United States
Department of
Agriculture

Forest Service
Eastern Region

Huron-Manistee
National Forests

August 2011

Huron-Manistee National Forests

Recreation Supply and Demand Analysis

For the Supplemental Environmental Impact Statement

Cooperating Agencies: Michigan Department of Natural Resources, U.S. Department of the Interior, Bureau of Land Management, and Little River Band of Ottawa Indians

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I. Introduction

This document analyzes the supply and demand for various recreation opportunities and experiences on the Huron-Manistee National Forests (Forests). See Appendix A, Map A-1 for a map of the Forests. This analysis is intended to assist the Forest Service in completing a Supplemental Environmental Impact Statement (SEIS) as directed by the *Meister* panel of the U.S. Court of Appeals for the Sixth Circuit. *Meister v. U.S. Dep't of Agriculture*, 623 F.3d 363, 380 (6th Cir. 2010).

Background

The Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976, 16 U.S.C. § 1600 *et seq.* specifies that land and resource management plans be developed for all National Forests. Land and resource management plans (Forest Plans) establish direction for natural resource management on the National Forests. Land and resource management plans provide programmatic direction to guide the development of site specific projects that will occur during the life of the plan.

The Huron-Manistee National Forests' Forest Plan was revised in 2006 following the preparation of an Environmental Impact Statement that analyzed the proposed changes in management of resource from the 1986 Forest Plan. The 2006 Final Environmental Impact Statement (FEIS) (USDA-FS 2006) and the March 20, 2006 Record of Decision were administratively appealed. After the administrative appeal was denied, a lawsuit was filed in the U.S. District Court for the Eastern District of Michigan (Chief Judge Gerald E. Rosen (Detroit, Michigan)). *Meister v. U.S. Dept of Agriculture*, No. 07-13008 (E.D. Mich. filed July 18, 2007). After the district court ruled in favor of the Forest Service, an appeal was filed with the U.S. Court of Appeals for the Sixth Circuit (the Meister Panel, a three judge panel sitting in Cincinnati, Ohio) which led to a ruling which reversed the prior decision. *Meister v. U.S. Dept of Agriculture*, No. 07-13008, slip op. (E.D. Mich. Mar. 30, 2009), *revd*, 623 F.3d 363 (6th Cir. 2010); *see also Meister v. U.S. Dept of Agriculture*, No. 09-1712, 2010 WL 5393839 (6th Cir. Nov. 17, 2010). The *Meister* panel found deficiencies in the Forest Service's application of the agency's planning tool, the Recreation Opportunity Spectrum (ROS), and in the agency's evaluation of snowmobiling and firearm hunting activities. The *Meister* panel found that these noisy activities were allowed to occur in or near the quieter areas in the Forests: the Semiprimitive Nonmotorized (SPNM) Areas (2006 Forests Plan's Management Area (M.A.) 6.1) and the Nordhouse Dunes Wilderness (Primitive Area) (2006 Forests Plan's M.A. 1). The *Meister* panel determined that the 2006 FEIS's analysis was deficient because the Forest Service failed to correctly apply the ROS standards in its analysis of the recreational activities that are allowed in the Forests SPNM and Primitive Areas. The *Meister* panel held that the Forest Service's approval of the 2006 Forest Plan "was arbitrary and without observance of procedures required by law." *Meister*, 623 F.3d at 380.

The *Meister* panel cited deficiencies in the Forest Service's analysis process. These deficiencies involved the evaluation of snowmobiling and gun hunting within the Primitive and Semiprimitive Nonmotorized (SPNM) areas on the Forests. Specifically, the panel held:

1. The Forest Service's estimates of snowmobile and cross-country visitors to the Forests were arbitrary. Thus, the Forest Service has not complied with 36 C.F.R. § 219.21(a)(2)'s requirement of a demand-supply analysis;
2. The Forest Service did not comply with the requirement that it coordinate its recreation planning with that of the State of Michigan with the aim (to the extent feasible) of "reducing duplication in meeting recreational demands" with respect to gun hunting and snowmobiling (36 C.F.R. § 219.21(e));
3. The Forest Service's reasons for keeping pre-designation and club trails open to snowmobile use were arbitrary. Thus, the Forest Service did not complied with 36 C.F.R § 219.21(g)'s mandate to minimize conflicts between off-road vehicle use and other uses and interests of the Huron-Manistee; and
4. The Forest Service violated NEPA when it failed to consider whether to close Primitive and Semiprimitive Nonmotorized (SPNM) areas to gun hunting and snowmobile use, as Meister proposed.

The *Meister* panel of the U.S. Court of Appeals for the Sixth Circuit did not 'set aside' the Forests' Land and Resources Management Plan but remanded the 2006 Forest Plan to the to correct these deficiencies. The Forests prepared a Supplemental Environmental Impact Statement (SEIS) to address the additional analysis of the 2006 Forest Plan as directed by *Meister* panel. This Recreation Supply and Demand Analysis is part of the SEIS prepared to address the deficiencies identified by the *Meister* panel. *Meister*, 623 F.3d at 380.

Definition of Supply and Demand Analysis

During the 2006 revision of the Forest Plan, when analyzing recreation opportunity, the staff of the Forests used the guidelines of the 1982 planning rule (*see* 1982 Planning Rule, 47 Fed. Reg. 43,026 (Sept. 30, 1982) formerly published at 36 C.F.R. § 219.21(a) (2)), which requires that: "(a) Forest planning shall identify…(2) The recreation preferences of user groups and the settings needed to provide quality recreation opportunities[.]"

It is well known that just providing a certain number of miles of trail may not meet the recreation preference of the user group if the trail itself does not provide a quality recreation experience. This analysis will provide a description of the Recreation Opportunity Spectrum (ROS), a framework which the Forest Service uses to describe the prevalent experience that recreationists would encounter in different areas of the National Forests.

The *Meister* panel found that the Forest Service's analysis of the recreation preferences and opportunities was deficient, specifically as it dealt with users' demands for recreation opportunities for snowmobiling and cross-country skiing. This document provides a thorough analysis of recreation demand by examining the State and national user data that was not available at the time the 2006 Forest Plan revision was completed.

The *Meister* panel also found that the agency did not consider existing recreation opportunities that may exist on local and State public lands "with the aim of reducing duplication in meeting recreation demands (*see* 1982 Planning Rule, 47 Fed. Reg. 43,026 (Sept. 30, 1982)) formerly published 36 C.F.R. § 219.21(e)). *Meister*, 623 F.3d at 380. This requirement might be thought of as the supply portion of the equation. Specifically the panel found that the Forest Service

failed to estimate how much State land is available to hunting and snowmobiling, which the *Meister* panel considered essential to reducing "duplication of hunting and snowmobiling opportunities." *Id.*

For the purposes of this analysis, the definition for supply and demand analysis is: "An assessment of the recreation opportunities and settings both desired and available for the public in a given market area." The *Meister* panel established the market area for the purposes of this analysis as the State of Michigan. *Meister*, 623 F.3d at 380.

The following outline details the process followed for estimating recreation supply and demand trends. This analysis is consistent with the guidance provided in *R09 ROS 'Working Principles' in LRMP Revision* (USDA-FS 2002) which was used in the initial preparation of the *Demand and Supply Analysis* for the Forest Plan *(*USDA-FS 2004).

The framework followed to analyze recreation supply and demand includes:

I. **Introduction.** This section outlines the background and purpose of this analysis.

II. **Data Sources.** As directed by the ROS Users Guide Chapter 30, this section provides information on the three primary data sources used for this analysis: the 2008-2012 Michigan State Comprehensive Outdoor Recreation Plan (SCORP) (MDNR 2007), National Visitor Use Monitoring (NVUM) survey results (USDA-FS 2007), and Outdoor Recreation for 21st Century America (Cordell et al. 2004).

III. **Demographics of Market Area.** This section provides an overview of Michigan demographics.

IV. **Demand.** This section provides an overview of the demand for outdoor recreation in Michigan. The demand for recreation opportunities and experiences on the Forests is then discussed, with an emphasis on recreation opportunities and experiences associated with 14 study areas (Primitive and SPNM Areas on the Forests) (*see* Appendix A, Map A-2).

V. **ROS.** The Forest Service utilizes the descriptions of the recreation areas (Primitive, SPNM, Semi-Primitive Motorized, Roaded Natural, Rural, and Urban) provided in the ROS Users Guide to describe the range of recreation settings that may be available in the National Forests.

VI. **Supply.** This section provides an overview of the supply of outdoor recreation opportunities in Michigan. The supply of recreation opportunities and experiences on the Forests is then discussed, focusing on recreation opportunities and experiences associated with the 14 study areas that were classified as Primitive and SPNM Areas (2006 Forests Plan). This analysis considers all of the similar recreation opportunities and experiences that are available to the general public outside of the Forests.

VII. **Quality of Recreation Experiences.** This section reviews issues related to customer satisfaction to determine the overall quality of the experiences being provided to the general public. This section also addresses issues pertaining to

some of the users' interests in experiencing solitude while safely enjoying dispersed recreational opportunities on the Forests.

VIII. **Findings**. This section summarizes the findings regarding the supply and demand for opportunities and experiences that would be available in areas characterized as ROS Primitive and SPNM.

IX. **References.** This section provides a summary of references used in this document

II. Data Sources

Three primary data sources used for this analysis are:

- The 2008-12 Michigan State Comprehensive Outdoor Recreation Plan (MSCORP) provides current and forecasted supply and demand information for outdoor recreation in Michigan between 2008 to 2012 (MDNR 2007);
- The 2007 National Visitor Use Monitoring (NVUM) Study includes current consumption or activity participation on the Forests from October of 2006 through September of 2007 (USDA-FS 2007); and
- *Outdoor Recreation for 21st Century America* (Cordell et al. 2004) provides information on trends and contemporary American's participation in outdoor recreation.

2008-12 Michigan State Comprehensive Outdoor Recreation Plan (MSCORP)

In 1964, Public Law 88-578 (Act of Sept. 3, 1964, Pub.L. 88-578, 78 Stat. 897, as codified at 16 U.S.C. §§ 460l-4 to 4601l-11) established the Land and Water Conservation Fund (LWCF). This law created a Federal funding source for both Federal acquisition of park and recreation lands and matching grants to States, and through States to local governments, for outdoor recreation planning, land acquisition and development. It established requirements for State outdoor recreation planning, requiring each participating State to have a State comprehensive outdoor recreation plan (SCORP). The Michigan administrator for LWCF monies and the SCORP program is the Michigan Department of Natural Resources (MDNR). The 2008-12 MSCORP updates and replaces the prior 2003-2007 MSCORP.

The SCORP addresses:

- the supply of Michigan outdoor recreation resources (local, State, and Federal),
- the demand and need for outdoor recreation,
- existing initiatives to include under the SCORP,
- 2008-12 directions and initiatives to meet demand including wetlands conservation
- implementation planning for the program.

National Visitor Use Monitoring Survey (NVUM)

The National Visitor Use Monitoring Survey is a nationwide systematic process for gathering statistically reliable recreation visitation data on National Forests, National Grasslands, and designated wilderness areas. NVUM information assists Congress, Forest Service leaders, and program managers in making sound decisions that best serve the public and protect valuable natural resources by providing science based, reliable information about the type, quantity, quality, and location of recreation use on public lands.

Forest Service units are directed to survey visitor use every four years. Under NVUM, the agency began the use of National Forest Visits (NFVs) as a measurement of use. A recreation visit is defined as "The entry of one person upon a national forest to participate in recreation activities for an unspecified period of time. A national forest visit can be composed of multiple site visits (USDA-Forest Service, 2002)." NVUM methodology and analysis is explained in detail in *Forest Service National Visitor Use Monitoring Process: Research Method Documentation* (English *et al.* 2002).

The first NVUM project initiated on the Forests to determine forest-wide recreation use occurred from October 2000 through September 2001 (2001 NVUM study). For the first round of sampling, the study was designed primarily to estimate the total number of national forest visits and it was not designed to provide data on the national forest visits by site, area, or activity. The 2001 NVUM results did not accurately reflect the actual use and types of activities that forest recreation managers thought had actually occurred on the forest, therefore recreation managers adjusted the NVUM results based on other information.

From October 2006 through September 2007, the Forests completed a new NVUM study. For the second round, the sampling frame was adjusted to account for spatial and temporal distribution of national forest visits across the Forests. Forest managers also worked with NVUM specialists to better sample winter recreation uses such as snowmobiling and cross-country skiing. In addition, a more intensive sample was done at Nordhouse Dunes Wilderness to better capture use levels there.

The NVUM survey was not designed to capture specific activities at specific locations. For example, NVUM results won't identify where the most popular mushroom picking areas are. The NVUM survey was also not designed to capture latent demand; opportunities that the Forests visitors would like that are not currently being offered. In addition, NVUM results do not provide information on displaced forest visitors; those visitors who no longer visit the Forests because the activities they desire are not offered. Additional details regarding the background of NVUM survey, terms, limitations, and other study results are available in National Visitor Use Monitoring Results, January 2009; Data collected FY2005 through FY2009 (USDA-FS 2010). The results of the 2007 NVUM study are incorporated here by reference and were considered in development of this analysis.

Results from the two rounds of NVUM data collection were not compared because the sample design and sampling frame were quite different. After the first round of sampling, the Forest Service was able to improve on the identification of representative survey sites, more accurately classify days into use level strata, and ensure more consistency in survey application. These improvements enhanced the validity of all aspects of the NVUM results and provided managers better information on user demographics and experiences.

The NVUM program managers reviewed round two results and found, "the FY2007 NVUM provides more representative information of visit and visitor characteristics across the Huron-Manistee National Forests throughout the sample year." The second round included an improvement in sampling approach to balance the competing goals of visitation and describing the visits. The NVUM protocols were also adjusted for the second round to greatly expand the series of quality control procedures used in field data collection (USDA-FS 2009).

Outdoor Recreation for 21st Century America (H. Ken Cordell *et al.* 2004)

The primary purpose of this book was to provide recreation planners, public land managers, academicians, and others interested in outdoor recreation with a resource describing the trends and the contemporary American's participation in outdoor recreation. The book provides a professional information resource for planning, decision making marketing, and documentation. The information from this book was used to make recreation use projections up to 2050.

Other Studies Considered

While the majority of information was gathered from NVUM, MSCORP, and Cordell's work, the interdisciplinary team members reviewed other studies specific to recreation uses in Michigan for pertinent information. Additionally the interdisciplinary team considered and used, where relevant, sources recommended by the public during scoping. This document is intended as an objective analysis of the recreation supply and demand for Primitive and SPNM recreation opportunities in Michigan.

A full list of sources used can be found in the reference section of this document and the project file. Documentation of the review of public-recommended references is available in the project file.

Key studies considered include:

- U.S. Census results were used to identify user demographics in the State of Michigan (U.S. Census Bureau 2010)
- *Role of Manager and Visitor Self-Interest in Wilderness Management: Nordhouse Dunes and Limits of Acceptable Change* (Propst, Dennis B. *et al.* 2003)
- National Survey on Recreation and the Environment (USDA-FS 2000)

Collaboration

As part of this analysis, the Forest Service collaborated with MDNR representatives to discuss the supply and demand of outdoor recreation in Michigan. Two MDNR employees served as SEIS interdisciplinary team members. The focus of the analysis process was to address specific recreation issues associated with the management of areas classified as Primitive and SPNM (2006 Forest Plan) on the Forests. These issues included, but are not limited to;

- coordination of recreation planning with the aim (to the extent feasible) of reducing duplication in meeting recreation demands with respect to gun hunting and snowmobiling;

- minimizing conflicts between off-road vehicle use and other uses or interests in the Forests; and
- considering the effects of closing Primitive and SPNM Areas to gun hunting and snowmobile use.

In addition, the Forest Service consulted with Dr. Chuck Nelson of Michigan State University. Professor Nelson is an expert and the author of peer-reviewed articles on outdoor recreation. Several of Dr. Nelson's publications were used in the development of this document.

III. Demographics of Market Area

As determined by the District court, the market area for this analysis is the State of Michigan.

According to the MSCORP, the demand for outdoor recreation is influenced by the size, characteristics, and geographic distribution of populations. Three important population subgroups are (1) the Michigan resident population, (2) populations with access to seasonal homes, and (3) tourists to the State.

Resident Population

Between 2000 and 2009, Michigan's population remained relatively constant, with a growth rate of less than 0.1 percent. The population in Michigan in 2010 was 9,883,640 people (U.S. Census Bureau 2010). Approximately 51 percent of the population was female and 49 percent male. In Michigan, 45.3 percent of the population is under age 35, 28.1 percent of the population is 35 to 54 years of age, and 26.6 percent of the population is 55 or older. The largest population increase between 2000 and 2010 was in the 50 to 54 age group. Approximately 78.9 percent of the population classified self classified themselves as white in 2010, 14.2 percent as Black or African-American, and about 6.9 percent as other races or ethnic groups. These percentages remained approximately the same over the last decade (2000-2010). The Hispanic and Latino populations grew from 3.3 percent of the population in 2000 to 4.4 percent of the population in 2010, the greatest increase in any of the ethnic groups.

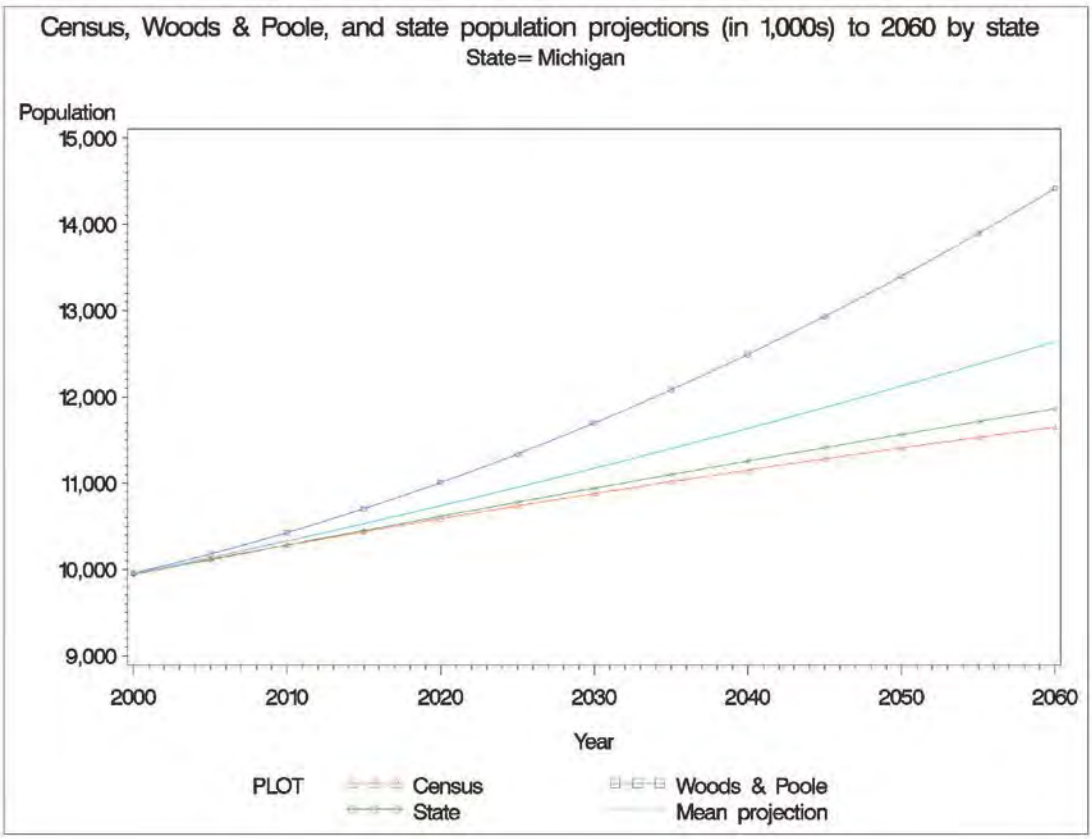
The 2010 census classified just over two-thirds of households as "family households." Approximately 34 percent of households are non-family households with 27.9 percent being individuals living alone. Across all households, approximately 31.6 percent have at least one member under age 18 and 25.4 percent have at least one member 65 years or older. From 2000 to 2010, the average household size remained stable at approximately 2.5 people. The same was true for the average family size, which remained at 3.0 people.

Figure 1 displays State population projections from 2000 through 2060. Three projections were plotted and a fourth projection was produced to display the mean average of the three. All population projections forecast an increase in Michigan's population over the next 60 years.

According to the MSCORP, because Michigan's population continues to grow in ethnic diversity and increase in age, managers will be challenged to identify and meet the changing outdoor recreation demands of the public.

Additional information regarding age and uses of National Forest System (NFS) lands can be found in the National Visitor Use Monitoring Results, USDA Forest Service, National Summary Report (USDA-FS 2010).

Figure 1. Michigan Population Projections (in 1,000s) 2000 to 2060



Source: Woods and Poole 2006

According to the MSCORP, visiting seasonal homes are an important part of the lifestyle of many Michigan residents and these visits account for a considerable share of outdoor recreation. Michigan had 233,922 seasonal homes in 2000, approximately 5.5 percent of all housing units in the State. The number of seasonal homes grew by 5 percent between 1990 and 2000.

Two studies conducted by Michigan State University describe the importance to outdoor recreation use in northern Michigan and its relationship to seasonal homes (Stynes *et al.* 1997; Nelson et al. 1995).

Stynes (1997) measured patterns of use based on a sample of seasonal homeowners in six northern Lower Peninsula counties. Almost half of seasonal homeowners cited outdoor recreation as an “extremely important” reason for owning the seasonal home. On average, seasonal homes were occupied 86 days in 1994. The use was split 48 days during the summer, 17 in the fall, 13 in spring and 8 in winter. The majority of use cited was hiking, ORV use, bicycling, nature study, and other activities that took place on the nearby public lands.

Nelson and Lynch (1995) noted residents with seasonal homes and their guests accounted for the majority of dispersed recreation user hours on the adjacent State and National Forests in the northern Lower Peninsula of Michigan. Key activities included hunting, fishing, nature observation, picking wild edibles, and trail activities. As seasonal homes tend to be located in areas with lower densities of year-round residents and limited development, seasonal residents and their guests have significant relative impacts on the outdoor recreation demand in rural areas.

IV. Demand

Demand for outdoor recreation opportunities is measured by recreation planners in multiple ways, including analyzing data on sale of specialized equipment such as snowmobiles and skis and the sale of State licenses such as hunting, fishing, and ORV vehicle licenses.

Demand is also measured by use of existing facilities and analyzing whether the facilities are used, the number of days that they are used, and how full to capacity these facilities are on the days that they are used. For example, the NVUM study measures visitor use at trailheads and developed sites, by counting users as the people exit.

Another method of measuring demand is to survey people at home and ask them what types of outdoor recreation activities they pursue, how often they pursue them, and where they go for recreational activities.

All of the methods mentioned above provide useful information and each method has flaws that must be considered. Combining all this type of information often paints the best overall picture of demand.

The MSCORP provides supply and demand information on outdoor recreation opportunities in Michigan. In 2007, Michigan State University conducted a mail survey of randomly selected, registered voters to better understand public outdoor recreation needs, preferences, activities and the use of Michigan's public outdoor recreation resources. A sample of 2,001 voters was randomly selected, with 460 responses received. Table 1 displays the results of this survey showing the rating by residents of the relative importance of various outdoor recreation activities. Walking outdoors, hunting, and fishing are the first, second, and third most important outdoor recreation activities. This list identifies those activities primarily associated with the focus of this analysis. Activities such as developed camping and group sports activities were not included since they do not tend to be associated with recreational opportunities in Primitive and SPNM Areas (2006 Forests Plan). According to the MSCORP, walking outdoors, hunting, and fishing are the first, second, and third most important outdoor recreation activities of Michigan residents.

Table 1. Michigan Resident Outdoor Recreation Participation by Importance

Activity	Participating (percent)	1st Most Important Activity (percent)	2nd Most Important Activity (percent)	3rd Most Important Activity (percent)	1st, 2nd Or 3rd Most Important (percent)
Walk Outdoors	85.7	25.7	12.8	5.7	44.2
Driving for pleasure	67.2	7.4	4.7	4.8	16.9
Sightseeing	53.5	1.6	1.0	5.7	8.3
Fishing	50.7	8.3	10.5	5.5	24.3
Wildlife Viewing	44.6	2.1	4.4	6.2	12.7
Motorized Boating	37.6	3.2	3.0	3.8	5.2
Hunt	30.4	9.2	7.0	3.6	19.8
Canoe/ Kayak	28.7	0.7	3.7	2.9	7.3
Day Hike	20.0	1.1	1.4	1.2	3.7
Snowmobile	12.8	1.1	2.1	1.0	4.2
Horseback riding	8.7	0.9	0.2	-	1.1
Cross-Country Ski	8.7	0.2	0.9	0.5	1.6
Overnight Backpack	3.9	0.7	-	-	0.7
Geocache	2.6	0.2	0.2	-	0.4

Source: MDNR 2008, p. 32.

The MSCORP concludes:
"[M]ichigan residents and out-of-State visitors seek a wide variety of outdoor recreation opportunities. Demand for recreation is year-around and includes such activities as hiking, backpacking, camping, hunting, fishing, boating, ORV riding, snowmobiling, and wildlife viewing. Considering that 75 percent of Michigan's population participates in outdoor recreation activities in public venues, demand is high (MDNR 2008, p. 34)."

The MSCORP states that "[w]alking outdoors and hiking are major uses on Federal, State, and local lands." Many activities are directly associated with improvements such as trails, campgrounds, and river access sites. Nonmotorized trails, such as the North Country National Scenic Trail and Michigan Shore to Shore Riding-Hiking Trail, receive high numbers of recreation visits. In addition, driving for pleasure and other motorized outdoor recreation experiences are major activities which bring visitors to Michigan's parks and forests. Trail systems are located throughout the State and attract high levels of use from mountain bikers, horseback riders, and ORV enthusiasts (MDNR 2008).

Forest Service personnel have noted that picking wild edible products (mushrooms, berries, etc.) in Primitive and SPNM Areas (2006 Forests Plan) is common and some newer recreation activities, like geocaching, are becoming popular.

The U.S. Fish and Wildlife Service (USFWS) conducts a nation-wide study of participation and economic impact for hunting, fishing and wildlife viewing every 5 years, with data also available at the State level. The USFWS estimates that 753,000 people aged 16 and over hunted in Michigan in 2006, accounting for a total of 11.9 million hunter days[1]. This is the fifth largest number of hunters of any State and third most hunter days (USFWS 2006). The State of Michigan is currently promoting hunting through a hunting recruitment initiative. Table 2 displays the hunting season dates for selected species of wildlife in Michigan for the 2010 season. Some species are not identified in Table 2 since they may be hunted year-round. The wildlife species that can be hunted throughout the year include porcupine, some squirrel species, weasel, skunk, raccoon, and opossum. A firearm can be used in hunting these species.

[1] A hunter day is defined as any portion of a day that a person spends hunting.

Table 2. 2010 Michigan Hunting Seasons

Species	Season Dates									
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May
Black Bear		Sept. 10-Oct. 20								
Cottontail Rabbit and Varying Hare		Sept. 15-Mar.31								
Spring Turkey									Apr. 18-May 31	
Crow	Aug.1-Sept.30						Feb.1-Mar.31			
Deer (Early Antlerless Firearm (select areas))		Sept.15-19								
Deer (Youth Early Antlerless Firearm)		Sept. 20-23								
Deer (Youth & 100 percent Disabled Veterans)		Sept.24-25								
Deer (Archery)			Oct. 1–Dec. 31 + Dec. 1 – Jan. 1							
Deer (Special Disabled Firearm Hunt)			Oct.13-16							
Deer (Regular Firearm)				Nov. 15-30						
Deer (Muzzleloading)					(By Zone) Dec.3-12; Dec.10-19; Dec.3-19					
Deer (Late Antlerless Firearm (select areas))					Dec.19-Jan.1					

Species		Season Dates								
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May
Elk	Aug.31-Sept.3; Sept.24-27		Oct.16-20		Dec.4-12	Jan.12-16				
Pheasant (male only)			(By Zone) Oct.10-31; Oct. 20-Nov.14; Dec.1-Jan.1							
Quail			Oct.20-Nov.14							
Ruffed Grouse		Sept.15-Nov.14			Dec.1-Jan.1					
Sharp-tailed Grouse			Oct.10-31							
Squirrel-Fox and Gray (black phase included)		Sept.15-Mar.1								
Fall Wild Turkey		Sep.15-Nov.14								
Woodcock		Sept.24-Nov.7								

Source: MDNR 2011

Table 3 displays the number of Michigan hunting licenses sold in 2009 and 2010. The number of license purchases by Michigan hunters declined by 3.2 percent during that 2-year period.

Table 3. Michigan Hunting Licenses Sold in 2009 and 2010

Hunting Season	2009	2010	Percent change
Deer (all licenses)	682,193	657,406	- 3.6
Antlerless Deer	344,754	322,621	-6.4
Turkey (Spring)	120,763	115,114	-4.7
Bear	8,953	8,976	+0.3
Elk	366	227	-38.0
Small Game	257,504	253,764	-1.5
Fur Harvester	20,969	21,984	+4.8
Total	**810,153**[2]	**784,035**[2]	**-3.2 (Average)**

Source: MDNR 2010.

According to the MSCORP, taking into account public hunting available in State forest, Federal lands, State park and recreation areas, State game and wildlife areas and Commercial Forest Act lands, the public is never more than 30 minutes from someplace where there is a hunting opportunity (*see* Appendix A, Maps C-1 through C-5).

Visitors and residents of Michigan participate in a variety of winter recreation activities. According to the National Survey on Recreation and the Environment (Cordell 2004), participating in winter-based recreation activities within Michigan often exceeds the average rate of participation in the Nation. Table 4 displays the participation rates for winter sports for the State of Michigan and the United States as a whole. Based on this information, participation in winter activities is more popular in Michigan than in the United States as a whole. These participation rates detailed below are consistent with other studies done on winter recreation use in Michigan and nationwide.

Table 4. Winter Participation Rates in Michigan as Compared to the United States

Activity	Michigan	United States
Sledding	25.0	14.7
Snowmobiling	15.6	5.6
Cross-country Skiing	7.7	3.8
Snowshoeing	2.7	1.8

Source: Cordell 2004, pgs 111, 213-215

Several studies have been conducted to collect information on snowmobile user demographics, spending patterns and preferences in Michigan (*see* Appendix A, Map C-6). According to Nelson *et al.*, "[o]f the sample of 3,000 snowmobilers, 78 percent were Michigan residents and 22 percent were nonresidents (2009)." This is a shift from winter 1996-97 when 63 percent were residents and 37 percent were nonresidents. A total of 1,092 snowmobilers responded to the survey. After invalid addresses were removed, this resulted in a 38 percent response rate with 76 percent of responses by residents and 24 percent by non-residents. During winter 2007-08, it is estimated that the average resident machine had 11.5 days of use versus 14.5 in winter 1996-97. The average non-resident machine had an average of 6.5 days of use in Michigan compared to 5.5

[2] Sales of some State licenses cover multiple wildlife species.

days of use in winter 1996-97. In total, there were 2 million snowmobiling days[3] in winter 2007-08, a 13 percent decline from winter 1996-97.

Snowmobile use shifted southward as the Upper Peninsula had 35 percent of the days in winter 2007-08 instead of 39 percent as in 1996-97, while the southern Lower Peninsula had 14 percent of the use in 2007-08 compared to 10 percent in winter 1996-97. The most snowmobiling in both studies was in the northern Lower Peninsula, which had 51 percent of the snowmobiling days in both studies. Michigan residents accounted for 85 percent of the snowmobile days in winter 2007-08 and non-residents accounted for 15 percent. The proportion of resident use increased from 82 percent in winter 1996-97, while the proportion of non-resident use decreased from 18 percent. Use per permitted snowmobile declined 7 percent from winter 1996-97 to 2007-08. The Forest Service considers information of this nature in monitoring snowmobile use levels and trends.

Table 5. Estimate of Total Michigan Snowmobile Days by Region for Winter 1996-97 and 2007-08 for Snowmobiles with Trail Permits

Region	1996-97	2007-08
Upper Peninsula	889,111	710,178
Lower Peninsula	1,439,982	1,336,368
Total	2,329,093	2,046,546

Source: Nelson *et al.* 2009

Federal, State, and local lands and lands managed by land conservancies are commonly used by outdoor recreationists (*see* Appendix A, Maps C-1 through C-5). Table 6 provides a list of the percentage of households who visited public outdoor recreation venues over a 12 month period (MSCORP). Within a 12-month period, 59.5 percent of the Michigan residents in the sample had used State lands, 53.4 percent of the sample used lands managed by local governments (*e.g.* county, city, or township parks) and 23.3 percent used National Parks, National Lakeshores, and National Forests for outdoor recreation.

Table 6. Michigan Residents Using State, Local, Federal, and Other Lands to Recreate

Outdoor Recreation Venue	Percent	Percent Visiting Venue More than 10 Times	Mean # of Days visited	Median # of Days visited
Any public outdoor recreation venue	75.4 %	37.8 %	16.3	5
State of Michigan Park, Forest, etc.	59.5 %	21.2 %	7.3	0
Local government agencies (ie. County, city, township)	53.4 %	16.8 %	6.4	0
National Park, Lakeshore, Forest, Refuges	23.3 %	3.8 %	2.6	0

Source: MDNR 2008, Table 17

[3] A snowmobile day is defined as any portion of a day that a person spends snowmobiling.

The National Survey on Recreation and the Environment (NSRE): 2000-2002 was conducted by the Southern Research Station of the Forest Service (USDA-FS 2000). The NSRE database is used by the Forest Service to evaluate outdoor recreation uses and trends on NFS lands. Assessment reports are prepared to track the status and trends of the Nation's renewable resources on all forests and rangelands, as required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA). Renewable resources evaluated in RPA Assessment reports include fish and wildlife, water, forests, range, wilderness, and outdoor recreation opportunities, as well as the trends associated with these resources. The RPA data uses the latest NSRE database as one of the foundational data sources; therefore, NSRE findings are already incorporated into the RPA data. NSRE data is used in conjunction with NVUM data to provide the basis of quantitative information for outdoor recreation demand forecasts for all forests in the agency.

The following two tables display the results of the NSRE survey. Table 7 displays outdoor recreation activities and age group participation rates for people living in the proximity of the Huron National Forest and Table 8 displays this information for people living in the proximity of the Manistee National Forests. This survey also contains demographic information by sex and race relating to recreation activities demand by National Forest local areas. This demographical information was considered as part of this analysis and is available in the project file.

Table 7. Huron National Forest Activity Participation Rates by Age Class (percent and number of people age 16 and older participating in outdoor recreation)[4]

Activity	Age 16-34		Age 35-54		Age 55+		All Ages	
Walk for pleasure	82.0%	239,371	88.1%	298,940	87.6%	278,226	86.1%	816,537
Day hiking	35.3%	103,125	42.5%	144,005	25.1%	79,547	34.4%	326,677
Gather mushrooms, berries, etc.	52.9%	154,589	58.7%	199,096	44.4%	140,863	52.1%	494,548
Visit a wilderness or primitive area	46.3%	135,289	48.0%	162,797	36.4%	115,443	43.6%	413,529
Backpacking	16.8%	49,116	9.4%	32,042	6.4%	20,181	10.7%	101,339
Primitive camping	31.1%	90,941	22.5%	76,173	10.6%	33,628	21.2%	200,742
Horseback riding (any type)	14.4%	42,098	11.9%	40,242	3.4%	10,941	9.8%	93,281
Mountain biking	38.3%	111,950	35.5%	120,238	17.7%	56,171	30.4%	288,359
Sightseeing	56.9%	166,095	69.1%	234,484	58.6%	186,174	61.9%	586,753
Driving for pleasure	61.0%	178,273	66.7%	226,338	63.3%	200,923	63.8%	605,534
View/photograph other wildlife	53.6%	156,457	67.5%	228,847	58.4%	185,356	60.2%	570,660
Hunting (any type)	30.2%	88,265	26.7%	90,425	15.7%	49,912	24.1%	228,602
Freshwater fishing	51.8%	151,343	44.5%	150,980	34.1%	108,146	43.3%	410,469
Canoeing	30.5%	89,056	25.7%	87,147	15.0%	47,772	23.6%	223,975
Kayaking	9.3%	27,170	5.0%	16,810	4.0%	12,773	6.0%	56,753
Motorboating	48.9%	142,882	43.4%	147,078	33.0%	104,669	41.6%	394,629
Cross-country skiing	15.5%	45,306	19.3%	65,607	11.7%	37,181	15.6%	148,094
Snowmobiling	31.4%	91,595	27.6%	93,707	10.9%	34,669	23.2%	219,971

Source: USDA-FS 2000

[4] NSRE market area for the Huron National Forest includes portions of 31 counties. Percentages were rounded after the number of participants was derived.

Table 8. Manistee National Forest Activity Participation Rates by Age Class (percent and number of people age 16 and older participating in outdoor recreation)[5]

Activity	Age 16-34		Age 35-54		Age 55+		Total for All Ages	
Walk for pleasure	85.9%	2,171,314	87.3%	2,560,819	86.2%	1,899,809	86.5%	6,631,942
Day hiking	29.8%	752,605	33.0%	966,804	22.2%	489,769	28.8%	2,209,178
Gather mushrooms, berries, etc.	36.3%	917,954	40.6%	1,189,132	29.6%	651,607	36.0%	2,758,693
Visit a wilderness or primitive area	40.3%	1,017,821	38.0%	1,114,804	28.5%	628,515	36.0%	2,761,140
Backpacking	14.4%	362,978	9.0%	263,477	4.1%	90,622	9.4%	717,077
Primitive camping	23.5%	593,766	16.1%	471,760	8.1%	178,456	16.2%	1,243,982
Horseback riding on trails	10.6%	268,200	7.7%	224,853	1.5%	33,632	6.9%	526,685
Mountain biking	43.1%	1,089,169	30.6%	897,901	11.0%	242,274	29.1%	2,229,344
Sightseeing	54.9%	1,388,374	62.0%	1,818,619	58.1%	1,279,022	58.5%	4,486,015
Driving for pleasure	56.8%	1,434,568	62.2%	1,824,203	59.0%	1,299,820	59.5%	4,558,591
View/photograph other wildlife	48.9%	1,236,448	55.4%	1,624,909	46.8%	1,030,127	50.8%	3,891,484
Hunting (any type)	17.8%	449,503	15.8%	462,858	8.4%	186,006	14.3%	1,098,367
Freshwater fishing	38.0%	961,049	39.1%	1,146,018	22.2%	488,817	33.9%	2,595,884
Canoeing	23.5%	594,961	19.3%	565,222	8.8%	194,388	17.7%	1,354,571
Kayaking	8.0%	202,629	4.7%	137,271	2.1%	45,931	5.0%	385,831
Motorboating	41.7%	1,053,149	37.7%	1,105,258	25.4%	560,387	35.5%	2,718,794
Cross-country skiing	9.7%	246,133	12.5%	365,419	7.5%	164,354	10.1%	775,906
Snowmobiling	24.8%	626,936	14.9%	437,895	5.8%	127,044	15.6%	1,191,875

Source: USDA-FS 2000

[5] NSRE market area for the Manistee National Forest includes portions of 73 counties. Percentages were rounded after the number of participants was derived;

Figure 2 displays the recreation use levels detailed in NVUM for the three Michigan National Forests. The Huron-Manistee National Forests are located in the Lower Peninsula of Michigan and these National Forests are closest to the major population centers in Michigan.

Figure 2. Recreation Use Levels for the Three Michigan National Forests

Source: USDA-FS 2007

The proximity of major population centers to the National Forests, along with the desired recreation experiences offered, is a major consideration in assessing demand for recreation opportunities on the Forests. Approximately 25 percent of Michigan's population (2.4 million people) resides within a 1-hour drive of the Forests (*see* Appendix A, Maps B-1 and B-2). Extending the drive time to 2 hours, or about 120 miles, triples the number of potential users of the Forests to approximately 7.4 million (Leefers, *et al*. 2003).

Based on the NVUM survey, the Forests had 4,069,000 National Forest visits and 4,532,000 site visits[6]. Of these visits, 612,000 were associated with day use visits to developed recreation sites and 141,000 visits were associated with the overnight use of developed sites such as campgrounds. The majority of the visits (3,729,000) were associated with general forest area visits. General forest areas include almost everything, but exclude use of developed recreation sites such as campgrounds and the Nordhouse Dunes Wilderness. Some activities common in general forest areas are hunting, fishing, hiking, snowmobiling and cross-country skiing. Recreation use of SPNM Areas (2006 Forest Plan) is included in the general forest area visits (*see* Appendix A, Map A-2). The recreational use of the Nordhouse Dunes Wilderness was approximately 50,000 visits (*see* Appendix A, Map A-2).

Table 9 displays the NVUM data pertaining to the percent of the Forests' visits by the distance traveled. Almost 29 percent (28.7 percent) of the visits were by people living within 25 miles and one-third (33.3 percent) of visits were by people who lived within 101 to 200 miles of the Forests.

[6] A National Forest visit is defined as the entry of one person onto a National Forest to participate in recreation activities for an unspecified period of time. A site visit is defined as the entry of one person onto a specific forest site (a National Forest visit can consist of multiple site visits).

Table 9. Percent of National Forest Visits to the Forests by Distance Traveled

Distance (miles)	Percent of Visitors
0 - 25	28.7
26 - 50	12.3
51 - 75	7.0
76 - 100	11.4
101 - 200	33.3
201 - 500	6.2
Over 500	1.2
Total	**100.0**

Source: 2007 NVUM survey report

The majority of visitors to the Forests are from areas in southern Michigan. Figure 3 displays the counties of origin for 50 and 75 percent of the recreationists. Figure 4 displays the Forests' visitor origin map for the United States.

Figure 3. Counties of Origin for Michigan Recreationists

Source: NVUM 2007; Red indicates Counties of origins for 50 percent of the Forests recreationists; Red and Blue combined indicate 50 to 75 percent of the Forests' recreationists.

Figure 4. The Forests' Visitor Origin Map

Source: NVUM 2007

According to NVUM data, most visits to the Forests are relatively short. Half are 6 hours or less, and some are much longer, since the average National Forest visit length is about 34 hours. For nearly all visits (almost 95 percent), the person goes to only one place on the Forests for recreation. Over 60 percent of the visits come for one of three activities: viewing scenery (54 percent), hunting (25 percent) and hiking/walking (25 percent) on the Forests. It is important to note that the 2007 NVUM survey strategy was adjusted from the previous NVUM study to specifically address the lack of information the Forest Service had regarding winter use activities.

Table 10. Activity Participation on the Huron-Manistee National Forests.

Activity	Percent of visitors who participated in this activity[7]	Percent of visitors who identified activity as primary activity[8]	Average hours spent in primary activity
Viewing natural features (Scenery)	53.6	40.4	1.9
Non-Consumptive Wildlife Activities	27.8	2.1	4.2
Relaxing	24.9	4.2	10.2
Hiking/walking	24.5	6.7	11.7
Hunting	25.2	25.0	18.1
Driving for pleasure	17.7	1.8	1.4
Gathering forest products (mushrooms, berries, firewood)	16.0	9.1	5.1
Primitive camping	6.7	1.1	11.6
Snowmobiling	3.3	3.2	5.7
Nature study	3.1	0.0	0.0
Backpacking	2.5	2.1	17.5
Bicycling	2.0	1.0	1.6
Cross-country Skiing	0.8	0.4	1.2
Horseback riding	0.4	0.1	7.7

Source: USDA-FS 2007

Trends in Outdoor Recreation

Population growth has been and is expected to continue to be the primary driver of outdoor recreation participation growth. Recreation behavior and trends are also influenced by factors such as age, race or ethnicity, sex, wealth or income, education, and previous experiences. Projections for winter, wildlife-related, and dispersed land activities were developed based on data published in *Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends* by H. Ken Cordell, *et al.* (1999). Table 11 displays the projected trends for major outdoor recreation uses that are typically associated with the Primitive and SPNM Areas (2006 Forest Plan) on the Forests. Some recreation uses, such as geocaching, are not displayed since they were considered minor uses based on NVUM data and given the lack of data for a number of years, no trends could be projected.

[7] Survey respondents could select multiple activities. Respondents were asked to select one activity as their main one and some selected more than one activity.
[8] Computed only for those who indicated the activity was the main activity on their visit.

Table 11. Projected Index of Change in the U.S. Population and Selected (Recreation Activities for the North Region, Base Year 2000 (2000=100))[9]

Variable-Trips	2000	2010	2020	2030	2040	2050
U.S. Population - North Region	100	105	113	119	123	129
Dispersed Land Activities						
Biking[10]	100	109	116	133	142	157
Horseback Riding	100	108	120	130	136	144
Walking	100	106	114	121	126	132
Off Highway Driving[11]	100	100	107	104	105	110
Hiking	100	99	103	104	103	102
Backpacking	100	97	98	100	102	110
Primitive Camping	100	96	95	91	84	78
Wildlife-Related Activities						
Non-consumptive Wildlife Activities	100	106	114	114	106	94
Hunting	100	103	109	115	117	121
Fishing	100	100	102	102	98	96
Water Based Activities						
Canoeing	100	95	92	91	91	92
Rafting/floating	100	93	91	89	89	82
Winter Activities:						
Snowmobiling	100	115	134	154	175	206
Cross-Country Skiing	100	104	111	120	130	146

Source: Cordell *et al.* 2004

According Cordell *et al.* (2004), the five activities that are predicted to have the greatest increase in participation by 2050 are snowmobiling (106 percent increase), biking (57 percent increase), cross-country skiing (46 percent increase), horseback riding (44 percent increase) and walking (32 percent increase). The four activities that are predicted to decrease by 2050 are primitive camping (22 percent decline), rafting and floating (18 percent decline), non-consumptive wildlife activities (6 percent decline), and fishing (4 percent decline). During this time period, the population in Michigan is projected to increase (Figure 1, Page 9).

Table 12 provides a projection of National Forest Visits to the Forests based on use trends projected in Table 11. These projections have been updated from those originally developed for the Supply and Demand Assessment prepared as part of the 2006 Forest Plan revision process. The Forest Service has updated use information from the 2007 NVUM survey that was previously

[9] The Forest Service did not adjust trend projections based on use levels between 2000 and 2010. Sufficient information was not available to merit any adjustments. The Forest Service took actual use levels from 2007 NVUM data and used those figures to project future use levels.
[10] In the study, bicycling was identified as a developed site activity. No other sources could be found, so the trends were utilized from this study.
[11] For the purpose of this analysis, Off Highway Driving is considered equivalent to driving for pleasure.

not available. Total Forest visits according to NVUM was 4,069,000 and total general forest area visits were 3,729,000 (USDA-FS 2007).

Table 12. Projected Use Levels for Specific Activities on the Forests[12]

Activity	2010	2020	2030	2040	2050
Hunting	1,029.2	1,089.2	1,149.2	1,169.1	1,209.1
Gathering Mushrooms, Berries, Firewood, etc.	370.3	370.3	370.3	370.3	370.3
Hiking/walking	271.5	282.5	285.2	282.5	279.8
Snowmobiling[13]	137.4	160.1	184.0	209.0	246.1
Non-motorized watercraft	111.6	108.1	106.9	106.9	108.1
Non-consumptive Wildlife Activities	87.4	84.0	94.0	87.4	77.5
Backpacking	86.8	85.3	87.0	88.8	97.7
Driving for pleasure	73.2	77.6	75.4	76.2	79.8
Primitive Camping	44.0	43.6	41.7	38.5	35.8
Biking	42.1	44.8	51.3	54.8	60.6
Cross-country skiing	16.5	17.6	19.1	20.7	23.2
Horseback Riding	4.1	4.7	5.0	5.3	5.6
Total Projected RVDs	**5,042.7**	**5,347.7**	**5,615.2**	**5,686.5**	**5,935.7**

Source: Projected trends from Table 11 applied to estimated Primary Purpose National and Forest visits from NVUM survey, 2007 (calculations for each use is in the project file).

Accessibility

Based on U.S. Census Bureau information, 54 million people in the United States have a disability. In addition, the Census Bureau projects that by 2030, over 80 million people in the United States will be over 65. Currently 1 of every 2 people over 65 has a disability. If this ratio remains the same, by 2030, an additional 40 million people in the United States are expected to have disabilities. As the population continues to age, the proportion of Michiganians with disabilities is likely to increase (MSCORP). In addition, moderate physical exercise for those with ailments such as heart conditions and arthritis, as well as those more often considered disabled such as individuals in a wheel chair or with visual or auditory impairments, is important to maintaining physical and mental health. Trails, parks, wildlife viewing areas and other sites can provide excellent opportunities to maintain cardio-vascular health and socialization while participating in life-long outdoor recreation activities. For people with disabilities to successfully enjoy outdoor recreation, reasonable accommodations must be provided on the National Forest System lands as required by the Americans with Disabilities Act (ADA) and other federal accessability regulations, as amended and codified, 42 U.S.C. § 12101 *et seq.* According to National NVUM, 7.7 percent of those who visit the National Forests have self identified themselves as having a disability. Nationally, the largest demographic currently using the NFS

[12] All recreation uses on National Forest System lands are not reported, as some have relatively low participation rates (*i.e.* geocaching and snowshoeing) compared to other uses in the survey strategy.
[13] Considered driving for pleasure.

lands are within the age group that will be turning 65 by 2030. Based on these statistics, by 2030, 1 of every 2 people using NFS lands will have disabilities. The 2006 NVUM survey conducted on the Forests asked whether the user or member of their group had a disability. More than 19 percent (19.4 percent) of the respondents identified a group member as having a disability. Based on National trends and NVRUM data, the number of people with disabilities using the Forests for recreational purposes is expected to increase over the next 20 years. The Forest Service considers information on changing demographics and accessibility issues when developing direction for managing recreation opportunities on NFS lands.

Recreation Demand on National Parks

Isle Royale National Park, Pictured Rocks National Lakeshore, and Sleeping Bear Dunes National Lakeshore offer excellent outdoor recreation opportunities for those seeking hiking, camping, hunting, fishing, and cross-country skiing opportunities (*see* Appendix A, Map C-1). Use levels of other Michigan National Park sites, including Keweenaw National Historic Park and Motor Cities National Heritage Area are not reported here because they do not offer similar recreation opportunities to those on the National Forests in Michigan. Table 13 depicts recreation visits by National Park in 2000 and 2010. Other recreational activities occur, such as interpretive tours and scenic driving. These activities are not reported since they are not relevant to the analysis. These national parks have very different recreation opportunities and programs. As such, the type of activities and the manner in which the use levels are reported has varied.

Table 13. Recreation Use on National Parks in Michigan

Activity	Sleeping Bear Dunes		Pictured Rocks		Isle Royale	
	2000	2010	2000	2010	2000	2010
All Uses (total visitors)	1,195,084	1,280,934	422,905	499,280	21,241	15,893
Hiking	5,199	2,655	Not reported	Not reported	Not reported	Not reported
Backcountry Camping	25,511	18,372	Not reported	Not reported	41,071[14]	34,116[14]
Hunting	1,697	1,415	Not reported	Not reported	Not reported	Not reported
Cross-Country Skiing	1,878	411	25,909[15]	6,778[15]	Not reported	Not reported

Source: USDI-NPS 2011

Recreation Demand on National Refuges

National refuges provide excellent wildlife viewing and hunting opportunities (*see* Appendix A, Map C-1). A listing of the national refuges in Michigan along with the website information for each site is available in the project file.

[14] Reported as overnight stay
[15] Reported as winter activity visitor use

Recreation Demand on State Forests, Parks, and Game Areas

Michigan State Forests

Michigan's 3.9 million acres of State Forests are complex and interconnected systems that are extremely important to meeting a variety of needs in the State from wood products to ecosystem health to recreational pursuits of all types. Michigan State Forests also provide numerous recreation opportunities including hunting, fishing, boating, ORV riding, snowmobiling camping, and wildlife viewing (*see* Appendix A, Map C-2). These forests provide many opportunities for dispersed activities, such as picking wild edibles (mushrooms, berries, etc.).

In the 1990s, a recreation use study was conducted in Michigan State forests, including the Lake Superior State Forest (Eastern Upper Peninsula in 1993-1994), Au Sable State Forest (Northeast Lower Peninsula 1992), and the Pigeon River Country State Forest (North Central Lower Peninsula 1997-1998). These studies revealed that hunting was the most common dispersed use of State forest lands in all three State forests and that, in two of the three forests, adjacent private landowners and their guests accounted for up to half the dispersed use of the public forest land. Further, private lands provided numerous gateways to the public lands. Use levels ranged from over 10 hours per acre per year during snow-free months in the Au Sable State Forest to 2.5 hours per acre per year in the Lake Superior State Forest. Seasonally, activities such as picking edibles were very popular (mushrooms in May, blueberries in July and August, etc.). Use levels declined the further north one went, suggesting that distance from population centers is important in predicting future use (Nelson 1993, Nelson and Lynch 1995, Nelson *et. al* 1999). Across the entire State Forest System, it was estimated that in 1999 there were over 23 million visits for all recreation purposes (Nelson 1999).

Michigan State Parks and Recreation Areas

Michigan's State park system consists of 97 properties covering over 270,000 acres that annually serves over 26 million outdoor recreation visits (*see* Appendix A, Map C-2). Outdoor recreation is focused on camping, trail activities, boating, fishing, hunting and nature, and cultural resource appreciation and observation. There are also 18 recreation areas that encompass 84,070 acres and are distinguished from state parks in that they are open to hunting unless posted closed, whereas state parks are closed to hunting unless posted open. The State Park System is an important asset in meeting public outdoor recreation needs as well as to enhancing Michigan's image and supporting the tourism industry.

Michigan State Game and Wildlife Areas

Michigan State game and wildlife areas are similar to State forests in that they have unlimited ingress and egress, are often non-contiguous properties containing many private in-holdings. These areas are used for a wide variety of dispersed activities. In 2006, recreation use was assessed on 11 State game and wildlife areas (undeveloped portions only) in the southern Lower Peninsula. Unlike State parks, most State game and wildlife areas are located in southern Michigan, where 85 percent of the State's population resides and are close to large populations in neighboring States.

Dispersed use at game areas was higher than that recorded in State forests in the 1990s at 11.5 hours per acre from mid-March to mid-December. Of this use, 23.5 percent was by adjacent

private landowners and their guests who did not park in the game area, but rather walked from neighboring private property. Eighty-six (86) percent of adjacent landowners reported using the nearby game area for outdoor recreation without driving onto the public lands.

Wildlife associated recreation (hunting, fishing, wildlife viewing, trapping, and exercising or training a dog) accounted for about half the use in spring and summer and 98 percent of the fall use. Of the recreation use hours, 22 percent were estimated to be spent in the areas in the spring, 15 percent in the summer and 63 percent in the fall (Nelson *et al.* 2007).

Michigan Recreation Opportunities on Privately Owned Lands

Demand for many winter sports activities are also centered on opportunities provided by private businesses. Private winter sports centers like Caberfae Resort, Crystal Mountain, and others cater to downhill and cross-country skiing enthusiasts. Although these businesses are a focal point for many outdoor recreation activities, opportunities at these locations will not be evaluated in detail since they do not provide Semiprimitive Motorized and Nonmotorized recreation opportunities.

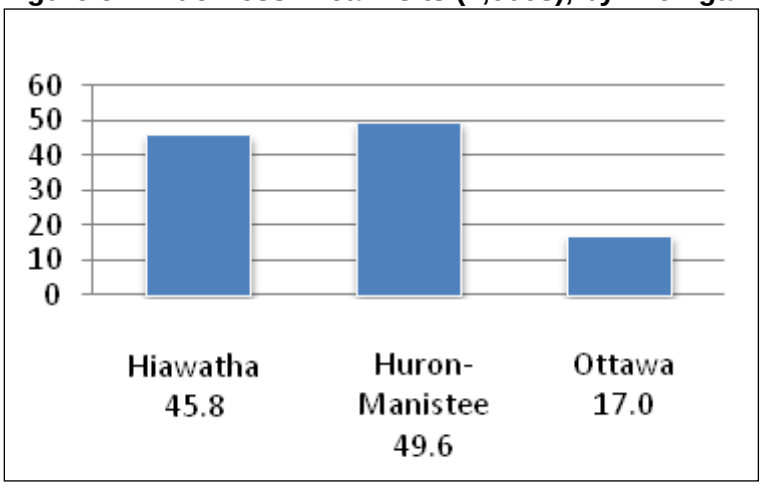
Demand for Primitive and SPNM Recreation Opportunities in Michigan

Visitors seeking Primitive and SPNM experiences tend to recreate in large blocks of undeveloped lands in a natural setting which offer the opportunity for solitude, challenge, and self reliance. People often use the term “wilderness” when they refer to these types of experiences and their definition varies based on each person’s past outdoor experience. In this document, the term wilderness refers to Congressionally designated wilderness areas under the Wilderness Act, 16 U.S.C. § 1131 *et seq.* The terms Primitive and SPNM recreation are defined using the Forest Service planning tool called the ROS. This tool is more fully explained in the next section.

Ten (10) Congressionally designated Wilderness Areas have been established on NFS lands in Michigan, one (Nordhouse Dunes) is on the Huron-Manistee; three on the Ottawa National Forest and six on the Hiawatha National Forest. The NVUM program measured wilderness visits to each of these areas during the last five years. Figure 5 displays total wilderness site visits to each of the National Forests. The Forests had the most wilderness site visits, which is likely due to the Forests proximity to Michigan’s major population centers.

While wilderness areas may be closest to meeting the setting, activities, and opportunities identified as ROS Primitive, few wilderness areas in Michigan have this ROS classification. It is important to note that of all the wilderness areas on NFS lands in Michigan, only the Nordhouse Dunes Wilderness has a portion (approximately 45 percent) of the wilderness inventoried as offering a Primitive recreation experience. The remaining portion of the Nordhouse Dunes Wilderness and all of the other National Forests’ wilderness areas in Michigan are managed for SPNM recreation experiences.

Figure 5. Wilderness Area Visits (1,000s), by Michigan National Forest



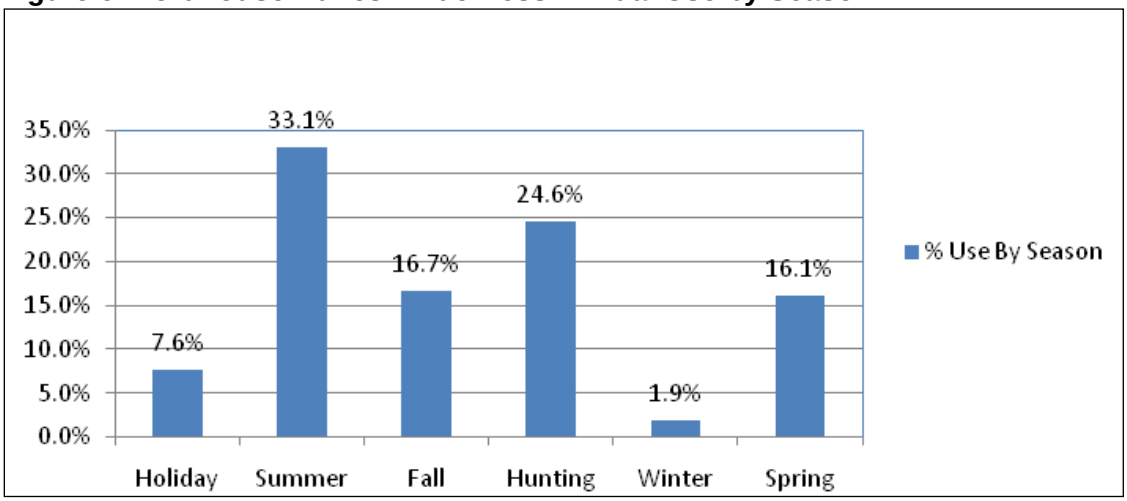
Visitation to wildernesses in the State of Michigan is similar to the rate nation-wide. Approximately 32.9 percent of the State population indicated that they participated in wilderness activities in 2001 compared to 32.7 percent nationwide. It is important to note however that some respondents may have identified a visit as being to a wilderness, but the visit may not have been validated as being to a congressionally-designated wilderness area. According to the 2007 NVUM study, the annual visitation estimate for the Nordhouse Dunes Wilderness was approximately 49,600 recreation visits.

According to the 1995 Nordhouse Dunes Wilderness user study conducted by Michigan State University, approximately 85 percent of the wilderness visitors were residents of Michigan. These findings are relatively consistent with the 2007 NVUM study (Propst *et al*. 2003). Figure 5 displays the number of wilderness visits by National Forest in Michigan. Of the 112,400 wilderness visits to NFS wildernesses in Michigan, 44.1 percent were to the Nordhouse Dunes Wilderness.

From May 1993 through March 1994, Michigan State University conducted a study of recreation use in the Nordhouse Dunes Wilderness. This study identified user demographics, perceptions, and satisfaction levels. The study determined that the largest group of wilderness visitors was from the local (60-mile radius) with 40 percent being from the Muskegon and Grand Rapids Area. First-time visitors constituted 34 percent of the wilderness area visitors. Hiking, walking, and enjoying nature ranked highest for reasons for visiting the wilderness area. Hunting and solitude or just getting away from it all comprised the remaining top 10 reasons.

Figure 6 displays the percent of recreation visits to Nordhouse Dunes annually by season.

Figure 6. Nordhouse Dunes Wilderness Annual Use by Season



Between 1993 and 1994, Michigan State University identified the main visitor activities as viewing scenery (86 percent), hiking on trails (82 percent), and hiking off trails (63 percent). Visitors often participated in more than one activity. Average party size was 2 people. Group sizes ranged from 1 to 14 people. Opening day of firearm deer season accounted for 9 percent of the total visitor use during the sample period.

The NVUM study also found that approximately 65 percent of visits to the wilderness were by males. Table 14 displays the race and ethnicity distribution of visits to the wilderness.

Table 14. Demographic Distribution of Wilderness Visitors

Race/Ethnicity[16]	Wilderness Visits (percent[17])
White	87
Spanish, Hispanic, or Latino	13.8
Black/African American	13

Source: USDA-FS 2007

The Forest Service monitors overall Forest use levels, separating those use areas by developed site visits, general forest visits, wilderness visits, and special events and organized camp use. Specific use information for areas managed for SPNM opportunities is unavailable. Recreation use information for these areas is incorporated into reports for general forest areas. In NVUM, general forest area sites include all of the national forest not included in the developed, outside developed, and wilderness site types. As such, user information in undeveloped areas in the ROS classes of Rural, Roaded Natural, SPNM and Semiprimitive Motorized sites are consolidated in NVUM reports.

[16] Due to OMB requirements, "Spanish, Hispanic or Latino" was presented in a separate question because it is an ethnicity not a race. In addition, respondents could choose more than one racial group

[17] Total exceeds 100 percent as some respondents identified themselves in more than one ethnic group

On the Forests, under the 2006 Forest Plan approximately 6.7 percent of the area is managed to provide SPNM opportunities (USDA-FS 2006 and 2006a). According to NVUM, 3,729,000 recreation visits occurred in general forest areas. Therefore, the Forest Service is estimating 24,984 recreation visits are occurring in these areas of the Forests.

Demand Summary

Based on a review of past, present, and future trend information, the demand for most forms of outdoor recreation on the Forests is expected to increase. Numerous factors effect demand for outdoor recreation, including changes in economic conditions at the local, State, and national levels. Population shifts to suburbs and northern Lower Michigan are expected to increase demand for outdoor recreation facilities. The Forests are within a 2-hour drive of more than 10 million people in Michigan and northern Indiana and Illinois. Other demographic changes along with the aging baby boomer population will likely affect which outdoor recreation activities increase or decrease over the next two decades. Cordell *et al.* (2004) suggests that demand for many dispersed recreation activities is likely to increase over the next 50 years. The greatest growth is expected in winter activities, including snowmobiling and cross-country skiing. Currently, snowmobiling and cross-country skiing account for approximately 3.2 percent and 0.4 percent of the annual use respectively (USDA-FS 2007). Other areas with an expected increase in use levels are horseback riding (0.1 percent), walking (6.7 percent), and hunting (25 percent). The Forest Service will need to continue monitoring of outdoor recreation uses to adjust programs to meet changing public demands for use of NFS lands.

The Forest Service utilizes the NVUM system to track outdoor recreation use levels, demographics, and satisfaction levels on NFS lands. In addition, MDNR monitors use levels and user satisfaction. The Forest Service and MDNR also work with State universities to conduct studies on recreation uses in Michigan to provide managers better information for making land management decisions. Both agencies work in a cooperative manner to address outdoor recreation use demand.

V. Recreation Opportunity Spectrum (ROS)

Recreation opportunities, rather than specific recreation activities, are the focus of this supply analysis process and are described as follows:

> "Research has shown that recreationists not only seek to participate in recreation *activities*, but also seek specific recreation *settings* in order to enjoy a special kind of recreation *experience* and subsequent *benefits*. These four components (i.e., activities, settings, experience, benefits) constitute a recreation opportunity; that is, *the opportunity for a person to participate in a particular recreation activity in a specific setting in order to enjoy a particular recreation experience and the benefits this affords*." ROS User Guide Chapter 30, pages 2&3, 2004.

An example of recreation opportunity versus recreation activity is this: One family might desire camping in a modern, full service campground on a reservoir in order to spend quality time with the family, to rest and relax, and to see nature's beauty. Another family might desire camping in a rural location where they can test their fishing skills, enjoy solitude, and see nature's beauty. Both families want to go camping, but in very different settings leading to different kinds of

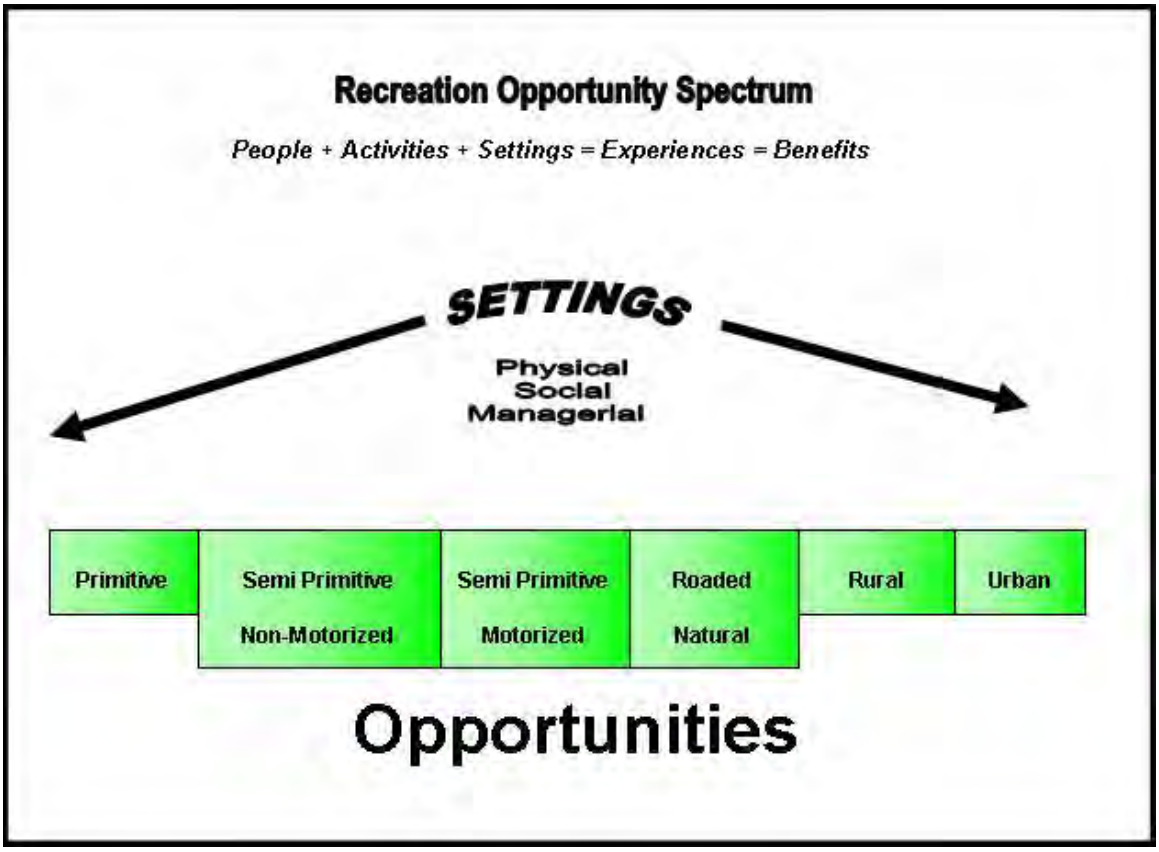
experiences and benefits; that is, they are seeking different kinds of recreation opportunities, desired experiences and outcomes (USDA-FS 1982).

While the apparent goal of the recreationist is to obtain satisfying experiences, the stated goal of the recreation manager is one of trying to provide opportunities for obtaining these experiences. Those opportunities are not exclusive to one form of recreation in almost all instances. Multiple forms of recreation occur on the same land area and on the same recreation facility. For example, a trail may provide for walking, equestrian use, overnight backpacking, access to hunting, opportunities for scenic viewing, wildlife observation, cross-country skiing, picking edibles such as berries and mushrooms, etc. Further, recreation is not the only use as the surrounding forest may be providing timber, conserving water through slowing runoff, filtering sediments and providing habitat for a host of plants and animals. Therefore, the emphasis for this analysis process is on recreation opportunities not just recreation activities. By focusing on recreation opportunities, the Forest Service is addressing the entirety of recreation. The Forest Service utilizes the ROS to identify these opportunities.

The ROS provides a framework for stratifying and defining classes of outdoor recreation opportunities. "[T]he land and water areas of the Forest are inventoried and mapped by Recreation Opportunity Spectrum Class to identify which areas are currently providing what kinds of recreation opportunities. This is done by analyzing the physical, social, and managerial setting components for each area. The characteristics of each of these three components of the setting affect the kind of experience the recreationist **most probably realizes** (emphasis added) from using the area ROS User Guide (USDA-FS 1982, page 14)." Six classes of recreation opportunities, ranging from the most remote and natural to the least remote and natural, are recognized along a continuum. These classes include Primitive, SPNM, Semiprimitive Motorized, Roaded Natural, Rural, and Urban (*see* Figure 5). Although numerous recreation opportunities and demands exist on National Forests, the Forest Service does not allocate set percentages of land to the various ROS classes. This direction is consistent with the ROS book, which states "[R]ecognition that National Forest System lands potentially have a large and diverse variety of recreation opportunities does not imply that equal or balanced allocations of classes be provided, nor does it mean that individual National Forests provide some of each class (USDA-FS 1986, page II-35)."

The ROS is used to map out the supply of different types of recreation opportunities across the NFS.

Figure 7. Recreation Opportunity Spectrum



Source: USDA-Forest Service 1985 and 1986

Table 15. Description of ROS Classes

ROS Class	Acronym	Description
Primitive	P	Evidence of other users is minimal
		Fairly large size (5,000 acres)
		Interactions between users is very low
		Managed essentially free of evidence of human–induced restrictions and controls
		Motorized use within the area is not permitted
		Unmodified natural environment
Semi-primitive Non-motorized	SPNM	Interactions between users are low
		Minimum on-site controls and restrictions may be present but subtle
		Moderate to large size (2,500 acres)
		Motorized use within the area is not permitted
		Often evidence of other users
		Predominantly natural or natural-appearing environment
Semi-primitive Motorized	SPM	Concentration of users is low, but there is often evidence of other users
		Moderate to large size (2,500 acres)
		Minimum on-site controls and restrictions may be present, but are subtle
		Motorized use is permitted
		Predominantly natural or natural-appearing environment
Roaded Natural	RN	Conventional motorized use is provided for in construction standards and design of facilities.
		Interactions between users may be low to moderate but evidence of others users is prevalent
		Moderate evidences of the sights and sounds of man, such evidences usually harmonize with the natural environment
		Predominantly natural-appearing environments
		Resource modification and utilization practices are evident but harmonize with the natural environment
Rural	R	Environment considerably altered by development or vegetative manipulation
		Extensive motorized use, parking available
		Facilities designed for large numbers of people and special activities
		Moderate to high visitor interaction
		No minimum size
		Sights and sounds of people common
Urban	U	Environment dominated by human-made structures
		Facilities for highly intense motor use and parking, sometimes with mass transit
		Large numbers of users
		No minimum size criteria
		The sights and sound of people dominant
		Vegetation often exotic and manicured

Figure 8. ROS Activities Characterizations[18]

Activity	Land Based	Land Based (includes Aircraft)	Water Based	Snow and Ice Based
Primitive		Viewing Scenery Hiking and Walking Horseback Riding Camping (all) Hunting (all) Nature Study (all) Mountain Climbing General Information	Canoeing Sailing Other non-motorized watercraft Swimming Fishing (all)	Snow play Skiing/Snowshoeing
Semi-Primitive Non-motorized		Viewing Scenery Automobile (off-road use) Motorcycles and Scooters Specialized land-craft Aircraft (motorized) Hiking and walking Horseback Riding Camping (all) Hunting (all) Nature Study (all) Mountain climbing General Information	Boating (powered) Canoeing Sailing Other Watercraft Swimming Diving (skin or scuba) Fishing (all)	Ice and Snowcraft Downhill Skiing Snow play Skiing/Snowshoeing
Semi-primitive Motorized				

[18] These activity characteristics are illustrative only. Specific additions or exception of activities within a ROS class may occur depending upon local forest situations where does this come from? Is it in the ROS Guide? What page?

Activity	Land Based	Land Based (includes Aircraft)	Water Based	Snow and Ice Based
Roaded Natural		Viewing Scenery Viewing Activities Viewing Works of Humankind Automobile (includes off-road use) Motorcycles and Scooters Specialized land craft Train and bus touring Aircraft (motorized) Aerial transportation and lifts Aircraft(Nonmotorized) Hiking and Walking Bicycling Horseback riding Camping (all) Organization Camping (all) Picnicking Resort and Commercial Services Resort Lodging Recreation Cabin Use Hunting (all) Nature Studies (all) Mountain climbing Gathering Forest Products Interpretive Services (all)	Tour Boat and Ferry Boat (powered) Canoeing Sailing Other watercraft Swimming and waterplay Diving (skin and scuba) Waterskiing and water sports Fishing (all)	Ice and Snowcraft Ice skating Sledding and Tobogganing Downhill Skiing Snow play X-Country Skiing/Snowshoes

Activity	Land Based	Land Based (includes Aircraft)	Water Based	Snow and Ice Based
Rural Urban	Viewing Scenery Viewing Activities Viewing Works of Humankind Motorcycles and Scooters Specialized land-craft Train and Bus Touring Aircraft (motorized) Aerial transportation and lifts Aircraft (Nonmotorized) Hiking and Walking Bicycling Horseback riding Camping (all) Organization Camping (all) Picnicking Services Resort Lodging	Recreation Cabin use Hunting (all) Nature Studies (all) Mountain climbing Gathering Forest Products Interpretive Services Team Sports Individual Sports Games and Play	Tour Boat and Ferry Boat (Powered) Canoeing Sailing Other watercraft Swimming and waterplay Diving (skin and scuba) Waterskiing and water sports Fishing (all)	Ice and Snowcraft Ice skating Sledding and Tobogganing Downhill Skiing Snow play X-Country Skiing/Snowshoeing

Source: USDA-FS 1982

ROS Criteria for Primitive and SPNM Opportunities

Federal, State, and private recreation opportunities are managed to differing standards based on the agencies administering these lands. To define similar recreation experiences and opportunities, the Forest Service considered the elements established in the ROS for both Primitive and SPNM areas. Since the Forest Service is attempting to analyze similar recreation opportunities in places other than NFS lands, some standards for these elements were developed to help ensure consistency in identifying similar recreation opportunities. For instance, all of the lands considered needed to be forested or semi-forested since the NFS lands in Michigan have these conditions. Opportunities, such as on agricultural lands (farm lands), were not considered even though people could pursue similar activities such as hunting. Agricultural lands do not meet the setting criteria established for a comparable recreation experience.

Primitive Opportunity Criteria

Table 16. Primitive ROS Activity Characterization

Activity	Application on the Forests.
Hiking and Walking	Hiking trails may or may not exist in the area
Horseback Riding	May or may not be allowed in area
Hunting	Hunting is generally allowed
Mushroom and berry hunting	May be an opportunity.
Nature Study	Areas may or may not have unique natural resources.
Tent Camping	Dispersed camping opportunities exist
Viewing Scenery	The area provides excellent opportunities to view forested to semi-forested environment.

Source: USDA-FS 1986

Table 17. Primitive ROS Setting Characterization

Characteristic	Application on the Forests.
Evidence of other users is minimal	Camping areas may be visible but not developed. Evidence of others is relatively low
Fairly large size (5,000 acres)	Congressionally designated wilderness area. Nordhouse Dunes Wilderness is 3,373 acres.[19]
Interactions between users is very low	Although recreation use may be high during some periods of the year, interaction is very low
Managed essentially free of evidence of human–induced restrictions and controls	Restrictions and controls are not relatively visible
Motorized use within the area is not permitted	No motorized use is allowed.
Unmodified natural environment	Most of the area is naturally appearing. Roads may be located on the boundaries

Source: USDA-FS 1986

Table 18. Primitive ROS Experience Characterization

Experience	Application on the Forests.
Closeness to nature	Interaction with nature is very high.
Extremely high probability of experiencing isolation from the sights and sounds of humans	A high probability to experience isolation from sights and sounds of humans.
High degree of risk	Management presence is low.
Independence	Management activities promote independence. Minimal signing and use limitations.
Self reliance	Management restrictions and controls are not relatively visible.
Tranquility	Opportunity for tranquility is excellent.

Source: USDA-FS 1986

[19] 1,536 acres were inventoried in the Nordhouse Dunes Wilderness as Primitive; 1,785 acres were inventoried as SPNM. Where does this come from?

SPNM Opportunity Criteria

Table 19. SPNM ROS Activity Characterization

Activity	Application on the Forests.
Hiking and Walking	Hiking trails may or may not exist in the area
Horseback Riding	May or may not be allowed in area
Hunting	Hunting is generally allowed
Mushroom and berry hunting	May be an opportunity.
Nature Study	Areas may or may not have unique natural resources.
Tent Camping	Dispersed camping opportunities exist
Viewing Scenery	The area provides excellent opportunities to view forested to semi-forested environment.

Source: USDA-FS 1986

Table 20. SPNM ROS Setting Characterization

Characteristic	Application on the Forests.
Interactions between users are low	Although recreation use may be high during some periods of the year, interaction is very low
Minimum on-site controls and restrictions may be present but subtle	Restrictions and controls are not relatively visible
Moderate to large size (2,500 acres)	The area is 2,500 acres
Motorized use within the area is not permitted	No motorized use is allowed.
Often evidence of other users	Camping areas may be visible but not developed. Evidence of others is relatively low
Predominantly natural or natural-appearing environment	Most of the area is naturally appearing. Roads may be located on the boundaries

Source: USDA-FS 1986

Table 21. SPNM ROS Experience Characterization

Experience	Application on the Forests.
Closeness to nature	Interaction with nature is very high.
High, but not extremely high, probability of experiencing isolation from the sights and sounds of humans	A high probability to experience isolation from sights and sounds of humans.
High degree of risk	Management presence is low.
Independence	Management activities promote independence. Minimal signing and use limitations.
Self reliance	Management restrictions and controls are not relatively visible.
Tranquility	Opportunity for tranquility is excellent.

Source: USDA-FS 1986

The ROS was used during the process of defining management areas in the 2006 Forests Plan. The ROS attributes were major determining factors in the classification of management areas. Very developed areas were typically classified under a Rural or Urban ROS class. Less developed areas offering activities, setting, and experiences meeting an ROS classification of Roaded Natural are common in the HMNF. Areas with even less development and more naturally-appearing environment were classified as ROS Semiprimitive. Managers then considered the attributes of these areas in more detail for each area prior to designation as ROS SPNM or ROS Semiprimitive Motorized. The Nordhouse Dunes Wilderness and the areas with Congresssionally designated National Wild and Scenic River were reviewed and no changes were made in their ROS classifications.

VI. Supply

In accordance with direction from the *Meister* panel, when analyzing the quantity and quality of recreation opportunities and experiences on public lands, the Forest Service considered all of the opportunities in the State of Michigan. This analysis considered the supply of these opportunities managed by government and private entities that provide outdoor recreational opportunities for public use: Federal, State, and local government and other private entities (such as land and nature conservancies). To determine the supply of outdoor recreation opportunities, the Forest Service researched numerous Federal, State, and internet sources. Only lands available for general public use were considered. Private hunt clubs or other lands may be available, but membership may be required (these private lands are not generally available to the public). Other recreation opportunities may exist on other private lands. The ROS standard listed in Table 16 through Table 21 were established to help identify where ***comparable*** recreation opportunities might be found. This analysis used ROS classifications and took into account other relevant information to ensure that not just the quantity, but the quality of recreation opportunities available to the public was considered.

Overview of Michigan's Public Land Base

Michigan's 36 million plus acres of land provides a wide range of environmental, commercial and recreational benefits. The State's land base is 53 percent forested, about 25 percent maintained as agricultural land, 13 percent of the land is in other vegetation or non-forested inland wetlands, and almost 10 percent of the land is the built environment. Michigan has an extensive public outdoor recreation land base and infrastructure. Although there is a substantial public land for outdoor recreation, land ownership patterns are fragmented which affects the quantity and quality of outdoor recreation opportunities that can be provided on the public lands.

Approximately 21 percent of all of the lands in the State of Michigan are in public ownership. National Forests comprise 8 percent and State lands another 13 percent of the total. State Forests and National Forests are concentrated in the northern Lower Peninsula and Upper Peninsula. National Forests are the largest Federal ownership category in Michigan, followed by the National Park Service lands, and U.S. Fish and Wildlife Service lands (Leefers, *et al.* 2003). State land ownership is approximately 4.5 million acres (12 percent of the State) with the majority of the land (3.9 million acres) being designated Michigan State Forests.

National Forests in Michigan

The Huron-Manistee, Ottawa, and Hiawatha National Forests are located in Michigan. Table 22 displays the total acreage of NFS lands by Forest. The Huron National Forest and the Manistee National Forest is administratively as one unit. They are the only National Forests in the Lower Peninsula of Michigan. All of these lands are open to general public use and the lands are currently managed for a variety of recreation opportunities in ROS classes ranging from Primitive to Rural. No areas on any of the National Forests in Michigan have an urban ROS classification.

Table 22. National Forest System Lands (Net Acreage) within Michigan, based on GIS data

National Forest	Net Acreage
Huron-Manistee	973,106
Ottawa	993,109
Hiawatha	889,063
Total	**2,855,278**

Sources: Huron-Manistee, Ottawa, and Hiawatha National Forests GIS databases

The proclamation boundaries for each National Forest encompass more land area than is in Federal ownership. The patchwork or checkerboard nature of this non-contiguous national forest ownership lessens the ability of the Forest Service to limit the influence of the surrounding lands in terms of visual effects, noise and other impacts of adjacent land uses. Table 23 displays the total lands within the proclamation boundaries for the Forests.

Table 23. Gross and Net Acreages of the Forests

National Forest	Gross Acreage	Net Acreage[20]
Huron	697,140	437,434
Manistee	1,328,428	535,672
Total	**2,025,568**	**973,106**

By law, National Forests are managed for multiple uses, including timber harvesting, wildlife values, and recreation. Outdoor recreation opportunities are abundant and can be located by visiting a National Forest website. Developed recreation facilities, such as facilities providing toilets and paved parking lots, provide for the needs of recreationists. National Forest System trails have been developed and managed for a variety of recreation opportunities including hiking, horseback riding, mountain biking, cross-country skiing, snowmobiling, and ORV use. Non-motorized trails are managed for the following uses:

- Hiking trails provide hiking, snowshoeing and cross-country skiing (on un-groomed trails) opportunities.
- Hiking, biking, and cross-country ski trails groomed in the winter for cross-country skiing provide opportunities depending upon the season. (Some trails are managed for a primary use, such as cross-country skiing, but other non-motorized uses, such as hiking or mountain biking, are allowed during the snow-free months.

[20] Land ownership data is slightly different than GIS data results, as displayed in the previous table.

- Trails that provide hiking, biking, cross-country skiing, and horseback riding opportunities on the same trail routes.

Table 24 summarizes miles of recreation opportunities in the three Michigan National Forests.

Table 24. National Forest System Trails within Michigan[21]

National Forest	Hiking	Biking	Snowmobile	Cross-country Ski	Horseback Riding
Huron-Manistee	450	154	525	268	163
Ottawa	253	42	430	44	19
Hiawatha	352	52	290	64	79
Total	**1,055**	**248**	**1,245**	**376**	**261**

Source: Huron-Manistee, Ottawa, and Hiawatha National Forests GIS databases.

The Forests have approximately 450 miles of hiking trails, 268 miles of cross-country ski trails, and 525 miles of snowmobile trails. These trails provide a variety of challenges, settings, and experiences. Trails locations and designs were adopted and accommodate needs while protecting the resources and minimize conflicts. The North Country National Scenic Trail traverses the Manistee National Forest from Croton Dam to Mesick, Michigan. Corsair, Big M, and McKenzie ski areas have trails specifically designed for cross-country ski use. Some snowshoeing also occurs on these trails. These areas are also well known for the excellent mountain biking opportunities in the spring, summer, and fall. The other hiking trails on the Forests provide un-groomed cross-country skiing and snowshoeing opportunities.

There are 253 miles of nonmotorized trails on the Ottawa National Forest, including 19 hiking trails, 4 ski trails, and 3 mountain bike trails. Included in this total are 123 miles of trails for hiking only. The Hiawatha National Forest currently maintains 352 miles of non-motorized trails. Included in this total are 116 miles of the North Country National Scenic Trail, and the Potawatomi-Gorge, State Line Mile Post Zero, and Agonikak National Recreation Trails. These trails are restricted to foot travel only, through trail design or as a result of policy and legislation (such as the Wilderness Act), or by National designation (such as for the North Country Trail).

In addition, the Hiawatha National Forest manages approximately 352 miles of trail as hiking, biking, and cross-country skiing.

Currently, the State of Michigan is implementing a trails initiative called, “Michigan Trails at the Crossroads: A Vision for Connecting Michigan.” The goals of this program include:

- Connecting population centers,
- Enhancing tourism, and
- Enhancing economic development.

This initiative is designed to focus on the economic, social, health, and transportation benefits of unified trail systems. The Forest Service is working with the State of Michigan in implementing the goals of this program.

[21] The trail mileages cited do not include portions of trails across private lands within the proclamation boundaries.

The Forest Service and MDNR have worked cooperatively for over 30 years in developing the existing state-wide snowmobile trail system across NFS lands. This trail system is designed to provide a safe, long-term trail system to connect communities. This network of trail segments is intended to encourage and support local economic development, reduce parallel trail systems, support a diversity of recreation experiences for the public, address environmental issues, and reduce conflicts among user groups. The Forest Service maintains a cooperative agreement with the MDNR to coordinate and manage the snowmobile trail system across NFS lands.

National Parks

National Parks are a significant supplier of outdoor recreation in Michigan. The National Park Service manages six units in the State. Isle Royale National Park is the largest unit, which is located on an archipelago of 400 islands north of the Keweenaw Peninsula in Lake Superior. The Park Service administers two national lakeshores, Pictured Rocks and Sleeping Bear Dunes. These parks provide a wide variety of recreation opportunities including hiking trails, dispersed camping, guided interpretive walks, and developed campgrounds.

Table 25. National Park Service Parks in Michigan

Lower Peninsula	Acres	Upper Peninsula	Acres
Sleeping Bear Dunes National Lakeshore	71,291	Pictured Rocks National Lakeshore	73,000
River Raisin National Battlefield Park	Not available	Isle Royale National Park	571,790
		Father Marquette National Memorial	52
		Keweenaw National Historic Park	1,869
Total	**71,291**		**646,711**

Source: National Park Service 2011

Within the Sleeping Bear Dunes National Lakeshore, areas have been designated as experience nature zones. Approximately 47,000 acres are managed as experience nature zones. These areas provide the wildest, most natural management zones in the park. The low numbers of visitors is intended to promote primitive recreation experiences. Access in these areas is on foot or in non-motorized craft. Wilderness areas may or may not have nature zone designations. Common activities in these areas include hiking, backpacking, hunting, horseback riding on trails, cross-country skiing, snowshoeing, and backcountry camping. Opportunities for solitude are plentiful (USDI NPS 2009).

At the Pictured Rocks National Lakeshore, there are 17 trails suited for day hikes, totaling 39 miles. The National Park Service does not permit mountain biking on trails, but it does allow mountain bikes to be used on the roads within the National Lakeshore that are open to motor vehicles. Cross-country skiing is permitted on the trails. There are also 42 miles of a hiking only trail on the North Country National Scenic Trail that parallels Lake Superior's shoreline. Portions of this trail are groomed for cross-country skiing (USDI NPS 2004).

Isle Royale National Park is a 571,790-acres island located in Lake Superior. Backpacking, motorized boating on Lake Superior, fishing, canoeing, kayaking, and scuba diving are the major activities in the park. Hunting is prohibited on the island.

National Wildlife Refugees

National wildlife refuges provide many unique opportunities for hiking, wildlife viewing, and hunting. In Michigan, the U.S. Fish and Wildlife Service (FWS) manages 10 national wildlife refuges, accounting for approximately 113,539 acres of public land. Seney National Wildlife Refuge (NWR) in the Upper Peninsula, the Shiawassee NWR near Saginaw, and the Detroit River International NWR along the Detroit River are the largest wildlife refuges. Each is primarily focused on wetland habitats that serve migratory birds as well as a host of other wetland dependent plant and animal species. The FWS also manages many islands in the Great Lakes for colonial nesting birds and shorebirds within the Michigan Islands NWR and the Harbor Island NWR. Recreation opportunities vary according to the land base of the wildlife refuge.

Seney NWR offers a 1.4-mile loop trail, as well as about 70 miles of roads, closed to motor vehicle travel, for walking and biking. Cross-country skiing and snowshoeing are permitted on the refuge as well, with groomed trails available. The USFWS does not allow off highway vehicles (OHVs) or snowmobiles (FWS 2004) in the refuges.

Table 26. Wilderness Areas by National Wildlife Refugees in Michigan

National Wildlife Refuge	Wilderness Area	Acres
Seney	Seney	25,150
	Huron Islands (8 remote islands in Lake Superior)	147
Shiawassee	Michigan Islands Wilderness Area (3 remote islands; 2 in Lake Michigan and 1 in Lake Huron)	12
	Total	**25,309**

Source: USFWS 2011

Michigan State Forests

State forests are located in both the northern Lower Peninsula and Upper Peninsula of Michigan and they are currently managed as 15 separate Forest Management Units (FMUs). The State forests also provide the largest single ownership public land base for outdoor recreation east of the Mississippi River. The Michigan Forest Recreation Act of 1998 mandates that Michigan State forests provide an integrated forest recreation system while remaining multiple-use forests providing for timber production, wildlife habitat, and energy, recreational, and environmental needs. Forests are managed for a wide variety of outdoor recreational activities, including such dispersed recreational activities as camping, hiking, backpacking, hunting, cross-country skiing, and snowmobiling. In terms of recreation facilities, the forests tend to be rustic and undeveloped. In addition, there are 560 miles of nonmotorized State forest pathways for hiking, cross-country skiing, bicycling and equestrian use. Of these trails, 171 miles of the nonmotorized pathway trail system are groomed for cross-country skiing. The State does not offer any equestrian trails in the Upper Peninsula.

Michigan State Parks and Recreation Areas

The State of Michigan maintains 80 State parks and 18 recreation areas, consisting of more than 270,000 acres that are available for general public use. The 18 recreation areas encompass 84,070 acres and are distinguished from State parks in that they are open to hunting unless posted as closed to hunting, whereas State parks are closed to hunting unless posted as open to hunting. The

State park and recreation area system provides almost 900 miles of nonmotorized trails and almost 200,000 acres of land open to hunting. According to the MSCORP, in the Upper Peninsula, Porcupine Mountains, Tahquamenon Falls and Craig Lake State Parks, the management emphasis focuses on preserving natural resources in their primitive state and fostering outdoor recreation.

The State game system includes 66 State game areas, 6 wildlife areas and 4 wildlife research areas, encompassing approximately 340,000 acres of land. State game and wildlife areas are mostly located in the southern Lower Peninsula, close to 85 percent of the State's population. Because of their locations, they are very popular with outdoor recreationists. In general, hunting is restricted by a safety zone with a radius of 450 feet around any structure on adjacent private lands.

Recreation Opportunities across Jurisdictions

Many of the unique recreation opportunities in Michigan cross landownership boundaries. For instance, many of Michigan's Federally-designated areas such as wild and scenic rivers, wildernesses, and preserves have private or State in-holdings within their boundaries. Many nonmotorized and motorized trail opportunities exist. Federal, State, and other land management organizations can be contacted for detailed trail information. Numerous internet sources are available for locating nonmotorized trail opportunities in Michigan. Map C-3 displays County, Township and city park recreation opportunities across the state.

Major recreation attractions, like the North Country National Scenic Trail (NCT) have been developed in a cooperative effort between trail advocates, a Federal or State agency, and landowners. The NCT is managed as a premier hiking trail with 757 miles of trail located in Michigan. The NCT provides a unique opportunity to hike a variety of landscapes in both the Lower and Upper Peninsula of Michigan. Eventually, the trail is expected to be approximately 4,500 miles long, with 1,150 miles of trail in Michigan. The Forest Service works cooperatively with the North Country Trail Association and National Park Service to manage this recreation opportunity on NFS lands.

Over time, many agencies have adjusted their management strategies to managing trail systems for multiple uses, as hiking, mountain biking, and horseback riding. In addition, they may serve as groomed or un-groomed cross-country ski or snowshoeing trails in the winter. Equestrian and mountain biking are common trail uses throughout Michigan. The Michigan Shore-to-Shore equestrian and hiking trail targets the needs of equestrians with appropriate day use and overnight camping facilities. The Shore-to-Shore Trail is approximately 400 miles long. Over 950 miles of Rails to Trails[22] on State lands are available for equestrian use. Mountain bike trails are located throughout the State, providing a variety of quality recreation experiences.

Land management agencies and land conservation groups restrict areas and trails to certain activities to address resource concerns, provide a certain recreation experience, or meet a specific resource objective. One instance is Nordhouse Dunes Wilderness, where mountain biking and equestrian use are prohibited. Use of mechanical devices, like mountain bikes, is prohibited in Congressionally designated wilderness areas by the Wilderness Act. Equestrian use in this area is

[22] Trails converted from former railroad rights-of-way.

prohibited because of sanitation and invasive species concerns. The Forests restrict user groups to the trails specifically designed and managed for those uses.

Some designated snowmobile trails pass through or are adjacent to the SPNM areas. Therefore, the demand for snowmobiling opportunities is considered in this analysis. According to the MDNR, Michigan is one of only three States that offer a large system of interconnected snowmobile trails. Approximately 50 percent of the snowmobile trail system is located on private lands; 20 percent on Federal lands; 25 percent on State lands; and 5 percent other public lands. The Forest Service has worked closely with the MDNR in developing a network of snowmobile trails across NFS lands. Approximately 600 miles (about 10 percent) of the 6,200 mile State of Michigan snowmobile trail system are located on the Forests. All designated snowmobile trails on NFS lands are coordinated under a Memorandum of Understanding with the MDNR. A complete set of maps by region of Michigan can be found at the MDNR website: http://michigan.gov/dnr/0,1607,7-153-10365_14824-31074--,00.html.

In Michigan, Act 74 of Public Acts of 1968 authorized the placement of snowmobile trails on roads under county jurisdiction. Many county roads are also located within or adjacent to the boundaries of Primitive and SPNM areas.

Approximately 3,516 miles of designated ORV trails are located throughout Michigan, with 2,591 miles on State lands, 478 miles on County and State Road rights-of-way, and 447 miles on NFS lands.

All suppliers of outdoor recreation face the challenge of accommodating the needs of mentally and physically challenged recreationists. All management policies must comply with the requirements of the Americans with Disabilities Act (ADA) and other federal accessability regulations (federal) and the applicable State laws and regulations for barrier-free accessibility. One significant challenge is to maintain the experiences offered in an area while ensuring reasonable accommodation for people with disabilities. Primitive and SPNM areas have fewer roads and lower standard trails. For instance, the Forest Service and Park Service have established clear guidelines for wheel chair use in wilderness areas. The Forest Service and other governmental agencies conduct systematic reviews of program areas to ensure compliance with all Federal laws, regulations, and policies. Accessibility was a consideration during the analysis of Demand and Supply Analysis prepared for Primitive and SPNM areas.

Primitive and SPNM Recreation Opportunities on Public Lands in Michigan

Although large parcels of public and private lands are available for those seeking an outdoor recreation experience in Michigan, limited opportunities exist for Primitive and SPNM experiences. Areas providing Primitive experiences require large parcels of land (typically over 5,000 acres by ROS criteria) in undeveloped settings. Typically, public lands provide the greatest number of opportunities for these settings due to the size of the parcels and land management direction. The Lower Peninsula of Michigan has very few areas which meet the ROS criteria for providing a SPNM experience principally because of the broken ownership patterns. Opportunities exist for the type of activities associated with SPNM areas; however, few areas actually meet the size and isolation criteria of the ROS system. The following summarizes opportunities for Primitive and SPNM experiences that the Forest Service identified in Michigan.

National Forests Wilderness and SPNM Areas

There are nine Congressionally designated wilderness areas on NFS lands in Michigan. Table 27 displays wilderness area by National Forest. The Nordhouse Dunes Wilderness is the only area that has some of its area (1,588 acres) inventoried as offering a Primitive recreation opportunity. The remainder of this area, and all other national forest wilderness areas in Michigan, are inventoried as providing SPNM experiences.

The Nordhouse Dunes Wilderness is located along the shoreline of Lake Michigan. The area is known for its spectacular views of Lake Michigan and the sand dunes. Ludington State Park has a large expanse of undeveloped lands immediately adjacent to the wilderness area to the south. Hiking and dispersed camping are popular. Gun hunting is very popular during deer rifle season.

The Forest Service reviewed the ROS characterizations for Primitive classifications (Figure 8). Based on these characterizations, Nordhouse Dunes Wilderness, currently classified as Primitive, has nonconforming characteristics. Firearm hunting was considered a nonconforming use in Primitive areas by the *Meister* panel. Upon remand, the District Court for the Eastern District of Michigan at Detroit recognized tribal members have the right to firearm hunt in the SPNM and Primitive areas, per the Washington Treaty (1836) and Treaty of Saginaw (1819). Given these treaties the Forests do not have the legal authority to eliminate all nonconforming uses in the Nordhouse Dunes Wilderness (Manistee National Forest).

Table 27. Wilderness Areas by National Forest in Michigan

Huron-Manistee	Acres	Hiawatha	Acres	Ottawa	Acres
Nordhouse Dunes	3,373	Big Island Lake	5,856	Sylvania	18,434
		Delirium	11,870	Sturgeon River Gorge	14,729
		Horseshoe Bay	3,790	McCormick	17,206
		Mackinac	12,230		
		Rock River Canyon	4,640		
		Round Island	378		
Subtotal	3,373		38,764		50,369
Total					**92,506**

Sources: Huron-Manistee, Ottawa, and Hiawatha National Forests GIS databases.

Table 28 displays the acres of NFS lands managed for a SPNM experience (2006 Forest Plans). A total of 211,564 acres of NFS lands in Michigan are within management areas with an ROS classification of SPNM.

Table 28. National Forest System Lands Managed as SPNM ROS in Michigan

National Forest	Net Acreage
Huron-Manistee	63,225
Ottawa	80,088
Hiawatha	59,180[23]
Total	**202,493**

Sources: Huron-Manistee, Ottawa, and Hiawatha National Forests GIS databases.

[23] Grand Island National Recreation Area is managed as SPNM in the summer and approximately 4,602 acres of this area is managed as Semiprimitive Motorized in the winter.

Grand Island National Recreation Area is managed by the Hiawatha National Forest. This area is located in Lake Superior, about 0.5 miles from the mainland community of Munising, Michigan. This rustic island offers visitors a wide range of primitive experiences and forest activities. Approximately half of this area is managed for SPNM recreation in the summer and Semiprimitive Motorized opportunities in the winter. Hiking and biking are popular activities on the island. Dispersed camping and gun hunting are allowed.

On the Forests, the following areas have been identified as providing a SPNM recreation opportunity (see Appendix A, Map A-2). Currently, these areas are managed to provide high visual diversity and a variety of recreation opportunities including hiking, cross-country skiing, primitive camping, fishing, and hunting.

Table 29. SPNM Recreation Opportunities on the Huron-Manistee.

SPNM Area	National Forest	SPNM Acreage	NFS Lands
Au Sable	Huron	11,846	10,628
Bowman Lake	Manistee	1,513	1,145
Briar Hills	Manistee	3,532	3,494
Condon Lakes West	Manistee	4,073	3,301
Cooke	Huron	2,768	2,419
Hoist Lakes	Huron	9,951	9,862
Manistee River	Manistee	8,972	7,985
Reid Lake	Huron	3,870	3,207
South Branch Au Sable	Huron	4,009	4,008
Wakeley Lake	Huron	3,640	2,414
Whalen Lake	Huron	3,031	2,754
White River	Manistee	5,200	4,825
Whitewater Creek	Huron	9,891	7,183
Total		**72,296**	**63,225**
Wilderness Area			
Nordhouse Dunes	Manistee	1,785[24]	3,373

Source: USDA-FS 2006

The Forest Service reviewed the ROS characterizations for SPNM classifications (Figure 8). Based on these characterizations, all areas currently classified as SPNM have nonconforming characteristics (Table 29). Firearm hunting is considered a nonconforming use in SPNM areas by the *Meister* panel. Upon remand, the District Court for the Eastern District of Michigan at Detroit recognized tribal members have the right to firearm hunt in the SPNM and Primitive areas, per the Washington Treaty (1836) and Treaty of Saginaw (1819). As such, the Forests do not have the ability to eliminate all nonconforming uses in SPNM areas.

[24] 1,588 acres are inventoried as ROS of Primitive

National Parks Wilderness and SPNM Areas

Several National Parks in Michigan have Congressionally designated wilderness areas in Michigan. These areas provide excellent opportunities for dispersed recreation opportunities in remote settings with the opportunity to get away from most of the sights and sounds of others. Gun hunting is allowed in all of these areas.

Table 30. National Park Wilderness Areas in Michigan

Lower Peninsula	Acres
North Manitou Island (part of Sleeping Bear Dunes)	14,430
Upper Peninsula	
Beaver Basin Wilderness (Part of Pictured Rocks National Lakeshore)	11,740
Total	**26,170**

Source: USDI, NPS 2011

State of Michigan Lands Comparable to Primitive and SPNM Areas

Although the MDNR does not designate SPNM areas, they do offer similar recreation opportunities and experiences.

Michigan State Forests

Information on the various recreation opportunities offered on Forest Management Units (FMUs) can be found at http://www.michigan.gov/dnr. Table 31 lists several areas by FMU and acreage that provide a similar recreation opportunity as identified in a SPNM ROS designation. The Hanson Refuge is a tract of approximately 20,000 acres located in southwest Crawford County. Deed restrictions have designated these lands as a "game preserve," closing them to hunting and trapping. Hanson Refuge is also home to Hanson Hills Recreational Area. Managed by the Crawford County Recreational Authority, Hanson Hills provides an extensive cross-country ski and mountain bike trail system, as well as downhill skiing and other recreational trail programs. The Lame Duck Foot Access Area is approximately 11,000 acres in size with only walk-in access permitted. This area provides hiking, cross-country skiing, snowshoeing, and hunting opportunities but prohibits bicycles. The Lame Duck Foot Access Area is also managed for timber production and wildlife habitat. The Pretty Lakes Quiet Area offers dispersed camping, off-road vehicle routes, and access to the North Country National Scenic Trail. Motorized vehicle use is prohibited at the 2,880-acre Sand Lakes Quiet Area. Sand Lakes Quiet Area has an extensive nonmotorized trail system.

Table 31. Michigan State Forests

Forest Management Unit	Area Name	Acres
Grayling	Hanson Refuge	20,000
Gladwin	Lame Duck Foot Access Area	11,000
Newberry	Pretty Lakes Quiet Area	2,200
Pere Marquette	Sand Lakes Quiet Area	2,800
Total		**36,000**

Michigan State Parks and Recreation Areas

Michigan State Parks and Recreation Areas are located throughout Michigan. They provide a full range of recreation opportunities from primitive hiking and camping experiences to highly developed campgrounds and information centers that provide guided walks. Many of the parks have approved management plans that provide management zones for various management and recreational activities similar to the ROS system of the Forest Service. Information on State park opportunities can be found at: http://www.michigandnr.com/parksandtrails/parkmap.aspx.

Table 32 provides a listing of some State parks with approved management plans that identified primitive and backcountry zones (similar to SPNM ROS).

Table 32. Michigan State Parks with approved Primitive and Backcountry Zone Designations Greater than 500 acres

State Park	Total Acreage	Primitive Zone	Backcountry Zone
Grand Mere	1,127	1,028	99
Rockport	4,237	1,645	0
Rifle River	4,449	670	0
Negwegon	3,738	3,100	640
Ionia	4,420	543	0
Algonac	1,408	1,170	0
Thompson's Harbor	3,030	237	2,050
Bay City	2,488	1,918	70
Wetzel	913	566	0
Highland	5,959	992	2,285
Wilderness	10,500	n/a[25]	n/a[24]
Hartwick Pines	7,700	n/a[24]	n/a [24]
Tahquamenon Falls	48,127	20,000	n/a [24]
Porcupine Mountains	59,920	35,000	57,600
Total	**158,016**	**66,869**	**62,744**

Ludington State Park is approximately 5,300 acres in size and is comprised of scenic sand dunes, a shoreline vista, ponds, marshlands and forests. It is situated between Hamlin Lake and Lake Michigan with several miles of shoreline and beaches on both bodies of water. Ludington State Park borders the Nordhouse Dunes Wilderness to the north. Although the park does not have an approved management plan, backcountry opportunities abound in the northern end of the park.

[25] Primitive Zones for Wilderness and Hartwick Pines State Parks have been identified but acreage determinations were not available. Backcountry areas are identified for Wilderness, Hartwick Pines, and Tahquamenon Falls but acreage determinations were not available. Some state parks have small areas under 500 acres identified as backcountry but are not included in the table since the size of the backcountry areas provide limited opportunity for solitude.

Nature Conservancy and Other Land Conservancies

Numerous non-profit nature conservancies and other private groups operate in Michigan, managing properties for the protection and enjoyment of the areas' resources. These areas can range from several thousand acres to less than one acre. In general, only those areas open to general public use were considered in this analysis. The recreation opportunities these areas provide vary by site and the groups managing the areas. A group may enforce some use restrictions, such as closed to hunting or snowmobiling while others allow such activities. All of these areas appeared to meet some, but not all, of the ROS criteria for a classification of SPNM. Additional opportunities, like those provided at the Zetterberg Preserve (140) acres, exist, but the areas are smaller in size. The Forest Service conducted a search of the nature conservancy websites to determine which opportunities would be available for to the public seeking Primitive to SPNM experiences. Table 33 contains a listing of the areas available and the type of use permitted. Map C-4 displays the location of these and other conservancy lands.

Table 33. Other Michigan Lands Comparable to Primitive and SPNM Areas

Organization	Site	Acres	Hunting	Hiking
Michigan Nature Association	Estivant Pines	508	No	Yes
Little Traverse Conservancy	Round Island Point Preserve	884	Yes	Yes
Grass River Natural Area, Inc	Grass River	1,325	Yes	Yes
Grand Traverse Regional Land Conservancy	Arcadia Dunes: C.S. Mott Nature Preserve	3,000	Yes	Yes
	Skegemog Lake Wildlife Area	3,300	No	Yes
The Nature Conservancy	Mary Macdonald Preserve at Horseshoe Harbor	1,433	Yes	Yes
	Laughing Whitefish Lake Preserve	1,728	Yes	Yes
	Two-Hearted River Forest Reserve	23,338	Yes	Yes
	McMahon Lake Preserve	3,124	Yes	Yes
	Carl A. Gerstacker Nature Preserve	890	Yes	Yes
	Maxton Plains Preserve	1,185	Yes	Yes
	Grass Bay Preserve	750	No	Yes
	Ross Coastal Plain Marsh Preserve	11,449	Yes	Yes

Source: Michigan Nature Association 2011; Grand Traverse Regional Land Conservancy 2011; The Nature Conservancy 2011; and Grass River Natural Area 2011

Commercial Forest Lands Program

Approximately 2.2 million acres of private lands are available for hunting through the MDNR's Commercial Forest Lands Program. Unfortunately, the public may have difficulty in determining which private lands fall within this category. In addition, few of these lands are likely to provide the quality of recreation experiences sought for those seeking a Primitive to SPNM hunting

experience (MDNR 2011). Map C-5 in Appendix A displays the location of lands in Michigan which are part of the Commercial Forest Lands Program. Most of the commercial forest lands are located in the Upper Peninsula of Michigan.

Private Property Hunting Opportunities

Opportunities for hunting on private property are numerous. Many private properties in rural areas of Michigan offer the opportunity for landowners and others to hunt. Some privately owned properties are owned by hunt clubs which cater to members while others offer opportunities to any member of the public to hunt after payment of an entrance fee. These opportunities are not considered likely to provide the type of recreation experiences sought for those seeking a Primitive to SPNM hunting experience.

VII. Quality of Recreation Experiences

This analysis is primarily focused on Primitive and SPNM opportunities to address the issues identified in the Introduction. To further address issues associated with *Meister* case, the Forest Service has included specific items in this analysis to address the quality of recreation opportunities and any duplication of opportunities provided by the Forest Service and the State. In accordance with 36 C.F.R. § 219.21(a)(2) Forest planning shall identify "The recreational preferences of user groups and the settings needed to provide *quality* recreation opportunities." *Meister*, 923 F.3d at 371 (emphasis in original). To determine the quality of the recreation experience, the Forest Service reviewed customer satisfaction at a State-wide and Forest level. The MSCORP and NVUM monitored user satisfaction.

Satisfaction Levels Reported in MSCORP

According to the MSCORP, when a sample of registered Michigan voters were asked to rate their satisfaction with the amount of public outdoor recreation opportunities available in Michigan on a scale of 1 (highly dissatisfied) to 9 (highly satisfied), 69.8 percent responded that they were satisfied (rating 7-9), 27.5 percent were neutral (rating 4-6) and 2.7 percent were dissatisfied (rating of 1-3) (MSU, 2004). Based on these figures, users appear to be generally satisfied with the recreation opportunities provided in Michigan.

National Forests

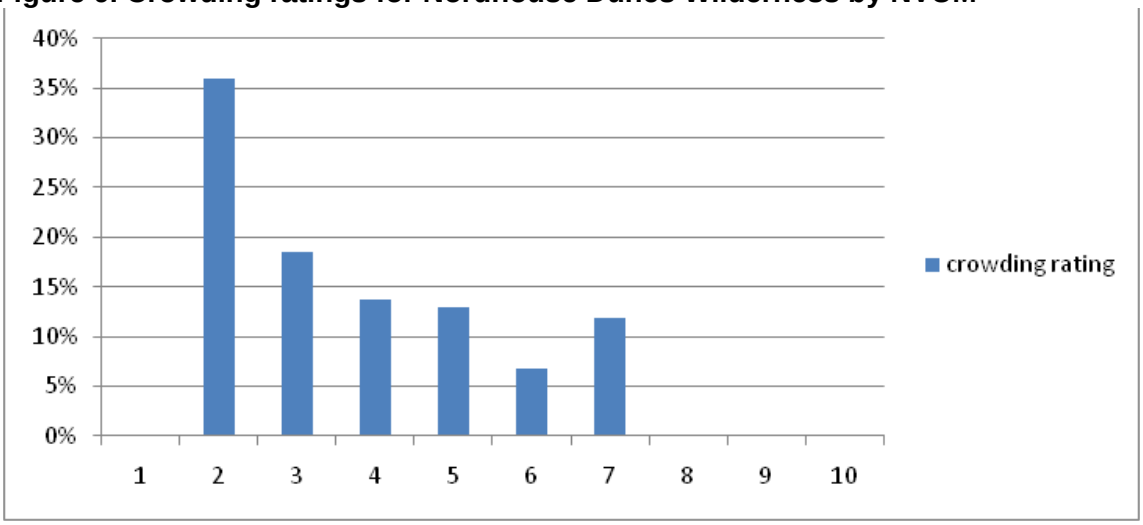
A critical element of outdoor recreation program delivery is the evaluation of customer satisfaction with the recreation setting, facilities, and services provided. As part of the NVUM study, satisfaction is measured by the Percent Satisfied Index (PSI). The PSI is the proportion of all ratings for the 14 items in each category in which the satisfaction was denoted as either 'Somewhat satisfied' or 'Very Satisfied.' Conceptually, the PSI indicator shows the percent of all recreation customers who are satisfied with agency performance. The agency's national target for this measure is 85 percent. It is usually difficult to consistently have a satisfaction score higher than 85 percent due to factors managers have no control of such as weather and travel companions.

According to the 2007 NVUM study, overall satisfaction levels with visits to National Forests in Michigan are quite high. In the overall satisfaction rating, less than 3 percent of National Forest

visits were rated as dissatisfied (Figure 9 and Figure 11) and over 77 percent were rated as very satisfied. The Percent Satisfied Index shows very high satisfaction levels for visitors' perceptions of safety (Table 35). Satisfaction levels pertaining to access were above the national target for developed sites and wilderness, but slightly below the target for undeveloped areas. Across all types of sites, satisfaction levels with services (signage, information, and employee helpfulness) were above 70 percent; however, all were below the target of 85 percent. Comparing these results to the overall satisfaction results indicates that safety and access are among the most important elements of customer satisfaction.

Several measures can be applied to measure user satisfaction in both Primitive and SPNM setting. The Nordhouse Dunes Wilderness has both Primitive and SPNM settings. The Forest Service is utilizing NVUM data pertaining to crowding to determine the degree to which area users can expect to have solitude and isolation from the sights and sounds of others. Table 34 displays the FY2007 NVUM wilderness visitor survey perception of crowding rating (Percent site visits) for the Nordhouse Dunes Wilderness. Visitors rated their perception of how crowded the wilderness felt to them. This information is useful when considering the opportunity of solitude since crowding would be one facet of this experience. If a rating of 5 is considered as people seeing the amount of people they expect, 81.2 percent (ratings of 1-5 totaled) of visitors saw as many or less than then number of people they expected at the Nordhouse Dunes Wilderness.

Figure 9. Crowding ratings for Nordhouse Dunes Wilderness by NVUM



Scale 1 = Hardly anyone there to 10 = Overcrowded									
1	2	3	4	5	6	7	8	9	10
0.2	35.9	18.5	13.7	12.9	6.7	11.9	0.2	0.2	0.0

Source: USDA-FS 2007

The 1993-1994 Michigan State University Study of Nordhouse Dunes Wilderness users made the following findings (Propst et al. 2003):

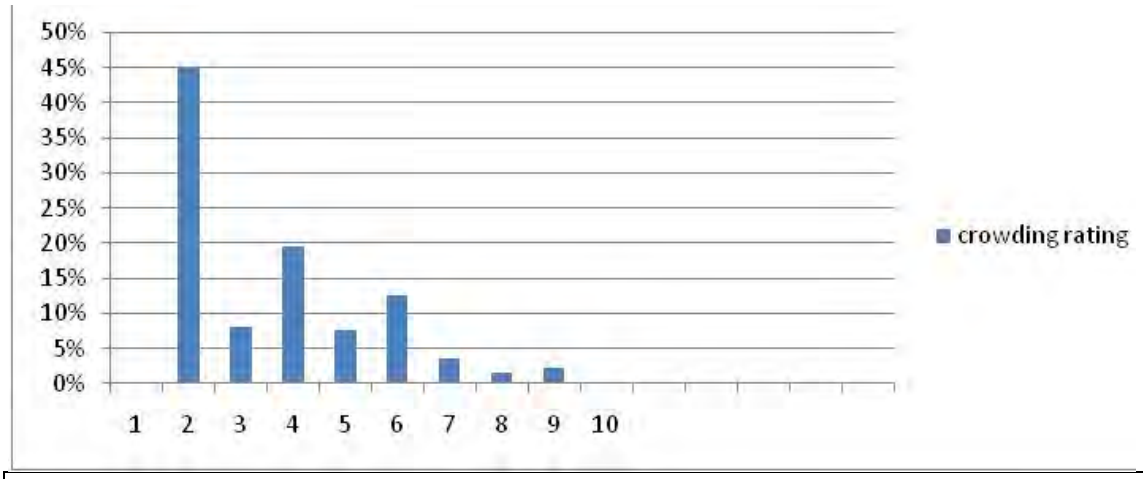
- 86 percent of the users agreed that Nordhouse Dunes met their personal definition of wilderness.

- Users' personal definitions of wilderness were generally consistent with the 1964 Wilderness Act definition.
- 74 percent of the users encountered as many people as they expected or fewer.
- 83 percent did not feel overcrowding was a problem.
- Visitors' perceptions of the current conditions in the wilderness area indicated that 20 percent opposed hunting, 48 percent favored hunting and 32 percent were neutral to hunting levels.
- 95 percent approval rate for Nordhouse Dunes.

The results of this study are consistent with the 2007 NVUM study.

The Ottawa and Hiawatha National Forests inventoried the ROS for their wilderness areas as SPNM. These Forests also had NVUM data collected at the same time as the Huron-Manistee National Forests. Figure 10 displays the FY2007 NVUM wilderness visitor survey perception of crowding rating (percent site visits percent) for the Ottawa and Hiawatha National Forests. Taking the previous approach for considering crowding, 80.1 percent (total of ratings of 1 through 5) of visitors saw less than the number of people they expected in the designated wilderness areas on the Ottawa and Hiawatha National Forests. The Ottawa National Forest has five wilderness areas totaling approximately 50,369 acres and 17,000 recreation visits in 2007). The Hiawatha National Forest has five wilderness areas totally approximately 38,764 acres and 45,800 recreation visits in 2007.

Figure 10. Consolidated Crowding Ratings for Ottawa and Hiawatha Wilderness Areas



Scale 1 = Hardly anyone there to 10 = Overcrowded									
1	2	3	4	5	6	7	8	9	10
0.0	44.9	8.1	19.5	7.6	12.5	3.6	1.6	2.2	0.0

Source: USDA-FS 2007

Table 34. FY2007 NVUM Satisfaction of the Forests Wilderness Visitor Respondents

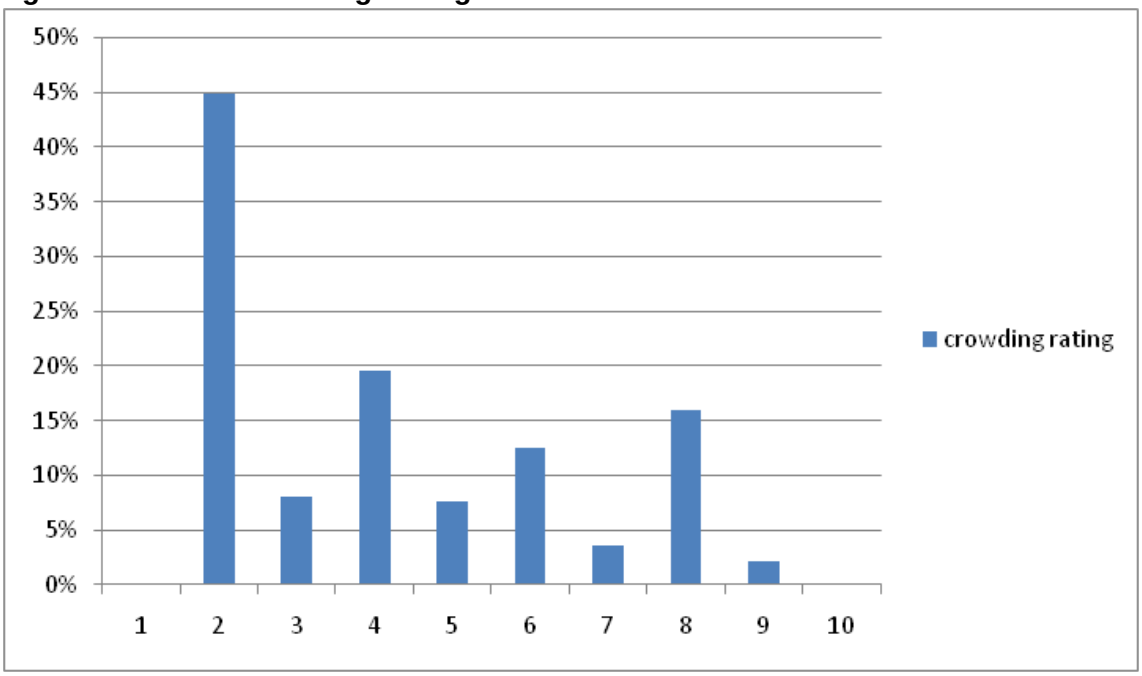
Item	Poor	Fair	Average	Good	Very Good
Condition of environment	0.0	0.7	0.3	6.5	92.4
Feeling of safety	0.0	5.9	11.7	18.8	63.6
Scenery	0.0	0.0	0.0	11.7	88.3
Trail conditions	0.0	0.0	0.0	39.4	60.6

Source: USDA-FS 2007

In 1992, a study of dispersed recreation use of the Forests and the Au Sable State Forest was completed by Michigan State University. One of the conclusions of this study was that "the estimate of approximately 4 tourist dispersed recreation use hours per acre over the study period suggests that public forests do provide opportunities for relative solitude. While this estimate does not consider noise (sound of motor vehicles) and the visual reminders of the presence of others (car driving down a forest road, the opportunity for one to immerse him or herself in nature without encountering others seems readily available (Nelson 1993).

The Forest Service also considered NVUM data regarding visitor's perception of crowding in dispersed areas as an additional measure of the opportunity for solitude in SPNM areas. For comparison purposes, the Forest Service also considered the NVUM data regarding perceptions of crowding on all three Michigan National Forests. Feeling that an area is very crowded can diminish recreation satisfaction. Other than in developed recreation sites, very few visitors felt that the places they visited on NFS lands were very crowded (Figure 11). In dispersed settings, between 45 and 50 percent of the visitors felt that the areas were not crowded, giving those areas a rating of 1 - 3.

Figure 11. NVUM Crowding Rating for Ottawa and Hiawatha National Forests

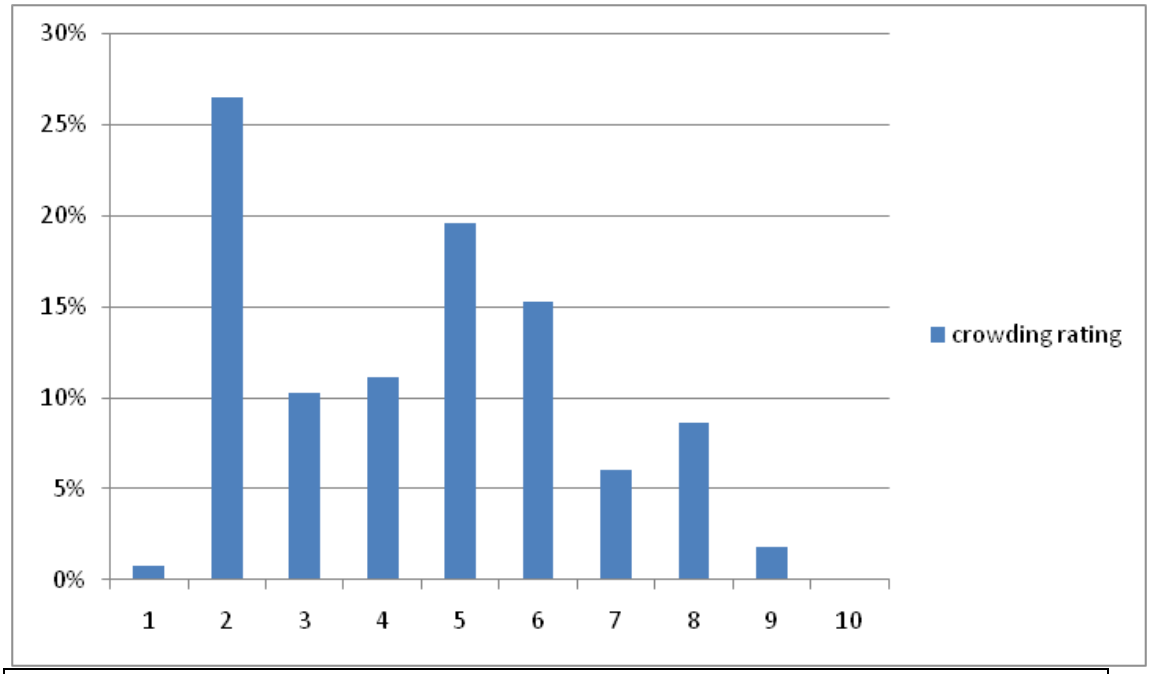


Scale 1 = Hardly anyone there to 10 = Overcrowded									
1	2	3	4	5	6	7	8	9	10
1.6	28.3	19.2	17.1	4.5	17.6	5.3	4.6	1.3	0.3

Source: USDA-FS 2007

Figure 12 displays the perception of crowding on the Forests. The consolidated crowding rating data for the three Michigan Forests is relatively consistent for the three Forests.

Figure 12. Huron-Manistee National Forests General Forest Areas Crowding Rating



Scale 1 = Hardly anyone there to 10 = Overcrowded									
1	2	3	4	5	6	7	8	9	10
0.8	26.5	10.3	11.1	19.6	15.3	6.0	8.6	1.8	0.0

Source: USDA-FS 2007

Table 35. FY 2007 NVUM Satisfaction of the Forests Recreation Visitors in General Forest Areas

Item	Poor	Fair	Average	Good	Very Good
Condition of environment	0.0	4.3	0.8	33.6	61.3
Feeling of safety	0.0	0.0	3.2	25.0	71.8
Scenery	0.0	0.0	1.6	11.5	86.8
Trail conditions	0.0	5.2	29.5	20.5	44.8

Source: USDA-FS 2007

Capacity

As part of the development of alternatives and evaluation of effects in the 2006 FEIS, the Forest Service considered the capacity of NFS lands to provide various levels of recreation use by ROS class (USDA-FS 2006). As part of that process, the Forest Service inventoried the existing ROS and Desired Future Condition ROS for the entire Forest in accordance with the Forest Service's Region 9 guidance (R9 ROS "Working Principles in LRMP Revisions" (USDA-FS 2002)). This portion of the Supply and Demand Analysis is limited to considering the recreation capacity of the Forests by alternatives in the SEIS.

Capacity estimates are subject to a certain amount of subjectivity. While the capacity of a campground can be estimated based on the parking availability and the number of sites provided; estimates of the capacity of the general forest areas are subject to interpretation based on personal or social preferences. Social capacity is the number of other persons or activities that a visitor can tolerate without feeling that their experience has been compromised. If social capacity is exceeded, a visitor will try to find another location to pursue their chosen activity or abandon that activity in favor of another. Social capacity can vary from one person to another. What one individual is willing to accept, may be unacceptable to another.

The capacity of the general forest areas was estimated using coefficients provided in the 1982 Forest Service ROS Users Guide. Coefficients for estimated Recreation Visitor Days per acre (RVDs/acre) were developed by the Southwest Region of the Forest Service for a variety of vegetation types. The coefficients for deciduous forest and coniferous woodland vegetation in each ROS classification present on the Forest were applied. This coefficient for vegetation was used in the 2006 FEIS and is considered representative of the overall vegetative condition of the Forests (USDA-FS 2006).

The resulting capacity estimates are presented in Table 36 through Table 38 based on the alternative developed for detailed analysis in the SEIS.

Table 36. Estimated Capacity by ROS Classification (Alternatives 1 and 2)

ROS Classification	Estimated Acres	Coefficient (RVDs per Acre)	Estimated Capacity (MRVDs[26])
Primitive (Nordhouse Dunes)	1,536	0.75	1.2
SPNM (Nordhouse Dunes)	1,837	1.72	3.2
SPNM	63,225	1.72	108.7
Semiprimitive Motorized	17,122	4.20	71.9
Roaded Natural	707,655	10.50	7,430.4
Rural/urban	128,483	10.50	1,349.1
Special/other designations[27]	56,551	10.50	498.5
TOTAL	**976,409**		**9,478.4**

[26] Thousand Recreation Visitor Days

[27] Areas managed for a variety of values with varying ROS objectives (*i.e.* Wild and Scenic Rivers, Special Interest Areas, etc)

Table 37. Estimated Capacity by ROS Classification (Alternative 3)

ROS Classification	Estimated Acres	Coefficient (RVDs per Acre)	Estimated Capacity (MRVDs[28])
Primitive (Nordhouse Dunes)	0	0.75	0
Semiprimitive Nonmotorized (Nordhouse Dunes)	3,373	1.72	5.8
SPNM	0	1.72	0
Semiprimitive Motorized	50,652	4.20	212.7
Roaded Natural	737,350	10.50	7,742.2
Rural/urban	128,483	10.50	1,349.1
Special/other designations[29]	56,551	10.50	593.8
TOTAL	**976,409**	**0.75**	**9,903.6**

Table 38. Estimated Capacity by ROS Classification (Alternative 4)

ROS Classification	Estimated Acres	Coefficient (RVDs per Acre)	Estimated Capacity (MRVDs[28])
Primitive (Nordhouse Dunes)	0	0.75	0
SPNM (Nordhouse Dunes)	3,373	1.72	5.8
SPNM	0	1.72	0
Semiprimitive Motorized	17,122	4.20	71.9
Roaded Natural	714,838	10.50	7,505.8
Rural/urban	128,483	10.50	1,349.1
Special/other designations[29]	112,593	10.50	1,182.2
TOTAL	**976,409**		**10,114.8**

For all of the alternatives, the estimated recreation capacity based on ROS classifications for the Forests is not exceeded.

The NVUM analysis estimated that the average length of the stay per each National Forest visit was 20 hours. This information allows for a rough comparison of actual use levels to the 2006 Forest Plan's projections. Multiplying the estimated National Forest visits by the average length of stay and dividing by 12 yields the estimated total actual use of MRVDs. Based on the 2007 NVUM data, the average visitor spent 1.7 recreation visitor days on Forests. Since there were 4,069,000 recreation visits reported in 2007, the Forests had 6,795,230 recreation visitor days of use (Table 39). For general forest areas, the average length of stay was 21.7 hours, which equates to 1.8 recreation visitor days. General forest areas had 3,729,000 recreation visits and 712,200 recreation visitor days. The estimated average length of stay per visit to the Nordhouse Dunes Wilderness was 22.9 hours. The wilderness had 50,000 recreation visits and 95,417 recreation visitor days. This information serves as the basis for the capacity analysis below.

[28] Thousand Recreation Visitor Days

[29] Areas managed for a variety of values with varying ROS objectives (*i.e*. Wild and Scenic Rivers, Special Interest Areas, etc)

Table 39. Current Recreation Visitor Days and Percent Capacity, by Alternative

Alternative	Estimated Capacity Recreation Visitor Days	Current Use Level Recreation Visitor Days	Percent of Total Capacity
1	9,558,400	6,795,230	71.1
2	9,558,400	6,795,230	71.1
3	9,903,600	6,795,230	68.6
4	10,114,800	6,795,230	67.2

Based on the recreation use capacities displayed by alternatives in Table 36 through Table 39, none of the alternatives considered would exceed the recreation capacity of the Forests. Alternatives 1 and 2 provide the same estimate of total recreation capacity by ROS, with 9,558,300 recreation visitor days (71.1 percent of current use). Alternative 3 provides for a greater recreation capacity by ROS than Alternatives 1 and 2, with 9,903,500 recreation visits (68.6 percent of current use). Alternative 4 provides the greatest capacity by ROS, with 10,114,800 recreation visitor days (67 percent of current use). As such, Alternative 4 provides for the greatest amount of recreation use of the alternatives evaluated in detail in the SEIS.

It is important to note that this analysis of capacities considers the overall ability of the NFS lands on the Forests to accommodate recreation use by ROS designation. The level of recreation uses by type (*i.e.* snowmobiling, cross-country skiing, hunting, hiking, etc.) and the quality of recreation opportunities provided by area are not evaluated. A more specific study would need to be conducted to determine if specific areas of the Forests are receiving recreation use levels above the capacity of an area and potential impacts to the quality of the recreation experience provided.

The estimated average length of stay per visit to the Nordhouse Dunes Wilderness was 22.9 hours. The wilderness had 50,000 recreation visits, therefore 95,417 recreation visitor days. In all of the alternatives evaluated in detail in the SEIS, the recreation capacity for the Nordhouse Dunes Wilderness is exceeded by current use based on the established formula. The implications of these high recreation-use levels in the wilderness are further discussed in the findings section of this analysis.

As part of this analysis, the Forest Service considered recreation use trends and the capacity of the Forests to accommodate the projected recreation use based on the information provided in Table 12 (Cordell *et al.*, 2004). The Forest Service considered the main recreation uses on the Forests and considered the average projected percent of increase for the recreation demand based on current trends through 2050. This percentage of increase was then used to project the expected percent of total recreation use of the Forests by decade. Table 40 displays the projected recreation use levels on the Forests from 2010 (baseline) through 2050.

Table 40. Projected Recreation Use Levels on the Forests by Decade (RVDs)[30]

Activity	2010	2020	2030	2040	2050
Total Projected RVDs by Selected Activities	5,042,700	5,347,700	5,615,200	5,686,500	5,935,700
Percent Increase by Decade	100	106	111	113	118
Total Projected RVDs on Forests	6,795,230	7,202,944	7,542,705	7,678,610	8,018,371

Based on of the percent increase of recreation use by decade projected in Table 40, the Forest Service calculated the percent of recreation capacity by alternatives evaluated in detail in the SEIS. Table 41 displays the projected percent of capacity for the Forests, by alternative, from 2010 (baseline) through 2050. Based on these projections, the National Forests can accommodate the projected recreation use levels expected through 2050.

Table 41. Projected RVDs and Percent Capacity, by Alternative

Alternative	Estimated Capacity RVDs	Percent Capacity 2010	Percent Capacity 2020	Percent Capacity 2030	Percent Capacity 2040	Percent Capacity 2050
1	9,558,400	71.1	75.4	78.9	80.3	83.9
2	9,558,400	71.1	75.4	78.9	80.3	83.9
3	9,903,600	68.6	72.7	77.5	77.5	81.0
4	10,114,800	67.2	71.2	74.6	75.9	79.3

Snowmobiling

In a study by Michigan State University in 2009, when asked to rate Michigan snowmobiling and the MDNR snowmobile program, snowmobilers gave the program a strong report card. On a scale of 5 (very good) to 1 (very poor), Michigan snowmobiling for winter 2008-09 received an average rating 4.1 and the trail system received a rating of 4.2. Specific ratings related to trail grooming, trail maps, trail design, staging areas, law enforcement and safety education all received higher marks in 2009 than in the previous 1998 study. The four most commonly suggested improvements for future Michigan snowmobiling were:

- continued improvement in grooming
- more trails with better connections to towns, goods and services
- improved trail maps and signs
- wider, straighter trails

When asked if they supported an expanded designated trail system, 79 percent of snowmobilers responded that they did.

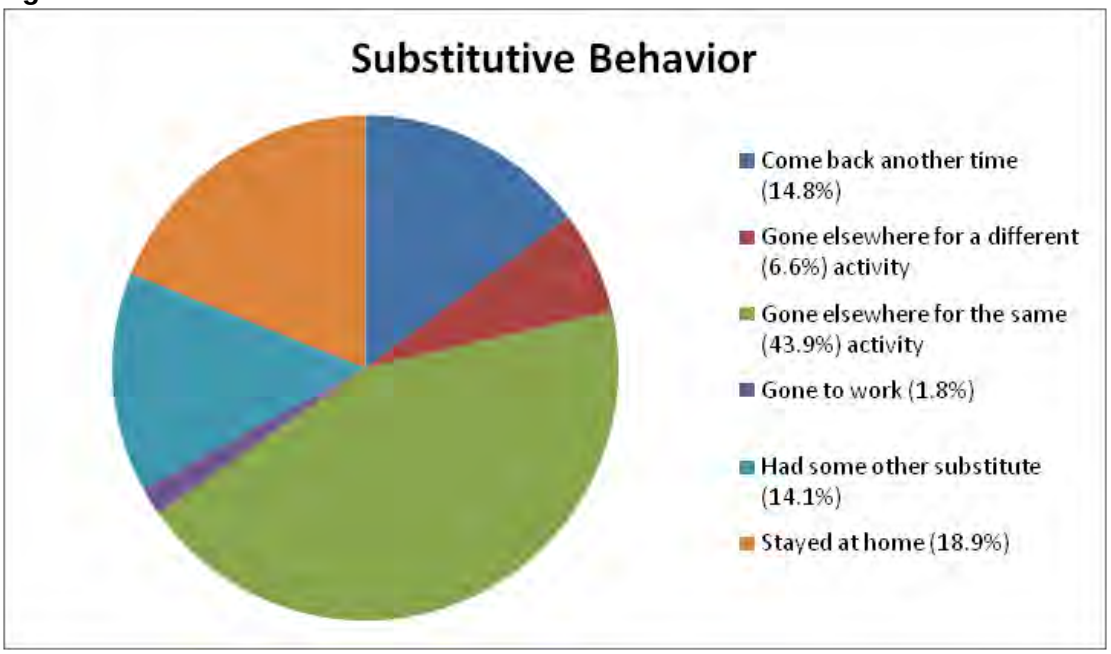
[30] For the purposes of the analysis, current use levels were identified as 2010 recreation use recreational vehicle days (RVDs).

Substitute Behavior Choices

As part of the 2007 NVUM study, visitors were asked to select one of several substitute choices, if for some reason they were unable to visit this National Forest. Choices included going somewhere else for the same activity they did on the current trip, coming back to this forest for the same activity at some later time, going someplace else for a different activity, staying at home and not making a recreation trip, going to work instead of recreating, and a residual 'other' category. This information is helpful in considering how people may behave or are behaving if they are displaced by recreation opportunities that do not meet their expectations.

Based on NVUM, the majority of visitors indicate that their substitute behavior choice is activity driven (come back another time or gone elsewhere for same activity). Results indicate that 14.8 percent of users would come back later to the National Forest for the same activity and 43.9 percent of users stated they have gone elsewhere for the same activity.

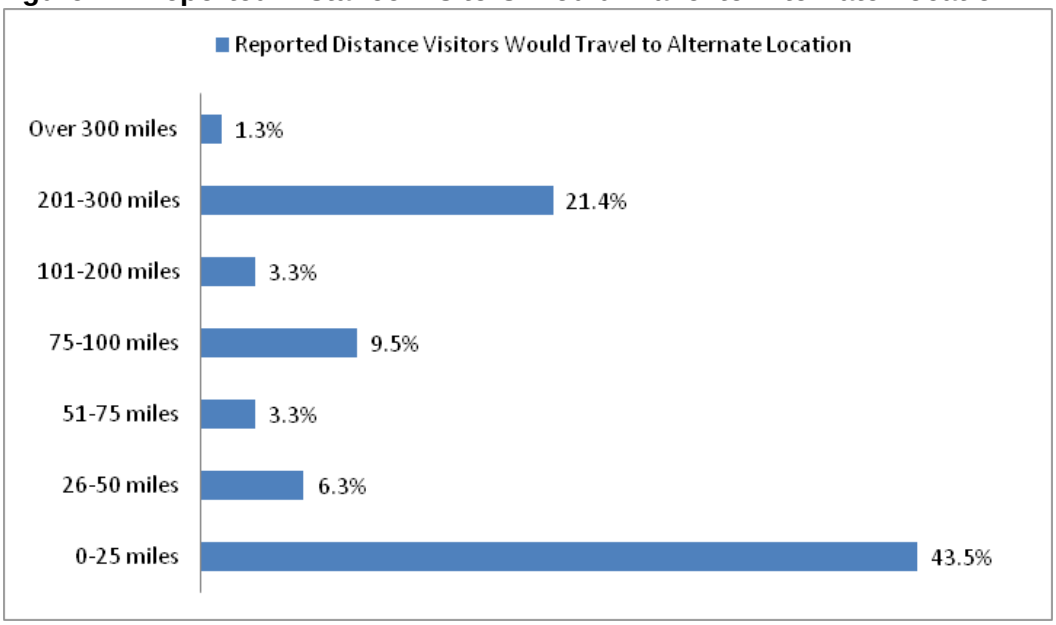
Figure 13. Substitute Behavior Choice



Source: USDA-FS 2007

NVUM asked people who chose to go elsewhere to pursue their recreation activity, how far would they travel to an alternate destination. Based on the study, 43.5 percent of visitors would travel only 0 to 25 miles to get to another location to pursue their preferred activity. Only 26 percent of visitors were willing to travel over 100 miles to recreate elsewhere.

Figure 14. Reported Distance Visitors Would Travel to Alternate Location



Source: Source: USDA-FS 2007

Related Studies

In 1993, Michigan State University conducted a study of dispersed recreation use on the Forests and the Au Sable State Forest. In "Estimated Tourist Dispersed Recreational Use of the Forests and the Au Sable State Forest during April-December 1992 (Nelson, 1993)," hunting was noted as the dispersed activity which tourists recreationists most frequently cite as the main reason for a dispersed recreation visit." The report states, "[H]unting also accounts for the largest proportion of the dispersed recreation hours." Page number 12.

Many recreationists participate in more than one activity during a visit to a forest. However, they are likely to view some of these activities as complementary to the main reason for the visit. Nature observation, hiking/walking, and camping were the most frequently mentioned activities that often complemented some other activity rather than being listed as the main reason for the visit. The study also concludes, "[t]he estimate of approximately 4 tourist dispersed recreation use hours per acre over the study period suggests that public forests do provide opportunities for relative solitude. While this estimate does not consider noise (sound of motor vehicles) and the visual reminders of the presence of others (car driving down a forest road), the opportunity for one to immerse him or her in nature without encountering others seems readily available." Page number 30.

VIII. Findings

The demand for outdoor recreation opportunities is high in Michigan, as demonstrated by the information contained in this analysis. It is likely to be further increased due to the State' "Pure Michigan" tourism efforts which focus, in large measure, on the natural resources available for outdoor recreation. Initial results suggest that outdoor recreation based tourism in Michigan is

increasing. The public pursues a wide variety of outdoor recreation with the most popular activities being walking outdoors, fishing, and hunting (Table 1).

Many recreationists pursue more than one activity during their visits. Over 75 percent of the outdoor recreation activities reportedly occur on public land venues (MDNR 2007), with the most occurring on lands managed by the State. Nationwide, the National Forests also play an important role in providing recreation opportunities and report over 5,069,000 recreation visits in 2007 (USDA-FS 2007).

Michigan is home to a great variety of landscapes ranging from dunes, wetlands, forests and grasslands as well as 11,300 lakes over 5 acres in size and 36,000 miles of rivers and streams. State and Federal lands provide valuable public access to 7.5 million acres of natural resource based lands. Of these, the Federal government manages over 3 million acres of National Forests, Parks, and Refuges and the State manages over 4.5 million acres of Michigan State forests, parks, wildlife areas and other lands managed at least in part to accommodate the demand for outdoor recreation. Michigan is also home to lands owned by numerous non-profit land and nature conservancies which provide alternative experiences and settings to enjoy the outdoors. Private properties also provide important opportunities for the public to enjoy nature and pursue their outdoor recreation experiences.

An important consideration for recreationists in Michigan is the distance to their desired recreation opportunity. The majority of public lands are located in the northern two-thirds of the State, where only 15 percent of the population reside. Based on the information in this report, the proximity to recreation opportunities is important to users based on the relationships seen between travel distances and areas the public uses in Michigan. The Forests are the only National Forests located in the Lower Peninsula of Michigan and they are the closest to the State's major population centers. As such, the Forests receive significantly more outdoor recreation use than the two National Forests in the Upper Peninsula. The Forests accounted for 5,069,000 visits which is over 80 percent of the total National Forest visits in Michigan in 2007 (USDA-FS 2007).

The Forest Service analyzed the total recreation capacity of the Forests, utilizing the direction in the Forest Service ROS Users Guide and the coefficients for estimated Recreation Visitor Days per acre developed by the Southwest Region of the Forest Service. Based on the capacities displayed by alternatives in Table 41, the total recreation capacity of the Forests would not be exceeded in any of the proposed SEIS alternatives evaluated in detail. The Forest Service also considered visitor satisfaction as a tool to measure the quality of recreation opportunities provided on the Forests. Based on the information provided from MSCORP, NVUM, and other recreation use studies over the last two decades, visitor use satisfaction is ranges from good to very good.

An important issue identified in the recreation capacity analysis was that the recreation use capacity for the Nordhouse Dunes Wilderness is exceeded by all of the alternatives studied based on the established formula. The recreation use level in the wilderness was identified in the NVUM study as approximately 50,000 recreation visits or 95,417 visitor days. In Alternative 1 (No Action Alternative), the recreation capacity based on the Southwest Region formula for the wilderness is 4,400 recreation visitor days. In Alternatives 2, 3, and 4, the recreation capacity is 5,800 recreation visits. The user satisfaction level was high in both the NVUM study and the Michigan State University study of wilderness recreation use. The capacity formula is only one means of measuring the amount of recreation use that the wilderness can accommodate. The

Forest Service will be preparing additional analysis to identify the wilderness management issues and options. The Forests will be considering the results of recreation use level and visitor satisfaction monitoring as part of the analysis process to ensure that wilderness values are protected and a high quality wilderness experience continues to be provided.

Several conclusions can be drawn regarding the displacement of recreationists who are not satisfied with their recreation experience who choose to go elsewhere. Based on NVUM, 50.5 percent of people were willing to go elsewhere to pursue their preferred activity or another recreation activity. Of those willing to go elsewhere, almost half (49.9 percent) will not travel over 50 miles to pursue their activity elsewhere. Most recreationists who visit the Forests live within 200 miles of the Forests. Michigan has an abundance of recreation opportunities available throughout the State. Considering this information, it is highly likely that recreationists will travel elsewhere to pursue their preferred recreation experiences if they are dissatisfied with the recreation opportunities provided on the Forests. Based on a review of outdoor recreation opportunities in this document, it may be concluded that Michigan provides a wide variety of outdoor recreation experiences and the displaced users are likely to find that their preferred recreation experiences are available elsewhere within the State.

In reviewing recreation opportunities provided on all of the lands available within the State of Michigan, it should be concluded that Primitive and SPNM settings and recreation opportunities are available, but they are somewhat limited, for those members of the public seeking those types of experiences. The National Forests and the National Park Service administer wilderness areas in both the Lower and Upper Peninsula of Michigan. In addition, people seeking quiet experiences may find them in some of the State's parks and forest quieter areas. Likewise, land and nature conservancies provide similar opportunities for the public's enjoyment of primitive experiences on the private lands that they manage. Although private entities manage lands differently, these agencies and groups provide some opportunities for those seeking outdoor recreation experiences in an undeveloped setting in Michigan. Based on ratings on user satisfaction and crowding indices, these areas appear to be meeting the public's demand for quality Primitive and SPNM experiences.

The Forest Service reviewed the ROS characterizations for Primitive and SPNM classifications (Figure 8). Based on these characterizations, all areas currently designated as Management Area 6.1 (SPNM) in the Forest Plan have nonconforming characteristics (USDA-FS 2006a). Based on the Meister panel, Firearm hunting is considered a nonconforming use in Primitive and SPNM areas. The Court recognized tribal members have the right to firearm hunt in the SPNM and Primitive areas, per the Washington Treaty (1836) and Treaty of Saginaw (1819). As such, the Forests do not have the ability to eliminate all nonconforming uses in Primitive and SPNM areas.

Based on this analysis, it should be concluded that currently the Forests provide a wide variety of quality recreation opportunities for visitors. Based on the current conditions in the 14 SPNM and Primitive Areas designated in the 2006 Forest Plan and the characteristics of areas that are classified as SPNM Areas or Primitive Areas under the ROS Guide, only one of these areas comes close to meeting the ROS criteria for a SPNM Area experience on the Forests, the Nordhouse Dunes Wilderness (3,373 acres). The other 13 areas currently classified as SPNM Areas do not meet the ROS criteria. No area in the Forests meets the ROS criteria for a "Primitive" area under the ROS system.

A quality recreation opportunity is provided in the Nordhouse Dunes Wilderness, based on user satisfaction surveys (Table 34). The Forest Service manages this area to provide quality recreation opportunities for uses identified in the ROS activities characterization for SPNM areas (Figure 8), with the exception of horseback riding. Horseback riding is prohibited in Nordhouse Dunes Wilderness due to resource concerns.

This direction is consistent with Forest Service policy and the ROS guide, which states, "[R]ecognition that National Forest System lands potentially have a large and diverse variety of recreation opportunities does not imply that equal or balanced allocations of classes be provided, nor does it mean that individual National Forests provide some of each class (USDA-FS 1982)."

Items to be Addressed, per Order of the *Meister* panel of the U.S. Court of Appeals for the Sixth Circuit

Estimates of Snowmobiler and Cross-Country Skier Visitors

The Court found that the Forest Service's estimates of snowmobile and cross-country skiing visitors to the Forests were arbitrary because these estimates were not based on the comprehensive demand-supply analysis that is required by the regulations, 36 C.F.R. § 219.21(a)(2). *Meister*, 623 F. 3d at 380. Given these deficiencies, the Forest Service prepared this comprehensive Supply and Demand Analysis. The three primary recreation use data sources used for this analysis are the following:

- The 2008-12 Michigan State Comprehensive Outdoor Recreation Plan (MSCORP) which provides current and forecasted supply and demand information for outdoor recreation in Michigan between 2008 to 2012;
- The 2007 National Visitor Use Monitoring (NVUM) Study which includes current consumption or activity participation on the Forests from October of 2006 through September of 2007; and
- The Outdoor Recreation for 21st Century America (Cordell *et al.* 2004) which provides information on trends and the contemporary American's participation in outdoor recreation.

This Supply and Demand Analysis used these data sources to display estimates of recreation use, including snowmobiling and cross-country skiing, on the Forests. The following are some of the results. Table 1displays Michigan resident outdoor recreation participation by importance, including snowmobiling and cross-country skiing. This information shows that both of these activities did not rate as the first, second, or third most important outdoor recreation activities of Michigan residents, but these are popular activities.

Table 4 displays the participation rates for winter sports, including snowmobilers and cross-country skiers, for the State of Michigan and the United States as a whole. Based on this information, participation in these activities is more popular in Michigan than in the United States as a whole. Table 7 and Table 8 display outdoor recreation activities and age group participation rates for people living in proximity to the Forests.

Table 10 displays recreation activity participation on the Forests, including snowmobiling and cross-country skiing. Table 42 displays a summary of the snowmobile and cross-country skiing use on the Forests.

Table 42. Projected Use Levels for Snowmobiling and Cross-country Skiing on the Forests

Activity	2010	2020	2030	2040	2050
Snowmobiling	137.4	160.1	184.0	209.0	246.1
Cross-country skiing	16.5	17.6	19.1	20.7	23.2
Total Projected RVDs	**5,042.7**	**5,347.7**	**5,615.2**	**5,686.5**	**5,935.7**

Source: Projected trends from Table 11 applied to estimated Primary Purpose National and Forest visits from NVUM survey, 2007 (calculations for each use is in the project file).

The information presented in this analysis used the best available information to describe recreation uses on the Forests, including snowmobiling and cross-country skiing.

Quality of Recreation Opportunities

The Court specified that "[i]t is not enough, therefore, for the Service merely to identify the supply of lands on which an activity *can* occur." *Meister*, 623 F.3d at 372 (emphasis in original). Under the regulations, 36 C.F.R. § 219.21(a)(2), the Forest Service "must instead identify the supply of lands on which participants in that activity are afforded a '*quality* recreation opportunity'." *Id.* (emphasis in original).

The 1986 ROS Guide states "Quality, then, is not judged by the presence or absence of some factor (facilities, naturalness, or other visitors), but as the extent to which a given setting satisfies the desires of a particular recreationist. The recreation opportunity spectrum helps clarify the quality issue by providing a framework that calls for the systematic provision of diverse settings for recreation (USDA-FS 1986, p. 5)."

The Forest Service researched visitor satisfaction as a means to measure the quality of recreation opportunity provided. Based on user surveys conducted on MSCORP, NVUM on NFS lands in Michigan and National Park Service Visitor Survey Data reports, the preparers concluded that visitors rate their overall outdoor recreation experiences as good to very good. The MDNR does not have a specific program that measures visitor satisfaction on State Parks and Forests; however, the MSCORP survey of outdoor recreationists identified 69.8 percent of visitors were satisfied (rating 7-9), 27.5 percent were neutral (rating 4-6) and 2.7 percent were dissatisfied (rating of 1-3). Based on these figures, the Forest Service concludes that overall, the outdoor recreation users are generally satisfied with the recreation opportunities provided in Michigan.

Based on this information, the Forest Service concludes that overall, the National Forests, National Parks, State Parks, and State Forests provide quality outdoor recreation opportunities. These opportunities and each visitor's satisfaction will vary among individuals based on numerous factors including the type of use desired, user preferences and user expectations.

Table 43 provides a summary of lands providing the specified recreation opportunities in Michigan.

Table 43. Summary of Lands Providing Specified Recreation Opportunities in Michigan

Designation	Acreage	Hunting	Snowmobiling	Cross-country Skiing	Hiking
National Forest	2,855,278	Yes	Yes	Yes	Yes
National Park	646,711	Some	Some	Yes	Yes
National Refuge	113,539	Some	Some	Some	Yes
State Forest	3,900,000	Yes	Yes	Some	Yes
State Park Recreation Area	270,000	Some	Some	Some	Yes
Commercial Forest lands	2,200,000	Yes	No	No	No
Land/Nature Conservancies	52,914	Some	Some	Some	Yes
Other	Unavailable[31]	Yes	Some	Some	Some

Numerous federal, state, and other land management agencies provide opportunities for SPNM and Primitive recreation opportunities. Some of these opportunities may be characterized as backcountry, primitive or other terminology depending on agency managing the lands. The recreation experience offered at each of these areas varies due to many factors including land management agency policies, area setting, and user expectations. Table 44 summarizes lands which the Forest Service determined that have characteristics that are similar to the ROS designations of SPNM and Primitive Areas.

Table 44. Lands Potentially Providing SPNM and Primitive Experiences

Designation	Designated Wilderness	SPNM acres	Primitive acres
National Forest	92,506	202,493	1,588
National Park	26,170	Unavailable	Unavailable
National Refuge	25,309	Unavailable	Unavailable
State Forest	0	36,000[32]	Unavailable
State Park Recreation Area	0	Unavailable	Unavailable
Land/Nature Conservancies	0	52,914[32]	Unavailable

In general, the Forest Service concludes that opportunities to experience SPNM and Primitive experiences are limited in Michigan, especially in the Lower Peninsula. Recreationists seeking these experiences may have to travel relatively long distances for SPNM and Primitive recreation opportunities, especially if the users are located in the Lower Peninsula. Demand for these recreation opportunities appears to being met based on user satisfaction levels. Opportunities to expand these recreation experiences appear to be limited, especially in the Lower Peninsula, given the current land ownership patterns, land development, road densities, and past land management practices.

Displacement

Several conclusions can be made regarding displacement of recreationists who are not satisfied with their recreation experience. Based on NVUM, 50.5 percent of people were willing to go elsewhere to pursue their preferred activity or another recreation activity. Of those willing to go

[31] Includes private hunt clubs, some county and municipal lands, etc.
[32] Areas offer less developed experiences that vary based on managing agency's direction and policies.

elsewhere, almost half (49.9 percent) will likely not travel over 50 miles to pursue their activity elsewhere. Most recreationists who visit the Forests live within 200 miles of the Forests. Michigan has an abundance of recreation opportunities available throughout the State. Considering this information, it is highly likely that recreationists will travel elsewhere to pursue their preferred recreation experiences if they are dissatisfied with the recreation opportunities provided on the Forests. Based on a review of outdoor recreation opportunities in this document, the preparers concluded that Michigan provides a wide variety of outdoor recreation experiences and most displaced users are likely to find that their preferred recreation experiences are available elsewhere within the State.

Duplication

The Forest Service reviewed the *Meister* panel's direction regarding the elimination of any unnecessary duplication of recreation opportunities. *Meister*, 623 F. 3d at 380. The *Meister* panel found that the Forest Service had not complied with the requirement "that it coordinate its recreation planning with that of the State of Michigan with the aim (to the extent feasible) of 'reducing duplication in meeting recreation demands' with respect to gun hunting and snowmobiling. " *Id.*

To coordinate recreation planning, the Forest Service and the MDNR reviewed the present and the proposed recreation activities under local and State land use or outdoor recreation plans, particularly the MSCORP, and the agencies considered the recreation opportunities that are already present and available on public and private lands with the aim of reducing any unnecessary duplication in meeting the public's demand for recreational opportunities in Michigan. In addition, the Forest Service regulations, 36 C.F.R. § 219.21(e) was considered. These regulations require the Forest Service, "to the extent feasible, to coordinate with the State in eliminating duplicate recreation opportunities on state and national forest." To address this issue, the Forest Service conducted a series of meetings with the MDNR to discuss any feasible opportunities to reduce the duplication of recreation opportunities provided for those visitors who enjoy snowmobiling and hunting experiences in the HMNFs' Primitive and SPNM Areas. As part of this process, the agencies reviewed ROS standards, current and projected demand for outdoor recreation experiences in these areas, the recreation opportunities provided in Michigan, and past history of cooperative planning efforts. This information is provided in detail within the supply and demand sections of this document.

The Forest Service and the MDNR considered the current and proposed supply and demand for hunting and snowmobiling opportunities in Michigan with the intent, where feasible, to reduce duplication of recreation opportunities in meeting recreation demands. Upon the conclusion of this process, the Forest Service and the MDNR did not identify any potential opportunities to reduce what might be incorrectly characterized as "duplication of recreation opportunities" on National Forest System lands or State lands. The opportunities provided by the Forest Service, State of Michigan, and other providers of recreation opportunities provide for a wide range of recreation experiences in hiking, backpacking, cross-country skiing, snowshoeing, hunting, snowmobiling, and other activities in a variety of settings. The trail systems and other outdoor opportunities were created and modified over time to address user demands, resource concerns, and to reduce user conflicts. The snowmobile trail systems were designed through coordinated efforts between the Forest Service and the MDNR to serve as a network of travel routes to connect local communities and to enhance the local economies. These opportunities are vital to

meeting the current demand and the projected future expansion of public demand for these uses. The current supply of these different recreation opportunities gives users a wide variety of choices as to where to go to recreate and also reduces the potential for crowding, user conflicts, and resource damages to National Forest System and State lands.

After considering all the information provided in this document, the preparers concluded that the available supply of areas and trails on National Forest System and State lands where users may enjoy snowmobiling and hunting should meet the current and foreseeable demand for these recreation experiences without providing any unnecessary duplication of opportunities on State and National Forest System lands. Based upon user satisfaction measurements, the current users appear generally satisfied with the recreation opportunities that are provided on the Forests. An expansion of some of the existing recreation opportunities may increase a particular user's satisfaction based on reduced crowding and fewer user conflicts. However, it would also be likely to adversely affect the satisfaction of other users by restricting their ability to enjoy their recreational pursuits where they regularly have done so in the past on State and National Forest System lands.

The Multiple Use Sustained Yield Act of 1960, as amended, 16 U.S.C. §§ 528-531, directs the Secretary of Agriculture and the Forest Service to administer the renewable surface resources of the National Forests for multiple use and sustained yield (which is defined as achievement and maintenance of a high level of the regular output of the renewable resources of the National Forest without impairment of the land's productivity) of the various products and services obtained from the forests including outdoor recreation. The opportunity to produce cross-country skiing outputs, coupled with other valued outputs such as hiking, hunting and wildlife viewing on a single site is what makes meeting this mandate feasible. After evaluating the information detailed in this Supply and Demand Analysis along with backup data in the project file, the Forest Service and the MDNR did not identify any feasible opportunities to reduce duplication of recreation opportunities in any areas without diminishing the variety and quality of recreation opportunities provided throughout the State.

Summary

Analysis of the interactions between recreation supply and demand, the economy, and the local communities is not an exact science. The data and level of analysis used in this Supply and Demand Analysis were commensurate with the importance of the many variables. When encountering a gap in information, the team preparing this analysis concluded that the missing information may have added to the precision of estimates or better defined a relationship, but this information would not affect the overall conclusions. The basic data and central relationships are sufficiently well established in the respective sciences and the additional information would be very unlikely to reverse or nullify the understood relationships. Thus, new information would be welcome and it would add the analysis's precision, but it is not essential to the completion of this analysis.

A wide array of recreation experiences and opportunities are available throughout the year and they can be readily identified through internet searches. Federal, State, and local governmental agencies are working cooperatively to coordinate management activities to maximize recreation opportunities within their agency mandates and directives. In addition, numerous private groups including nature and land conservancies manage lands for public enjoyment and use. Customer satisfaction is monitored by both Federal and State agencies in an effort to ensure that the quality

and quantity of recreation opportunities is meeting the public's expectations. The Forest Service will continue to work with State and local land management agencies to address user conflicts on a case-by-case basis.

NVUM will continue to serve as a useful tool for the Forest Service to track long-term use trends on National Forest System lands. This information, along with the results of site-specific studies, will be used by land managers to assess demand trends, modify programs, and adjust land management direction to better meet the needs of the recreating public.

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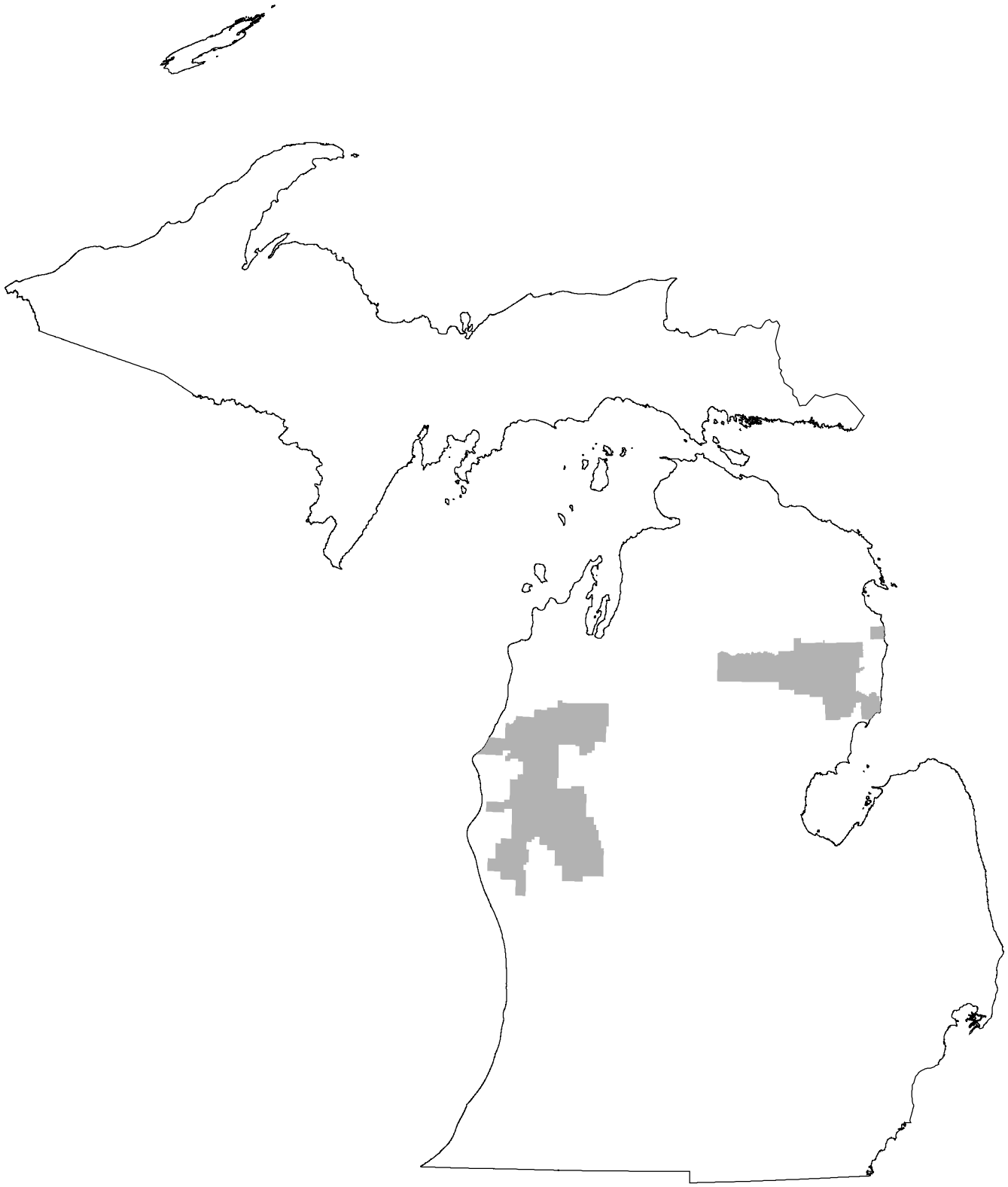
X. Appendices

Appendix A – Maps

Map A-1

Huron-Manistee National Forests

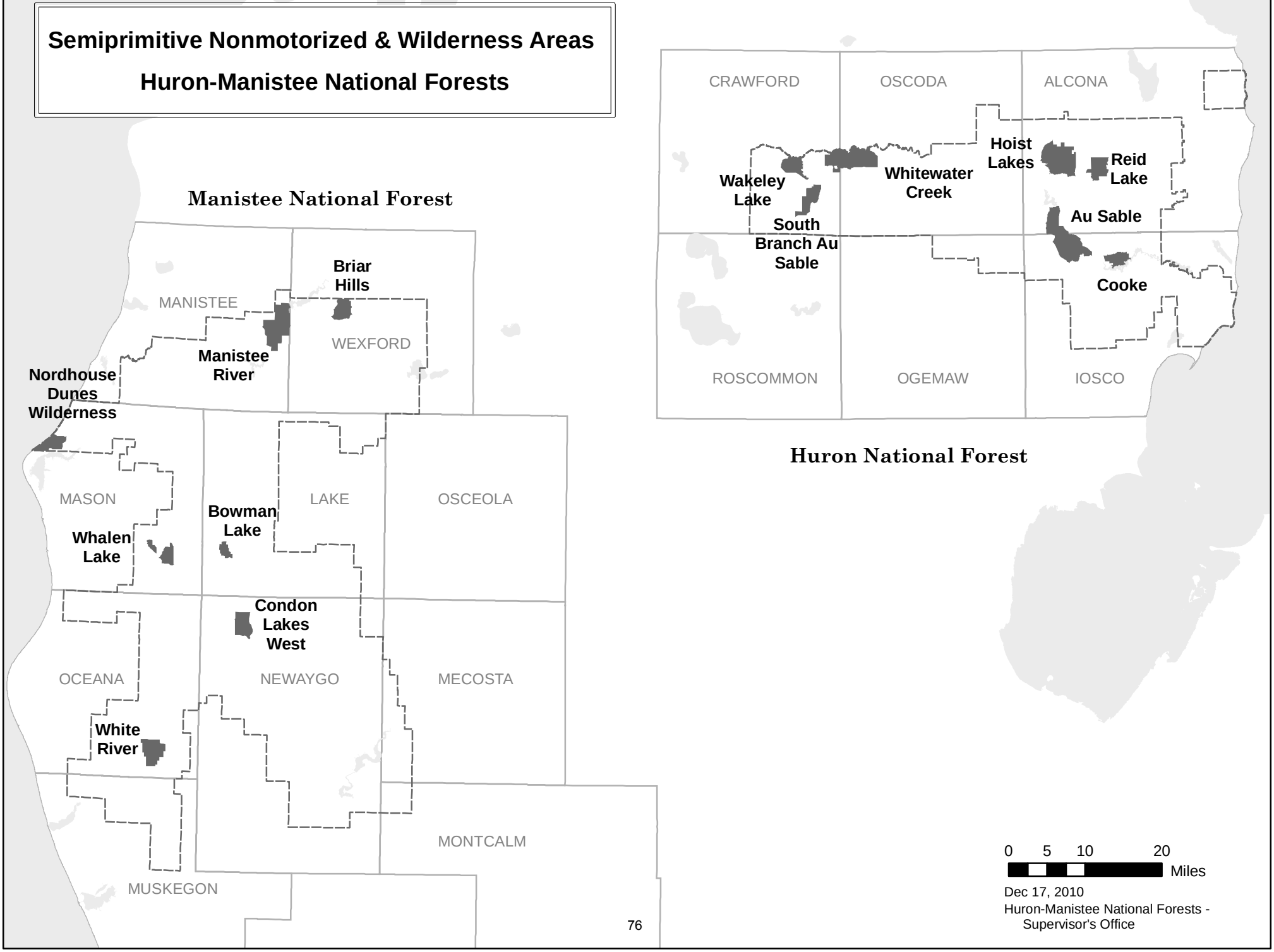


0 25 50 Miles

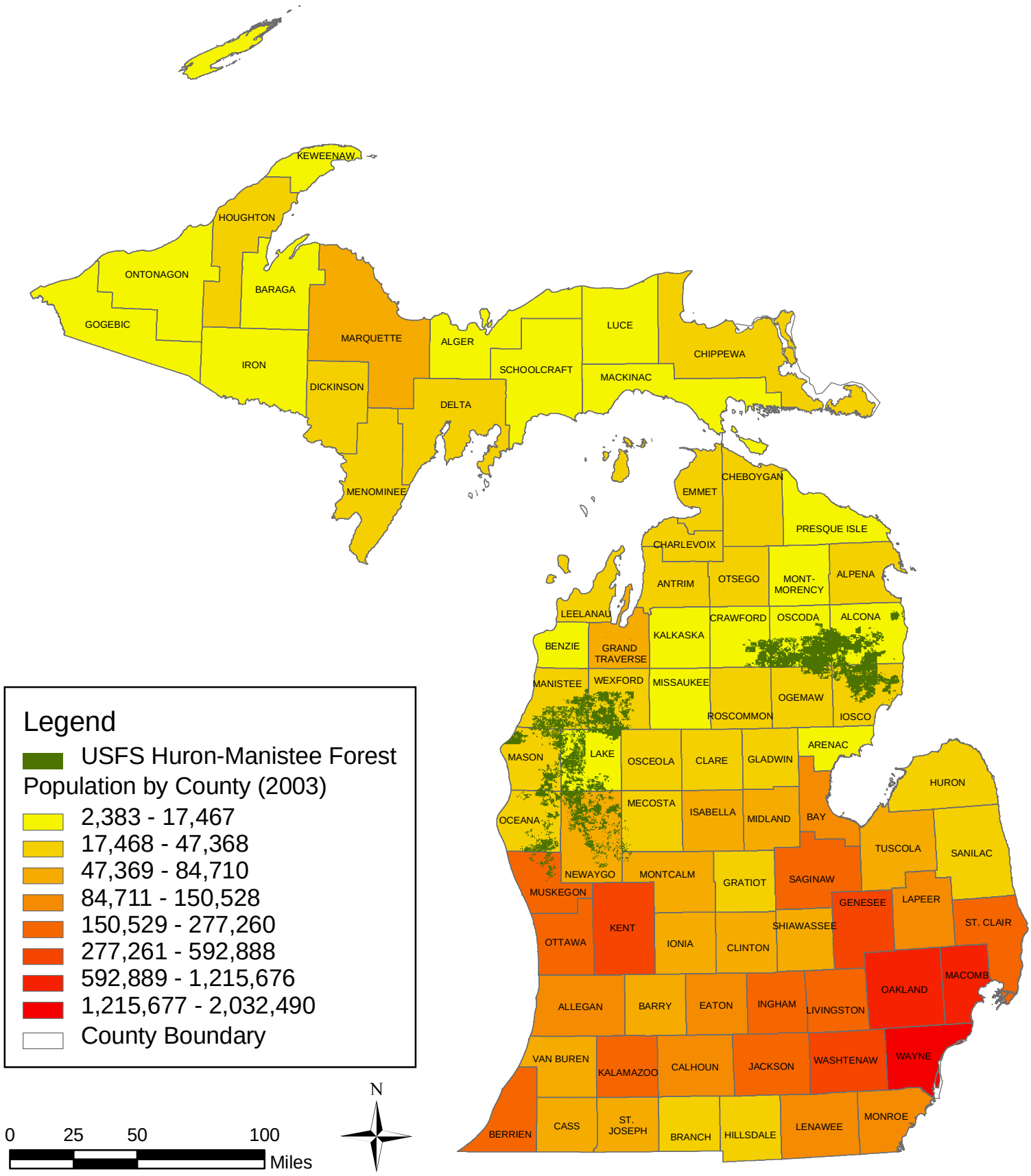
June 29, 2011
Huron-Manistee National Forests - Supervisor's Office

Map A-2. Huron-Manistee National Forests Semiprimitive Nonmotorized and Primitive Areas

Semiprimitive Nonmotorized & Wilderness Areas
Huron-Manistee National Forests



Map B-1. Population Densities in Michigan by Counties



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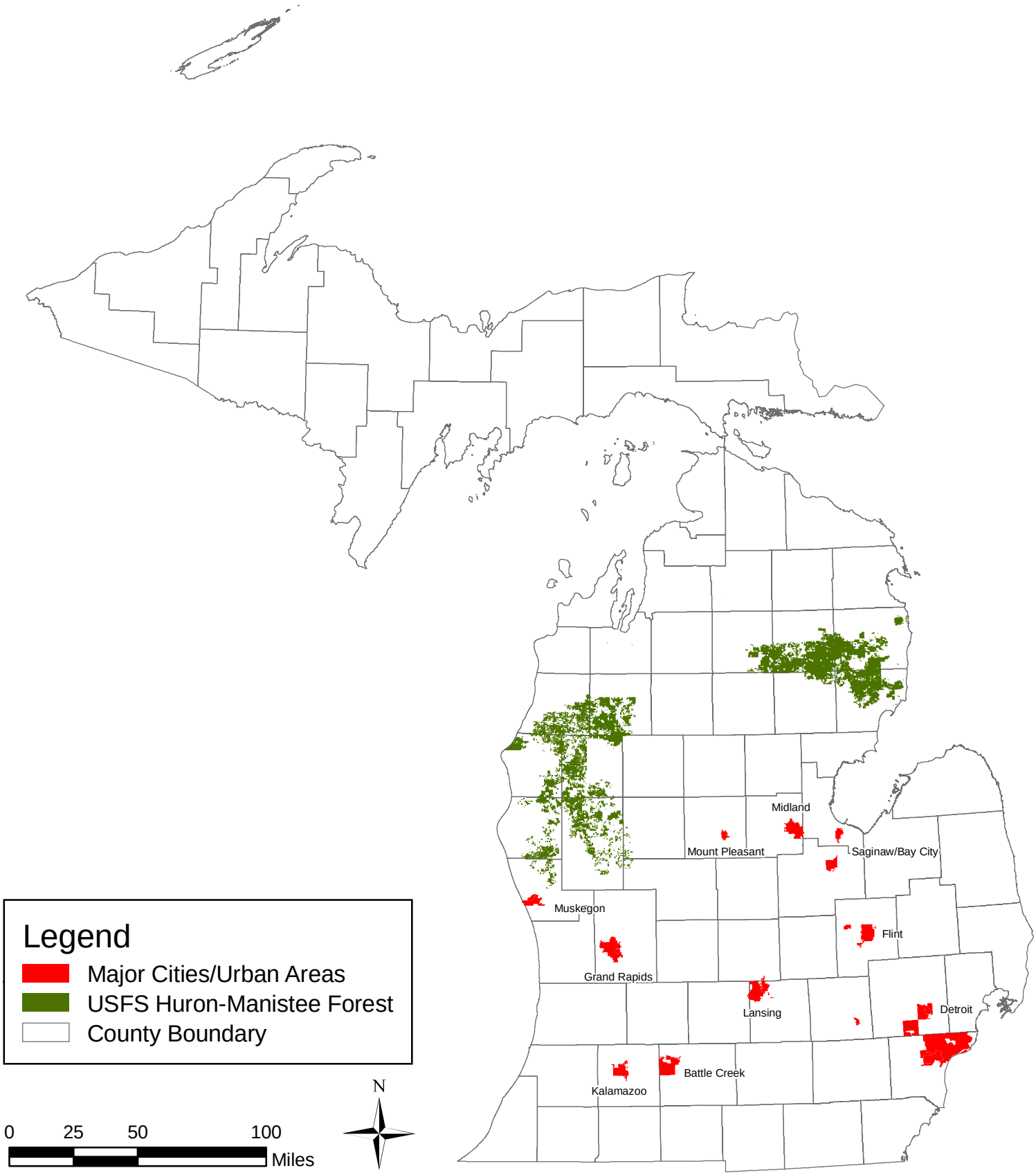
Map B-2. Population Densities in Michigan by Major Cities



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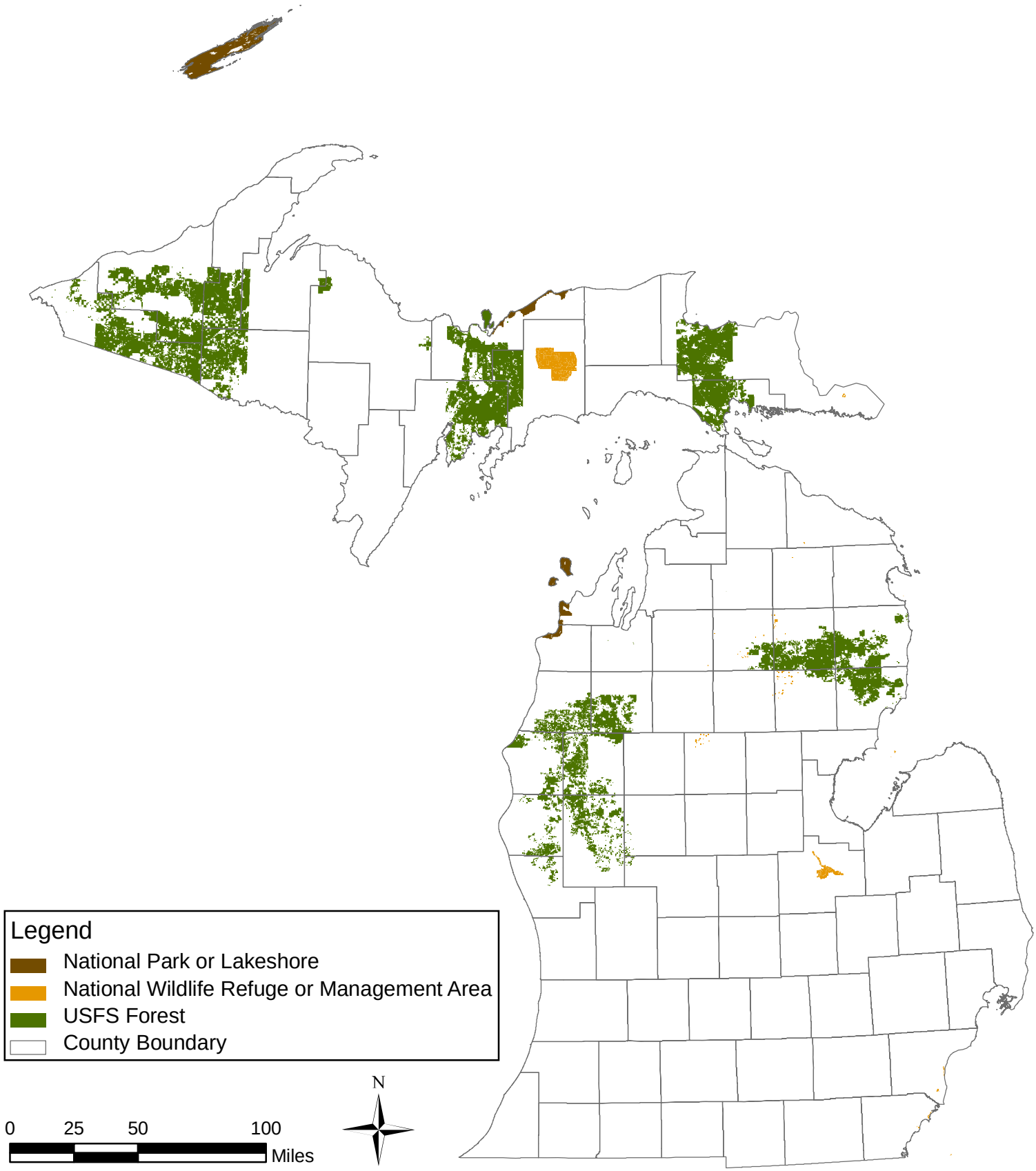
Map C-1. Federal Lands in Michigan



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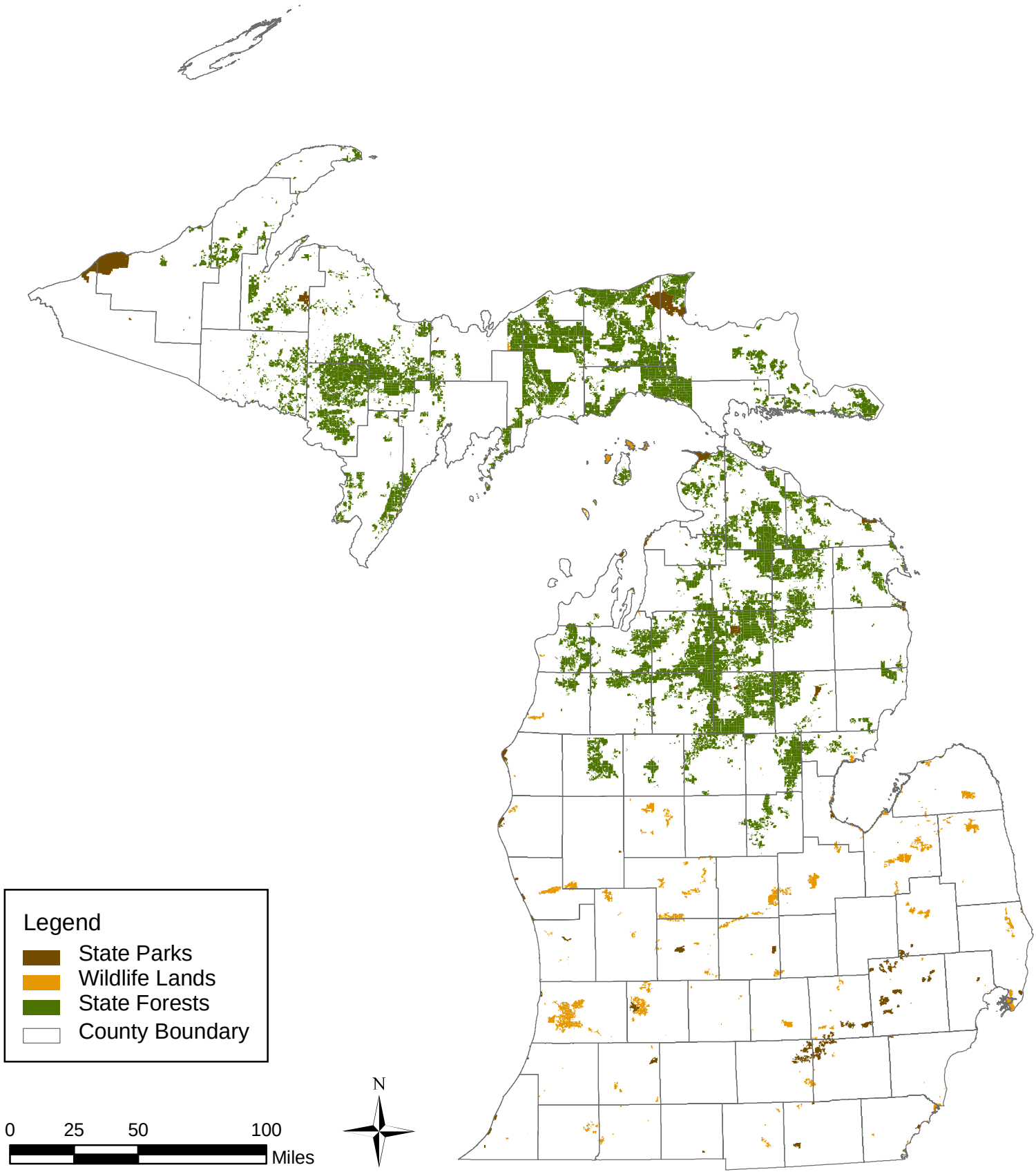
Map C-2. State Lands in Michigan



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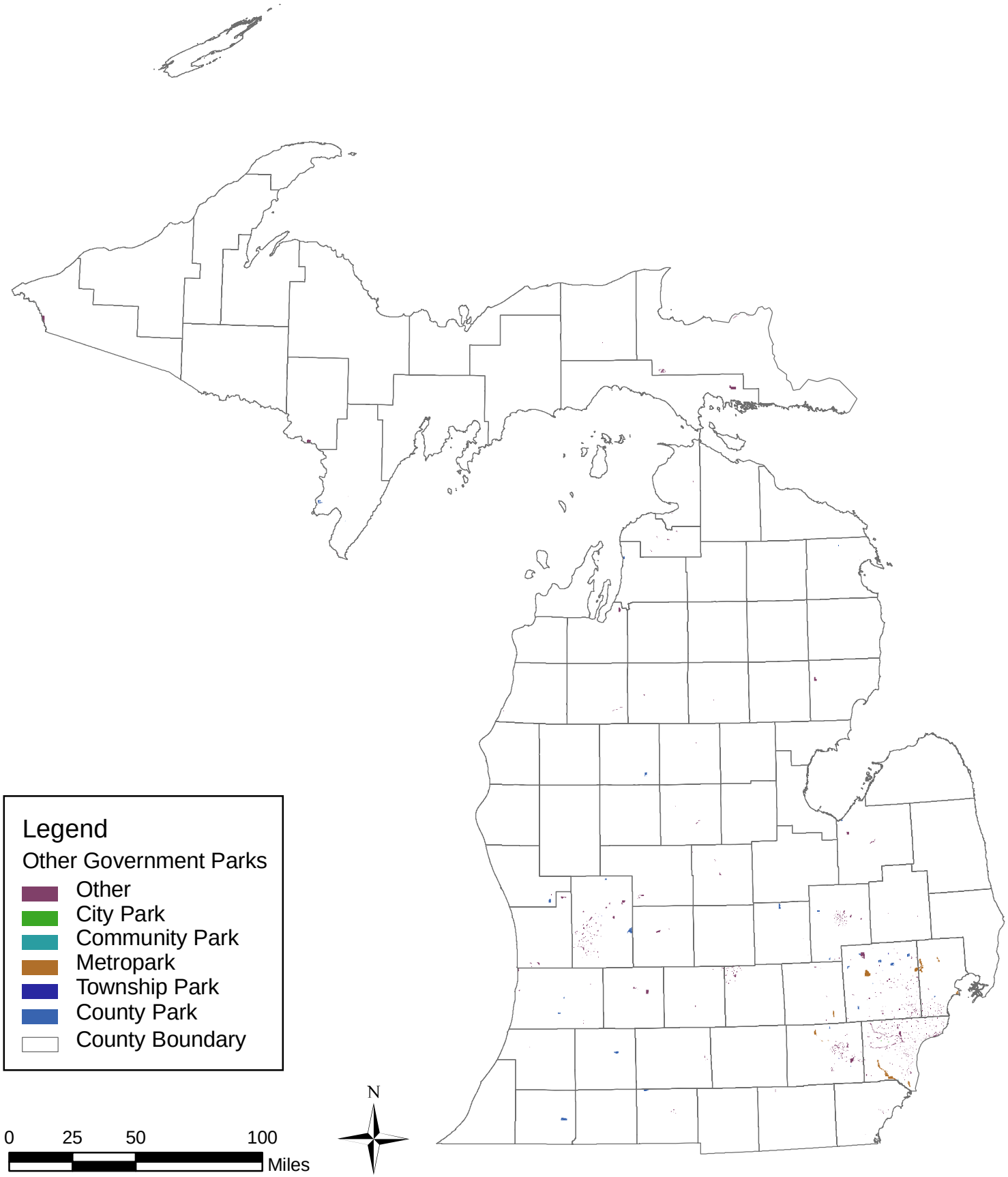
Map C-3. Other Governmental Lands in Michigan



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Map C-4 Land Conservacy Lands in Michigan

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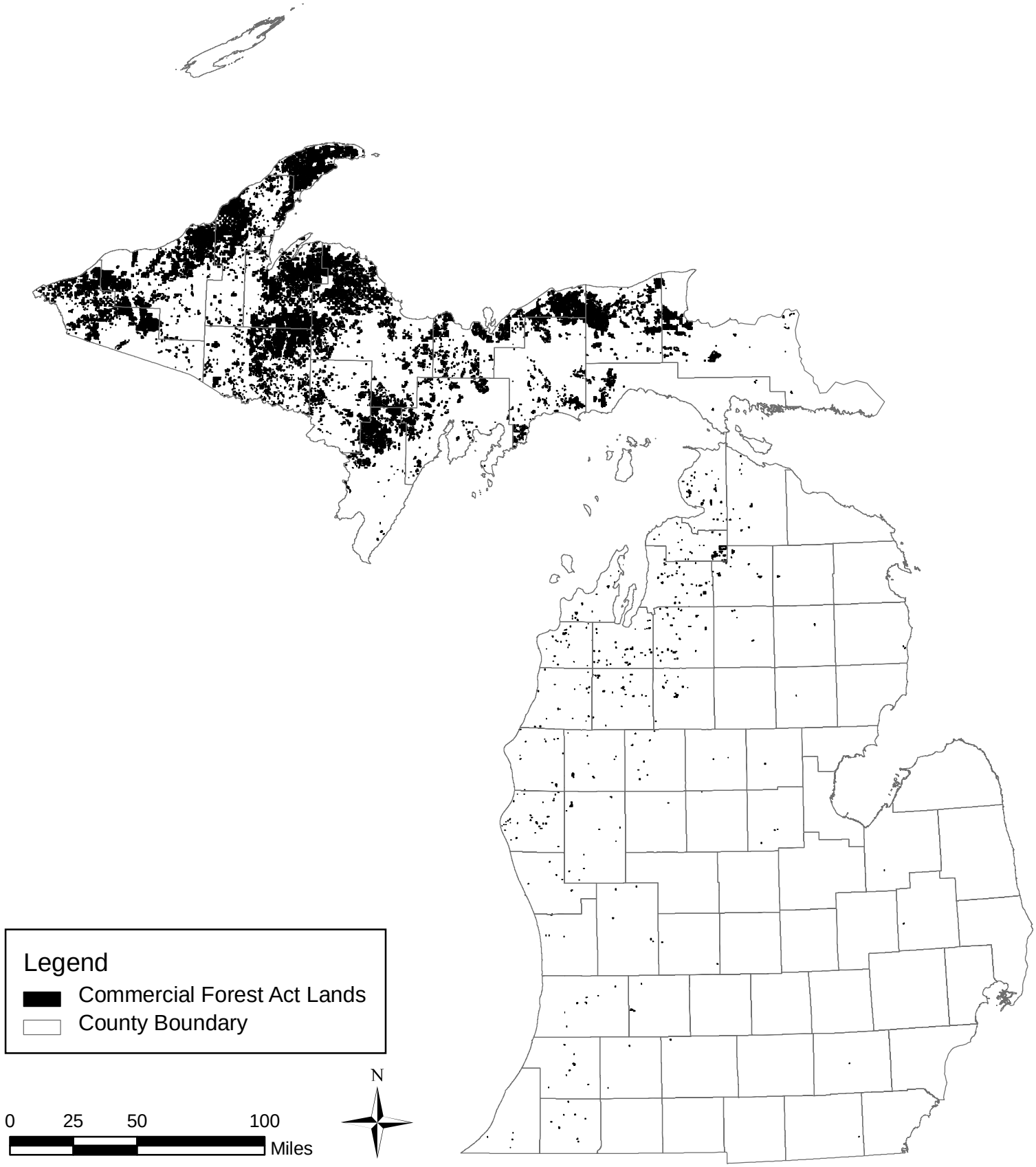
Map C-5 Commercial Forest Lands



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Map C-6: To view, access the MI DNR Website:

http://www.michigan.gov/dnr/0,1607,7-153-10365_14824-31074--,00.htm