4 - MANAGEMENT AREA DIRECTION

4.1 – Introduction

This section builds upon the discussions in the previous sections on forest history and current conditions and trends and provides specific management direction for each of the 33 state forest management areas in the northern Lower Peninsula ecoregion (Figure 4.1). Management areas are groupings of forest compartments that range in size from approximately 19,000 to 185,000 acres. The boundaries of management areas are based upon common attributes.

Each management area section contains:

- A summary of use and management;
- An introduction, which includes a projection of harvest acres in this 10-year planning period;
- Management direction for each of the major (covering at least 4-5% of a management area) and some of the minor (covering less than 4-5% of a management area) forest cover types in the management area, including a description of the current condition, desired future condition, 10-year management objectives and long-term management issues;
- Featured wildlife species and habitat specifications; and
- Discussions of rare fish, wildlife and plant management, forest health management, aquatic resources, fire management, recreation, access and other regional-specific issues, such as oil and gas development.

The sustained yield of Michigan state forest timber management is largely predicated upon a sophisticated and continually updated forest inventory that enables the use of a modified area control method and the associated balancing of age classes rather than volume control. Area regulation is an indirect method of controlling the amount of timber to be annually harvested on the basis of an equal (balanced) number of acres in each of several age classes (up to a set rotation age) of stocked trees, in order to meet management objectives and as a means of ensuring sustained yields over time (see Leak, 2011 for a more in-depth description of area regulation). Most public forestry agencies employ an area regulation approach to achieve sustainable, even flows of timber. For the Michigan state forest system, area control is used for management of even-aged stands in the aspen, jack pine and some oak forest types. Management of uneven-aged stands such as northern hardwoods is based upon a basal area/stocking approach, and a combination of basal area and age class is used in management of red and white pine stands. Most lowland cover types are also managed as even-aged stands using the area control method. However, for many lowland forest types (particularly for lowland conifer types) the balancing of age classes may not be achievable or prudent due to the unavailability of many acres and the management objective in these types is to promote regeneration for future habitat and other values.

It is important to understand that balancing age classes for a forest type is a long-term management objective that can only be achieved over the course of time (typically 50 to 80 years or more). During this period, harvest levels in any given year-of-entry can be higher or lower than the desired long-term area-regulated harvest level as unbalanced age classes (resulting from past over- or under-harvesting) are rectified through additional harvest prescriptions. Application of the modified area control method to the effective base of timberland in the state forest ensures that harvest levels are sustainable and comply with forest certification standard requirements.

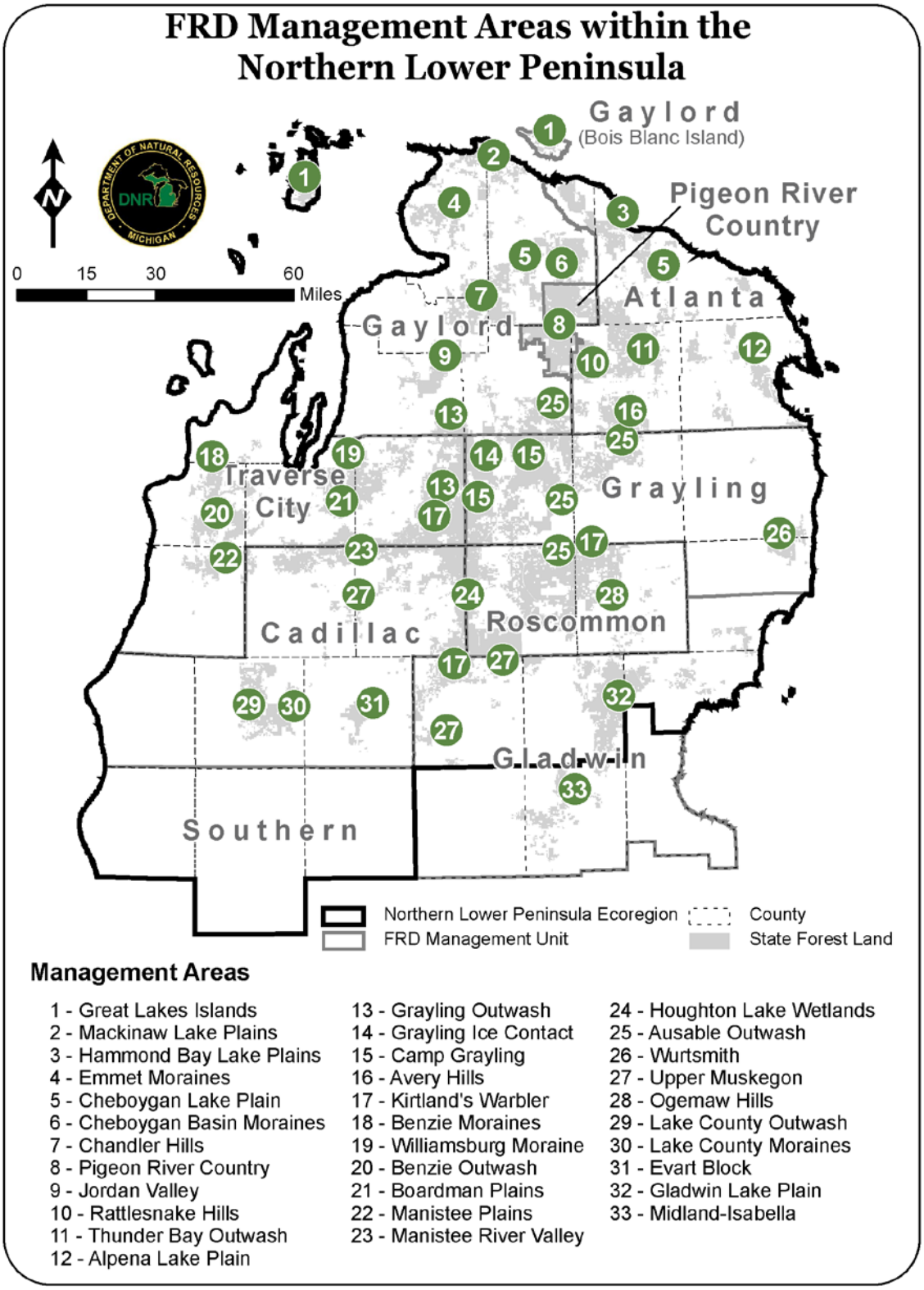

Figure 4.1. A map of the northern Lower Peninsula ecoregion showing the management areas.

The calculation of projected harvest levels is a key component of each management area section in the regional state forest management plan and are framed in terms of projected harvests (in acres) for the major and minor cover types for the following decade. These projections are based upon several factors:

- The desired future condition for the forest type, which include area regulated (balanced) age-class distributions and the perpetuation or transition of dominant forest types based upon Kotar habitat classification (Burger and Kotar, 2003);
- The present acreage and age class and/or stocking condition of forest types, based upon inventory data;
- Areas that are reserved from harvest due to treatment limiting factors or other management goals (including special conservation areas, high conservation value areas and ecological reference areas); and
- The type of silvicultural practices that are typically employed for different cover types, age classes and means of forest regeneration.

Other variable factors such as disease, insect, wind or fire mortality may also impact harvest levels. Where disease, insect or fire mortality problems are known in advance to apply to a management area (e.g., beech mortality due to beech bark disease), they are taken into consideration when establishing harvest levels for that management area. These factors cannot always be predicted with sufficient accuracy or certainty to allow them to be integrated into operational landscape-level planning. So when they do occur, harvest schedules are often adjusted in the compartment review process to address them. Where there are occurrences of disease or insect outbreaks or large wind throws or wildfires, they are usually quite localized and may lead to unanticipated temporary increases in salvage harvests to avoid major losses in timber value. These unanticipated harvests are taken into account in subsequent annual planning analyses and processes.

All the above factors are integrated into DNR planning processes at the strategic-level (2008 Michigan State Forest Management Plan), operational landscape-level (regional state forest management plans) and the tactical-level (through the compartment review process). In particular, they are considered in formulating the management direction for each management area in the regional state forest management plan, which provide specific estimates of harvest levels for the next 10-year compartment review cycle.

The management direction contained within each management area section of the plan is used with appropriate standards and guidelines and professional judgment in the compartment review process to plan tactical prescriptions for timber harvest. Whereas standards originate from higher authority, they retain higher precedence than the contents of this plan. Standards and guidelines that are used for the operational management of the state forest include:

Standards:

1. Natural Resource Commission Policy 2204, Reforestation, issued January 1, 1977
2. Natural Resource Commission Policy 2207, Management of State Forests, issued May 11, 1979
3. DNR Policy and Procedure 32.22-06, Forest Type Mapping Instructions and Type Symbols, issued July 11, 2005
4. DNR Policy and Procedure 32.22-07, Forest Management, issued July 11, 2005
5. DNR Policy and Procedure 39.21-20, Beaver Management, issued July 11, 2005
6. DNR Forest Management, Fire and Mineral Division Policy and Procedure 241, Reforestation, issued October 26, 1999
7. DNR Forest Management, Fire and Mineral Division Policy and Procedure 251, Sale and Removals of Timber, issued March 1, 2000
8. DNR Forest Management, Fire and Mineral Division Policy and Procedure 251a, Sale and Removals of Timber, Visual Management, issued February 28, 2002
9. DNR Forest Management, Fire and Mineral Division Policy and Procedure 441, Operations Inventory and Compartment Review Procedures, issued January 19, 2000
10. Fisheries Division Policy and Procedures 02.01.002, Dams and Barriers.
11. Fisheries Division Policy and Procedures 02.01.007, Stream Crossings (Bridges, Culverts and Pipelines).
12. Fisheries Division Policy and Procedures 02.02.005, Fish Passage.
13. Fisheries Division Policy and Procedures 02.02.011, Riparian Vegetation Protection.
14. Director's Fisheries Order 210.10, Designated Trout Streams for Michigan.
15. Requirements for the Sustainable Forestry Initiative 2010-2014 Program, January 2010.
16. Forest Stewardship Council-U.S. Forest Management Standard (v1.0), July 8, 2010.
17. DNR Forest Certification Work Instruction 1.4 – Biodiversity Management on State Forest Lands
18. DNR Forest Certification Work Instruction 1.5 – Social Impact Considerations and Public Involvement Processes
19. DNR Forest Certification Work Instruction 1.6 – Forest Management Unit Analysis

20. DNR Forest Certification Work Instruction 2.1 – Reforestation
21. DNR Forest Certification Work Instruction 2.3 – Integrated Pest Management and Forest Health
22. DNR Forest Certification Work Instruction 7.1 – Timber Sale Preparation and Administration Procedures

Guidelines:

1. DNR Silvicultural Guidelines
2. Within-Stand Retention Guidance (Michigan Department of Natural Resources, 2011)
3. Michigan Woody Biomass Harvesting Guidance (Michigan Department of Natural Resources, 2010)
4. Sustainable Soil and Water Quality Practices on Forest Land (Michigan Department of Natural Resources and Michigan Department of Environmental Quality, 2009)
5. Evaluating Riparian Management Zones on State Lands (Michigan Department of Natural Resources, 2004)
6. Forest Certification Green-Up Guidelines (Michigan Department of Natural Resources, 2006)
7. Guidelines for Red Pine Management (Michigan Department of Natural Resources, 2006)
8. American Beech Management: Beech Bark Disease (Michigan Department of Natural Resources, 2012)
9. Ash Management: Emerald Ash Borer (Michigan Department of Natural Resources, 2012)
10. Rare Species Protection Approach and Assessment Guidelines (Michigan Department of Natural Resources, 2008)
11. Interim Management Guidance for Red-Shouldered Hawks and Northern Goshawk on State Forest Lands (Michigan Department of Natural Resources, 2012)
12. Strategy for Kirtland's Warbler Habitat Management (Michigan Department of Natural Resources et al., 2001)
13. Conservation Guidelines for Michigan Lakes (Special Report 38).
14. Guide to Stream Protection and Restoration (Special Report 15).
15. Deer Winter Range Guidelines (Michigan Department of Natural Resources et al., 2013).

This forest plan is based upon 2012 DNR state forest inventory data. A model was used to analyze the inventory data and to generate the tables and figures presented in this plan section. Metadata describing the design elements and functions of this model is provided in Appendix D.

The state forest inventory in the northern Lower Peninsula ecoregion totals 2,050,183 acres, of which 1,780,752 acres (87%) are forested (Table 3.1). The dominant cover types are aspen (24%), northern hardwoods (10%), jack pine (10%), oak (10%) and red pine (8%) (Table 4.1). There are 227,440 acres (17%) with hard limiting factors (Table 4.1), resulting in 1,822,734 acres (88%) of manageable forested and non-forested land. There are very little anticipated shifts in cover type acreages over the 10-year planning period, aside from some minor decreases in the jack and red pine types and increases in the northern hardwood and upland mixed cover types. The plan maintains a conservative path for the present, until such time that a scientifically-based, deliberate and quantifiable analysis can be conducted that will help to inform decisions about the cover type composition of the future state forest (next 30 years). As identified in Section 5 of this plan, such an analysis will need to incorporate more complete inventory data from the Integrated Forest Monitoring Assessment and Prescription forest type classification system and also account for probable social, economic and ecological trends and impacts related to climate change over the next century.

Some broad trends on forest acreages merit a brief discussion here, and are discussed in further detail in the management area sections that follow. In some management areas red pine was planted on northern hardwood sites (habitat classes (Burger and Kotar, 2003): AFOCa and AFO) and contains a well-developed hardwood understory. After treatments of these older red pine stands, the decision may be made to allow the red pine to convert back to northern hardwoods. Red pine is also being converted to jack pine on dry sites more suitable for jack pine (habitat class (Burger and Kotar, 2003): PVCd), or red pine may be converted to oak where oak is already present in the understory. These trends may result in a slight reduction in future red pine acres. The oak age-class distribution in the northern Lower Peninsula ecoregion is largely skewed towards the older age-classes and in some management areas older-less-vigorous oak is difficult to regenerate. In addition, forest health issues such as oak wilt and oak decline continue to impact oak. While management will continue to stress maintaining oak as the dominant species in stands, in mixed stands with pine or as a component in other cover types on the landscape, it is expected that the future trend will be toward fewer acres of oak. Northern hardwoods are also being impacted by forest health issues, with increasing mortality from the emerald ash borer and beech bark disease.

Opportunities to increase harvest prescriptions in lowland cover types including lowland deciduous, cedar and lowland conifer will be assessed. This is due to a number of factors, including an abundance of mature acres in these lowland forest types; emerging forest health issues associated with some mature forest types; and a current DNR project to digitize, review and update old hard copy maps of deer wintering complexes (comprised predominantly of lowland conifer cover types) into a unified Geographic Information System shape file.

The modeled DNR inventory data projects a prescribed harvest level of 392,601acres over this 10-year planning period for the state forest in the northern Lower Peninsula ecoregion, which is the summation of the projected 10-year final harvest area and the projected 10-year partial harvest area levels for both major and minor cover types in each management area (Table 4.1).

These higher harvest levels reflect a concerted effort to accelerate the balancing of age classes for upland cover types in the northern Lower Peninsula ecoregion. Harvest projections should be considered to be prescribed inventory acres. Proposed timber sale acres are consistently 10% less than prescribed inventory acres, due to site-specific conditions (such as access issues or survey needs). Considering this, the acreage of proposed timber sales the state forest in the northern Lower Peninsula ecoregion is projected to be about 353,000 acres over this 10-year planning period (an average of about 35,300 acres per year). This does not mean that 35,300 acres of timber will be harvested during every year in the planning period. Harvest levels in any given year may actually be lower or higher than 35,300 acres due to several reasons, including variability in the proportion of different forest types and their age/size classes in any given year-of-entry, variability in the timing of actual harvests during the 3-4 year timber sale preparation and contract process and variability in the number of unanticipated salvage harvests (due to forest health or fire occurrences).

Likewise and for the same reasons, there is variability in the annual harvest levels in any given forest management unit. Harvest levels in each cover type will also be variable due to reclassification of cover types as the transition from the operations inventory to Integrated Forest Monitoring Assessment and Prescription forest inventory systems progresses during the planning period. Harvest levels in lowland cover types may be higher or lower, as available acres are quantified by collection of site condition (limited factor) data for all forest stands during the planning period. However, over the full 10-year planning period it is anticipated that about 353,000 acres of timber will be harvested from the northern Lower Peninsula ecoregion. It is anticipated that this level of harvest activity will decrease in the next planning period (11-20 years from the present), as less aggressive measures will be necessary to continue progression toward the balancing of age classes in the northern Lower Peninsula ecoregion.

Table 4.1. Projected harvest level by cover type and management areas aggregated over this 10-year planning period for the state forest in the northern Lower Peninsula ecoregion (Department of Natural Resources 2012 inventory data).

Species	Percentage	Current Acreage	Hard Factor Limited Acres	Manageable Acres	Project 10 year Final harvest	Project 10 Year Partial Harvest	Projected Acreage at end of planning horizon
Aspen	24%	496,754	32,491	464263	102,132	0	496,754
Cedar	4%	77,881	77,936	-55	0	0	77,881
Hemlock	0%	1,456	72	1384	0	249	1,456
Jack Pine	10%	207,084	16,528	190669	24,356	0	206,971
Lowland Aspen/Balsam Poplar	2%	41,957	21,195	20762	3,384	0	41,957
Lowland Conifers	4%	89,842	72,048	17794	1,880	0	89,842
Lowland Deciduous	5%	99,201	69,790	29411	2,412	800	99,201
Lowland Mixed Forest	1%	11,791	9,454	2337	121	0	11,791
Lowland Spruce/Fir	0%	8,978	7,301	1677	106	0	8,978
Mixed Upland Deciduous	2%	46,626	4,511	42115	7,116	8,113	46,626
Natural Mixed Pines	1%	26,209	1,923	24286	2,309	7,359	26,209
Northern Hardwood	10%	215,204	17,053	197551	2,018	62,091	215,804
Oak	10%	201,067	65,755	135312	11,522	28,377	201,067
Paper Birch	0%	3,431	2,001	1430	291	0	3,431
Planted Mixed Pines	0%	6,536	40	6496	1,038	1,712	6,536
Red Pine	8%	167,896	14,621	154362	37,095	55,583	166,809
Tamarack	0%	7,882	6,322	1560	117	0	7,882
Upland Conifers	0%	2,791	182	2609	1,064	768	2,791
Upland Mixed Forest	1%	21,014	2,236	18178	3,190	4,770	21,614
Upland Spruce/Fir	0%	7,064	2,200	4864	1,856	0	7,064
White Pine	2%	40,088	3,057	37031	8,146	12,626	40,088
Lowland Open/Semi-Open Lands	7%	138,187	1,165	137022	0	0	138,187
Upland Open/Semi-Open Lands	5%	104,070	12,200	91870	0	0	104,070
Misc Other (Water, Local, Urban)	1%	27,174	3,056	24118	0	0	27,174
Totals	1	2,050,183			210,153	182,448	

Climate Change Considerations

As the climate continues to change, the effects of these changes may present forest managers with challenges to achieving the desired future conditions outlined in this plan and exploration of additional strategies for adapting to these changes may be warranted. Within the scope of this plan, forest managers may consider management actions that help to put forests in a better position to respond to a range of future conditions. Millar et al. (2007) described an adaptation framework with actions that fit into three broad categories:

- Resistance Actions – These help a forest ecosystem build its defenses, both against the direct impacts of a changing climate and the indirect impacts of other threats that are aggravated by climatic changes. These are for situations where there is a goal of keeping the ecosystem in a relatively unchanged condition. Examples of actions include creating a complete fire-break around a unique, vulnerable area or intensive removal of all invasive species from an area. For many areas, these actions may only make sense in the short-term, as ultimately, the climatic changes may simply go beyond the physical limits of the species or system and will likely get more expensive with greater climate changes.
- Resilience Actions – These help a forest ecosystem rebound and return to a prior condition following a disturbance and are for situations where a small-degree of change is acceptable. Resilience actions are similar to resistance actions, but are applied more broadly and focus on helping a system cope with disturbance. An example would be actions that help to increase the diversity of species in an ecosystem. Again, these actions may not be long-term solutions, if the climate becomes completely unsuitable for that ecosystem.
- Response Actions – These help a forest ecosystem change and move to a different condition that is suitable for a changing and new climate. These actions include assisted migration (intentionally moving a species to a location outside of its current range) and promoting connected landscapes.

Decisions about what types of adaptation actions are most appropriate for an area will need to consider the implications of climate changes to that area and recognize that they will be influenced by differences in ecosystem, ownership and management objectives. Section 3 includes an overview of some regional differences that may affect which kinds of actions are most appropriate.

Many of the special resource areas described by management area in this section have characteristics that may make them more vulnerable to climate change, as well as characteristics that may make them good candidates as refugia for species threatened by climate changes. Refugia are “locations and habitats that support populations of organisms that are limited to small fragments of their previous range” (Handler et al., In Press). In addition to their potential for providing some protection for vulnerable species and ecosystems, refugia may also be valuable for their potential to protect water supplies and functions as they fluctuate across the landscape (Handler et al., In Press).

Some special resource areas are examples of natural communities that are already rare – either have very specific hydrologic/climatic/disturbance requirements or are already threatened in other ways; regardless, this will make them more vulnerable to additional threats/stresses. However, those special resource areas that are already in good condition and include diverse species and few invasives will have a higher adaptive capacity than other lower quality places, making them good potential refugia. High-quality natural communities are more likely to support rare species – this is an additional characteristic that will make some special resource areas valuable as refugia. Additionally, management objectives already in place in many special resource areas focus on promoting high-quality natural communities, thus are already in line with the best adaptation strategies.

Special Resource Area Management Direction

The Department of Natural Resources has used many mechanisms to identify areas that may have particular or special biological/ecological, social or economic conservation objectives or values. For example, some state natural areas have been dedicated by Natural Resource Commission resolutions and the Simmons Woods Area was established using a land use order under the authority of the director. Some areas are managed through memorandums of understanding and statute and there are also areas that have been noted for their biodiversity potential through less formal mechanisms.

Over time it has become challenging to sift through naming conventions and designations to understand the broad range of conservation values within the state forest system. The special resource area management direction section of this plan begins the process of collating and organizing these areas and their associated designations.

This section provides a description of areas of the state forest that have been identified as having specific or special resource attributes that are considered in management planning and activities. The majority of these areas are noted for renewable resource conservation values; however, some social and non-renewable categories (e.g., concentrated recreation areas and mineral resource areas) have also been included in order to document and track their purposes.

Areas with specific conservation values have been sorted into three primary categories: special conservation areas, high conservation value areas and ecological reference areas. Each category has a conservation value trait and a 'level of recognition' trait. Combined, the two traits determine whether an area is identified as a special conservation area, a high conservation value area or an ecological reference area. It is anticipated that over time, areas will be moved between, added and/or removed from these categories based on conservation values and level of recognition.

Special Conservation Areas: Special conservation areas are areas of state forest land that have one or more identified special conservation objectives, interests or natural community (Kost et al, 2007) element occurrences. They are a broad assemblage of areas that possess some inherent ecological, social or economic value. Conservation objectives listed in the special conservation area category have been identified through a variety of methods and mechanisms. The type and strength of recognition (and possible management options) will vary depending on the process used to identify the conservation value. For example, some objectives are detailed in the land use orders of the director (force of law) while other may be identified through cooperative agreements (administrative recognition). Areas formerly identified through administrative recognition that have not had that recognition superseded by another formal designation will have administrative recognition re-affirmed by this plan. There are also objectives developed through department process or agreement (e.g., deer wintering areas, potential old growth or riparian buffers). The special conservation area category may also be used to document areas identified by an external group or organization, such as National Audubon Society's Important Bird Areas Program.

High Conservation Value Areas: High conservation value areas are areas of state forest lands that have been recognized for their contribution to specific conservation objectives or ecological attributes through a public process. Examples of these formal processes include: legislation, administrative rule or director's or Natural Resource Commission orders. High conservation value areas include dedicated natural, wilderness and wild areas; natural rivers; species recovery plan areas such as piping plover habitat areas; and critical dune areas.

Designated high conservation value areas are located only upon state forest land, but within a landscape context, conservation efforts of equivalent high conservation value area resources should be coordinated with other private and agency landowners. The high conservation value area category is intended to address the Forest Stewardship Council U.S. Forest Management Standard (v1.0) Principle 9, which requires the maintenance of high conservation value forests.

Ecological Reference Areas: Ecological reference areas are areas that serve as models of ecological reference within the state. They are high-quality examples of ecosystems that are primarily influenced by natural ecological processes and they can be located upon any land ownership. High-quality natural communities recognized by NatureServe (an internet based international network of biological inventories) and the Michigan Natural Features Inventory as global (G) or state (S) endangered (1), threatened (2) or rare (3) and with an element of occurrence (EO) rank of A or B in the Michigan Natural Features Inventory database serve as an initial set of ecological reference areas. This ecological classification system was selected as a baseline because it is nationally and internationally acknowledged and is based on a sound scientific system. The ecological reference area category is intended to address the Forest Stewardship Council U.S. Forest Management Standard (v1.0) Criterion 6.4, which requires the establishment of a system of protected representative ecosystems across the landscape of all ownerships.

Identified ecological reference areas, high conservation value areas and special conservation areas will be managed to conserve, protect and/or enhance the defined conservation objective or value. The methods used will vary depending upon the objective and type of designation. Methods can include active management or just the provision of access. Either method must be compatible with the defined conservation objective or value. Land managers, field staff and stand examiners use technical materials, program staff and/or other references when assessing management options that are suitable for the specific conservation objective. All areas will be managed to protect the immediate natural resource values with consideration of human health and safety.

Areas that are designated as ecological reference areas, high conservation value areas and special conservation areas may overlap one another and are not mutually exclusive. The Department of Natural Resources has developed maps that show the spatial extent of these areas across the landscape of the northern Lower Peninsula ecoregion.

The starting point for reviewing special conservation areas is the operations inventory and compartment review process. The starting point for reviewing high conservation value areas and ecological reference areas is the Biodiversity Conservation Planning Process. Both processes include public participation and consider nominations for inclusion, removal or other changes to designations. Additional information regarding these areas can be found in the Conservation Area Management Guidelines and the standards and guidelines applicable to the management directions for each type of special resource area can be found in Section 5 of the Michigan State Forest Management Plan, 2008.

Cultural and Customary Use Areas

Cultural use areas in the northern Lower Peninsula ecoregion are those areas which are important due to the beliefs, practices, history and culture of certain ethnic and religious groups. Native American tribes and other groups may also use forest areas for customary uses which are normally seasonal. Customary uses may include placement of traditional hunting camps or the gathering of non-timber forest products such as wild fruit or mushroom hunting.

Maintenance and preservation of cultural and customary use areas is economically and socially important to our society. The National Historic Preservation Act requires consultation with Tribes and others to identify and manage traditional cultural properties. Sales of gathered non-forest products may be an important source of income during times of economic need such as seasonal unemployment (Jones and Lynch, 2002).

Social ties may be developed through family outings for gathering or harvesting non-forest products (Stynes and Kakoyannis, 1999 and Emery, 1998). These outings may also serve as a form of recreation or exercise. The primary socioeconomic management objective for cultural and customary use areas is to maintain these resources for their intrinsic social and economic value. Though cultural and customary use areas are perceived as economic or consumption value for humans, they may also represent forms of biodiversity that must be maintained on the landscape from an ecosystem management perspective.

Land use permits for non-tribal customary and cultural uses are coordinated by each forest management unit. Permits for cultural and customary uses of state forest resources by tribal members who are exercising their gathering rights in areas that are under the 2007 Inland Consent Decree for the 1836 Treaty of Washington (Figure 4.2) are issued by their respective tribal government.

Archaeological Sites

Archaeological sites have intrinsic social value and require protection in the northern Lower Peninsula ecoregion. There are two types of archaeological sites. First, three are the pre-historic sites that existed before the arrival of Europeans. Examples of pre-historic sites are camp sites, village sites, quarries, mortuary mounds and other areas used by early natives. The second type of archeological site is the historic site. These are sites that may be part of the written record, including cemeteries, town sites, logging camps and homesteads. In the ecoregion, most historic sites are from the early 1800s to the mid-20th century.

Sites may be identified by natural heritage data from the State Historical Preservation Office and Office of the State Archaeologist. Sites or possible sites may be discovered in the course of normal field work. These sites should be reported to the Office of the State Archaeologist if they are not already in the database. To protect archaeological sites it is necessary to safeguard location information. This information is sensitive and will be protected from public disclosure and as such, is exempted from the Freedom of Information Act.

Tribal governments should be contacted when working in areas where Native American use may have occurred. Tribal governments should receive notification of open house meetings to enable review of treatment proposals for any possible disruption to archeological sites.

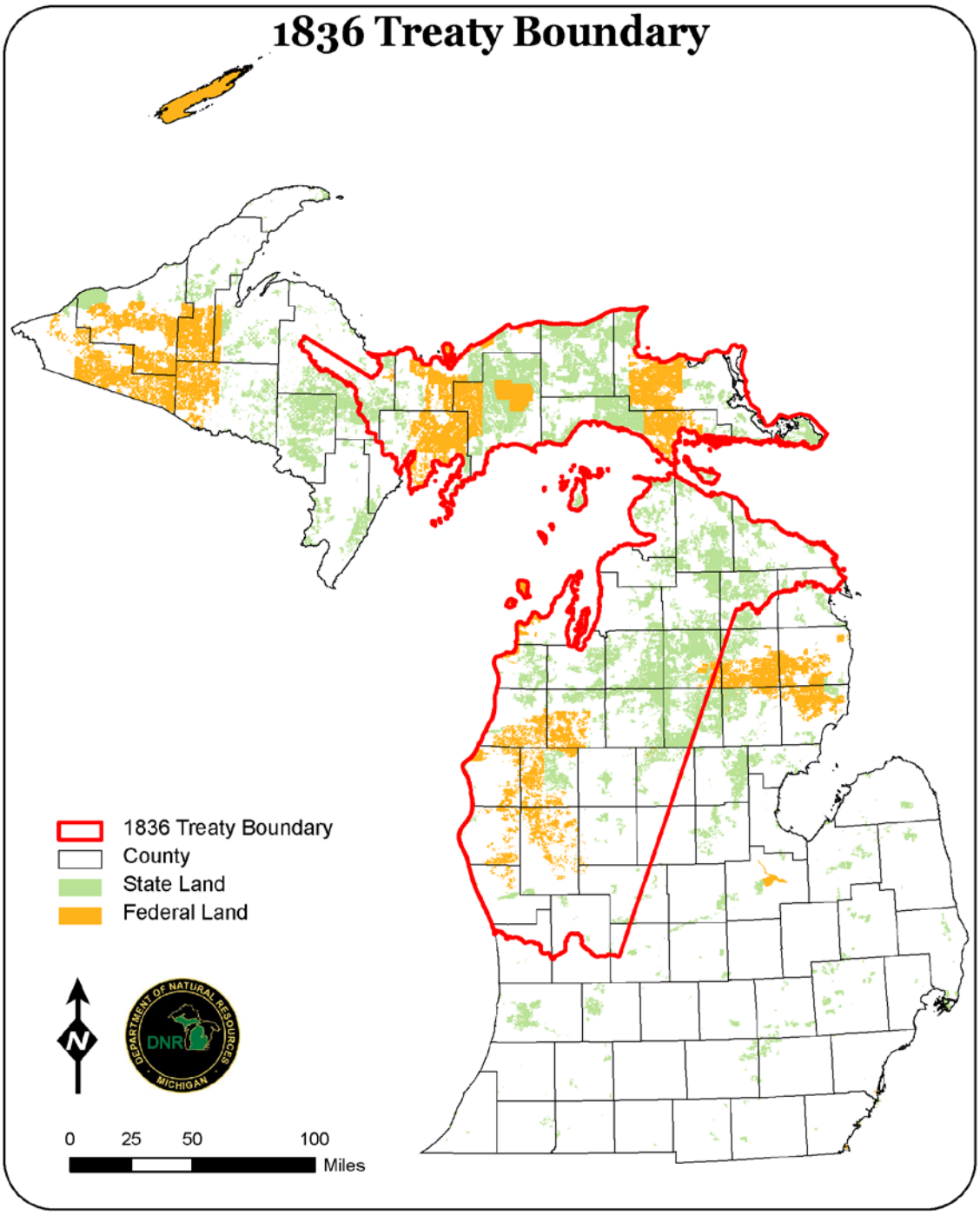

Figure 4.2. Boundary for the 1836 Treaty of Washington (Department of Natural Resources, 2007).