

4.2 MA 2 – Battydoe Deer Yard Management Area

Summary of Use and Management

Management in the Battydoe Deer Yard management area (MA) (Figure 4.2.1) will emphasize critical wintering deer habitat, timber production and forest-based recreation. Deer travel long distances to this area to winter in the dense cedar near Lake Michigan. Timber harvesting activities are generally conducted in the winter to benefit the deer. Expected issues in this 10-year planning period include: difficulty of regenerating cedar and other tree species, introduced pests and diseases and illegal off-road vehicle use.

Introduction

The Battydoe Deer Yard management area is located in the central part of the eastern Upper Peninsula in Mackinac County. It has 16,689 acres of state-owned land. The primary attribute for this management area is the critical habitat for wintering deer. Additional attributes which were important in identifying this management area include:

- The management area falls within the Niagaran Escarpment and Lake Plain subsection 8.1 of the eastern Upper Peninsula ecoregion (Albert, 1995).
- The dominant landform consists of extensive conifer-dominated wetlands on sandy lake plain. Upland sites feature northern hardwoods and aspen. Dune and swale landforms are found along the southern edge of the management area.
- Recreational opportunities including hunting, trapping and fishing.
- A large, active limestone quarry is adjacent to the west and north of the management area.

The state forest land in this management area is concentrated, with a few private in-holdings. The Battydoe Deer Yard management area falls within the Sault Ste. Marie Forest Management Unit. The predominant cover types, acreages and projected harvest acres in the management area are shown in Table 4.2.1.

Table 4.2.1. Current cover types, acreages, projected harvest acres and projected 10-year cover type acreage for the Battydoe Deer Yard 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 |
| Cedar | 34% | 5,665 | 86 | 5,579 | 50 | 0 | 5,665 | 349 | 0 |
| Northern Hardwood | 20% | 3,368 | 254 | 3,114 | 0 | 1,327 | 3,368 | 0 | 1,327 |
| Aspen | 12% | 2,012 | 48 | 1,964 | 100 | 0 | 2,012 | 327 | 0 |
| Lowland Conifers | 5% | 831 | 35 | 796 | 108 | 0 | 831 | 88 | 0 |
| Mixed Upland Deciduous | 5% | 803 | 12 | 791 | 115 | 195 | 803 | 113 | 195 |
| Lowland Deciduous | 5% | 763 | 108 | 655 | 0 | 0 | 763 | 73 | 0 |
| Lowland Open/Semi-Open Lands | 4% | 720 | 0 | 720 | 0 | 0 | 720 | 0 | 0 |
| Lowland Aspen/Balsam Poplar | 3% | 455 | 92 | 363 | 0 | 0 | 455 | 61 | 0 |
| Paper Birch | 2% | 328 | 50 | 278 | 0 | 0 | 328 | 46 | 0 |
| Upland Spruce/Fir | 2% | 319 | 66 | 253 | 36 | 0 | 319 | 36 | 0 |
| Upland Open/Semi-Open Lands | 2% | 277 | | 277 | | | 277 | | |
| Misc Other (Water, Local, Urban) | 2% | 291 | 0 | 291 | 0 | 0 | 291 | 0 | 0 |
| Others | 5% | 857 | 164 | 693 | 189 | 113 | 857 | 76 | 125 |
| Total | 100% | 16,689 | 913 | 15,775 | 598 | 1,635 | 16,689 | 1,169 | 1,647 |

Other Types include: lowland spruce/fir, upland mixed forest, lowland mixed forest, upland conifers, white pine and tamarack.

Battydoe Deer Yard

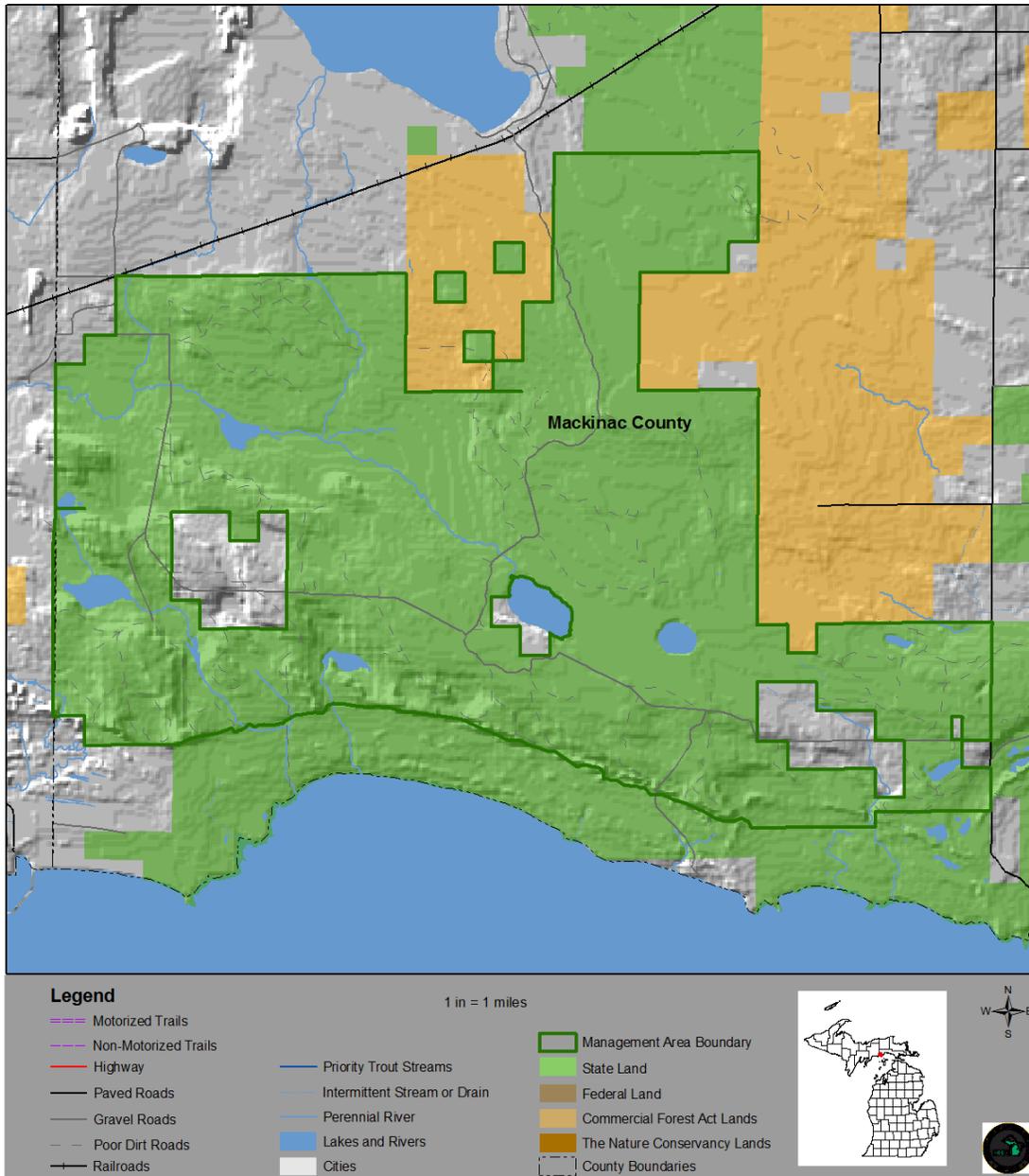


Figure 4.2.1. Location of the Battydoe Deer Yard management area (dark green boundary) in relation to the surrounding state forest lands and other ownerships.

4.2.1 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 (e.g., 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 canopy species.

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 4.2.1.1 Forest Cover Type Management - Cedar

Current Condition

Cedar occurs on approximately 5,762 acres (34%) of the management area (Table 4.2.1). All of the cedar stands in this management area are within an important deer wintering habitat special conservation area; therefore, the primary management for cedar in this management area will be to maintain closed canopy conditions. Maintaining a closed canopy structure provides important cover for deer, reducing snow depths within the stands. The majority of cedar stands are over 100 years of age (Figure 4.2.2). Cedar harvesting in this area has been limited by the combined effect of high deer numbers and low snowfall on cedar regeneration. Cedar strip cut harvesting was done on an experimental basis and resulted in cedar regeneration. 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, making it important to ensure that cedar and/or hemlock recruitment/regeneration is reliable, if harvesting in this cover type.

Currently, there are no cedar stands prescribed for harvest. While a regulated harvest would allow approximately 349 acres to be harvested per decade (red line in Figure 4.2.2), this is currently not a focus of cedar management in this management area due to the deer wintering area.

There are 86 acres of cedar that have site conditions limiting their harvest this 10-year planning period. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations.

Desired Future Condition

- Cedar trees are very long lived and generally provide excellent closed canopy habitat for wildlife. In areas where deer browse is a concern, these stands may not be actively harvested at this time.

10-Year Management Objectives

- The 10-year projected harvest of cedar is approximately 50 acres. This is lower than the regulated amount of 349 acres per decade due to the use of cedar stands by wintering deer; and
- Harvest of this type, if it occurs, may vary widely from the projected harvest, in order to meet the long-term wildlife management objectives.

Long-Term Management Objectives

- Cedar stands will be managed to maintain habitat for deer in the wintering areas and to retain this forest type in the landscape; and
- Look for opportunities to test different methods of regenerating cedar.

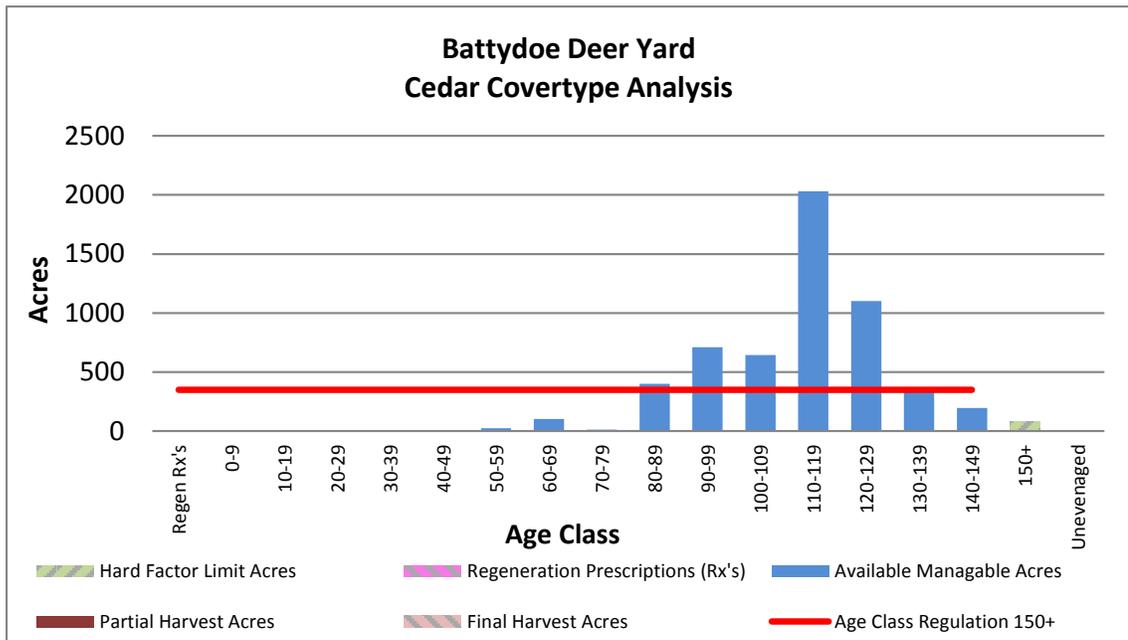


Figure 4.2.2. Age class distribution of cedar in the Battydoe Deer Yard management area (2012 Department of Natural Resources inventory data).

Section 4.2.1.2 Forest Cover Type Management – Northern Hardwoods

Current Condition

Northern hardwood cover types occur on 3,368 acres (20%) of the management area (Table 4.2.1). Northern hardwoods are distributed throughout the management area on mesic medium to rich nutrient loam soils (Kotar habitat classes: AFPO, AFOAs and ATFD (see Appendix E). Approximately 20% of the hardwood stands have been classified as uneven-aged, with trees of varying ages and sizes. While the majority of stands will be managed through individual tree selection to work toward an uneven-aged state, poor quality stands have been managed using even-aged harvesting systems and just over 10% of the stands are currently coded as immature (Figure 4.2.3). Regeneration of hardwood stands in this management area has been impacted by high deer numbers and a large percentage of the regeneration is beech, as it is not a preferred food source of deer.

Beech bark disease has impacted the management area, resulting in high beech mortality. This management area is past the killing front of beech bark disease, and salvage of affected beech is ongoing. Northern hardwood stands that had a component of beech now have decreased stocking levels due to beech bark disease mortality and salvage harvesting. Further selection harvesting will be delayed, due to resultant lower than normal residual basal area.

Currently, 662 acres have a partial harvest method of cut assigned. In addition, there are 27 acres of poor-quality hardwoods that have a final harvest prescribed. There are 254 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.

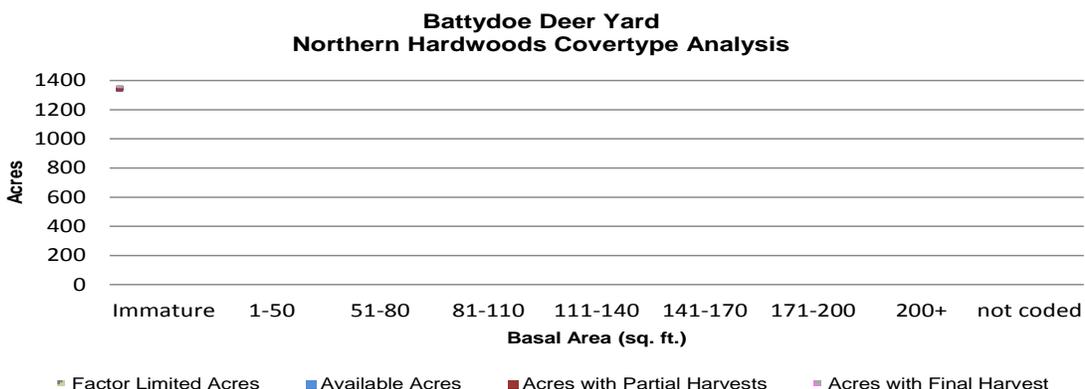


Figure 4.2.3. Basal area distribution of northern hardwoods in the Battydoe Deer Yard management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

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

10-Year Management Objectives

- The projected 10-year harvest is for 1,327 acres of partial or selection harvest;
- Evaluate stands previously dominated by beech to determine the impact of beech bark disease on regeneration;
- Track beech regeneration in these stands; and
- Favor regeneration of hardwood other than beech; consider herbicide applications of beech regeneration and planting of hard mast producing trees, including disease resistant beech and oak.

Long-Term Management Objectives

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

Section 4.2.1.3 Forest Cover Type Management – Aspen

Current Condition

Aspen occurs on 2,012 acres (12%) of the management area (Table 4.2.1). Aspen is distributed throughout the management area on mesic poor- to medium- to rich-nutrient sandy loam soils with ATFD, AFPO and AFOAs Kotar habitat classes. Accessible aspen has been consistently harvested over the last 30 years, resulting in approximately 80% of the aspen stands being in the 0-29 year age classes (Figure 4.2.4).

Currently, there are 28 acres prescribed for final harvest. There are 24 acres prescribed for harvest in other cover types that are expected to convert to aspen after harvest. These acres are shown in Figure 4.2.3 in the regeneration prescriptions column and were removed from the manageable acres in the other types. There are 48 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 aspen will eventually succeed to late successional species.

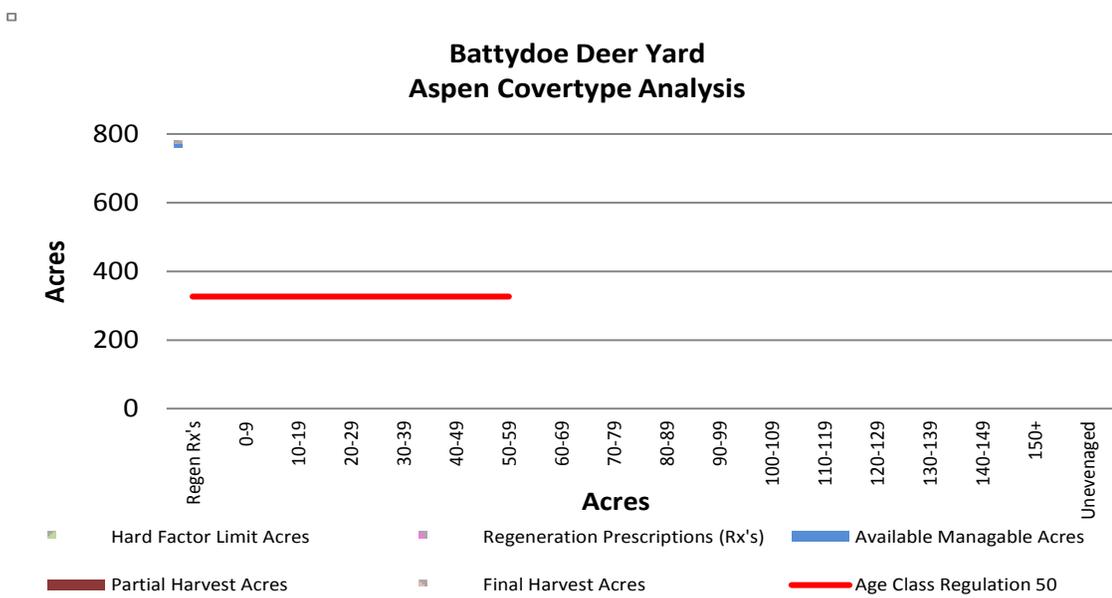


Figure 4.2.4. Age-class distribution of aspen in the Battydoe Deer Yard management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

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

10-Year Management Objectives

- Due to the current age-class structure, the projected 10-year final harvest of aspen is 100 acres. This is less than the regulated amount due to the current age-class structure. To achieve this projected harvest level, some stands will be harvested before reaching rotation age.

Long-Term Management Objectives

- Balance the age-class structure of aspen by harvesting and regenerating the regulated amount of approximately 327 acres per decade (red line in Figure 4.2.4).

Section 4.2.1.4 Forest Cover Type Management – Lowland Conifers

Current Condition

Lowland conifers occur on approximately 831 acres (5%) of the management area (Table 4.2.1). Lowland conifer stands have been successfully harvested and regenerated in this area, resulting in many age classes (Figure 4.2.5). Many of the lowland conifer stands in this management area will be managed for deer wintering habitat. While deer may affect the regeneration of cedar, natural regeneration consisting of other species currently on site is expected after harvesting. Some of the stands in older age classes may be inaccessible for harvest at this time due to access.

Currently, there are 23 acres with a final harvest prescription, and 46 acres with a partial harvest prescription. There are 35 acres of lowland conifer that have site conditions limiting their harvest this entry period. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Lowland conifer stands in inaccessible areas will be subject to natural processes, resulting in a range of successional stages.

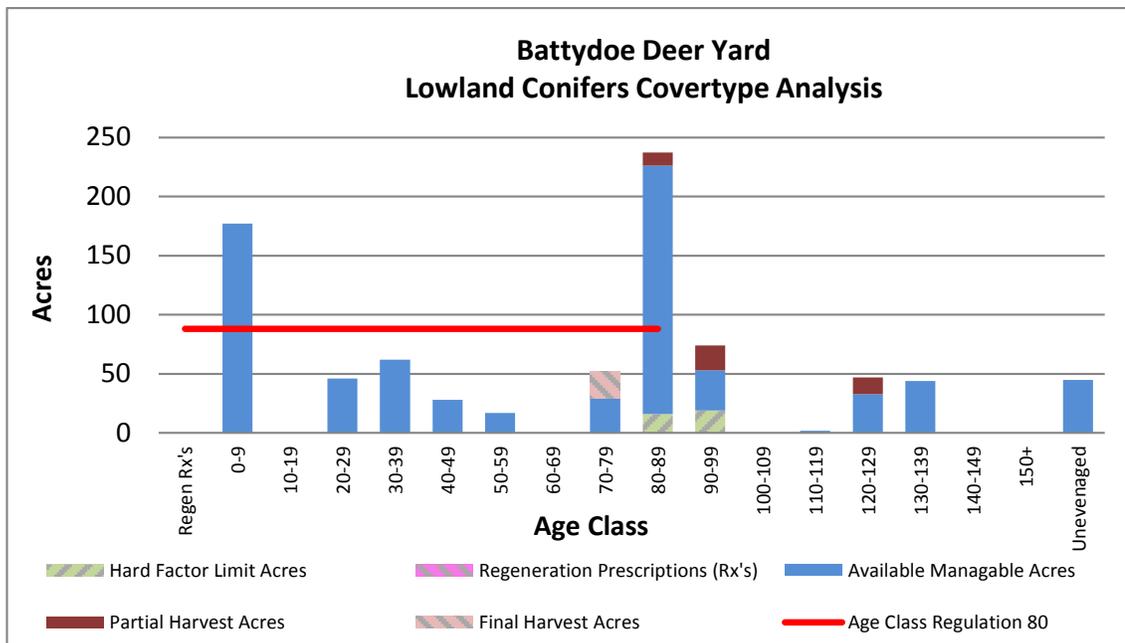


Figure 4.2.5. Age-class distribution of lowland conifers in the Battydoe Deer Yard management area (2012 Department of Natural Resources inventory data).

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. This will provide for a continuous supply of timber, available wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The projected 10-year final harvest for lowland conifers is 108 acres. The 10-year projected harvest is slightly higher than the regulated harvest amount, due to the current age class structure where there are a lot of acres in the 80-89 year age class.

Long-Term Management Objectives

- Balance the age-class structure of available lowland conifer stands providing a regulated harvest of approximately 88 acres to be harvested per decade; and
- Minimize the impact of high deer numbers on the species composition of regeneration.

Section 4.2.5 Forest Cover Type Management – Mixed Upland Deciduous

Current Condition

Mixed upland deciduous stands occur on 803 acres (5%) of the management area (Table 4.2.1). As the name suggests, these stands occur on upland sites and contain a variety of tree species. The species composition varies from stand to stand, but normally includes hardwood species such as aspen, birch, maple, beech and cherry. Conifer species may also be present, but normally compose less than 20% of the crown closure. Depending upon their species mix, mixed upland deciduous stands with high basal area may be thinned before reaching rotation age where final harvest normally occurs. Natural regeneration has been successful in mixed upland deciduous stands in this management area.

Currently, there are 66 acres prescribed for final harvest (Figure 4.2.6). There are 12 acres of mixed upland deciduous 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. Mixed upland deciduous stands in inaccessible areas will be subject to natural processes, resulting in a range of successional stages.

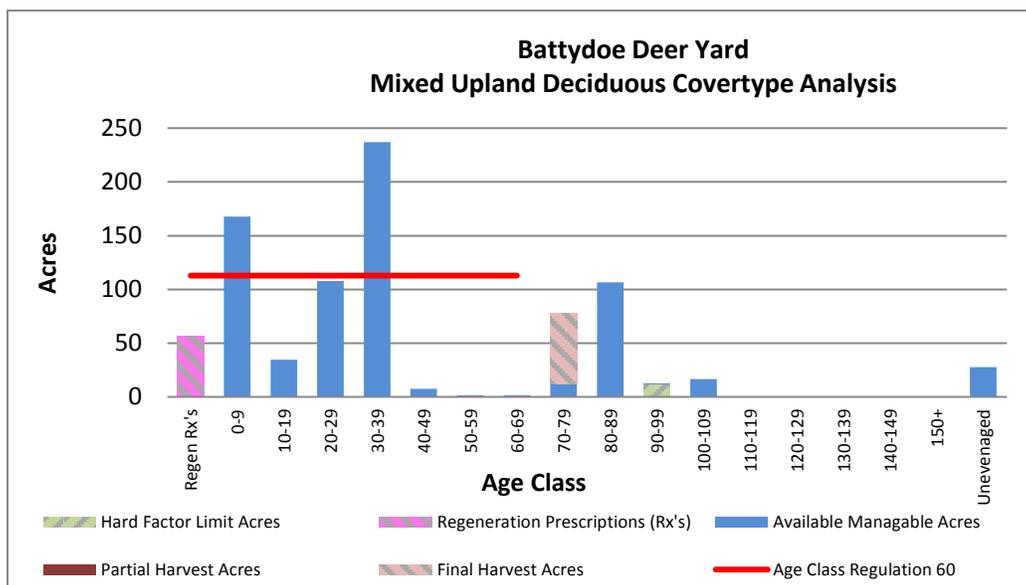


Figure 4.2.6. Age-class distribution of mixed upland deciduous in the Battydoe Deer Yard management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Mixed upland deciduous stands will be maintained on operable sites through even-aged management, with acres balanced between 0-69 years of age. This will provide for a continuous supply of timber, available wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The projected 10-year final harvest for mixed upland deciduous stands is 115 acres; and
- The projected 10-year partial harvest or thinning of stands with high basal area is 195 acres.

Long-Term Management Objectives

- Balance the age-class structure of available mixed upland deciduous stands producing a regulated harvest of approximately 113 acres to be final harvested per decade; and
- Prior to final harvest at rotation age and dependent upon species composition, periodically thin stands with high basal area.

Section 4.2.6 Forest Cover Type Management – Lowland Deciduous

Current Condition

Lowland deciduous cover types occur on 763 acres (5%) of the management area (Table 4.2.1). Lowland deciduous stands have been successfully harvested and regenerated in this area, resulting in many age classes (Figure 4.2.7). These stands are generally managed using even-aged systems, followed by natural regeneration.

Currently there are 67 acres with a partial harvest method of cut prescribed. In addition, there are approximately 33 acres in other cover types that are currently prescribed for harvest, that are expected to convert to lowland deciduous after harvest. These acres are shown in Figure 4.2.7 in the regeneration prescriptions column. There are 108 acres of lowland deciduous that have site conditions limiting their harvest this entry period. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Lowland deciduous stands in areas inaccessible for harvest will be subject to natural processes, resulting in a range of successional stages.

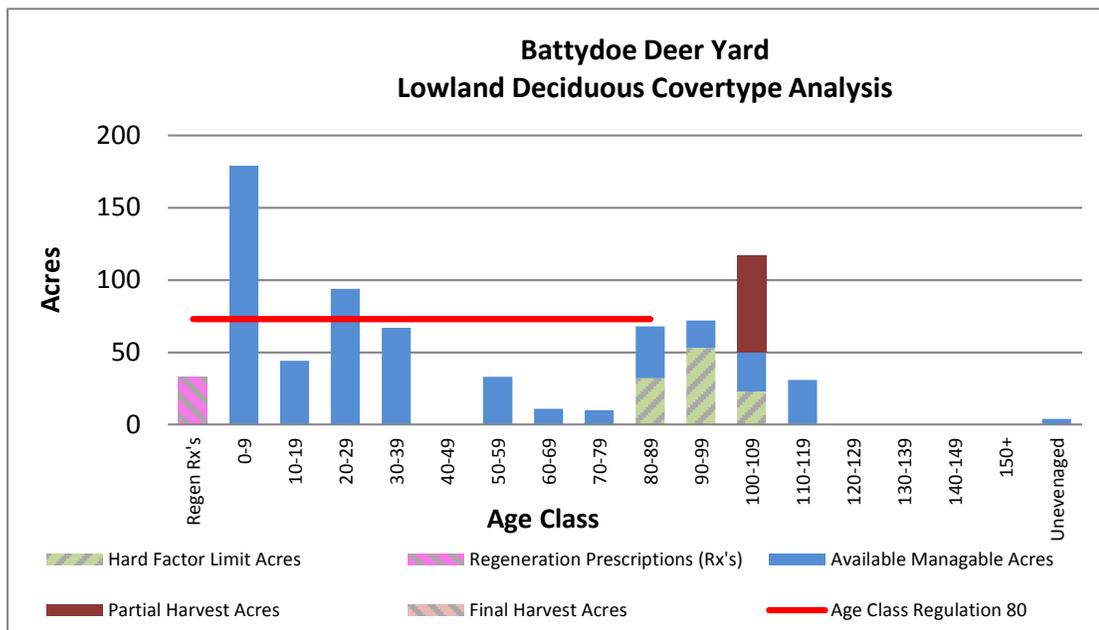


Figure 4.2.7. Age-class distribution of lowland deciduous in the Battydoe Deer Yard management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Lowland deciduous 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 harvest is zero acres due to the large number of acres in the 0-9 year age class.

Long-Term Management Objectives

- Balance the age-class structure of accessible stands providing a regulated harvest of approximately 73 acres to be harvested per decade.

Section 4.2.1.7 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 4.2.1). Lowland open/semi-open lands (720 acres or 4%) is made up of lowland shrub (566 acres), bog (59 acres), marsh (55 acres) and treed bog (40 acres). Paper birch (328 acres) and upland spruce/fir (318 acres) each contain about 2% of the total acres. Upland open/semi-open lands (277 acres or 2%) is made up of herbaceous open land (124 acres), low-density trees (113 acres), upland shrub (24 acres) and bare/sparsely vegetated (1 acre).

The “others” category with 857 acres (5%) includes cover types with less than 2% of the total acres: lowland spruce/fir, upland mixed forest, lowland mixed forest, upland conifers, white pine and tamarack. In addition, there are 291 acres (2%) of “miscellaneous other” stands, which include water, sand/soil and roads.

In general, most of these cover types are managed as even-aged stands, using natural regeneration after harvest. Some of the mixed cover types with high basal area may be thinned, depending upon their species composition, prior to final harvest. Approximately 371 acres of these other minor cover types have site conditions limiting harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Early successional cover types found in inaccessible areas will move toward mid and late successional cover types.

Desired Future Condition

- These cover types will be maintained on suitable sites and will contribute to the compositional diversity of the landscape while providing forest products and wildlife habitat.

10-Year Management Objectives

- The projected 10-year final harvest includes: 36 acres of upland spruce/fir and 189 acres of other types; and
- The projected 10-year partial harvest is 113 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.

4.2.2 Featured Species Management

This is a key area for wintering deer in the Lake Michigan watershed. The primary wildlife value of this management area is provided by cedar and lowland conifer stands. The vast majority of these cover types are in mature age classes and are used by approximately 80 species of wildlife. The spatial arrangement of other forest cover types, northern hardwoods in particular, make this management area biologically diverse.

Red-shouldered Hawk

The goal for red-shouldered hawk is to maintain or improve suitable habitat in the ecoregion. Management activities should focus on the maintenance of large blocks of mesic northern forest with the appropriate level of large diameter trees in priority landscapes.

Wildlife habitat specifications:

- All known woodland raptor nests should be reported to local wildlife staff and included in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment. Confirmed red-shouldered hawk nests are to be documented in accordance with the “DNR’s Approach to the Protection of Rare Species on State Forest Lands” (IC4172) and included in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment. For red-shouldered hawks, 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.

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 within this management area.

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 type to maintain young forests across the management area.
- Ideal aspen stands will be of 40-160 acres under a 50-60 year rotation.
- Larger harvest units should have irregular boundaries and include one or two 1-3 acre 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 in 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.

Snowshoe Hare

The goal for snowshoe hare in the eastern Upper Peninsula is to increase available habitat in the ecoregion. In priority landscapes, management should focus on maintaining young aspen adjacent to lowlands, maintaining jack pine, retaining coarse woody debris, 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.
- In hare habitat, discourage biomass harvesting and chipping operations in this management area.
- Retain down coarse woody debris slash already present 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, retaining the maximum residues.

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 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 of tree species, particularly white cedar and hemlock. It is recognized that meeting both timber management and deer goals presents challenges for the DNR 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 breakout areas by maintaining open hardwood stands on southern exposures and herbaceous openings adjacent to deer wintering complexes.
- When possible, timber harvests within deer wintering complexes should be carried out only during winter months and tops should be left. Chipping of non-bole wood and whole-tree harvesting in the deer wintering complexes should be avoided, but will be discussed on a case-by-case basis through the compartment review process.
- Harvests of cedar and hemlock may only be conducted when:
 - There is reasonable confidence of successful recruitment/regeneration of the cover types; or
 - There is a forest health issue (e.g., hemlock wooly adelgid); or
 - Part of an approved research project; or
 - Removal of selected trees will facilitate a reduction of harvest trails, landings, etc. to minimize soil sedimentation and possible soil compaction issues.
- Provide fall foods in the form of hard and soft mast, and provide dense escape cover or bedding areas in the form of early successional forests, brush and warm-season grasses that will encourage fall deer use in areas open to public hunting. Where habitat types are appropriate, increase diversity of hard mast by planting oak.

4.2.3 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 “Rare Species Protection Approach and Assessment Guidelines for DNR Staff on State Forest Lands (IC 4172). 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 three listed species and one natural community as shown in Table 4.2.2. Any established management guidelines will be followed.

Table 4.2.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Battydoe Deer Yard 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 Communities | | | | | | | | |
| Wooded dune and swale complex | | S3/G3 | Confirmed | | | | Upland open/semi-open | N/A |
| Birds | | | | | | | | |
| Red-shouldered hawk | <i>Buteo lineatus</i> | T/G5/S3-4 | Confirmed | PS | Very High | Floodplain forest | Lowland mixed | Mid |
| | | | | | | Dry-mesic northern forest | White Pine | Late |
| | | | | | | Mesic northern Forest | Northern Hardwood | Late |
| 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 |

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

This entire management area provides winter habitat for white-tailed deer and is designated as an obligate winter deer range special conservation area. Other special conservation areas within the management area are possible Type 1 or Type 2 old growth areas and the Milakokia River cold water stream.

There are currently no identified high conservation value areas in this management area.

There are two wooded dune and swale complex ecological reference areas of 145 and 11 acres within the management area. The majority of the wooded dune and swale complex ecological reference areas are in the Lake Michigan Shoreline management area to the south. Ecological reference areas will be managed to enhance and protect their natural vegetative and associated wildlife communities by an ecological reference area-specific management plan. Figure 4.2.8 shows the special conservation areas and ecological reference areas for this management area.

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 and potential Type 2 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.

Battydoe Deer Yard

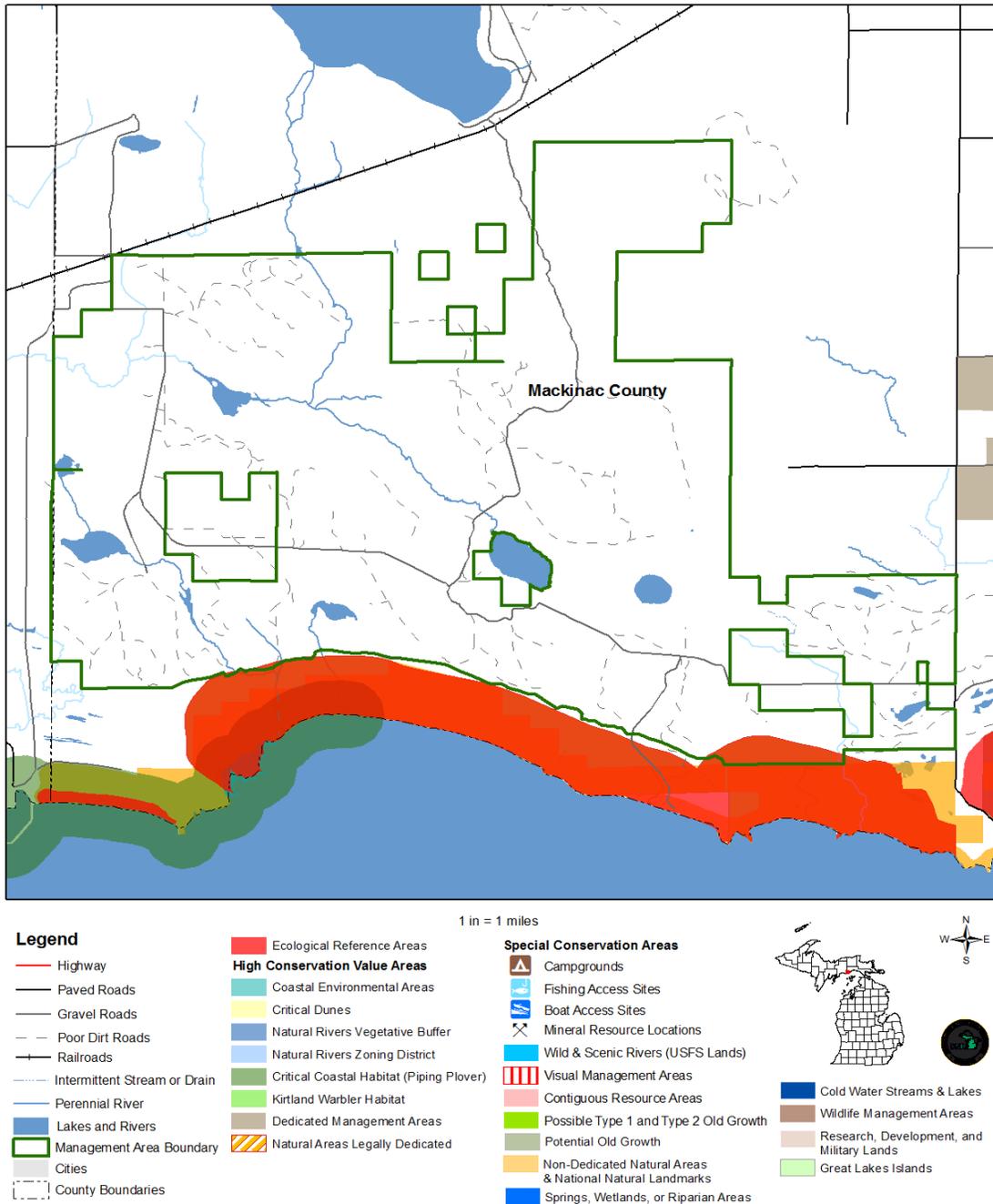


Figure 4.2.8. A map of the Battydoe Deer Yard management area showing the special resource areas.

4.2.4 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
- Aspen and lowland aspen/balsam poplar: white trunk rot and *Hypoxyylon* canker
- Upland and lowland conifers: spruce budworm, eastern larch beetle and larch casebearer
- Lowland deciduous: emerald ash borer

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

Invasive Plant Species

Invasive exotic species, specifically plants, may pose a significant forest health threat to forested and non-forested areas throughout the management area. No invasive plant species have yet been documented within the management area, but garlic mustard has been documented within a five mile buffer of the management area (Table 4.2.3), 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.

While it is not yet listed in the Michigan Invasive Plant database, there have been sightings of wild parsnip (*Pastinaca sativa*) in the management area.

Table 4.2.3. Invasive plant species within or near the Battydoe Deer Yard management area (Data from the Michigan Invasive Plant Identification Network database).

| Battydoe Deer Yard - FRD Management Areas | Cases within FRD Areas | Cases within 5 Mile Buffer | Total number of cases | Total number of different Invasive Species |
|---|------------------------|---|-----------------------|--|
| | 0 | 4 | 4 | 1 |
| Invasive Species within FRD Areas | Occurrences | Invasive Species within 5 Mile Buffer | | Occurrences |
| - | - | Garlic Mustard <i>Alliaria petiolata</i> | | 4 |

4.2.5 Fire Management

Much of the land area, being wetland, is of uncertain fire frequency. Sites dominated by northern white cedar and hardwood islands probably will not be significantly impacted by wildland fire. Black spruce, treed bogs and marshes may be more receptive to fire ignition and spread with lower water levels. The following fire management concepts should be applied in the management area:

- Fire may be used as a management tool in these lowland conifer stands under appropriate conditions.

4.2.6 Public Access and Recreation

Access to portions of the management area is limited by lack of roads, and streams and small lakes.

There are no established recreational facilities in this management area.

Snowshoe hare, deer, bear and bobcat hunting and trapping are important forms of recreation in this management area.

4.2.7 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 identified in this management area.

4.2.8 Minerals

Surface sediments consist of an coarse-textured till, peat and muck and lacustrine (lake) sand and gravel. There is insufficient data to determine the glacial drift thickness. Sand and gravel pits are located in the area, but there is potential.

The Silurian Engadine and Manistique Groups subcrop below the glacial drift. The Engadine 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. (two in western Mackinac 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.