

4.13 MA 13 - Gogomain Management Area

Summary of Use and Management

Vegetative management in the Gogomain Swamp management area (MA) Figure 4.13.1) will provide timber products; maintain or enhance wildlife habitat; protect areas of unique character, including rich conifer swamp, deer wintering area special conservation area and threatened, endangered and special concern species; and provide for forest based recreational uses. A large portion of this management area was recently purchased with wildlife funds for deer habitat. There are other lands in this area under consideration for purchase to enhance the deer wintering complex and wildlife use capability. Management of the Gogomain Swamp is focused on providing deer habitat. Timber management within the management area will occur in accessible areas and will focus on improving age class diversity. Expected issues in this 10-year planning period include illegal use of off-road vehicles, introduced pests and diseases and introduction and spread of invasive species.

Introduction

The Gogomain management area is located in the far south-eastern portion of the eastern Upper Peninsula in Chippewa County. It has 7,226 acres of state-owned land. The large western block of this management area was recently purchased with wildlife funds and hence wildlife management is the primary purpose for ownership and for selection as a management area. Additional attributes which were important in identifying this management area include:

- The management area is within the Niagaran Escarpment and Lake Plain subsection VIII.1 (Albert, 1995).
- The dominant landform consists of clay lake plain modified by glacial outwash commonly known as the Rudyard clay flats. Due to the unique geology of the lakeshore, there is an exposed area of fossil beds along the St. Mary's River.
- Past history includes the location of lumber camps in the area.
- Love and Hart Islands, in the St. Mary's River, have historic and prehistoric values. Great Lakes Islands provide significant habitat for numerous species including many rare plants and animals, several of which are endemic or largely restricted to the Great Lakes region. Due to their isolation, islands provide good examples of many Great Lakes-associated natural communities and ecosystems. Specific wildlife values include their value to colonial nesting waterbirds, migratory waterfowl and neotropical migrants who rest and feed on islands on their migration through the Great Lakes. The primary management objectives for Great Lakes islands include the protection of ecological and natural functioning ecosystems and the above mentioned groups of species.
- Lime Island State Recreation Area is near Love and Hart islands.
- Special features including a special conservation area deer wintering area, a coastal environmental area high value conservation area, a rich conifer swamp and several threatened and endangered species.

The state owned land in this management area is concentrated into two larger parcels with smaller parcels to the south. It is surrounded by private ownerships. The Gogomain 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 4.13.1.

Gogomain

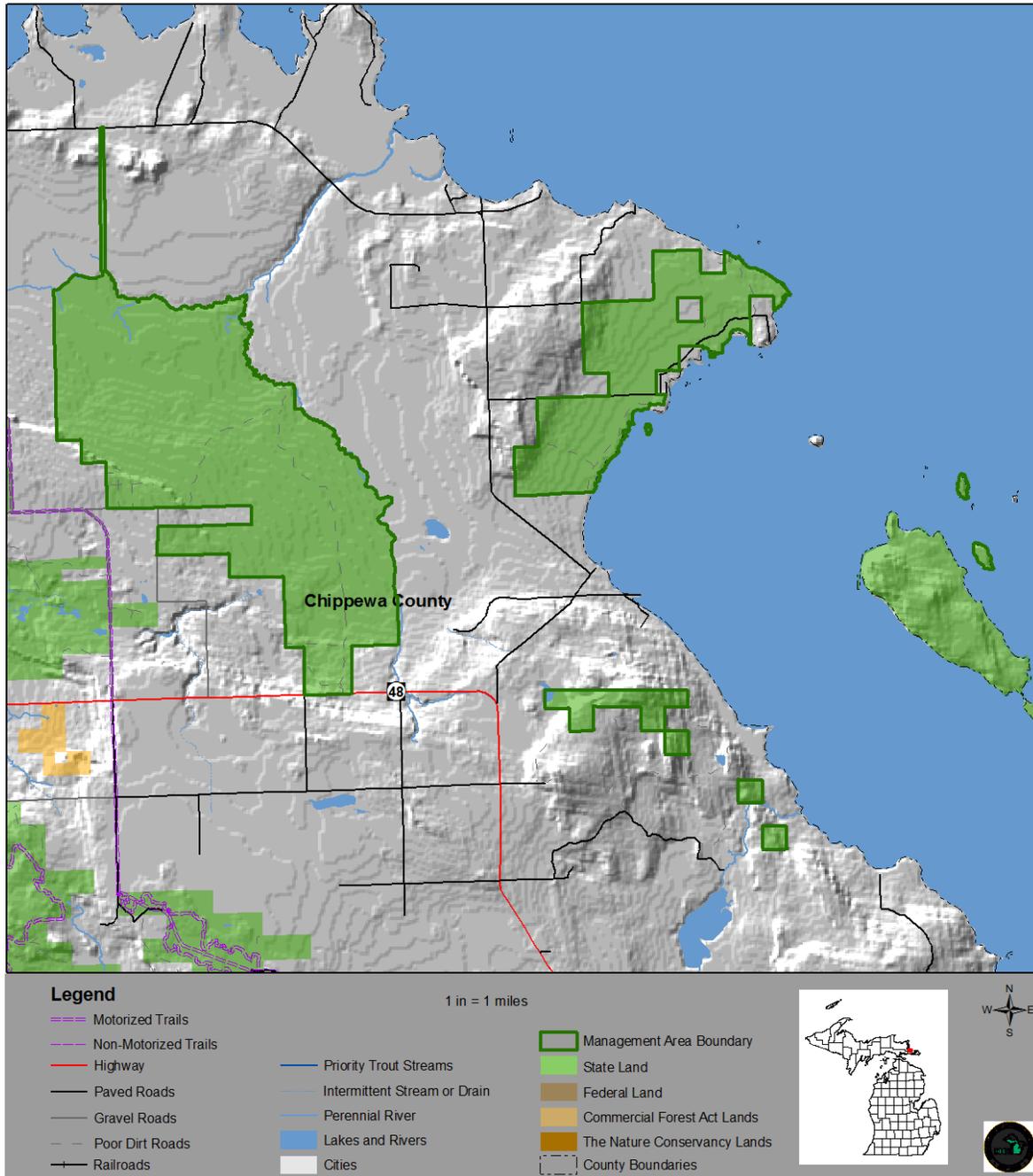


Figure 4.13.1. Location of the Gogomain management area (dark green boundary) in relation to surrounding state forest lands, other ownerships and the St. Mary's River.

Table 4.13.1. Current cover types, acreages, projected harvest acres and projected ten-year cover type acreage for the Gogomain 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	61%	4,394	0	4,394	0	0	4,394	275	0
Northern Hardwood	7%	495	0	495	0	203	495	0	203
Lowland Open/Semi-Open Lands	5%	369	0	369	0	0	369	0	0
Lowland Mixed Forest	5%	348	33	315	123	0	348	35	0
Lowland Conifers	5%	332	290	42	18	0	332	5	0
Lowland Deciduous	5%	326	41	285	32	0	326	32	0
Aspen	4%	262	140	122	0	0	262	20	0
Tamarack	4%	254	0	254	36	0	254	36	0
Upland Open/Semi-Open Lands	0%	20	0	20	0	0	20	0	0
Misc Other (Water, Local, Urban)	0%	10	0	10	0	0	10	0	0
Others	6%	416	70	346	68	23	416	49	33
Total	100%	7,226	574	6,652	276	226	7,226	452	236

Others include: paper birch, lowland aspen/balsam poplar, mixed upland deciduous, lowland spruce/fir, upland mixed forest, upland conifers, red pine and upland spruce/fir.

4.13.1 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 Issues 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. Management areas consist of stands that are defined by their predominant vegetative cover type.

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 4.13.1.1 Forest Cover Type Management - Cedar

Current Condition

Cedar occurs on 4,394 acres (61%) of the management area (Table 4.13.1). Cedar is also found in other cover types as a minor species. Northern white cedar stands are most common in the basin portion of the management area. The majority of the management area is within an special conservation area for wintering deer. The Gogomain Swamp has been identified as a rich conifer swamp, with large areas of uneven-aged, old-growth cedar. Throughout the swamp, cedar regeneration is dense, and areas lacking regeneration are only found on the margins and within deer wintering areas. The closed canopy cedar provides winter thermal protection for white-tailed deer as well as cover for many other species of wildlife. Numerous streams and headwater streams occur throughout the swamp. While a regulated harvest balancing the acres from 0-159 years of age would allow approximately 275 acres to be harvested each decade (red line in Figure 4.13.2), this currently isn't an objective in this management area.

Currently there are not any acres of cedar with a final harvest prescribed (Figure 4.13.2). At this time there are no acres of cedar that have site conditions limiting their harvest. Cedar stands in areas inaccessible for harvest will be subject to natural processes, resulting in a range of successional stages.

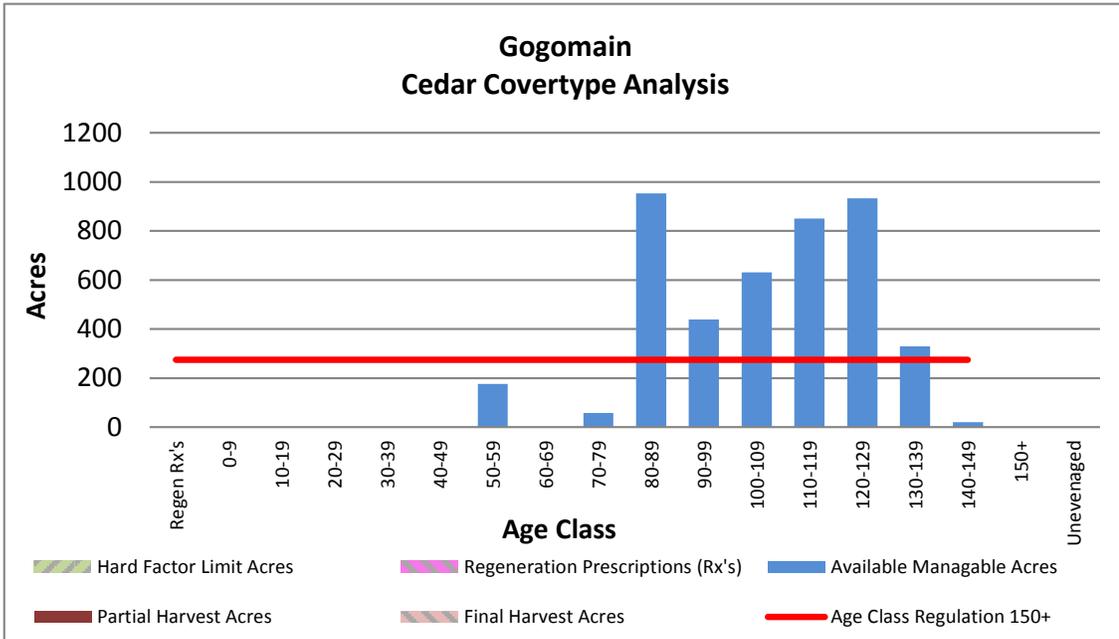


Figure 4.13.2. Age-class distribution of cedar in the Gogomain management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Cedar stands in this management area will be maintained primarily for deer habitat with lesser emphasis on timber management and recreation. Cedar will be harvested through even-aged management only in areas where deer populations are not likely to negatively impact regeneration.

10-Year Management Objectives

- The ten-year projected harvest is zero acres with the reduction from the regulated amount due to the deer wintering area and potential Type 2 rich conifer swamp old growth area.

Long-Term Management Objectives

- Conserve and maintain the rich conifer swamp community; and
- In stands that will not be affected by deer and outside the rich conifer swamp, look for opportunities to test different methods of regenerating cedar.

Section 4.13.1.2 Forest Cover Type Management – Northern Hardwoods

Current Condition

Northern hardwood occurs on 495 acres (7%) of the management area (Table 4.13.1). Northern hardwoods are distributed throughout the management area on range of sites with Kotar habitat classes of PARVAa, ATFD, AFPo and AFOAs. Generally these stands are selectively harvested to work toward an uneven-aged, multi-storied structure. In most stands individual tree selection harvests are used when basal area is over 120 square feet per acre. Where site quality is poor shelterwood and other even-aged harvesting systems will be considered.

Beech bark disease is found throughout the management area. 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, there are no northern hardwood stands prescribed for harvest (Figure 4.13.3). At this time, there are no northern hardwood stands with site conditions limiting harvest.

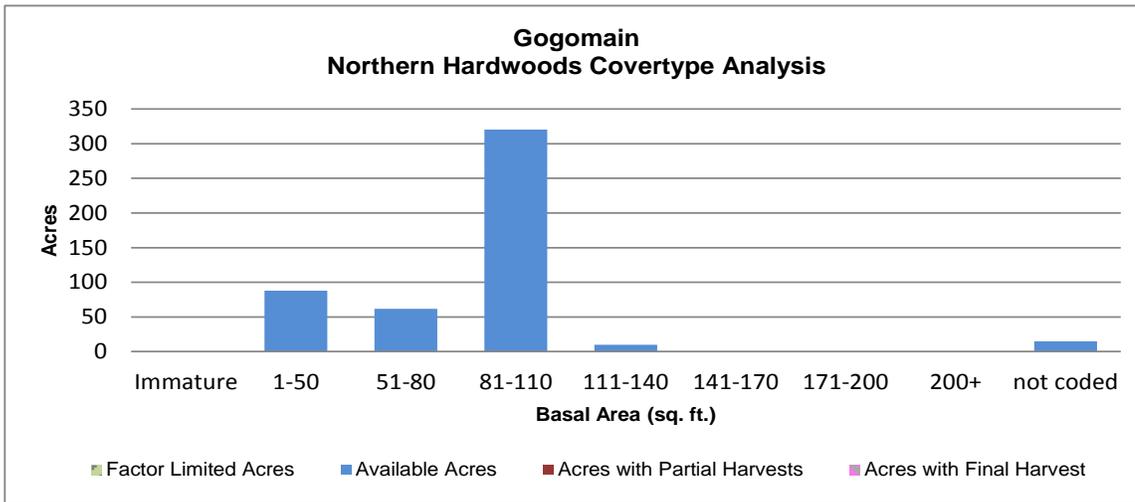


Figure 4.13.3. Basal area distribution of northern hardwoods in the Gogomain management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Northern hardwood will be maintained on operable sites using selection harvests to provide uneven-aged composition and structurally diverse stands providing for a continuous supply of timber, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected partial or selection harvest is 203 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 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 4.13.1.3 Forest Cover Type Management – Lowland Open/Semi-Open Lands

Current Condition

Lowland open/semi-open lands occur on 369 acres (5%). This category is a combination of lowland shrub (324 acres), marsh (45 acres), bog (zero acres) and treed bog (zero acres). These cover types function ecologically as sources of habitat for numerous species of wildlife. These stands are found in association with creeks, rivers and lowland forested stands.

Desired Future Condition

- Lowland open/semi-open lands will be retained in their current state 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, primarily through passive management, allowing natural processes to occur.

Section 4.13.1.4 Forest Cover Type Management – Lowland Mixed Forest

Current Condition

Lowland mixed forest occurs on 348 acres (5%) of the management area (Table 4.13.1). The lowland mixed cover type contains a mixture of deciduous and coniferous trees with neither type being dominant. There has not been any recent harvest work in this cover type. This is in part due to access and deer wintering area constraints. Some of these stands contain significant amounts of ash trees. Follow Emerald Ash Borer Management Guidelines for harvesting in stands with ash trees.

Currently there are not any acres of lowland mixed forest with a final harvest prescribed (Figure 4.13.4). There are 33 acres of lowland mixed forest that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Inaccessible stands of lowland mixed forest will gradually succeed to more shade tolerant species.

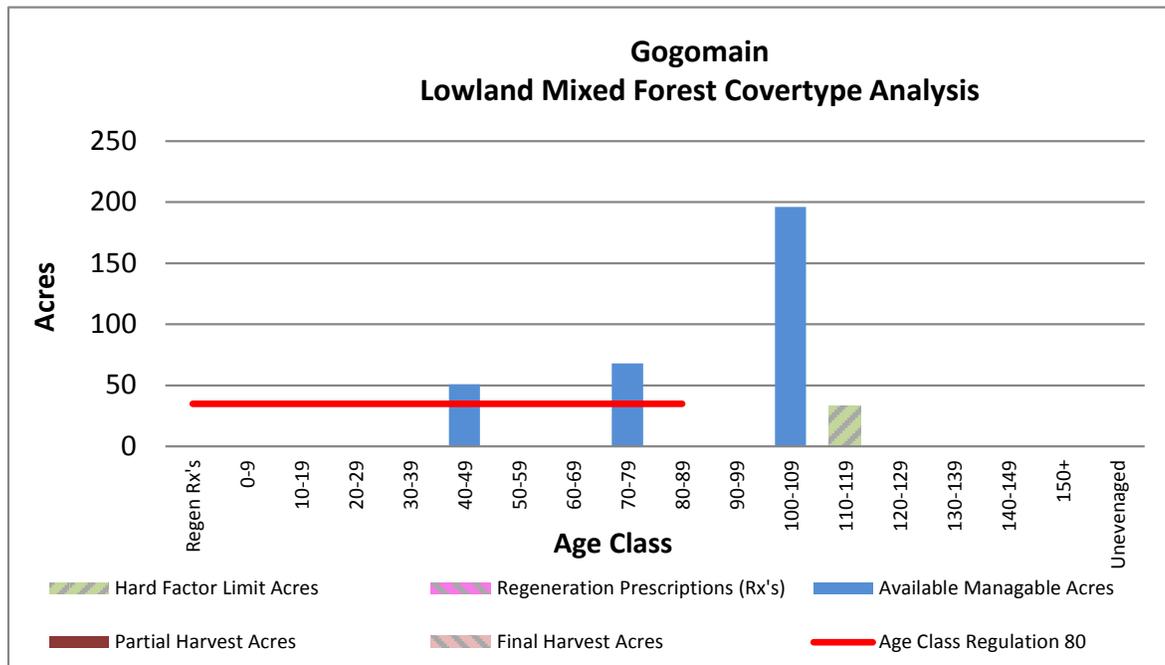


Figure 4.13.4. Age-class distribution of lowland mixed forest in the Gogomain management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

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

10-Year Management Objectives

- As emerald ash borer is expected to move in to this area, ash salvage may occur.
- The 10-year projected final harvest for lowland mixed forest is 123 acres. This is higher than the regulated amount due to the current age-class structure, and the need to start balancing age classes. Natural regeneration of species currently on site is expected.

Long-Term Management Objectives

- Balance the age classes of available lowland mixed forest stands providing a regulated harvest of approximately 35 acres per decade.

Section 4.13.1.5 Forest Cover Type Management – Lowland Conifer

Current Condition

Lowland conifer stands are found on 332 acres (5%) of the management area (Table 4.13.1). The majority of these stands are found within the deer wintering special conservation area. Some of these stands may contain ash trees and salvage may occur following Emerald Ash Borer Management Guidelines.

Currently there are no stands prescribed for harvest within the lowland conifer stands (Figure 4.13.5). There are 290 acres of lowland conifers that have site conditions limiting their harvest at this time. These hard factor limited acres been removed from the total number of manageable acres available for harvest calculations. This leaves very few stands available for management. Stands in areas inaccessible for harvest will be subject to natural processes resulting in a range of successional stages.

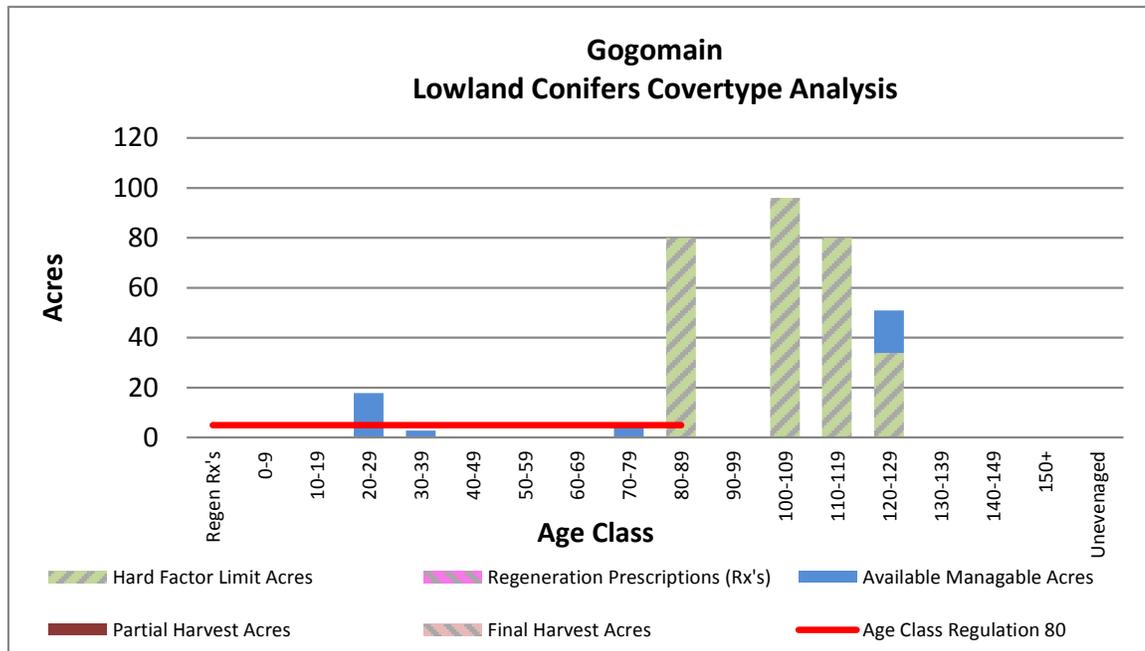


Figure 4.13.5. Age class distribution of lowland conifers in the Gogomain management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

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

10-Year Management Objectives

- The 10-year projected final harvest of lowland conifers is 18 acres which is an increase from the regulated amount due to the current age class structure and the need to start balancing age classes.

Long-Term Management Objectives

- Balance the age-class structure of available stands providing a regulated harvest of approximately five acres every decade.

Section 4.13.1.6 Forest Cover Type Management – Lowland Deciduous

Current Condition

Lowland deciduous stands occur on 326 acres (5%) of the management area (Table 4.13.1). Lowland deciduous stands are often found in association with streams and drainages. While there has been no recent harvesting, past harvesting and natural regeneration has somewhat diversified the age-class structure. Some stands contain black ash trees, though salvage of ash has not yet occurred. The Emerald Ash Borer Management Guidelines will be followed in stands with a component of ash.

Currently there are not any acres of lowland deciduous with a final harvest prescribed. There are 41 acres of lowland deciduous that have site conditions limiting their harvest this entry period. These hard factor limited acres (Figure 4.13.6) have been removed from the total number of manageable acres available for harvest calculations. Lowland deciduous stands in inaccessible areas will be subject to natural processes (fire, windthrow, insect defoliation and beaver flooding) resulting in a range of successional stages.

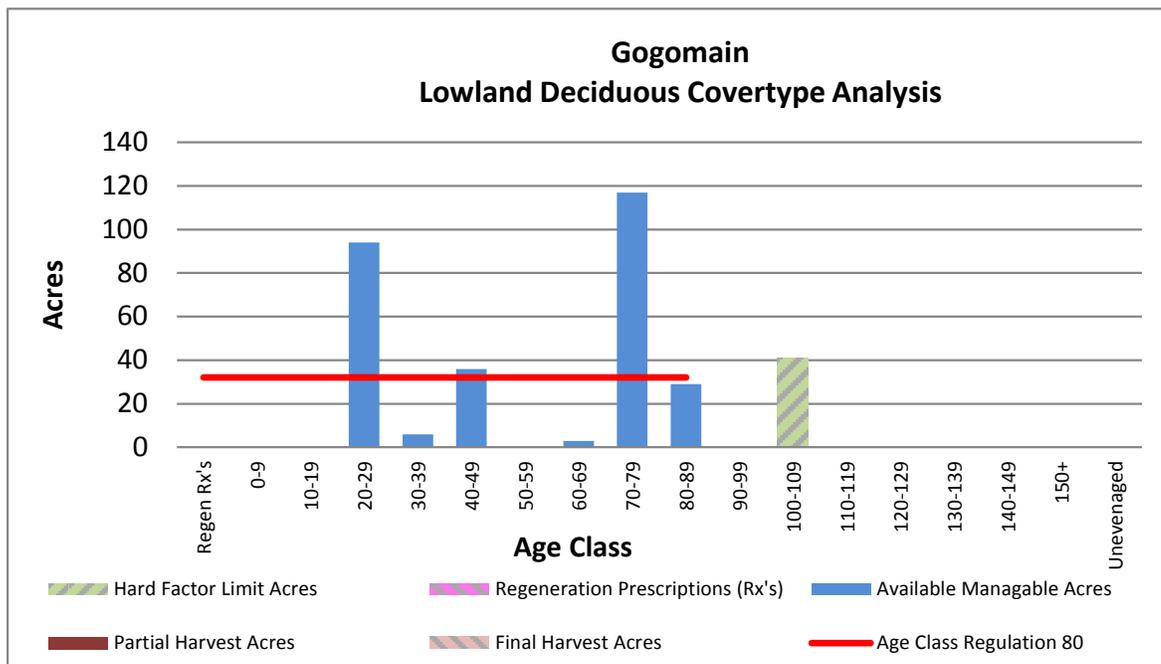


Figure 4.13.6. Age-class distribution of lowland deciduous in the Gogomain management area (2012 Department of Natural Resources inventory data).

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 providing for a regulated harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The 10-year projected final harvest of lowland deciduous is 32 acres to begin diversifying the age classes.

Long-Term Management Objectives

- Balance the age-class structure of available stands providing a regulated harvest of approximately 32 acres every decade.

Section 4.13.1.7 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 (Table 4.6.1). The two largest cover types are aspen (262 acres or 4%) and tamarack (254 acres or 4%). The “other types” category (416 acres or 6%) contains forested cover types with 2% or less of the total management area including: paper birch (132 acres), lowland aspen/balsam poplar (102 acres), mixed upland deciduous (65 acres), lowland spruce/fir (37 acres), upland mixed forest (30 acres), upland conifers (24 acres), red pine (13 acres) and upland spruce/fir (13 acres).

The majority of these cover types have been managed as even-aged stands and regeneration harvests will be carried out in those even-aged forested cover types. Natural regeneration of species currently on site is expected. Mixed cover types with high basal area may be thinned depending on the species composition before final harvest. The emerald ash borer and beech bark disease management guidelines will be followed where beech and/or ash salvage may be necessary.

Upland open/semi-open lands (20 acres) is composed of herbaceous openland (17 acres) and low-density trees (three acres). The “miscellaneous other” type (10 acres) is comprised of roads, water and sand/soil.

Approximately 210 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. Where stands are inaccessible, natural processes will occur moving early successional cover types toward mid- and late-successional cover types.

Desired Future Condition

- Management in these cover types will contribute to the compositional diversity of the landscape while providing for continual harvest, wildlife habitat and recreational opportunities.

10-Year Management Objectives

- The projected 10-year final harvest is 36 acres of tamarack and 68 acres of other types; and
- The projected 10-year partial harvest is 23 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.

4.13.2 – Featured Species Management

A large portion of this management area was purchased specifically for wildlife habitat. Much of the cedar type is multi-aged and has a significant amount of structural and floral diversity and is the largest high-quality example of rich conifer swamp in the state. Opportunities may exist to harvest some cedar in this management area. Structural diversity, closed canopy and mast are of high value to wildlife.

Black Bear

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

Wildlife habitat specifications:

- Maintain or increase tree species that provide mast including beech, oak, black cherry and ironwood.
- Beech trees with bear claw scars on the bark are generally good mast producers and should be retained wherever possible.
- Retain some large diameter white pine and hemlock for bear 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, use and management activities that facilitate fragmenting state lands within the management area.

Snowshoe Hare

The goal for snowshoe hare in the eastern Upper Peninsula is to increase available habitat in the ecoregion. In priority landscapes, management should focus on maintaining young aspen adjacent to lowlands, maintaining jack pine, retaining slash, 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 4 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 already present (before cutting) and resulting from incidental breakage of tops and limbs in the general harvest area, except on skid trails and landings, to the extent feasible. Retain slash and create brush piles within timber sales associated with hare habitat.

White-tailed Deer

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

Wildlife habitat specifications for deer wintering complexes:

- Strive to maintain > 50% of the land area within deer wintering complexes in mixed or pure stands of cedar, hemlock, white and black spruce, white and natural red pine, balsam fir, mixed swamp conifer and mixed upland conifer-hardwood.
- In northern white cedar and hemlock cover types that are commonly occupied by deer during severe winters, especially in medium and high snowfall zones, maintain canopy closure of >65%.
- In deer wintering complexes in low snowfall areas and within ¼-mile of severe-winter cover in the higher snowfall zones, write prescriptions that strive to maintain canopy closure of 40-65%, favoring cedar, hemlock, white spruce, black spruce, balsam fir and white pine.
- Provide winter forage in deer wintering complexes through stands of regenerating hardwood or brush, including preferred species of red maple, sugar maple, aspen, yellow birch, ashes, oaks, dogwood, crabapple, elderberry, high-bush cranberry, sumac and hazel.
- Enhance accessibility to winter browse within deer wintering complexes by maintaining mature mesic conifer components within upland hardwood stands or by maintaining or enhancing sheltered travel corridors between areas of conifer cover and browse.
- Provide spring break out areas by maintaining open hardwood stands on southern exposures and herbaceous openings adjacent to deer wintering complexes.
- When possible, timber harvests within deer wintering complexes should be carried out only during winter months and tops should be left. Chipping of non-bole wood and whole-tree harvesting in the deer wintering complexes should be avoided, but will be discussed on a case-by-case basis through the compartment review process.
- Harvests of cedar and hemlock may only be conducted when:

- There is reasonable confidence of successful recruitment/regeneration of the cover types; or
- There is a forest health issue (e.g., hemlock wooly adelgid); or
- Part of an approved research project; or
- Removal of selected trees will facilitate a reduction of harvest trails, landings, etc. to minimize soil sedimentation and possible soil compaction issues.
- Provide fall foods in the form of hard and soft mast, and provide dense escape cover or bedding areas in the form of early successional forests, brush and warm-season grasses that will encourage fall deer use in areas open to public hunting. Where habitat types are appropriate, increase diversity of hard mast by planting oak.

4.13.3 – 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 five listed species as well as one natural community of note occurring in the management area as listed in Table 4.13.2. A detailed inventory of this recently acquired land was performed in 2008 and it was determined that a large portion of the acquisition is the largest high quality rich conifer swamp in the state. A colony of great blue herons has also been identified on Love Island. 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 4.13.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Gogomain 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								
American bittern	<i>Botaurus lentiginosus</i>	SC/G4/S3-4	Confirmed	MV	Very High	Great Lakes marsh	Lowland open/semi-open	N/A
						Emergent marsh	Lowland open/semi-open	N/A
						Coastal plain marsh	Lowland open/semi-open	N/A
						Northern wet meadow	Lowland open/semi-open	N/A
						Southern wet meadow	Lowland open/semi-open	N/A
						Lakeplain wet prairie	Lowland open/semi-open	N/A
						Lakeplain wet-mesic prairie	Lowland open/semi-open	N/A
						Wet-mesic sand prairie	Lowland open/semi-open	N/A
						Wet prairie	Lowland open/semi-open	N/A
						Northern fen	Lowland open/semi-open	N/A
						Poor fen	Lowland open/semi-open	N/A
						Coastal fen	Lowland open/semi-open	N/A
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
Plants								
Lapland buttercup	<i>Ranunculus lapponicus</i>	T/G5/S1S2	Confirmed			Rich conifer swamp	Tamarack	Late
						Wooded dune & swale complex	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.

A large portion of the historic Gogomain deer wintering area special conservation area is found within the management area. Love and Hart islands are Great Lakes island special conservation areas (Figure 4.13.7).

Areas that might meet the definition of Type 1 and Type 2 old growth have been identified in a special conservation area layer in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment and area shown in Figure 4.13.7. 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 Gogomain management area there are 4,323 acres identified as potential Type 2 rich conifer swamp (Figure 4.13.7).

There is also a coastal environmental area high conservation value area shown in Figure 4.13.7, where some fish spawning occurs. No ecological reference areas have been identified within the 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, potential Type 2 and potential old growth areas to determine their status as a special resource area.

Gogomain

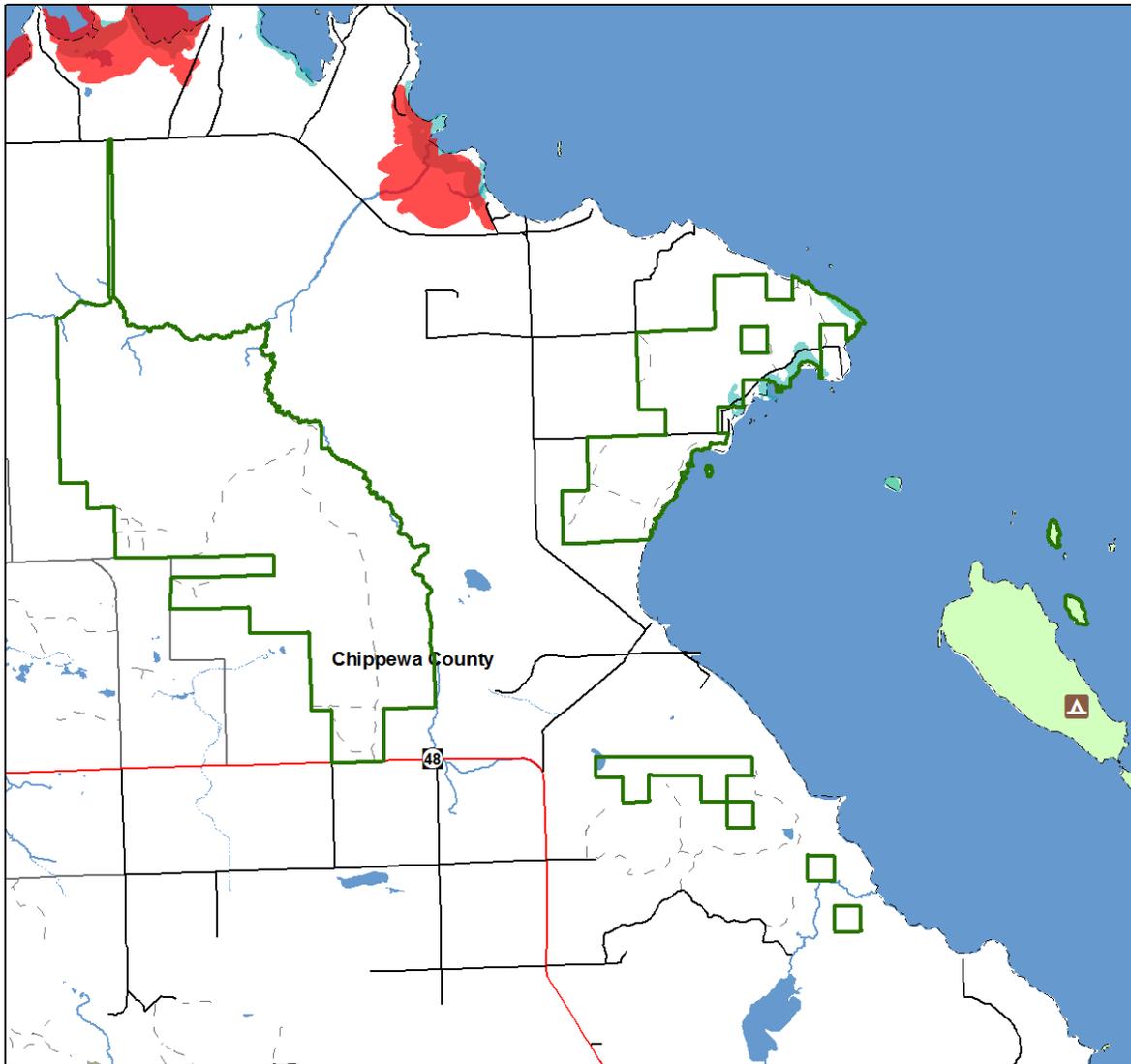


Figure 4.13.7. A map of the Drummond Island management area showing the special resource areas.

4.13.4 – 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:

- Lowland hardwoods: Emerald ash borer;
- Northern hardwoods: Beech bark disease; and
- Mixed conifers: Spruce budworm, eastern larch beetle and larch casebearer.

For further information on forest health refer to 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 leafy spurge and spotted knapweed have been documented within a five-mile buffer of the management area (Table 4.13.3) and monitoring efforts should specifically look for new populations of this species. Evaluate eradication treatments of any new populations of invasive plant species found in the management area. Invasive species that merit eradication efforts are those species that threaten sensitive sites due to their location or growth characteristics and have population levels that may be successfully controlled.

Table 4.13.3. Invasive plant species within or near the Gogomain management area (Data from the Michigan Invasive Plant Identification Network database).

Gogomain - FRD Management Areas	Cases within FRD Areas	Cases within 5 Mile Buffer	Total number of cases	Total number of different Invasive Species
	0	3	3	2
Invasive Species within FRD Areas	Occurrences	Invasive Species within 5 Mile Buffer	Occurrences	
-	-	Leafy Spurge <i>Euphorbia esula</i>	2	
-	-	Spotted Knapweed <i>Centaurea stoebe</i>	1	

4.13.5 – Fire Management

Much of this management area is comprised clay lowland soils which may have been rarely influenced by fire disturbance.

- Prescribed fire may be used in this management area for northern white cedar regeneration.

4.13.6 – Public Access and Recreation

M-48 is along the southern boundary of the management area and county roads access other portions of the management area. A large portion of this management area is without road access which facilitates preservation of the rich conifer swamp complex.

While there are no recreational facilities within the management area, a snowmobile trail passes to the southwest. Lime Island State Recreation area is also near the management area.

Deer hunting is very popular within the large swamp portion of the management area and there is a long history of waterfowl hunting along the St. Mary's River.

4.13.7 – 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.

4.13.8 – Minerals

Surface sediments consist of lacustrine (lake) sand and gravel, clay and silt, peat and muck and coarse-textured till. The glacial drift thickness varies between 50 and 200 feet. Sand and gravel pits are located in the management area and there is good potential for additional pits on the uplands.

The Silurian Engadine, Manistique and Burnt Bluff Groups, Cabothead Shale and Manitoulin Formation and Ordovician Queenston Shale, Big Hill Dolomite and Stonington Formation subcrop below the glacial drift. The Engadine and Burnt Bluff are quarried for stone in the Upper Peninsula.

Exploration and development for oil and gas has been limited to a few wells drilled in the Upper Peninsula (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.