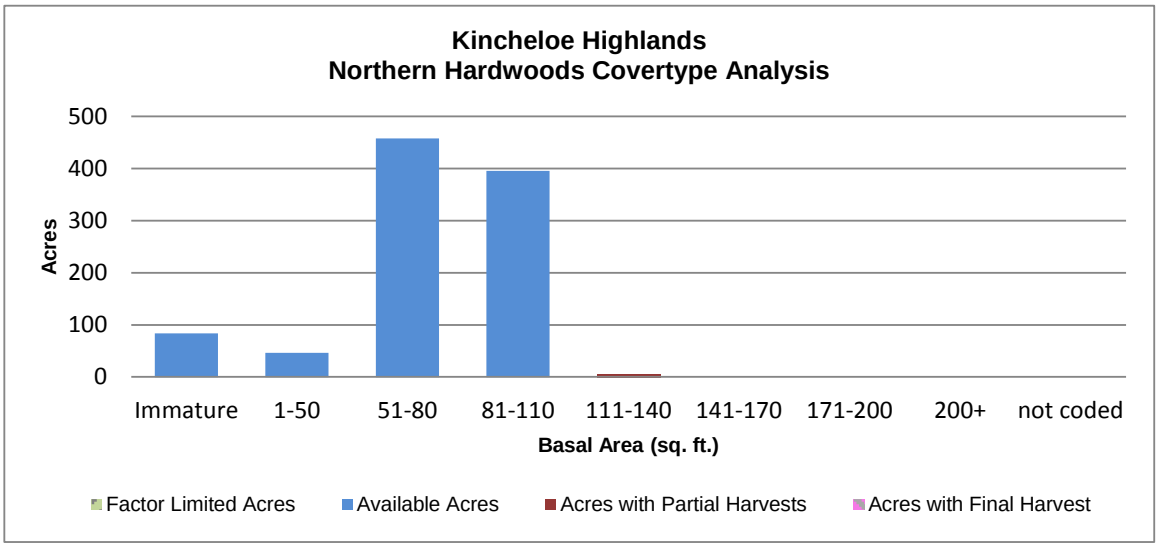

Figure 4.17.4. Basal area distribution of northern hardwoods in the Kincheloe Highlands management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Northern hardwood stands will be maintained on operable sites by using individual tree selection harvests to provide uneven-aged composition 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 ten-year projected partial or selection harvest is 396 acres of northern hardwood;
- Evaluate stands previously dominated by beech to determine the impact of beech bark disease on regeneration;
- Track beech regeneration in these stands;
- Consider herbicide applications on beech regeneration to promote regeneration of other species; and
- In areas that have lost beech to beech bark disease, consider planting disease resistant beech or oak to increase the availability of hard mast.

Long-Term Management Objectives

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

**4.17.1.4 Forest Cover Type Management – Lowland Open/Semi-Open Lands**

Current Condition

Lowland open/semi-open lands occur on 920 acres (12%) (Table 4.17.1). This category is a combination of lowland shrub (592 acres), marsh (268 acres), treed bog (six acres) and bog (54 acres). These cover types are valued ecologically as sources of habitat for numerous species of wildlife. Most lowland brush stands are found in association with streams and rivers which contributes to access issues. Many of these stands are seasonally flooded.

Desired Future Condition

- Lowland open/semi-open lands will be retained to ensure an adequate level of wildlife habitat and recreational opportunity.

Long-Term Management Objectives

- Continue to maintain this habitat type for wildlife and other ecological concerns without active management.

**4.17.1.5 Forest Cover Type Management – Oak**

Current Condition

Red oak occurs on 412 acres (6%) of the management area (Table 4.17.1). Oak stands are distributed throughout the management area on sandy or loamy soils with Kotar habitat types of PArVAa, ATFD and AFPo. Most of the oak is found in uneven-aged stands in conjunction with other tree species such as hardwoods and white pine.

Currently there are 48 acres of oak with a partial harvest prescribed (Figure 4.17.5). There are no acres of oak with site conditions limiting harvest.

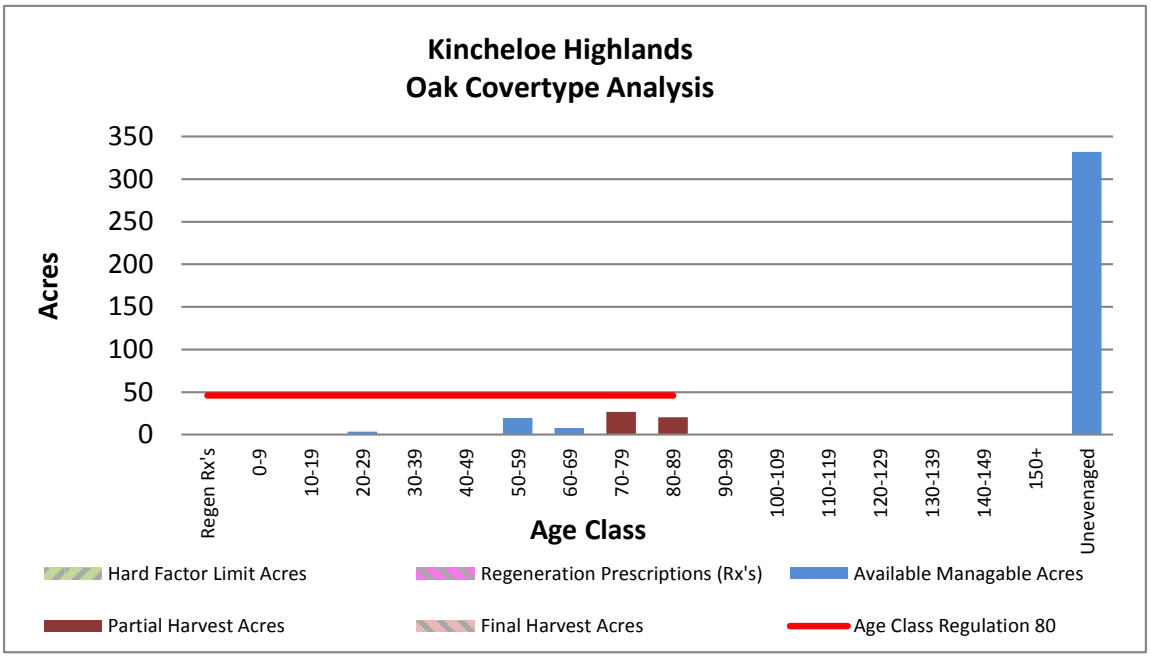

Figure 4.17.5. Age-class distribution of oak in the Kincheloe Highlands management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Red oak stands will be maintained and managed on operable sites through thinning until stand replacement harvest at economic maturity; and
- Acres will be 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 oak is 46 acres to begin balancing the age classes; and
- The 10-year projected partial harvest of oak stands is 50 acres.

Long-Term Management Objectives

- Balance the age classes of oak providing for a regulated harvest of approximately 46 acres per decade.

### 4.17.1.6 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 4.17.1). Upland open/semi-open lands (326 acres or 4%) is a combination of herbaceous open land, bare/sparsely vegetated and upland shrub. Lowland conifers (208 acres), lowland spruce/fir (207 acres) and natural mixed pines (196 acres) each have 3% of the total management area acres.

"Other types" (1,010 acres or 14%) is comprised of forested cover types each with 2% or less of the total management area acres: cedar (185 acres), white pine (173 acres), upland mixed forest (141 acres), hemlock (123 acres), lowland deciduous (117 acres), mixed upland deciduous (95 acres), jack pine(83 acres), lowland aspen/balsam poplar (67 acres), paper birch (19 acres) and upland spruce/fir (seven acres). In addition there are 77 acres (1%) of "miscellaneous other" stands, which includes water, sand/soil and roads.

With the exception of white pine and hemlock, the majority of these cover types will be managed as even-aged stands using natural regeneration after harvest. White pine and mixed cover types with high basal area may be thinned prior to final harvest depending on the species composition.

Approximately 259 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. Inaccessible stands may never be harvested and will be subject to successional processes.

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 66 acres of lowland spruce/fir, 28 acres of natural mixed pines and 136 acres of other types; and
- The projected 10-year partial harvest is 76 acres of natural mixed pines and 129 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.

### 4.17.2 - Featured Wildlife Species

Northern hardwoods in this management area have a much higher component of oak than in the surrounding areas. With beech bark disease being highly prevalent in the eastern Upper Peninsula, this source of mast is very important for wildlife species. In pine cover types, the retention of large mature trees is desirable for seed dependent species and in aspen cover types early successional age classes are desirable with retention of mesic conifer and coarse woody debris.

**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. State forest management for bear should focus on improving existing habitat (minimizing fragmentation and maintaining both hard and soft mast) in this management area.

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.

**Red Crossbill**

In the eastern Upper Peninsula, the goal for red crossbill is to maintain or increase suitable habitat. Management should focus on maintaining mature and over mature seed producing trees in priority areas.

Wildlife habitat specifications:

- Maintain a minimum of 15% of the total acres of appropriate cover types (upland spruce/fir, upland conifers, natural mixed pine and natural red and white pine) in the management area for red crossbill in a mature forest condition (i.e., >150 years for red pine, > 130 years for white pine and > 80 years for white spruce). This can be accomplished with existing factor-limited stands or alternatively by extending the rotation length of these types to 150, 130 and 80 years respectively. In this management area, older age classes for red crossbill habitat are being met by a large number of stands with site conditions that limiting harvesting.
- Retain large mature and over mature red pine, white pine and white spruce in shelter-wood and seed tree cuts.
- Evaluate the management area for the establishment of core tracts of old (greater than 100 years old) pine stands in biodiversity stewardship areas or Type 1 or Type 2 old growth.

**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.

Wildlife habitat specifications:

- Maintain the aspen cover type and increase the aspen component in mixed stands within the management area.
- Move to balance the age-class distribution of aspen and birch cover types 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 unharvested 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.

### 4.17.3 Rare Species and Special Resource Area Management

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

Past surveys have noted and confirmed one listed species and no natural communities of note occurring in the management area as listed in Table 4.17.2. 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 4.17.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Kincheloe Highlands 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 |
|---|---|---|---|---|---|---|---|---|
| **Birds** | | | | | | | | |
| Sharp-tailed grouse | *Tympanuchus phasianellus* | SC/G5/S4 | Confirmed | PS | Moderate | Pine barrens | Jack Pine | Early |
| | | | | | | Oak-pine barrens | Oak | Mid |
| | | | | | | Dry sand prairie | Upland open/semi-open | N/A |
| | | | | | | Wet-mesic sand prairie | Upland open/semi-open | N/A |
| | | | | | | Northern shrub thicket | 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.

This management area has a large deer wintering area that is a special conservation area (Figure 4.17.6).

Areas that might meet the definition of Type 1 and Type 2 old growth have been identified in an special resource area layer in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support System and area shown in Figure 4.17.6. This set of areas originated from a subset of forested natural communities within some state natural areas and all A/AB-ranked natural heritage database element occurrences. Within the Kincheloe Highlands management area there are 20 acres (Figure 4.17.6) identified as potential Type 2 dry-mesic northern forest.

There have been no high conservation value areas or ecological reference areas identified in this management area.

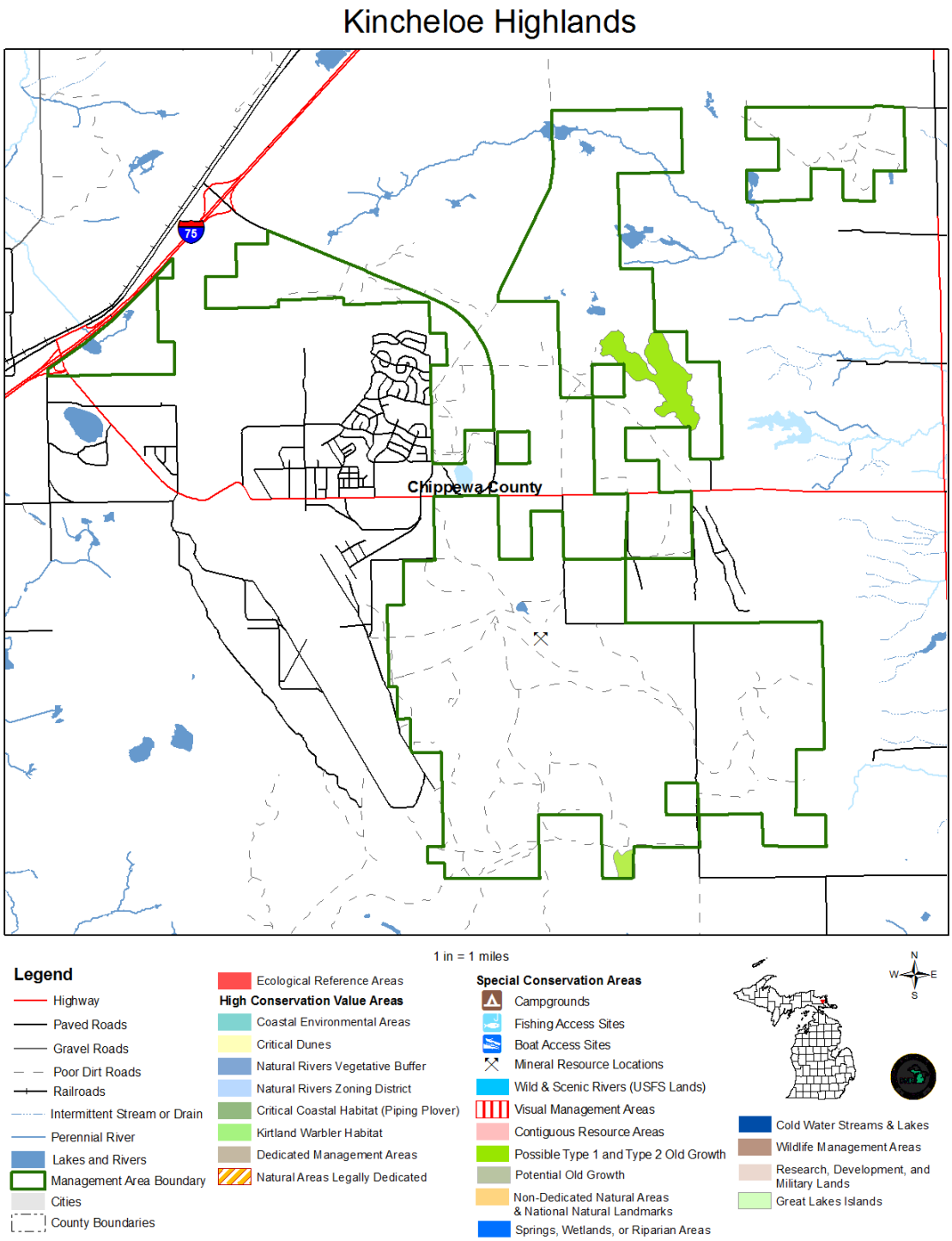


Figure 4.17.6. A map of the Kincheloe Highlands management area showing the special resource areas.

Management goals during this planning period:

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

**4.17.4 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 pine: red-headed pine sawfly;
- Northern hardwoods: beech bark disease;
- Aspen and lowland poplar: white trunk rot and *Hypoxylon* canker; and
- Oak: oak wilt.

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.

**4.17.5 Fire Management**

Fire likely maintained the pine and oak communities on the old beach ridges found in this management area. The adjacent wetlands would have also burned to some extent at the same time.

- Prescribed fire may be used to maintain the pine and oak communities in this management area.

**4.17.6 Public Access and Recreation**

Trash dumping is a continual problem, and there have been numerous trash clean-ups in the area. Road closures will be considered as needed to control illegal activity and to mitigate potential impacts to wetland soils.

Recreational trail facilities in this management area include Kinross Motorcycle Trail, snowmobile trails and the Pine Bowl cross country ski trail (Figure 4.17.1).

The Kinross Motorcycle Trail is designated motorcycle use only by Director's Order. Extreme care must be exercised to maintain the 24 inch trail bed.

**4.17.7 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. There are no designated high priority trout streams in this management area.

### 4.17.8 Minerals

Surface sediments consist of lacustrine (lake) sand and gravel, 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 this area and there is good potential for additional pits.

The Ordovician Stonington Formation, Utica and Collingwood Shales and Trenton Formation subcrop below the glacial drift. The Trenton is quarried for stone/dolostone 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 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.