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Agriculture

Forest
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**Eastern
Region**

September 2011

Draft Supplemental Environmental Impact Statement for the Land and Resource Management Plan

Huron-Manistee National Forests

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

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Huron-Manistee National Forests

Draft Supplemental Environmental Impact Statement for the Final Environmental Impact Statement of March 2006 which accompanied the 2006 Land and Resource Management Plan

Lead Agency: USDA Forest Service

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

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Reviewers should provide the Forest Service with their comments during the official comment period for the draft supplemental environmental impact statement (DSEIS). Submission of comments on the DSEIS is an important part of the National Environmental Policy Act (NEPA) process. 40 C.F.R. '1503.1, 1503.2. Reviewers' timely participation in the NEPA process will prevent undue delay in the Forest Service's decision making process which must be completed by January 31, 2012. The Forest Service will analyze and consider all of the DSEIS comments in the preparation of the final supplemental environmental impact statement (USDA-FSEIS). 40 C.F.R. '1503.4. Reviewers have an obligation to structure their timely participation in the NEPA process so that their participation is meaningful and clearly alerts the agency to the reviewers' positions and contentions. 40 C.F.R. ' 1503.3; *see also Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 553-54 (1978); *Havasupai Tribe v. Robertson*, 943 F.2d 32, 34 (9th Cir. 1991); *Wilson v. Hodel*, 758 F.2d 1369, 1372 (10th Cir. 1985). Environmental objections that could have been raised earlier may be waived if they are not included in the reviewers' timely comments. *See DOT v. Public Citizen*, 541 U.S. 752, 764-65 (2004); *see also Ohio Forestry Ass'n, Inc. v. Sierra Club*, 523 U.S. 726, 732-37 (1998); *City of Angoon v. Hodel*, 703 F.2d 1016, 1020-22 (9th Cir. 1986). Reviewers' comments on the DSEIS should be specific and they should address the adequacy of the draft's environmental analysis and the merits of the alternatives discussed. 40 C.F.R. '1503.3.

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Send Electronic Comments to: comments-eastern-huron-manistee@fs.fed.us . Comments sent via e-mail should contain the subject line: "Forest Plan SEIS"

Date Comments Must Be Received: 3 months from the date of publication of availability

Preface – Understanding the Supplemental Environmental Impact Statement (SEIS)

The Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976 (NFMA), 16 U.S.C. § 1600 *et seq.*, specifies that land and resource management plans are to be developed for all of the National Forests. Land and resource management plans (also called Forest Plans) establish the direction for natural resources management on the National Forests. Each Forest Plan provides programmatic direction to guide the development of site-specific projects that may occur during the life of the plan. Additional environmental analysis is required to consider the site-specific effects of each proposed project.

The Huron-Manistee National Forests Land and Resource Management Plan was revised in 2006 (2006 Forest Plan) after the Forest Service prepared the final environmental impact statement (FEIS) under the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.* The 2006 FEIS analyzed the environmental effects of the proposed changes in the management of natural resources from the 1986 Forest Plan management direction. The 2006 Forest Plan was approved by the Regional Forester on March 20, 2006 and the new management direction was implemented in the Huron-Manistee National Forests.

The approval of the 2006 FEIS and the 2006 Forest Plan 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. Dep't 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. Dep't of Agriculture*, No. 07-13008, slip op. (E.D. Mich. Mar. 30, 2009), *rev'd*, 623 F.3d 363 (6th Cir. 2010); *see also Meister v. U.S. Dep't 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 14 analysis areas (13 of the areas are managed under 2006 Forest Plan Management Area (M.A.) 6.1, Semiprimitive Nonmotorized (SPNM) and one area, the Nordhouse Dunes Wilderness Area is managed under 2006 Forest Plan M.A. 5.1, Wilderness). The *Meister* panel determined that the 2006 FEIS analysis was deficient because the Forest Service failed to correctly apply the ROS standards in its analysis of the recreation activities that are allowed in the Forests SPNM and Wilderness 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.

Despite the 2006 FEIS's deficiencies, the *Meister* panel did not "set aside" the 2006 Forest Plan, but instead directed the Forest Service to perform additional analysis to address the deficiencies in the 2006 FEIS analysis. On remand, the District Court ordered the agency to bring the 2006 Forest Plan into compliance with NEPA and NFMA.

The Forest Service decided to prepare a supplemental environmental impact statement (SEIS) to supplement the 2006 FEIS analysis and to correct the deficiencies that the *Meister* panel identified in its ruling. The SEIS will also respond to the significant issues raised by the public in response to the Forest Service's Notice of Intent to prepare a SEIS (75 Fed. Reg. 81,561 (Dec. 28, 2010)).

The SEIS NEPA analysis and any Forest Plan amendment that may result are being conducted under the authority of NFMA and the applicable regulations. The Regional Forester will use the procedures of the planning regulations that were in effect before November 9, 2000 (*see* 1982 Planning Rule, 47 Fed. Reg. 43,026 (Sept. 30, 1982)) which were previously used to prepare the 2006 Forest Plan.

Organization of the Supplemental Environmental Impact Statement

Chapter 1 describes why the Forest Service is preparing this analysis and what public involvement has been done.

What is the purpose of this analysis?

What is proposed?

How were the public, tribal governments and other Federal, State and county agencies involved?

What issues are addressed?

Chapter 2 describes and briefly compares alternative ways of addressing the purpose and need for change described in Chapter I. With public input, the interdisciplinary team developed alternative strategies to address the deficiencies identified by the *Meister* panel and responds to the significant issues raised by the public.

Chapter 3 describes the current condition of resources that could be affected by the alternatives. It then describes the environmental and social effects of implementing each alternative.

Chapter 4 lists the preparers and contributors to this document.

Appendices

Appendix A includes the data and maps supporting the analysis.

Appendix B displays the Forest Plan Management Area changes, by alternative.

Appendix C includes the Recreation Opportunity Spectrum (ROS) review.

Appendix D lists the statutes, regulations, policies and agreements relevant to this analysis.

Appendix E includes a summary of public comments and agency responses to comments received during the official comment period.

Appendix F includes the references used in this analysis.

Appendix G demonstrates the social and economic analysis used to determine the Forests' contribution to local community economies effects.

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Chapter 1. Purpose of and Need for Action

Purpose and Need for Action

The *Meister* panel of the U.S. Court of Appeals for the Sixth Circuit issued an opinion in the case of *Meister v. U.S. Department of Agriculture*, et al., No. 09–1712 (September 29, 2010), which found deficiencies in the analysis supporting the revised Land and Resource Management Plan for the Huron-Manistee National Forests (2006 Forest Plan) (USDA-FS 2006).

Specifically, the *Meister* panel found that:

1. The Forest Service's estimates of snowmobile and cross-country visitors to the Forests were arbitrary,
2. The Service did not coordinate its recreation planning with the State of Michigan, as required, to "reduce duplication in meeting recreation demands" with respect to gun hunting and snowmobiling,
3. The Service's reasons for keeping certain trails open to snowmobile use were arbitrary and
4. The Service violated the National Environmental Policy Act (NEPA) when it failed to consider closing the Semiprimitive Nonmotorized (SPNM) Areas (2006 Forest Plan Management Area (M.A.) 6.1) and the Nordhouse Dunes Wilderness Area (2006 Forest Plan M.A. 5.1) to gun hunting and snowmobile use.

This Supplemental Environmental Impact Statement (SEIS) will address deficiencies identified by the *Meister* panel.

Proposed Action (Notice of Intent)

The Forest Service proposes to remedy the deficiencies identified by the *Meister* panel by supplementing the Final Environmental Impact Statement (2006 FEIS) for the Forest Land and Resource Management Plan (2006 Forest Plan). The supplement will evaluate an alternative that closes the 13 non-wilderness analysis areas (2006 Forest Plan M.A. 6.1, SPNM) to snowmobile use and firearm hunting (subject to existing rights) and closes Nordhouse Dunes Wilderness (2006 Forest Plan M.A. 5.1, Wilderness) to firearm hunting (subject to existing rights). No motorized use is allowed in the Nordhouse Dunes Wilderness. A description of the 14 analysis areas can be found at the beginning of Chapter 3 and individual maps are included in Appendix A (Map A-13 through A-26). Maps 1 and 2 display the location of the 14 analysis areas within the Huron-Manistee National Forests and the State of Michigan.

Scope of the Analysis

To comply with the *Meister* panel directives, the Forest Service decided to prepare a SEIS to supplement the 2006 FEIS analysis and to correct the deficiencies that the *Meister* panel identified in its ruling. The SEIS will also respond to the significant issues raised by the public in response to the Forest Service's Notice of Intent to prepare a SEIS (75 Fed. Reg. 81,561 (Dec. 28, 2010)).

Despite the 2006 FEIS's deficiencies, the *Meister* panel did not "set aside" the 2006 Forest Plan, but instead directed the Forest Service to perform additional analysis to address the deficiencies in the 2006 FEIS analysis. On remand, the District Court ordered the agency to bring the 2006 Forest Plan into compliance with NEPA and NFMA.

The SEIS will supplement the 2006 FEIS with additional analysis of the direct, indirect and cumulative effects of each alternative (including the no action alternative). The *Meister* panel found that that the

analysis of possible additional SPNM Areas (2006 Forest Plan M.A. 6.1) in the 2006 Forest Planning process was adequate, so that analysis will not be part of the SEIS.

Decision to be Made

The SEIS NEPA analysis and any Forest Plan amendment that may result are being conducted under the authority of NFMA and the applicable regulations. The Regional Forester will use the procedures of the planning regulations that were in effect before November 9, 2000 (*see* 1982 Planning Rule, 47 Fed. Reg. 43,026 (Sept. 30, 1982)) which were previously used to prepare the 2006 Forest Plan.

Public Involvement

The Forests have involved Federal, tribal, State and local government agencies, citizens and non-governmental organizations in this process. Outreach efforts have included news releases, public meetings, Web site posting, legal notices and mailings.

Prior to the Notice of Intent

The Forests issued a news release to 41 news agencies on November 29, 2010 announcing the Forests' intention to prepare a SEIS and to explain that the official public comment period would begin with the publication of the Notice of Intent (NOI) in the Federal Register.

Consultation with the tribes that are signatories to the Treaty of Washington of 1836 and the Treaty of Saginaw of 1819, including tribes that are members of the Great Lakes Indian Fishing and Wildlife Commission, began in November of 2010.

The Michigan Department of Natural Resources (MDNR) and U.S. Department of Interior, Bureau of Land Management (BLM) were invited to be cooperating agencies.

Notice of Intent (NOI)

The Forest Service's NOI to prepare a SEIS (75 Fed. Reg. 81,561) was published on December 28, 2010. A legal notice detailing the information from the NOI was posted in the Cadillac News, Oscoda Press, Oscoda County Herald, Manistee News Advocate and the Lake County Star.

A copy of the NOI, a map and a cover letter with the public meeting schedule and locations were sent to 1,476 individuals, governmental agencies and organizations on December 28, 2010. Five other interested parties were notified by e-mail of the availability of these documents on the Forests' Web site.

On December 28, 2010 a press release on the publication of the NOI and public meeting schedule was sent to 41 news agencies and published to the Forests' Web site. A second press release detailing the time and location of the public meetings was sent to 41 news agencies on January 27, 2011.

Public meetings (open houses) were held in several areas in the State in late January and early February 2011 to answer questions, disseminate information and collect written comments. The meetings were held in Mio, Oscoda, Manistee, Baldwin, Grand Rapids, Birch Run, Southfield and Lansing, Michigan. Meetings that were originally scheduled in Southfield and Lansing for February 1 and 2, 2011, respectively, were cancelled due to inclement weather and rescheduled for February 9 and 10, 2011, respectively.

The BLM, MDNR and the Little River Band of Ottawa Indians were granted cooperating agency status and became part of the interdisciplinary team.

Public Comments

The 45-day comment period started with the publication of the NOI in the Federal Register on December 28, 2010 and ended February 11, 2011. During the comment period, the Forests received 9,127 e-mails, letters, faxes and hand-delivered comments in response to the NOI. Appendix E includes a summary of the comments received.

Issue Development

All public comments submitted in response to the NOI were read, analyzed and organized into 98 comment summary statements by the staff of the Forests. The SEIS interdisciplinary team, including our cooperating agency members, used these statements to identify significant issues and develop the range of alternatives that are evaluated in the SEIS.

The Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues are defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues are identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" A list of non-significant issues and the analysis behind why they are non-significant is included in Appendix E.

Significant issues are used to formulate the range of alternatives, prescribe mitigation measures and analyze environmental effects.

Significant Issues

The interdisciplinary team grouped comment summary statements into three significant issues:

Issue 1: The management area conditions, including other public and private infrastructure within and adjacent to the 14 analysis areas, are inconsistent with the Recreation Opportunity Spectrum (ROS) activity, setting and experience characteristics (a detailed explanation of ROS is included in Chapter 3). These inconsistencies include State and county highways, utility corridors, roads and snowmobile trails, development on private land and easements.

Issue 2: The Forests should provide opportunities for quiet recreation experiences. This issue addresses the desire of some visitors for the opportunity to recreate in an environment with the high probability of isolation from the sounds of human activity.

Issue 3: Alteration of current recreation activities, settings and opportunities (such as elimination of firearm hunting and snowmobile trails) in the 14 analysis areas may affect recreation experiences of visitors, economies of local communities and natural resources in these areas.

This section includes a description, a summary of public comments and evaluation criteria for each of the three issues. Evaluation criteria or indicators, are proposed to measure the environmental consequences of each alternative.

Issue 1

The management area conditions, including other public and private infrastructure within and adjacent to the 14 analysis areas, are inconsistent with the ROS activity, setting and experience characteristics (A detailed explanation of ROS is found in Chapter 3). These inconsistencies include State and county highways, utility corridors, roads and snowmobile trails, development on private land and easements.

This issue responds to public concerns with how the 14 areas being analyzed meet (or do not meet) conformity to ROS characteristics. Comments ranged from those that would like the Forest Service to close roads and motorized trails within the analysis areas, to those who would like the management area designation changed to conform to ROS characteristics and more accurately reflect existing infrastructure and uses.

Evaluation Criteria

The Forests' interdisciplinary team used the following criteria to evaluate the issue of management area designation and conformity to ROS classification:

- Management area conformity to ROS characteristics.

Issue 2

The Forests should provide opportunities for quiet recreation experiences.

This issue responds to public requests for recreation opportunities in an environment with a high probability of isolation from the sights and sounds of human activity. This issue was developed in response to comments that included a desire that firearm hunting, snowmobiling and other motorized activities could be prohibited in and adjacent to the 14 areas analysis areas. Furthermore, some commenters believe that these type areas (2006 Forest Plan M.A. 6.1, SPNM) are in limited supply and quiet recreation experience opportunities could be provided.

Evaluation Criteria

The Forests interdisciplinary team uses the following criteria to evaluate the issue of quiet recreation experiences:

- Acres closed to firearm hunting within the 14 analysis areas.
- Miles of snowmobile trail open within and adjacent to the 14 analysis areas.
- Miles of other motorized trails open within the 14 analysis areas.
- Miles of National Forest System (NFS) and other roads open in the 14 analysis areas.

Issue 3

Alteration of current recreation activities, settings and opportunities (such as elimination of firearm hunting and snowmobile trails) in the 14 analysis areas may affect recreation experiences of visitors, economies of local communities and natural resources in these areas.

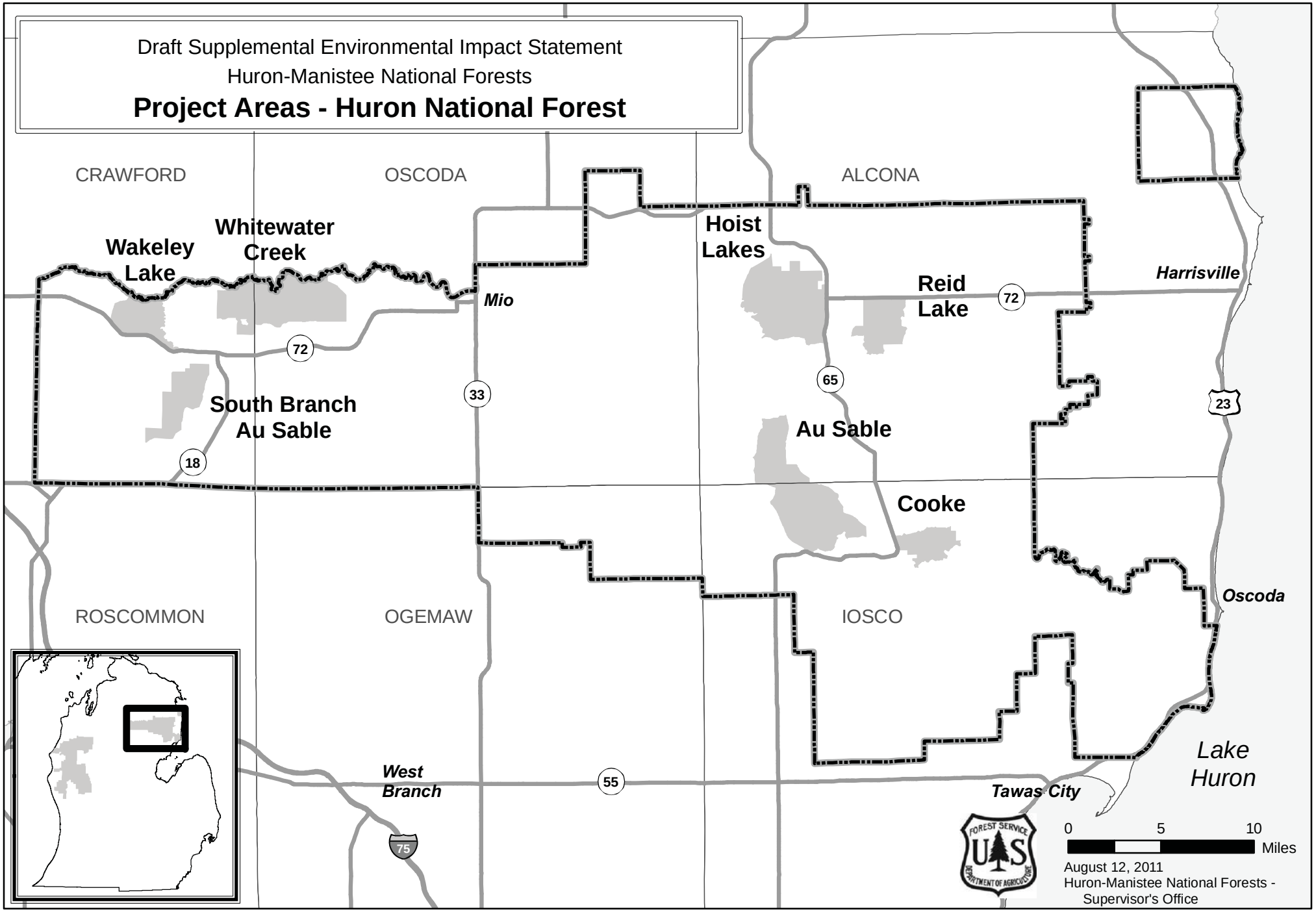
This issue responds to public requests for continuation of existing uses and recreation opportunities in a SPNM (M.A. 6.1) and Wilderness (M.A. 5.1) environment. Comments ranged from those who felt firearm hunting, snowmobiling and other motorized activities should continue in and adjacent to the 14

analysis areas, to those concerned about potential economic impacts by prohibiting existing uses. Other commenters expressed a concern that areas closed to gun hunting would remain open to gun hunting by tribal members exercising their treaty rights.

Evaluation Criteria

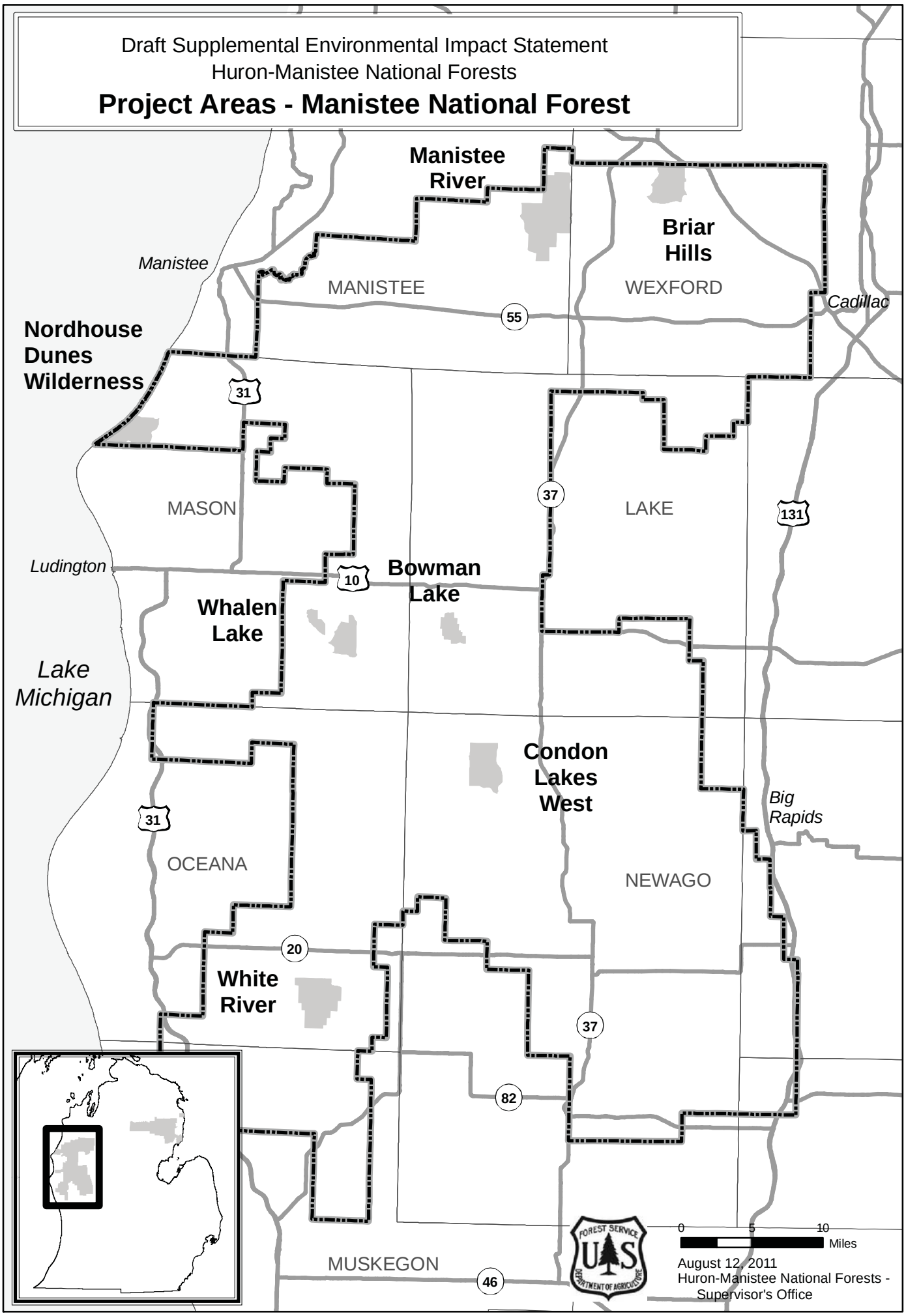
The Forests' interdisciplinary team uses the following criteria to evaluate the issue of changes to recreation activities, settings and opportunities:

- Acres available to firearm hunting on the Forests.
- Acres closed to gun hunting by general public that remain open to gun hunting by tribal members in the exercise of treaty rights.
- Miles of snowmobile trails on the Forests.
- Employment by Forest Service resource program area (average annual, decade 1).
- Labor Income by Forest Service resource program area (average annual, decade 1).
- Employment by major industry (average annual, decade 1).


Draft Supplemental Environmental Impact Statement
Huron-Manistee National Forests
Project Areas - Huron National Forest
CRAWFORD
OSCODA
ALCONA
ROSCOMMON
OGEMAW
IOSCO
Wakeley Lake
Whitewater Creek
Hoist Lakes
Reid Lake
South Branch Au Sable
Au Sable
Cooke
Mio
Harrisville
Oscoda
West Branch
Tawas City
Lake Huron
72
33
65
23
18
55
75
0
5
10
Miles
August 12, 2011
Huron-Manistee National Forests - Supervisor's Office

Draft Supplemental Environmental Impact Statement
Huron-Manistee National Forests

Project Areas - Manistee National Forest



Chapter 2. Alternatives, Including the Proposed Action

Introduction

The National Forest Management Act (NFMA) and the National Environmental Policy Act (NEPA) mandates the development and analysis of a broad range of reasonable alternatives to respond to issues and concerns identified during the planning process. This chapter describes and compares alternatives considered for managing the 14 analysis areas. The Huron-Manistee National Forests manage 13 of the areas under the 2006 Forest Plan M.A. 6.1 (SPNM) direction and manages the Nordhouse Dunes Wilderness under the 2006 Forest Plan M.A. 5.1 (Wilderness). This section presents the alternatives in comparative form, defines the differences between each alternative and provides a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative (i.e., acres of M.A. 6.1 and M.A. 5.1) and some of the information is based upon the environmental, social and economic effects of implementing each alternative (firearm hunting restrictions).

Development of Alternatives

Alternatives are required to address the purpose and the need for the Supplemental Environmental Impact Statement (SEIS), as identified in the Notice of Intent (NOI) and NEPA regulations.

The SEIS identifies 4 alternatives for detailed analysis. Six alternatives were considered but eliminated from detailed study. Each alternative has a different approach to managing the 14 analysis areas over the next 10 to 15 years.

Each alternative was developed with the intent of being in compliance with applicable laws, regulations and agency policies and guidelines while addressing the deficiencies identified by the *Meister* panel of U.S. Court of Appeals for the Sixth Circuit. Paralleling this process was the process of preparing the Recreation Supply and Demand Analysis and the 2011 Recreation Opportunity Spectrum (ROS) classification inventory.

2011 ROS Classification Inventory

The existing Recreation Opportunity Spectrum (ROS) characteristics (activities, settings, and experiences) were reviewed. This review was based on the agency's interpretation of the *Meister* panel finding that to be consistent with the direction in the 2006 Forest Plan, the 14 analysis areas should meet all of their classified ROS characteristics, goals and objectives, "and that SPNM areas should present little chance of encountering noise by humans (*Meister v. U.S. Dep't of Agriculture*, No. 09-1712, 2010)."

As part of the 2011 ROS classification inventory, noise and encumbrances currently present in the 14 analysis areas were identified and are discussed in this document. These include: the size of the analysis area, presence of State and County highways and roads, railroads, developments within and adjacent to the areas (structures, utility corridors), motor boat travel, motorized travel to and from recreation water access sites, motorized use for easements across National Forest System (NFS) lands within and adjacent to the areas, landscape features such as rivers and streams and tribal hunting rights (See Chapter 3, Noise and Appendix A, Noise Sources Maps A-27 through A-40).

The 2011 ROS classification inventory placed each of the 14 analysis areas into a different ROS class than the goals from the 2006 Forest Plan. (The 2011 ROS classification inventory results are displayed in

the following four tables, by alternative.) The goal of the inventory was to attain full compliance with all ROS characteristics at the time of this analysis; in 2006 the ROS interpretation by the Forest Service allowed for areas to be classified based upon an aspiration or objective, which the agency referred to as "desired future condition." The *Meister* panel found that the agency's 2006 interpretation was deficient. See a full description of the ROS classification and inventory in Appendix C.

The interdisciplinary team used the comment summary statements, the Recreation Supply and Demand Analysis and the 2011 ROS classification inventory to develop three significant issue statements, as defined in Chapter 1. For each issue, evaluation criteria, or indicators, are proposed to measure the environmental consequences of each alternative. This process will allow the comparison of alternatives.

Common to All Alternatives

Tribal Rights

Tribal hunting rights under the Treaty of Washington (1836) and the Treaty of Saginaw (1819) would be honored in all alternatives. All areas of the Forests are covered by these two treaties.

Alternatives Considered in Detail

The four alternatives identified for detailed analysis are:

Alternative 1: No Action Alternative (2006 Forest Plan);

Alternative 2: Proposed Action, as published in the NOI;

Alternative 3: Change management area (M.A.) designation to align with 2011 ROS class inventory and;

Alternative 4: Preferred Alternative; Change M.A. designation and manage to provide a less roaded recreation experience.

Alternative 1 – No Action Alternative (2006 Forest Plan)

Under the no action alternative, management of the 14 analysis areas would continue, as guided by the 2006 Forest Plan (see Appendix A, Map A-1 and A-2, Table 1 and Appendix B for management area direction). No changes to management area designation would be implemented to accomplish project goals.

The no action alternative is required by NEPA regulations (40 CFR Part 1502.14(d)).

Table 1. Management Area Designations, Alternative 1

Area Name	2006 M.A. Designation[1]	M.A. Designation, Alternative 1
Au Sable	M.A. 6.1	M.A. 6.1
Bowman Lake	M.A. 6.1	M.A. 6.1
Briar Hills	M.A. 6.1	M.A. 6.1
Condon Lakes West	M.A. 6.1	M.A. 6.1
Cooke	M.A. 6.1	M.A. 6.1
Hoist Lakes	M.A. 6.1	M.A. 6.1
Manistee River	M.A. 6.1	M.A. 6.1
Reid Lake	M.A. 6.1	M.A. 6.1
South Branch Au Sable	M.A. 6.1	M.A. 6.1
Wakeley Lake	M.A. 6.1	M.A. 6.1
Whalen Lake	M.A. 6.1	M.A. 6.1
White River	M.A. 6.1	M.A. 6.1
Whitewater Creek	M.A. 6.1	M.A. 6.1
Nordhouse Dunes Wilderness	M.A. 5.1	M.A. 5.1

Alternative 2 – Proposed Action, as Published in the NOI

This alternative was developed to respond to the *Meister* panel finding that the Forest Service should have evaluated an alternative that closed the 13 areas (2006 Forest Plan M.A. 6.1, SPNM) and the Nordhouse Dunes Wilderness (2006 Forest Plan M.A. 5.1) to firearm hunting and snowmobiling (Proposed Action listed in the NOI dated December 28, 2010). Under Alternative 2, firearm hunting would be prohibited in the 14 analysis areas (subject to existing rights) and the 13 non-wilderness analysis areas (2006 Forest Plan M.A. 6.1, SPNM) would be closed to snowmobile use (subject to existing rights). No motorized use is allowed in the Nordhouse Dunes Wilderness. Designated Forest Service System snowmobile trails within the Manistee River and the Whitewater Creek areas would be removed from the NFS and those with Forest Service jurisdiction would be closed. Snowmobile trails on the boundary of Au Sable, Bowman Lake, Briar Hills, Condon Lakes West and White River areas would be removed from the National Forest System and those within Forest Service jurisdiction would be closed. (See Appendix A, Map A-2 through A-4, Table 2 and Appendix B for management area direction.)

[1] In the 2006 Forest Plan, Management Area (M.A.) descriptions are: M.A. 5.1, Wilderness; M.A. 6.1, Semiprimitive Nonmotorized

Table 2. Management Area Designation, Alternative 2

Area Name	2006 M.A. Designation[2]	M.A. Designation, Alternative 2
Au Sable	M.A. 6.1	M.A. 6.1
Bowman Lake	M.A. 6.1	M.A. 6.1
Briar Hills	M.A. 6.1	M.A. 6.1
Condon Lakes West	M.A. 6.1	M.A. 6.1
Cooke	M.A. 6.1	M.A. 6.1
Hoist Lakes	M.A. 6.1	M.A. 6.1
Manistee River	M.A. 6.1	M.A. 6.1
Reid Lake	M.A. 6.1	M.A. 6.1
South Branch Au Sable	M.A. 6.1	M.A. 6.1
Wakeley Lake	M.A. 6.1	M.A. 6.1
Whalen Lake	M.A. 6.1	M.A. 6.1
White River	M.A. 6.1	M.A. 6.1
Whitewater Creek	M.A. 6.1	M.A. 6.1
Nordhouse Dunes Wilderness	M.A. 5.1	M.A. 5.1

Forest Plan Amendment to Change Management Area Designations

Alternative 2 proposes to amend the Forest Plan Standard and Guidelines (S&Gs) for the 14 analysis areas (M.A. 6.1 SPNM and 5.1 Wilderness) to close Forest Service designated snowmobile trails and restrict firearm hunting by non-tribal members (See Appendix B for management area direction).

Alternative 3 – Change Management Area (M.A.) Designation to Align with 2011 ROS Class Inventory

Alternative 3 proposes to align the management area designations of the 14 analysis areas with the 2011 Inventoried ROS classification. Under Alternative 3, the management area designations of 13 of the 14 analysis areas would be changed. When developing this alternative, the interdisciplinary team considered the *Meister* panel findings that current conditions in these 14 areas should meet the ROS classification descriptions for SPNM "and present little chance of encountering noise by humans (USDA-FS 1986)." Although many factors affect a person's ability to detect sound at a given place at any given time, the Forests have identified noise sources that visitors may experience in the 14 analysis areas (See Chapter 3, Noise and Appendix A, Noise Sources Map A-27 through Map A-40).

[2] Management Area (M.A.) descriptions are: M.A. 5.1, Wilderness; M.A. 6.1, Semiprimitive Nonmotorized

Forest Plan Amendment to Change Management Area Designations

Nordhouse Dunes Wilderness would maintain the designation of M.A. 5.1 (Wilderness) with no change in its management. (The 2011 ROS inventory characterized Nordhouse Dunes Wilderness as ROS class SPNM (See Appendix C for ROS Review)). The other 13 analysis areas (2006 Forest Plan M.A. 6.1, SPNM) would be designated as either M.A. 6.2 (Semiprimitive Motorized), M.A. 4.3 (Roaded Natural Wetlands) or M.A. 4.2 (Roaded Natural Sandy Plains and Hills), depending on the Land Type Association (LTA) of the area. Management of the areas would be in accordance with the direction of the Standards and Guidelines (S&Gs) in the respective management area (see Appendix B for a list of M.A. S&Gs). The management area designations for each area would change as listed below in Table 3.

Table 3. Management Area Designations, Alternative 3

Area Name	2006 M.A. Designation[3]	M.A. Designation, Alternative 3
Au Sable	M.A. 6.1	M.A. 4.3
Bowman Lake	M.A. 6.1	M.A. 4.2
Briar Hills	M.A. 6.1	M.A. 6.2
Condon Lakes West	M.A. 6.1	M.A. 6.2
Cooke	M.A. 6.1	M.A. 6.2
Hoist Lakes	M.A. 6.1	M.A. 6.2
Manistee River	M.A. 6.1	M.A. 4.2
Reid Lake	M.A. 6.1	M.A. 6.2
South Branch Au Sable	M.A. 6.1	M.A. 6.2
Wakeley Lake	M.A. 6.1	M.A. 6.2
Whalen Lake	M.A. 6.1	M.A. 4.2
White River	M.A. 6.1	M.A. 6.2
Whitewater Creek	M.A. 6.1	M.A. 6.2
Nordhouse Dunes Wilderness	M.A. 5.1	M.A. 5.1

[3] Management Area (M.A.) descriptions are: M.A. 5.1, Wilderness; M.A. 4.2, Roaded Natural Sandy Plains; M.A. 4.3, Roaded Natural Wetlands; M.A. 6.1, Semiprimitive Nonmotorized; M.A. 6.2, Semiprimitive Motorized

Alternative 4 – Change Management Area Designation to Special Areas (M.A. 8.4) and Manage For A Less Roaded Recreation Experience

Alternative 4 proposes to address inconsistencies with the SPNM ROS class characteristics identified by the *Meister* panel, while preserving areas where the Forests can manage for a less roaded recreation experience. Hunting opportunities would be unchanged in this alternative. (See Appendix A, Map A-9 and A-10).

Forest Plan Amendment to Change Management Area Designations

Under this alternative, the management area designation of 12 of the 14 analysis areas would be changed to M.A. 8.4 (Special Areas). The existing S&Gs for M.A. 6.1 (SPNM) would be applied to these 12 new M.A. 8.4 areas. The Goals and Objectives for the Special Areas would be to provide a less roaded recreation experience. Management area designation of Manistee River and Whitewater Creek would be changed to M.A. 4.2 (Roaded Natural Sandy Plains and Hills) and would be managed under the S&Gs for M.A. 4.2. The proposed NFS road mileage density by area would be amended, as described in Table 5. Management area designation for Nordhouse Dunes Wilderness would remain M.A. 5.1 (Wilderness) and management would remain the same. See Table 4 and Appendix B for a complete list of management area descriptions and S&Gs under this alternative.

Table 4. Management Area Designations, Alternative 4

Area Name	2006 M.A. Designation[4]	M.A. Designation, Alternative 4
Au Sable	M.A. 6.1	M.A. 8.4
Bowman Lake	M.A. 6.1	M.A. 8.4
Briar Hills	M.A. 6.1	M.A. 8.4
Condon Lakes West	M.A. 6.1	M.A. 8.4
Cooke	M.A. 6.1	M.A. 8.4
Hoist Lakes	M.A. 6.1	M.A. 8.4
Manistee River	M.A. 6.1	M.A. 4.2
Reid Lake	M.A. 6.1	M.A. 8.4
South Branch Au Sable	M.A. 6.1	M.A. 8.4
Wakeley Lake	M.A. 6.1	M.A. 8.4
Whalen Lake	M.A. 6.1	M.A. 8.4
White River	M.A. 6.1	M.A. 8.4
Whitewater Creek	M.A. 6.1	M.A. 4.2
Nordhouse Dunes Wilderness	M.A. 5.1	M.A. 5.1

[4] Management Area (M.A.) descriptions are: M.A. 5.1, Wilderness; M.A. 4.2, Roaded Natural Sandy Plains; M.A. 6.1, Semiprimitive Nonmotorized; M.A. 8.4, Special Areas

Table 5. NFS Road Mileage Density by Area, Alternative 4

Area Name	Total Miles of Road in Area	Square Miles of Area	2011 Road Density (Miles/mi^2)	Road Density, Alternative 4 (Miles/mi^2)
Au Sable	6.01	16.1	0.37	0-1
Bowman Lake	1.69	1.73	0.98	0-1
Briar Hills	6.73	5.29	1.27	0-2
Condon Lakes West	0.46	5.00	0.09	0-1
Cooke	0.23	3.67	0.06	0-1
Hoist Lakes	0.17	14.94	0.01	0-1
Manistee River	17.18	12.10	1.42	0-3
Reid Lake	0.07	4.86	0.01	0-1
South Branch Au Sable	5.84	6.07	0.96	0-1
Wakeley Lake	7.76	3.66	2.12	0-3
Whalen Lake	8.08	4.17	1.94	0-2
White River	12.17	7.31	1.66	0-2
Whitewater Creek	14.01	10.88	1.29	0-3
Total	80.34	95.80	0.84	
Wilderness				
Nordhouse Dunes	0	5.11	0	0

Comparison of Alternatives Considered in Detail

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 6. Comparison of Alternatives

Issues and Evaluation Criteria	Measurement	Alternative 1, No Action	Alternative 2	Alternative 3	Alternative 4, Preferred
Issue 1 – Management Area Conformity to ROS Characteristics (See Appendix C, ROS Review)					
Management Area Designation Conforms with ROS Inventory (13 analysis areas)	Yes/No	No[5]	No[5]	Yes	Yes
Management Area Designation Conforms with ROS Inventory – Nordhouse Dunes Wilderness		No[5]	No[5]	No[5]	No[5]
Issue 2 – Opportunities for quiet recreation should be provided					
Acres closed to firearm hunting within the 14 analysis areas.	Acres	0	66,598 (All acres in these areas.)	0	0
Miles of snowmobile trail open within and adjacent to the 14 analysis areas	Miles – FS Jurisdiction	14.3	0	14.3	14.3
	Miles – Other Jurisdiction	11.4	11.4	11.4	11.4
Miles of other motorized trails open within the 14 analysis areas	Miles	6.4	6.4	6.4	6.4
Miles of National Forest System (NFS) and other roads open in the 14 analysis areas	Miles – FS Jurisdiction	47.2	47.2	47.2	47.2
	Miles – Other Jurisdiction	32.9	32.9	32.9	32.9

[5] Firearm hunting was considered a nonconforming use in ROS classification of Semiprimitive Nonmotorized and Primitive areas by the *Meister* panel.

Issues and Evaluation Criteria	Measurement	Alternative 1, No Action	Alternative 2	Alternative 3	Alternative 4, Preferred
Issue 3 – Alteration of current recreation activities, settings and opportunities may affect resources (recreation, economic and natural)					
Acres available to firearm hunting on the Forests	Acres	970,261	903,663	970,261	970,261
Acres closed to gun hunting by general public that remain open to gun hunting by tribal members in the exercise of treaty rights.	Acres	0	66,598	0	0
Miles of snowmobile trails on the Forests	Miles	525[6]	511	525[6]	525[6]
Employment by Forest Service resource program area (average annual, decade 1	Total number of jobs contributed	4,465	4,465	4,465	4,465
Labor Income by Forest Service resource program area (average annual, decade 1)	Thousands of 2009 dollars	$129,964	$129,727	$129,964	$129,964
Employment by major industry (average annual, decade 1	Total number of jobs contributed	4,472	4,462	4,472	4,472

[6] Under various jurisdiction

Alternatives Considered But Eliminated From Detailed Study

Comments received in response to the NOI included suggested alternatives or parts of alternatives. These comments included:

- Suggestions to reroute trails if they are not permitted within M.A. 6.1 SPNM and M.A. 5.1 Wilderness;
- Opportunities for a quiet experience;
- Requests to create quiet areas, quiet seasons or quiet buffers; and
- Requests for more areas designated as M.A. 6.1 SPNM and M.A. 5.1 Wilderness.

Six additional alternatives were developed to respond to issues raised by the public and are described below. These alternatives were eliminated from detailed consideration after further review and analysis of the 2011 ROS classification inventory, trail reroute opportunities, inventory noise sources and viability of implementation.

Alternatives 7 through 10 have the same limiting factors: influences that prevent them from providing "… little chance of encountering noise by humans (*Meister v. U.S. Dep't of Agriculture*, No. 09-1712, 2010)." Although many factors affect a person's ability to detect sound at a given place at any given time, the Forests have identified noise sources that visitors may experience at each of the 14 analysis areas (See Chapter 3, Noise and Appendix A, Noise Sources Map A-27 through A-40).

ROS nonconforming activities for SPNM include such uses as:

- firearm hunting (determined nonconforming by the court),
- snowmobile use,
- motorcycle use and
- motorboat use.

ROS nonconforming settings include such things as:

- environment not naturally appearing,
- moderate to high interaction of users,
- noticeable onsite controls and restrictions and
- motorized uses occurring.

ROS nonconforming experiences include such things as:

- moderate probability of experiencing isolation of sights and sounds from humans and
- lack of tranquility

Because of the high probability of hearing noise by humans, neither the ROS SPNM characteristics nor the creation of a "quiet area" can reasonably be achieved. Therefore, these alternatives were not evaluated further.

Alternative 5 – Trail Reroute

This alternative would reroute all designated Forest Service snowmobile trails in and along the boundaries of the 14 analysis areas. Two snowmobile trails are located within Whitewater Creek and Manistee River. Five snowmobile trail segments are located along the boundaries of the Au Sable, Bowman Lake, Briar Hills, Condon Lakes West and White River areas. Existing trail segments would be abandoned upon completion of a rerouted snowmobile trail section.

This alternative has features similar to Alternatives 2, 3 and 4 that are being analyzed in detail. The principle difference is that this alternative would make a decision on rerouting of trail segments as opposed to abandonment. The Forest Service considered the possible relocation of snowmobile trail segments in and along the boundaries of the 14 analysis areas. Road jurisdictions, land ownership, potential conflicting uses, and resource values were reviewed. Under State law, snowmobiles can operate on County road rights-of-way. If the Forest Service abandoned routes along County roads, the public would continue to operate snowmobiles legally along those routes. As a result, implementation of rerouting and closing sections of snowmobile trail on County roads would be ineffective in eliminating snowmobile use in Manistee River and along the boundaries of Au Sable, Bowman Lake, Condon Lakes West and White River. Only two areas (Briar Hills and Whitewater Creek) were identified as having an opportunity to reroute snowmobile trails which would result in effectively closing a section of trail to snowmobile use.

Prior to rerouting the sections of snowmobile trail in Briar Hills and Whitewater Creek, a site specific NEPA analysis must be completed. Forest Plans do not make site specific project level decisions, rather they “guide all natural resource management activities and establish management standards and guidelines” within which site specific decisions are made 36CFR 219.1 (b). A decision to reroute a trail is not a Forest Plan level decision. Therefore it was determined that this alternative was outside the scope of this analysis and would not be carried forward for detailed analysis.

Alternative 6 – Partial Change of Management Area Designations

This alternative would change management area designation for 8 of the 14 analysis areas. Those with NFS snowmobile trails within or on the boundary would be changed to meet the current ROS characterization. Areas with new management area designations and direction would be: Au Sable (M.A. 4.3), Bowman Lake (M.A. 4.2), Briar Hills (M.A. 6.2), Condon Lakes West (M.A. 6.2), Manistee River (M.A. 4.2), Whalen Lake (M.A. 4.2), White River (M.A. 6.2) and Whitewater Creek (M.A. 4.2). The ROS classification of a portion of Nordhouse Dune Wilderness currently classified as ROS Primitive would be changed to SPNM. The management area designation would remain M.A. 5.1 (Wilderness), with no change in its management.

Under this alternative, firearm hunting and target shooting would be prohibited within any area maintained as M.A. 6.1 (SPNM). Forest Service roads would be closed and mechanical vegetation management activities would be prohibited. These areas are Cooke, Hoist Lakes, Reid Lake, South Branch Au Sable, Wakeley Lake and Nordhouse Dunes Wilderness. No other changes to the 2006 Forest Plan would occur.

None of the 14 areas currently meet all of the ROS SPNM characteristics, as discussed at the beginning of this chapter, nor can they provide the high probability of isolation from the sights and sounds of humans. In addition all of the areas contain private in-holdings and adjacent private lands. Firearm hunting, target shooting, use of motor vehicles and other activities would continue to occur on these private lands. County roads, State highways and roads on private lands would continue to be used. The Forest Service

has no authority to restrict activities on private or state lands. This alternative has features similar to Alternatives 2, 3 and 4 that are being analyzed in detail. Therefore this alternative was not carried forward for detailed analysis.

Alternative 7 – Sundays and Mondays as Quiet Days

This alternative would establish Sundays and Mondays as Quiet Days in all 14 analysis areas. Firearm hunting, target shooting and other motorized recreation and land management activities would be prohibited on Sundays and Mondays.

Under this alternative all motorized use within and bounding the 14 analysis areas would be prohibited on Sundays and Mondays. Existing rights-of-way for legal access would be honored. These areas would remain in M.A. 6.1 (SPNM) and no other changes to the 2006 Forest Plan would occur.

The Forest Service conducted an inventory of noise sources and mapped these in and adjacent to the 14 analysis areas. A summary of this can be found in Chapter 3, Noise. The maps of noise sources can be found in Appendix A. Based on this inventory all of the analysis areas had numerous noise sources. The type, number and spatial distribution of noise sources, identified in the inventory, would prevent any of the 14 analysis areas from having a high probability of isolation from the sights and sounds of humans. Existing County road and State highway use within and adjacent to these areas create substantial noise that can be heard throughout the areas. In addition the Forest Service is legally bound to provide access to private in-holdings. These rights-of-way, easements and other encumbrances prevent closure to motorized vehicle use within and/or adjacent to the areas. Uses on private properties contribute to noise within all of the areas. Private property owners within and adjacent to the area would still be hunting with and otherwise discharging firearms. Under state law snowmobiles can operate on county road rights-of-way. This snowmobile use is another noise source within and adjacent to these areas. The Forest Service has no authority to regulate any of the above uses. Although the Forest Service does have the authority to regulate use on National Forest System lands, exercising agency authorities would not create quiet within the areas as intended. For these reasons, this alternative was not carried forward.

Alternative 8 – Quiet Seasons

Under this alternative, the first 2 weeks of January, April, July and October would be established as quiet seasons within the 14 analysis areas. During the quiet season all motorized recreation and land management activities using motorized equipment would be prohibited within and on the boundaries of these areas. Firearm hunting and target shooting would be prohibited within these areas during the quiet seasons. No other changes to the 2006 Forest Plan would occur.

The Forest Service conducted an inventory of noise sources and mapped these in and adjacent to the 14 analysis areas. A summary of this can be found in Chapter 3 of this document. The maps of noise sources can be found in Appendix A. Based on this inventory all of the analysis areas had numerous noise sources. The type, number and spatial distribution of noise sources, identified in the inventory, would prevent any of the 14 analysis areas from having a high probability of isolation from the sights and sounds of humans. Existing County road and State highway use within and adjacent to these areas create substantial noise that can be heard throughout the areas. In addition the Forest Service is legally bound to provide access to private in-holdings. These rights-of-way, easements and other encumbrances prevent closure to motorized vehicle use within and/or adjacent to the areas. Uses on private properties contribute to noise within all of the areas. Private property owners within and adjacent to the area would still be hunting with and otherwise discharging firearms. Under state law snowmobiles can operate on county

road rights-of-way. This snowmobile use is another noise source within and adjacent to these areas. The Forest Service has no authority to regulate any of the above uses. Although the Forest Service does have the authority to regulate use on NFS lands, exercising agency authorities would not create quiet within the areas as intended. For these reasons, this alternative was not carried forward.

Alternative 9 – Quiet Area

Under this alternative, all 14 areas in this analysis would be managed as quiet areas. Firearm hunting, target shooting and motorized recreation uses would be prohibited in these areas. All roads and motorized trails within these areas would be closed. No land management activities involving motorized equipment would be restricted. All motorized use within the area would be prohibited regardless of jurisdiction. No other changes to the 2006 Forest Plan would occur. (Elements of this alternative are analyzed in detail under Alternative 2.)

The Forest Service conducted an inventory of noise sources and mapped these in and adjacent to the 14 analysis areas. A summary of this can be found in Chapter 3 of this document. The maps of noise sources can be found in Appendix A. Based on this inventory all of the analysis areas had numerous noise sources. The type, number and spatial distribution of noise sources, identified in the inventory, would prevent any of the 14 analysis areas from having a high probability of isolation from the sights and sounds of humans. Existing County road and State highway use within and adjacent to these areas create substantial noise that can be heard throughout the areas. In addition we are legally bound to provide access to private in-holdings. These rights-of-way, easements and other encumbrances prevent closure to motorized vehicle use within and/or adjacent to the areas. Uses on private properties contribute to noise within all of the areas. Private property owners within and adjacent to the area would still be hunting with and otherwise discharging firearms. Under state law snowmobiles can operate on county road rights-of-way. This snowmobile use is another noise source within and adjacent to these areas. The Forest Service has no authority to regulate any of the above uses. Although the Forest Service does have the authority to regulate use on National Forest System Lands, exercising agency authorities would not create quiet within the areas as intended. For these reasons, this alternative was not carried forward.

Alternative 10 – Quiet Areas plus Buffers

Under this alternative, management would be similar to Alternative 9 with the addition of a 1-mile buffer. Firearm hunting, target shooting and motorized recreation and land management activities would be prohibited in these areas and the 1-mile buffer. All roads and motorized trails within and on the boundary of these areas would be closed. Land management activities involving motorized equipment would be restricted. No other changes to the 2006 Forest Plan would occur.

The Forest Service conducted an inventory of noise sources and mapped these in and adjacent to the 14 analysis areas. A summary of this inventory can be found in Chapter 3 of this document. The maps of noise sources can be found in Appendix A. Based on this inventory the type, number and spatial distribution of noise sources would prevent any of the 14 analysis areas from having a high probability of isolation from the sights and sounds of humans. Existing County road and State highway use within and adjacent to these areas create substantial noise that can be heard throughout the areas. In addition the Forest Service is legally bound to provide access to private in-holdings. These rights-of-way, easements and other encumbrances prevent closure to motorized vehicle use within and/or adjacent to the areas. Uses on private properties contribute to noise within all of the areas. Private property owners within and adjacent to the area would still be hunting with and otherwise discharging firearms. Under state law snowmobiles can operate on county road rights-of-way. This snowmobile use is another noise source

within and adjacent to these areas. Private ownership and associated noise sources increase substantially outside of the 14 analysis areas making any buffers ineffective at reducing noise. The Forest Service has no authority to regulate any of the above uses. Although the Forest Service does have the authority to regulate use on National Forest System lands, exercising agency authorities would not create quiet within the areas as intended. For these reasons, this alternative was not carried forward.

Chapter 3. Affected Environment and Environmental Consequences

This chapter summarizes the physical, biological, social and economic environments of the project area and the effects of implementing each alternative on that environment. It also provides the scientific and analytical basis for the comparison of alternatives presented in Chapter 2.

Despite the 2006 FEIS's deficiencies, the *Meister* panel of the U.S. Court of Appeals for the Sixth Circuit (*Meister* panel) did not "set aside" the 2006 Forest Plan, but instead directed the Forest Service to perform additional analysis to address the deficiencies in the 2006 FEIS analysis. The SEIS tiers to the 2006 Forest Plan and further information on management of the other resource values in these areas can be found in the 2006 FEIS. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1502.2 (g), "Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made."

This section describes the direct, indirect and cumulative effects of the four alternatives selected for detailed analysis in the SEIS:

Alternative 1: No Action Alternative (2006 Forest Plan);

Alternative 2: Proposed Action, as published in the NOI;

Alternative 3: Change management area (M.A.) designation to align with 2011 ROS class inventory and;

Alternative 4: Preferred Alternative; Change M.A. designation and manage to provide a less roaded recreation experience.

Under the CEQ regulations, direct effects as those which would be caused by the implementation of the proposed alternative and those effects which occur at the same time and in the same place. 40 C.F.R § 1508.8(a). In this analysis, the SEIS will consider the direct effects of each proposed alternative within each of the areas being studied and within approximately a 1-mile radius around each area. The timeframe for the direct effects analysis is from 2011 through 2021, the life of the 2006 Forest Plan. The lands within the direct effects analysis areas include Federal, State, private and other lands. The land uses in the analysis areas include lands managed for forest, agricultural, residential, business and other uses. Any closure of National Forest System (NFS) trails, roads and areas reduces public access and results in fewer persons using an area of the National Forests. This would also occur if any land manager such as Michigan Department of Natural Resources (MDNR) or a private landowner decides to reduce access by closing trails, roads and areas that are currently open to public use within the approximate 1-mile radius around each of the 14 analysis areas. Any site-specific action that may be proposed in the future, such as the closure of a Forest Service trail, after the Forest Service's decision to adopt and implement one of the SEIS alternatives, may have direct effects on the surrounding communities. Traffic that formerly used this trail may be diverted to nearby county roads where snowmobiles travel on the shoulders. These direct effects will not be considered in this NEPA document because they are beyond the scope of the SEIS programmatic Forest Plan level of analysis.

Under the CEQ regulations, indirect effects are defined as those caused by the implementation of the proposed action which "are later in time or farther removed in the distance, but are still reasonably foreseeable." 40 C.F.R. §1508.8(b). In this analysis, the SEIS will consider the indirect effects of each proposed alternative within approximately a 5-mile radius around each area. The timeframe for the indirect effects analysis is from 2011 through 2021, the life of the 2006 Forest Plan. The lands within the indirect effects analysis areas include Federal, State, private and other lands. The land uses in the indirect

effects analysis areas include lands managed for forest, agricultural, residential, business and other uses. Overall, any closure of NFS trails, roads and areas reduces public access and results in fewer persons using an area of the National Forests. Any site-specific Forest Service action, such as the closure of an area to firearm hunting, that may be proposed in the future after the Forest Service's decision to adopt and implement one of the SEIS alternatives may have indirect effects on the surrounding communities. This may result in displaced hunters deciding to hunt on nearby State lands or purchase private property for a private hunting club in the vicinity of NFS lands. These site-specific indirect effects will not be considered in this NEPA document because they are beyond the scope of the SEIS programmatic Forest Plan level of analysis.

The CEQ regulations define cumulative effects, also referred to as the cumulative impact, as the "impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions." 40 C.F.R. §1508.7. The area of analysis for cumulative effects is the State of Michigan including the current or foreseeable actions that may be implemented by others in the counties where the 14 analysis areas are located. These counties include: Alcona County (Au Sable, Hoist Lakes and Reid Lake); Crawford County (South Branch Au Sable, Wakeley Lake and Whitewater Creek); Isoco County (Cooke and Au Sable); Lake County (Bowman Lake); Manistee County (Manistee River); Mason County (Whalen Lake and Nordhouse Dunes Wilderness); Newaygo County (Condon Lakes West); Oceana County (White River); Oscoda County (Whitewater Creek); and Wexford County (Briar Hills). Any site-specific Forest Service action that may be proposed in the future after the Forest Service's decision to adopt and implement one of the SEIS alternatives may have a cumulative impact when that action is added to the foreseeable actions by others. For example, should the Forest Service propose new developed facilities for overnight stays by snowmobilers on NFS land and the MDNR also propose new facilities on State lands; this may encourage more snowmobile recreation use in a part of the State and have environmental effects that should be considered. The cumulative impact of implementation of both of these proposals at the same time will be considered in the site-specific NEPA analysis that is prepared for the Federal proposal. However, the site specific cumulative effects will not be considered in this NEPA document because they are beyond the scope of the SEIS programmatic Forest Plan level of analysis.

2006 Forest Plan Management of the 14 Analysis Areas

Management Area 6.1 (SPNM)

The affected environment for the 13 areas designated as M.A. 6.1, SPNM in the 2006 Forest Plan is described in the 2006 FEIS (USDA-FS 2006, pp. III-312-318) and is incorporated by reference (see Table 7). Currently, these areas are managed to provide high visual diversity and a variety of recreation opportunities for Recreation Opportunity Spectrum (ROS) SPNM activities such as hiking, cross-country skiing, primitive camping, fishing and firearm hunting. The 2011 ROS inventory is included in Appendix C and maps of each area are located in Appendix A.

Table 7. Acreage of the M.A. 6.1 (SPNM) on the Huron-Manistee National Forests

Area Name	National Forest	Gross Acreage	National Forest System 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	Manistee	3,031	2,754
White River	Manistee	5,200	4,825
Whitewater Creek	Huron	9,891	7,183
Total		**72,296**	**63,225**

Source: USDA-FS 2006a

Area Descriptions

Au Sable

The Au Sable area is located in Iosco and Alcona Counties of Michigan (See Appendix A, Map A-13 and Map A-27 for a map of the area, including noise sources). The village of Glennie is located within 5 miles of the area and the village of South Branch is within 7 miles. A total of 10,628 acres of NFS lands and 1,218 acres of private lands are within the boundary of the Au Sable area. Many of the private lands within this area serve as focal points of seasonal recreation activities, including hunting camps and snowmobiling. The private lands are divided into approximately 40 private parcels, mostly located around Stuart, Grassy and Perch Lakes. The terrain is characterized by flat to gently rolling hills with some steep banks along the Au Sable River. In general, the area is densely forested with a mix of tree species including red and white pine, oak, northern hardwoods, aspen and paper birch. A portion of this area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include bald eagles, white-tailed deer, black bear, bobcat, raccoon, porcupine, squirrel, pileated woodpecker and various songbirds.

Campers and day-use visitors enjoy boating, tubing, rafting, canoeing and fishing on the Au Sable River. Other popular recreation activities include viewing the river and wildlife, hiking, swimming, picnicking, horseback riding, hunting, trapping and berry and mushroom gathering. The Forest Service requires camping permits from May 15 through September 30 at the 19 designated primitive campsites along the

river. A closure order is in place which prohibits camping outside of developed sites or designated sites adjacent to the Au Sable River.

Two developed campgrounds are located on the western portion of this area, South Branch Trail Camp (horse camp) and Rollways Campground. The South Branch Trail Camp is a very popular National Forest recreation site which allows access to the Michigan Shore-to-Shore Horseback Riding and Hiking Trail that runs along the western boundary of the area. Segments of the Michigan Snowmobile Trail system are located immediately adjacent to the northern, southern and western boundaries of the area.

County and NFS roads border the area on the southern and western edges. NFS roads are located within the interior of the area, accessing private lands and recreation sites. Some roads and utility rights-of-way are gated, limiting motorized use to private landowners and utility maintenance crews. The current road density for this area is approximately 0.37 miles of roads per square mile of land.

The Forest Service acquired much of the lands adjacent to the Au Sable River from Consumers Energy during a 1986 land purchase. Past timber activity includes aspen regeneration and thinning of red pine and white pine plantations. Timber harvest has occurred but is limited to improving visual quality; reducing hazard fuels, implementing pest management, maintaining fuelbreaks and enhancing diversity of wildlife habitats. Small opening maintenance projects occur every 3 to 5 years for wildlife benefits within the Old Thompson Farm area. Over the past two decades, road closures have been implemented on NFS lands to address resource concerns.

The Forest Service has completed extensive developed site rehabilitation work in the South Branch Campground. Some erosion and Au Sable River shoreline damage from horseback riding is occurring from horse trail use near the South Branch Trail Camp. New horse trail location and shoreline stabilization projects are planned to occur within the next several years.

The Forest Service is expected to continue implementation of current management direction, including maintenance of recreation sites, timber harvest, prescribed burning, watershed management, oil and gas exploration and development and fire suppression. Unauthorized road and trails have been closed in the area. Any new unauthorized roads or trails will be closed and rehabilitated. Erosion along the Au Sable River shoreline that is primarily associated with recreation uses continues to be a management concern. Monitoring will continue and measures will be developed to address unacceptable resource concerns. The Forest Service works in partnership with State, local agencies and environmental organization to introduce and monitor large woody debris in the Au Sable River for the benefit of aquatic habitat.

Private lands are located throughout the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences are expected to continue. Based on previous activities, more development in the form of seasonal and year-round dwellings of these properties is likely to occur. Roads and utility rights-of-way are expected to be maintained or improved. Some timber harvest on private property may occur, as well as oil and gas exploration and development. Consumers Energy is expected to continue to maintain and improve their facilities along the Au Sable River.

Bowman Lake

The Bowman Lake area is located in Lake and Sweetwater Townships in Lake County, Michigan (See Appendix A, Map A-14 and Map A-28 for a map of the area, including noise sources). The villages of Baldwin and Branch are located within 6 miles of the area. A total of 1,145 acres of NFS lands and 368 acres of private lands are within the boundary of the Bowman Lake area. The terrain is characterized by rolling hills, glacial depressions and leatherleaf bogs. A 3 acre lake is located within the area. The area

tends to be densely forested with a mix of hardwoods, red and white pine and aspen. A majority of this area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, bobcat, coyote, red fox, raccoon, porcupine, squirrel, pileated woodpecker, grouse, wild turkey and various songbirds.

Visitor recreation activities include camping, fishing, mushroom gathering, bird-watching, hunting, hiking and canoeing. Mountain biking and horseback riding are also common uses on the area trails. Although trails are not groomed in the winter, the area is popular for snowshoeing and cross-country skiing.

The Bowman Lake Trailhead serves as a main entry point onto the North Country National Scenic Trail (NCT). A 3-mile segment of the NCT is located within this area and mountain biking is allowed on this section of trail. Horses are prohibited on any portion of the NCT. In addition, a small trailhead is located on NFS Road 6267, giving access to the Bowman Lake Campground Trail, which is approximately 7.5 miles of loop trail designed for nonmotorized recreation. This trail system can also be used by mountain bikers and horseback riders. Four improved campsites are located on Bowman Lake. Segments of the State of Michigan snowmobile trail system and Michigan Cycle Conservation Club Trail (MCCCT) system are located immediately south of the area.

County roads border the area on the north, east and south. The two NFS roads located within the area are used for trail access. NFS roads have been closed and rehabilitated to enhance the values of the area and address adverse environmental impacts associated with erosion. The current road density in the area is approximately 0.98 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including maintenance of recreation facilities, timber harvest, prescribed burning, watershed management, oil and gas exploration and development and fire suppression. Unauthorized roads and trails have been closed in the area and any new unauthorized roads or trails will be closed and rehabilitated. Monitoring will continue and measures will be developed to address unacceptable resource concerns.

Many private lands are located within and immediately adjacent to the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences are expected to continue. Based on previous activities, more development of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way are expected to be maintained or improved. Some timber harvest on private property may occur, as well as oil and gas exploration.

Briar Hills

The Briar Hills area is located in Springville and Antioch Townships in Wexford County, Michigan (See Appendix A, Map A-15 and Map A-29 for a map of the area, including noise sources). The villages of Boon and Harrietta are located within 5 miles of the area. A total of 3,494 acres of NFS lands and 38 acres of private lands are within the boundary of the area. The terrain is characterized by rolling hills with relatively steep topography. Much of the area is densely forested with a mix of northern hardwoods, red and white pine and aspen. A portion of this area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, black bear, bobcat, raccoon, porcupine, squirrel, pileated woodpecker and various songbirds.

Mushroom gathering, wildlife and scenery viewing, hunting and driving for pleasure are popular activities in the area. There are no developed campgrounds located within the area but dispersed camping occurs along the perimeter. A groomed snowmobile trail is located along the southern and western boundaries of

the area. A short hiking trail to the historic Briar Hills' Lookout site is located in the western side of the area. Even though there are no remnants of the tower that once stood at this site, it is popular for sightseeing.

County and NFS roads border the area on the southern and western edge. Some portions of County Road 17 are located within the eastern area boundary. Some NFS roads are located within the interior of the area. NFS roads have been closed and rehabilitated to enhance the values of the area and address adverse environmental impacts associated with erosion. The road density in the area is approximately 1.27 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including timber harvest, watershed management and fire suppression. A small trailhead, trail and viewing platform are planned in the vicinity of the historic Briar Hills Lookout site. Unauthorized roads and trails have been closed in the area. Any new unauthorized roads or trails will be closed and rehabilitated. Monitoring will continue and measures will be developed to address unacceptable resource concerns.

Private lands are located immediately adjacent to the area. Landowner activities such as hunting, fishing, other recreation uses and maintenance of residences are expected to continue. Based on previous activities, more development of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

Condon Lakes West

The Condon Lakes West area is located in Lilley and Troy Townships in Newaygo County, Michigan (See Appendix A, Map A-16 and Map A-30 for a map of the area, including noise sources). The villages of Lilley, Bitely and Woodland Park are located within 5 miles of the area. A total of 3,301 acres of NFS lands and 772 acres of private lands are within the boundary of the Condon Lakes West area. The terrain is characterized by lowlands with cedar, hemlock, tamarack and tag alder swamps scattered throughout. Triple Lakes and Cedar Creeks meander through Condon Lakes West. Otterman Lake and Musketeep Lake are located within the area. Condon Lakes West is moderately forested with a mix of oak and maple hardwoods, red and white pine and aspen. Approximately 80 percent of this area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, turkey, grouse, black bear, bobcat, raccoon, porcupine, squirrel, pileated woodpecker and various songbirds

Hunting for grouse, turkey, deer and squirrel are popular activities in Condon Lakes West. Trappers catch fox, raccoon, mink and muskrat. Cedar Creek and Triple Lakes Creek are popular fishing streams for brook trout, steelhead and salmon. Dispersed camping is popular around the perimeter of the area adjacent to County roads and is most popular during hunting seasons. Mushroom collecting and bird watching are also popular activities. Two short segments of trail, the North Country National Scenic Trail and the M-4 motorcycle trail, are located in Condon Lakes West. No other trails or developed recreation sites are located within the area.

County roads border the area on all sides. One short (1/4 mile) NFS road is located inside the area, providing access to private property. The road density in the area is approximately 0.09 miles of road per square miles of land. All but one NFS road have been closed and rehabilitated to enhance the values of the area and address erosion concerns.

The Forest Service is expected to continue implementation of current management direction. Timber sales are designed to regenerate aspen and thin red pine plantations to reduce the row affect and promote a more natural appearance of the stands. Other management activities include trail maintenance, tree planting, conducting fish inventories and prescribed burning. Unauthorized roads and trails have been closed in the area. Any new unauthorized roads or trails will be closed and rehabilitated. Monitoring will continue and measures will be developed to address unacceptable resource concerns.

Private lands are located in and immediately adjacent to the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences are expected to continue. Based on previous activities, more development of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

Cooke

The Cooke area is located in Oscoda Township in Iosco County, Michigan (See Appendix A, Map A-17 and Map A-31 for a map of the area, including noise sources). The Oscoda community is located within 10 miles of the area. A total of 2,419 acres of NFS lands and 349 acres of private lands are within the boundary of the Cooke area. The community of Pine Acres is located just outside the southwestern boundary of the area. The terrain is mostly lowlands. Much of the area is densely forested with a mix of conifers including cedar, fir and red and white pine. Pockets of aspen and open areas also occur in the area. This area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, bald eagles, swans, raccoon, porcupine, squirrel, pileated woodpecker and various songbirds.

Dispersed camping is a popular activity at the eight designated campsites along the southern boundary of the area. From May 15 through September 30, permits are required to camp at these sites. Boating and fishing on the Au Sable River are very popular in this area. Other recreation activities include deer and small-game hunting, berry picking and bird watching. Occasionally, Forest closure orders are implemented restricting recreation use to protect nesting bald eagles. Boat docks for private motorized boating are maintained at the southeast and southwest corners of area.

NFS Road 4200 is located along the northwestern boundary of the area, serving as a primary access route into the area. Several other NFS roads are used by the public to access the area from the north. Highway M-65 borders the western edge of the area. Some users access the area along the eastern boundary through private property adjacent to Mert Road. NFS road 2015 is located within the western portion of the area. This road is used by private landowners to access their properties. The road density in the area is approximately 0.06 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction. Timber harvest is limited to projects for improving visual quality, reduce hazard fuels, pest management, fuelbreaks or maintaining diversity of wildlife habitats. Unauthorized roads and trails have been closed in the area. Any new unauthorized roads and trails will be closed and rehabilitated. Monitoring will continue and measures will be developed to address unacceptable resource concerns.

Private lands are located within and immediately adjacent to the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences are expected to continue. Based on previous activities, more development improvements of these properties is likely to occur. Additional

residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

Hoist Lakes

The Hoist Lakes area is located in Mitchell and Millen Townships in Alcona County, Michigan (See Appendix A, Map A-18 and Map A-32 for a map of the area, including noise sources). The village of Curran is located within 3 miles of Hoist Lakes and the village of Glennie is within 8 miles. A total of 9,862 acres of NFS lands and 89 acres of private lands are located in the Hoist Lakes area. Two private parcels of land are located within the area boundaries. The terrain is characterized by small rolling hills. The area is forested with a mix of northern hardwoods, oak, aspen and paper birch. This area is within the Huron-Manistee National Forests Old Growth design. Wildlife species inhabiting this area include white-tailed deer, black bear, beaver, porcupine, squirrel, pileated woodpecker and various songbirds. Trout and pan fish are found in the lakes.

Hiking and dispersed camping are popular recreation activities in the area. Other area recreation uses in the area include mushroom and berry picking, fishing and hunting. Hunting is a common recreation use during the firearm hunting seasons. Cross-country skiing and snowshoeing are popular activities in the winter.

Hoist Lakes East and Hoist Lakes West Trailheads are the primary access points into the area. Hoist Lakes East Trailhead is adjacent to M-65 and receives moderate levels of recreation use. Hoist Lakes West Trailhead is accessed by Aspen Alley Road and receives frequent use by area residents. The 19 mile trail system takes visitors through forested rolling hills. Three (3) designated dispersed campsites are located near Hoist Lakes.

Hoist Lakes area is bordered on the east by Highway M-65. The south end of the area is bordered by Forest Road 4119, which is also known as Sunny Lake Road. Aspen Alley Road is a high use road located along the western boundary of the area. A gated NFS road passes through the center of the area which provides motorized access to private land, management for stocking fish in lakes and vehicles responding to emergency situations. The road density in the area is approximately 0.01 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction. Timber harvest is limited to projects that improve visual quality, reduce hazard fuels, pest management, fuelbreaks or maintaining diversity of wildlife habitats. Fish stocking of lakes is expected to continue. Monitoring will continue and measures will be developed to address unacceptable resource concerns.

Private lands are located within and immediately adjacent to the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences, are expected to continue. Based on previous activities, more development of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

Manistee River

The Manistee River area is located in Marilla Township in Manistee County, Michigan (See Appendix A, Map A-19 and Map A-33 for a map of the area, including noise sources). The villages of Marilla,

Brethren and Mesick are located within 5 miles of the area. A total of 7,985 acres of NFS lands and 987 acres of private lands are located in the Manistee River area. The terrain is characterized by rolling hills with relatively steep topography for this local area. The Manistee River dissects the area, with Upper River Road paralleling the river to the west. Much of the area is densely forested with a mix of northern hardwoods, red and white pine and aspen. A portion of this area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, black bear, raccoon, porcupine, squirrel, woodpeckers and various songbirds.

Hiking and mountain biking are popular activities in the area. The North Country National Scenic Trail (NCT) is located on the west side of the river and the Manistee River Trail is along the east side. Mountain biking is allowed on this section of the NCT. Horses are prohibited on any portion of the NCT. Nine dispersed campsites are located along the Manistee River Trail in the area. The Upper River Road trailhead is located in the southwest corner of the area, providing access to both the North Country Trail and Manistee River Trail. A foot-trail, suspension bridge over the Manistee River is a destination tourist attraction. Both motorized and nonmotorized boats are used to fish and paddle between Hodenpyl Dam and Red Bridge River Access Site. A portion of the groomed and designated MDNR snowmobile trail follows Manistee County's Upper River Road and Sweets Ravine Road. Deer hunting is a popular activity in the area. There are two isolated cabins on NFS lands. Carry-in boat launches are maintained at Hodenpyl Dam and Woodpecker Flats.

County and NFS roads are located throughout the area. Most of these roads receive moderate use in the spring, summer and fall. Numerous NFS roads have been closed and rehabilitated to enhance the values of the area. The road density in the area is approximately 1.42 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including maintenance of recreation sites, timber harvest, watershed management and fire suppression. Past timber activity includes aspen regeneration and thinning of red and white pine plantations. Timber harvest has occurred in this area. The management emphasis for timber is to enhance diversity of wildlife habitats and improving Old Growth characteristics of stands. Unauthorized roads and trails have been closed in the area. Any new unauthorized roads or trails will be closed and rehabilitated. Erosion along the Manistee River shoreline, primarily associated with recreation uses, continues to be a management concern. Monitoring will continue and measures will be developed to address unacceptable resource concerns. Over the past two decades, road closures have been implemented on NFS lands to address resource concerns.

Private lands are located within and immediately adjacent to the area. Consumers Energy will continue to maintain their facilities. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences, are expected to continue. Based on previous activities, more development improvements of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

Reid Lake

The Reid Lake area is located in Millen Township in Alcona County, Michigan (See Appendix A, Map A-21 and Map A-35 for a map of the area, including noise sources). The village of Glennie is located within 4 miles of Reid Lake and Barton City is within 6 miles of the area. A total of 3,207 acres of NFS lands and 663 acres of private lands are located in the Reid Lake area. In general, the terrain is characterized by small rolling hills. The area is forested with a mix of northern hardwoods, oak, aspen and paper birch.

This area is within the Huron-Manistee National Forests' Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, black bear, beaver, porcupine, squirrel, pileated woodpecker and various songbirds.

Hiking and dispersed camping are popular activities in the area. Two trailheads serve as major entry points into the area. The M-72 Hiking Trailhead along the northern boundary is the highest use and most developed trailhead. Little Trout Hiking Trailhead is a backcountry trailhead with few improvements. A 12 mile trail system provides visitors a variety of hiking and cross-country skiing experiences through the forested rolling hills. The six designated dispersed campsites are frequently used. Camping is allowed in non-designated sites as long as campers remain 200 feet from water and trails. The area is also used by day-use visitors who come to view fall colors, pick mushroom and berries, fish, hunt, snowshoe and trap.

Gated NFS roads are retained for administrative motorized access to stock fish in Reid Lake, maintain Reid and Little Trout impoundments and repair boardwalks and bridges. The road density in the area is approximately 0.1 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including such things as maintenance of recreation improvements, timber harvest, watershed management and fire suppression. Past timber activity includes aspen regeneration and thinning of red and white pine plantations. Timber harvest is focused on enhancing diversity of wildlife habitats and improving Old Growth characteristics of stands. A large wildlife opening is occasionally managed with a prescribed burn. Duck and bluebird boxes and fish structures in Reid Lake will be maintained. The Little Trout Lake control structure and Reid Lake Dam will be maintained or improved. A primitive dock is proposed in Reid Lake to replace the existing docks which have deteriorated. Maintenance will continue for the trails in the area.

Private lands are located within and immediately adjacent to the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences are expected to continue. Based on previous activities, more development of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

South Branch Au Sable

The South Branch Au Sable area is located in South Branch Township in Crawford County, Michigan (See Appendix A, Map A-22 and Map A-36 for a map of the area, including noise sources). The towns of Luzerne and Roscommon are located within 8 miles of the area. A total of 4,008 acres of NFS lands and 1 acre of private lands are located in the South Branch Au Sable area. The topography of this area is flat. Terrain is comprised of a sandy soil with intermixed wetlands along the small creeks that drain into the South Branch of the Au Sable River. The vegetation is comprised of upland northern hardwoods and pines with wetter sites supporting aspen, spruce and fir. This area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, black bear, bobcat, raccoon, porcupine, squirrel, pileated woodpecker and various songbirds.

The area is popular for berry and mushroom gathering, wildlife or scenic viewing, hunting, fishing and seeking remote camping opportunities. Dispersed camping primarily occurs along the designated roads. The designated roads are mostly traveled by hunters, fishermen and visitors heading to the Mason Chapel

or State forest land. In 2010, the Meridian Boundary Fire burned through the majority of this area. Rehabilitation activities were required to mitigate the suppression effects caused by fire dozer and plows.

NFS road 4210 and natural gas utility right-of-way traverse the east perimeter of this area and State land borders the other three perimeters. Four (4) NFS roads are located within the interior of the area and one road parallels the eastern perimeter. Within the South Branch Au Sable area, many of the NFS roads have been closed. The closure of these roads were undertaken to enhance the values of the area and to curtail adverse environmental impacts that deteriorated habitat and soil conditions. The area beyond the closures remains open for cross-country skiing and hiking. The road density in the area is approximately 0.96 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including implementing activities to improve visual quality, manage dispersed recreation uses, mitigate illegal vehicle uses, close unauthorized roads, eliminate non-native invasive species, fire suppression and manage vegetation and wetlands for diversity of plant species and wildlife habitats. A request to prospect and install a gas well site has been initiated and the environmental analysis is ongoing for this proposed activity. Monitoring will continue and measures will be developed to address unacceptable resource concerns.

Wakeley Lake

The Wakeley Lake area is located in Grayling Township in Crawford County, Michigan (See Appendix A, Map A-23 and Map A-37 for a map of the area, including noise sources). The town of Luzerne and city of Grayling are located within 12 miles of the area. A total of 2,414 acres of NFS lands and 1,226 acres of private lands are located in the Wakeley Lake area. The topography of this area is relatively flat. Terrain is comprised of a sandy soil with intermixed wetlands around the shore of Wakeley Lake and Wakeley Creek. In general, the area's vegetation is comprised of upland northern hardwoods and pines with wetter sites supporting aspen, spruce and fir. This area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, black bear, bobcat, raccoon, porcupine, squirrel, pileated woodpecker, various songbirds, beaver, muskrat, fish, frogs and turtles.

Dispersed camping is a popular activity in the area. To access Wakeley Lake Campground, users must hike 0.5 mile into the site from the trailhead. Camping primarily occurs at the five developed sites in the campground. Hiking and ungroomed cross-country ski trails are located around the perimeter of the lake and adjoining wetlands. The area attracts people seeking wildlife and scenic viewing, hunting, boating and fishing opportunities.

Highway M-72 borders the area to the south. The South Branch of the Au Sable River borders the area to the east and the Au Sable River borders the area to the north. County roads border the area on the west. County and NFS roads are located within the interior of the area. A NFS road is used for administrative use to maintain campground facilities and to implement management activities. The road density in the area is approximately 2.12 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including as maintenance of recreation improvements, maintain plant diversity and wildlife habitats, fire suppression and improve and protect the wetlands. Some site treatments may be implemented to reduce the spread of non-native invasive species.

Private lands are located within and immediately adjacent to the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences are expected to continue. Based on previous activities, more development of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

Whalen Lake

The Whalen Lake area is located in Custer, Branch and Logan Townships in Mason County, Michigan (See Appendix A, Map A-24 and Map A-38 for a map of the area, including noise sources). The villages of Walhalla and Branch are located within 6 miles of the area. A total of 2,754 acres of NFS lands and 277 acres of private lands are located in the Whalen Lake area. The Big South Branch of the Pere Marquette River runs through portions of the area. The terrain is characterized by steep banks along the river to rolling hills, glacial depressions, leatherleaf bogs and wetlands. The area is densely forested with a mix of lowland and northern hardwoods, oaks, conifers and aspen. This area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, bobcat, coyote, red fox, raccoon, porcupine, squirrel, pileated woodpecker, grouse, wild turkey and various songbirds.

Fishing and canoeing are popular activities on the Big South Branch of the Pere Marquette River. Many visitors come to the area to disperse camp adjacent to NFS roads. A portion of the M-4 motorized trail is located in the southern portion of the area. Horseback riding occurs on open and closed sections of NFS roads. Other popular recreation activities in this area include mushroom gathering, hunting, wildlife viewing, mountain biking and bird watching.

County roads border much of the area and are a primary access route for recreation activities on NFS lands. Some NFS roads are open within the interior of the area. Numerous NFS and unauthorized roads have been closed and rehabilitated to enhance the values of the area and address erosion. The road density in the area is approximately 1.94 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including such things as timber harvest to improving visual quality of the area, reducing hazard fuels, pest management, creating fuel breaks, fire suppression and maintaining diversity of wildlife habitats. Management emphasis of this area is recreation.

Private lands are located within and immediately adjacent to the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences are expected to continue. Based on previous activities, more development of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

White River

The White River area is located in Greenwood and Otto Townships in Oceana County, Michigan (See Appendix A, Map A-25 and Map A-39 for a map of the area, including noise sources). The villages of Hesperia and Ferry are located within 5 miles of the area. A total of 4,825 acres of NFS lands and approximately 375 acres of private lands are located in the White River area. The White River is located in the Muskegon Recovery Unit for the endangered Karner blue butterfly. Management activities focus on

maintaining and enhancing this butterfly's habitat. The terrain is characterized by mostly flat topography with steeper hills near the banks of the North Branch and Main Branch of the White River. The vegetation of the area consists of northern pine, black and white oaks, red and white pines, aspen and upland openings. Red maple is commonly found near the river. A portion of this area is within the Huron-Manistee National Forests Old Growth design. Wildlife species that commonly inhabit this area include white-tailed deer, bobcat, coyote, red fox, raccoon, opossum, porcupine, squirrel, pileated woodpecker, grouse, wild turkey and various songbirds.

Dispersed camping opportunities, fishing, hunting and horseback riding are popular activities in the area. Camping primarily occurs along the County and NFS roads throughout the area. Anglers utilize campsites and pull-offs to park and access the White River. A trail used for horseback riding follows the banks of the White River near the Pines Point Picnic Area to the North Branch of the White River on the west side of the area. Management activities and new openings have been recently created to enhance Karner blue butterfly habitat.

Arthur Road is a main County road that borders the northern boundary of the area. The remainder of the area is bordered by the White River and the North Branch of the White River. The interior of the area includes both county and NFS roads. Numerous Forest and unauthorized roads have been closed and rehabilitated to enhance the values of the area and address erosion concerns. The road density in the area is approximately 1.66 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including addressing unauthorized ORV use, nonmotorized trails and campsites, potential construction of parking areas, fire suppression and evaluating potential new road closures. Management emphasis of this area is recreation.

Private lands are located within and immediately adjacent to the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences, are expected to continue. Based on previous activities, more development of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

Whitewater Creek

The Whitewater Creek area is located in South Branch Township in Crawford County and Big Creek Township in Oscoda County, Michigan (See Appendix A, Map A-26 and Map A-40 for a map of the area, including noise sources). The area is within 2 miles of town of Luzerne. A total of 7,183 acres of NFS lands and 2,708 of private lands are located within the Whitewater Creek area. The topography of this area is flat. Terrain is comprised of a sandy soil in the uplands and intermixed lowland swamps or wetlands found along the small creeks that drain into the Au Sable River. The area's vegetation is comprised of upland northern hardwoods and pines. Moister sites predominately support aspen, spruce and fir. Forest and County roads and the river to the north frame the borders for this area. This area is within the Huron-Manistee National Forests Old Growth design. Common wildlife species include white-tailed deer, black bear, bobcat, raccoon, porcupine, squirrel, pileated woodpecker and various songbirds. Beaver, muskrat, fish, frogs, turtles and other fresh water dependent wildlife species live along the Au Sable River and associated wetlands.

Hiking, camping, horseback riding ORV use, snowmobiling, wildlife and scenic viewing, berry and mushroom gathering and hunting are popular activities in the area. Dispersed camping primarily occurs at unauthorized sites along NFS roads. Approximately 4.0 miles of a mixed-use ORV and snowmobile trail cross through the eastern portion of this area and approximately 2.0 miles of a nonmotorized hiking and horseback riding trail cross through the western portion. The designated motorized routes are essential for access to private parcels and access to connect the trail system where it crosses the river.

NFS and County roads are located throughout the area. These roads are used to access private properties, NFS lands and the White River for fishing and boating. Ongoing closure of unauthorized roads is enhancing the area values by resolving erosion and wildlife habitat degradation. Road density is approximately 1.29 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including activities to improve forest health by maintaining and enhancing the area's visual quality, managing dispersed recreation uses, addressing illegal vehicle use, closing unauthorized motorized routes, treating non-native invasive species, thinning pine plantations, reducing hazardous fuel conditions, creating fuelbreaks, fire suppression and manage vegetation and wetlands for diversity of plant species or wildlife habitats. Trail maintenance activities will continue.

Private lands are located within and immediately adjacent to the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences, are expected to continue. Based on previous activities, more development of these properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

Management Area 5.1 (Wilderness)

Nordhouse Dunes Wilderness

Nordhouse Dunes Wilderness was designated by Congress under the 1964 Wilderness Act, as a wilderness area (See Appendix A, Map A-20 and A-24). Nordhouse Dunes is located in Grant Township in Mason County, Michigan. The cities of Manistee and Ludington are within 15 miles of the area. A total of 3,373 acres of NFS lands are located in the Nordhouse Dunes Wilderness. The 795-acre Nordhouse Dunes Research Natural Area (RNA) is located within the wilderness area boundary. No private lands are located within the wilderness. The terrain is characterized by flat with some rolling hills associated with sand dunes. The wilderness borders Lake Michigan to the west, Ludington State Park to the south, Green Road to the east and the Lake Michigan Recreation Area to the north. The area is a mix of sand dunes, densely forested northern hardwoods, red and white pine plantations, aspen stands and swamp lands. This area is within the Huron-Manistee National Forests Old Growth design.

1964 Wilderness Act

Section 2(c) of the 1964 Wilderness Act (P.L. 88-577) identifies four qualities of wilderness:

Untrammeled – wilderness is essentially unhindered and free from modern human control or manipulation.

Natural – wilderness ecological ecosystems are substantially free from the effects of modern civilization.

Undeveloped – wilderness is essentially without permanent improvements or modern human occupation.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation – wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge.

These qualities and items specific to the Nordhouse Dunes Wilderness designation in the 1987 Michigan Wilderness Act (P.L.100-184) are considered in this analysis. Due to the nature of the issues related in the purpose and need for the SEIS, the analysis focuses on the fourth quality of wilderness, "outstanding opportunities for solitude or a primitive and unconfined type of recreation." The effects section discloses the effects of the alternatives on opportunities for solitude specific to sounds in the wilderness from firearm hunting and snowmobiling and the other three qualities of wilderness.

The Nordhouse Dunes Wilderness is located along the shoreline of Lake Michigan. The wilderness is known for its spectacular views of Lake Michigan and sand dunes. Ludington State Park has a large expanse of undeveloped lands immediately adjacent to the southern boundary of the wilderness.

Hiking, camping, scenic viewing, nature study and wildlife viewing are popular activities. Many people coming to the area hike along the shoreline of Lake Michigan and walk the sand dunes. Approximately 14 miles of hiking trails are located in the area. Dispersed camping is allowed throughout the area but camping is prohibited within 400 feet of Lake Michigan, 200 feet from Nordhouse Lake and 100 feet of trails. Hunting white-tailed deer is a popular activity in the fall. Other than trails, no man-made improvements exist within the wilderness. The Forest Service conducts visitor use studies to monitor visitor satisfaction, use levels and dispersed camping. The Forest Service monitors populations of the Federally listed piping plover and Pitcher's thistle individuals and habitat. Management activities in the area focus on preserving and protecting the values of the wilderness. Invasive plant species abatement activities are ongoing.

No roads are located within the Nordhouse Dunes Wilderness. Major roads adjacent to the area include Nurnberg, West Forest Trail and Green. People tend to park vehicles at the Lake Michigan Recreation Area or Nurnberg Trailhead prior to accessing the wilderness. The road density in the area is 0.0 miles of road per square miles of land.

The Forest Service is expected to continue implementation of current management direction, including maintaining and improving the wilderness values, managing wilderness uses, addressing illegal uses, treating non-native invasive species, fire suppression and managing endangered, threatened and sensitive species habitat. Trail maintenance activities will continue using non-mechanized means.

Ludington State Park and private lands are located adjacent to the wilderness. State park activities focus on managing the recreation uses along with protecting and enhancing the values of the area. Landowner activities, such as hunting, fishing, other recreation uses and maintenance of residences are expected to continue. Based on previous activities, more development improvements of the private properties is likely to occur. Additional residential and seasonal houses along with associated improvements are likely to be built. Roads and utility rights-of-way adjacent to the area are expected to be maintained or improved. Some timber harvest on private property may occur.

Affected Environment – Physical Resources

Location

The Huron-Manistee National Forests are two distinct units in the Lower Peninsula of Michigan. The Huron unit on the east side of the State is approximately 60 miles wide east to west and from 12 to 30 miles long north to south. It touches Lake Huron near East Tawas and north of Harrisville. The Manistee unit on the west side of the State is approximately 40 miles wide east to west and 75 miles long north to south. A portion lies alongside Lake Michigan near Manistee.

The Huron and the Manistee are the only National Forests in Michigan's Lower Peninsula. Together the Forests contain about 970,000 acres of NFS lands within proclamation boundaries which encompass approximately 2,021,090 acres. The Huron and Manistee National Forests were combined for administrative purposes in 1945. Ranger station offices are located in Mio, Oscoda, Manistee and Baldwin and the Forests' headquarters is in Cadillac.

History of the Huron National Forest

The original reservation of lands within the Huron National Forest occurred in 1902 and the Forest was formally established in 1909. The Forest boundary includes approximately 692,000 acres, of which approximately 436,200 acres are NFS lands. Most of the land was acquired through purchase and land-for-land exchanges with the State of Michigan. Other lands were acquired through purchases with private individuals.

History of the Manistee National Forest

The Manistee Purchase Unit was created in 1933 and the Forest was proclaimed in 1938. The Forest boundary encompasses approximately 1,328,000 acres. Of that amount, about 535,000 acres, or 40 percent, are NFS lands. About 30 percent of NFS lands include Federal mineral rights. The majority of the Manistee National Forest System lands were purchased from private owners. However, a significant amount was acquired through State and private land-for-land exchanges.

Physical and Geographical Setting

The lands within the Huron-Manistee National Forests have a history of glaciation. The topography varies from level, associated with swamps and lakes, to undulating and broken, associated with pitted outwash and moraines. The soils and drainage pattern of the Forests are typical of a glaciated area. Sand and gravel soils are characteristic of both glacial outwash and till deposits. Loamy and silty soils occur in glacio-lacustrine and ground morainal systems. Peats and mucks are associated with lowland organic deposits. The abundance of rivers, lakes and wetlands is also a result of recent glacial action. The Forests are well known for quality cold water streams.

About 95 percent of the Huron-Manistee National Forests' land is forested, of which 92 percent is capable of commercial timber production. Common hardwood trees include red and black oak, aspen, sugar maple, white and black ash and red maple. Common softwood trees include red, jack and white pine; balsam fir, northern white cedar and tamarack. Hardwood trees are the most common trees forestwide.

Climate

The Huron-Manistee National Forests receive an average annual precipitation of approximately 30 inches. About 30 percent of this falls during the summer recreation season (June, July and August). The summers are considered short and mild with rare, extremely warm temperatures. Average temperatures during the summer range between 60 and 65 degrees Fahrenheit (F). Daytime temperatures occasionally reach 90 degrees F or more, while night temperatures often go below 60 degrees F.

There is an average annual snowfall of 57 inches (20 percent of the total precipitation) ranging throughout the Forests from 42 to 82 inches. This snowfall, coupled with moderate winter temperatures, provides ideal conditions for winter sports. This is especially true in the northern part of the Manistee National Forest and eastern half of the Huron National Forest, which are influenced by Lakes Michigan and Huron. The season for winter sport activities runs from December to March. Average daily temperatures during these months range between 20 and 40 degrees F.

Soil and Water Resources

The affected environment for soil and water resources on the Forests as described in the 2006 FEIS (USDA-FS 2006, pp. III-2-7) is applicable and incorporated by reference. In summary, soils within the analysis areas are generally sandy and were formed in deep glacial deposits which can exceed 600 feet in depth. Due to their sandy nature and gentle topography, most soils on the Forests pose only slight to moderate constraints on management activities. Low compaction and high water permeability potentials help minimize adverse impacts associated with most management activities. (See USDA-FS 2006, p. III-2 for additional information.) Surface water features, such as rivers, streams, lakes and wetlands, provide important habitat and exceptional recreation opportunities. The streams are geologically youthful and are entrenched into sandy glacial outwash and moraines. The overall quality of flowing stream water is good to excellent. Groundwater recharges within forestlands and the resulting discharge into surface waters create some of the most stable stream flows in the world. The majority of perennial streams are designated by the MDNR as coldwater trout streams. Transportation systems (roads, trails and associated road-stream crossings) are a major source of sediment to aquatic systems on the National Forests. (See USDA-FS 2006, pp. III-3 to III-7 for additional information.)

Air Quality

The air contains hundreds of different chemicals. Some of these chemicals are recognized as having a higher potential for adverse effects and are therefore regulated by the United States Environmental Protection Agency (EPA) and the States. The regulated chemicals or pollutants can be broken into two classes: criteria and air toxics. State and Federal government agencies are responsible for monitoring some of these pollutants. The EPA sets National Ambient Air Quality Standards (NAAQS) for each criteria pollutant.

Air quality differs from other resources in that it is not stationary. Air masses are constantly moving across the landscape, gathering pollution in one area and transporting it to another. Due to the local and regional transport of pollutants, air pollution sources located both inside and outside the Forests must be identified to develop an understanding of the existing air quality situation and the effects of emissions from the proposed action. Therefore, the scope of this analysis is broadened to include any County that intersects the Forests. The regional transport of air pollutants will also be discussed.

Air Quality – Affected Environment

The affected environment for air quality on the Forests is described in the 2006 FEIS (USDA-FS 2006, p. III-7) and is incorporated by reference. In addition, the specialist's report on Air Quality can be found in the project record.

The condition of the air can be determined by collecting air monitoring data. Michigan Department of Environmental Quality is responsible to conduct this monitoring, which focuses generally in the more populated areas of the State. Very few monitors are located near the Forests.

Fine Particulate

Particulate matter is a general term used for a mixture of solid particles and liquid droplets found in the air, which is further categorized according to size. Fine particles are equal to or less than 2.5 micrometer (µm) in diameter. Ten (10) µm in diameter is about one-seventh the diameter of a human hair. Elevated levels of fine particulate can cause cardiovascular and respiratory problems. Two nearby monitors exist for fine particulate, one in Manistee (operated by the Little River Band of Ottawa Indians) and one in Houghton Lake. The NAAQS for fine particulate is 35 micrograms per cubic meter (ug/m^3) on a 24-hour average basis and 15 ug/m^3 on an annual basis. Monitoring data shows all sites in Michigan were below the annual fine particulate NAAQS for the most recent period. On a 24-hr average basis for the years 2007-9 the design values (i.e., values upon conversion of raw monitoring data into a form comparable to NAAQS) for the Manistee and Houghton Lake monitors were 21 and 19 ug/m^3 respectively (MDEQ 2011a). These are both well below the 24-hr NAAQS of 35 ug/m^3.

Ozone

Ground-level ozone is created by photochemical reactions involving nitrogen oxides and hydrocarbons, in the presence of sunlight. These reactions usually occur during the hot summer months as ultraviolet radiation from the sun initiates a sequence of photochemical reactions. The ozone monitoring season in Michigan is from April 1 through September 30. Ground level ozone can also be transported hundreds of miles under favorable meteorological conditions. Ozone levels are often higher in rural areas than in cities due to transport to regions downwind from the actual emissions of ozone forming air pollutants. Shoreline monitors along Lake Michigan often measure high ozone concentrations due to transport from upwind States (i.e., Wisconsin, Illinois, and Indiana) (MDEQ 2009, Wickman 2010). Nearby ozone monitors are at Scottville, Manistee and Houghton Lake.

On April 30, 2004 EPA designated Mason and Muskegon counties nonattainment with respect to the 1997 8-hour Ozone National Ambient Air NAAQS of 0.08 (rounded to 0.084) parts per million (ppm). These counties were re-designated to maintenance status by EPA on May 16, 2007 due to measured improvements in ozone. In 2008 the ozone NAAQS was revised down to 0.075 ppm. In 2010 EPA proposed lowering the ozone standard again down to a level between 0.060 to 0.070 ppm. The EPA has not yet finalized this decision. Current monitoring data shows all of the State of Michigan is below the current ozone NAAQS.

Carbon Monoxide

Carbon monoxide is a colorless, odorless and poisonous gas formed during incomplete burning of fuel. Levels peak during colder months primarily due to cold temperatures that affect combustion efficiencies of engines (MDEQ 2009). Michigan only operates two carbon monoxide monitors in the entire State due to the very low concentrations in relation to the NAAQS. There are no monitors for carbon monoxide

near the Forests. Previous monitoring done across the State from 2004 to 2009 showed 1-hr levels well below 5 ppm, while the 1-hr NAAQS is 35 ppm (MDEQ 2009).

Availability of Mineral Resources

The affected environment for mineral resources on the Forests is described in the 2006 FEIS (USDA-FS 2006, pp. III-7-8) and is incorporated by reference. Minerals management on the Forests is primarily focused on oil and gas resources. The 2006 Forest Plan S&Gs specify if mineral development is permitted and if so, development must follow management area direction (USDA-FS 2006a). The S&Gs document how and when such development may occur. Application of S&Gs for forestwide availability of Federal mineral resources for leasing and development is described in Appendix D (page D-6) of the 2006 Forest Plan and under Alternative B of the 2006 FIES (USDA-FS 2006, p. III-29). In Nordhouse Dunes Wilderness, Federal mineral resources are withdrawn from development under the Mineral Leasing Acts of 1920 and 1947 (USDA-FS 2006a, p. III-5.1-5). Some State owned mineral interest has been leased under the Nordhouse Dunes Wilderness subject to a non-development stipulation (no surface occupancy of the Nordhouse Dunes Wilderness) and development of private minerals is subject to valid existing rights. S&Gs for development of minerals in the M.A. 6.1 (SPNM) areas are found on pages III-6.1-10-11 of the 2006 Forest Plan. Development is permitted subject to a maximum surface development density of 1 surface location per 640 acres.

Much of the acreage within the 13 analysis areas (M.A. 6.1 SPNM) includes designated Old Growth. S&Gs for management of Old Growth areas are outlined on page II-9 of the 2006 Forest Plan. Limitations on development of minerals in designated Old Growth areas are described on page II-36 of the 2006 Forest Plan. If there is reasonable access via open roads in designated Old Growth areas, oil and gas development can occur within these areas. If access does not exist, leases are issued with a “no surface occupancy” stipulation for those areas.

Mineral ownership in the 14 analysis areas included in the SEIS includes a mix of Federal, State and private. At the time the Forest Service acquired lands to build the National Forests, landowners often reserved the mineral interest which created a situation where the mineral estate is now severed from the surface estate. If the minerals in these acquired lands were owned by a third party at the time of acquisition, these are known as outstanding mineral rights. There are both reserved and outstanding State and private mineral rights across the Forests. As part of this analysis, the Forest Service inventoried reserved and outstanding rights on NFS lands within SPNM areas and the Nordhouse Dunes Wilderness. A copy of this inventory is available in the project record.

Table 8 provides information relating to what areas have authorized State or Federal oil and gas leases (Summary of State/Federal Authorized Leases from GIS (USDA-FS 2011)) and whether or not the agency has recently received or have information relating to interest in leasing in any of the areas (Grundman 2011, Storzer 2009). This information will assist in determining effects of the four alternatives analyzed in the SEIS.

Table 8. Current and Possible Future Leasing, by Area

Area Name	Total Acres of NFS lands	Number of existing surface well locations within area/Number of pending drilling permit applications	Approximate percentage of NFS lands under State or Federal authorized lease	Documented Recent/Future Leasing or Development Interest[7] (Yes/No)
Au Sable	10,368.40	0/0	0.0	N
Bowman Lake	1,144.50	0/0	0.0	N
Briar Hills	3,446.60	0/0	0.0	N
Condon Lakes West	3,289.00	0/0	0.0	Y
Cooke	2,422.60	0/0	0.0	N
Hoist Lakes	9,709.30	0/0	12.28	N
Manistee River	7,934.60	0/0	5.60	Y
Nordhouse Dunes Wilderness	3,379.60	0/0	18.17	Y
Reid Lake	3,192.00	0/0	3.28	N
South Branch Au Sable	3,981.30	1/1	52.56	N
Wakeley Lake	2,067.90	0/0	0.0	N
Whalen Lake	2,761.30	0/0	20.63	Y
White River	4,781.70	0/0	5.81	Y
Whitewater Creek	7,201.30	0/0	0.53	N

Environmental Consequences – Physical Resources

Effects on Soil and Water Resources

Overview

Management of roads and trails is the only topic in the alternatives that may be connected to soil or water resources. As stated in the 2006 FEIS the Huron-Manistee National Forests mitigate adverse soil and water impacts associated with roads and trails by implementation of Best Management Practices (BMPs) and adverse direct or indirect impacts on soil and water resources are not generally incurred (USDA-FS

[7] Determination based on existing requests for leasing of additional acreage. Projection of future leasing or development interest based on dates of issued Federal leases (within last 5 years), drilling activity and pending expressions of interest on file with the Forest Service.

2006, p. III-16 and p. III-19). However, as also disclosed in the 2006 FEIS, some risk does exist in association with roads and trails because they may impede infiltration of precipitation and concentrate surface runoff which, in turn, may increase the chance for soil erosion. Additionally, associated potential alteration of the amount and timing of runoff may lead to sedimentation, changes in channel morphology or aquatic habitat degradation or loss. Since factors leading to risk are the same for roads and trails, environmental effects of roads and motorized trails are assumed to be similar in this analysis.

Direct Effects Common to All Alternatives

The direct effects analysis area for soil and water resources is consistent with the area used in the 2006 FEIS; i.e. NFS lands within the 13 analysis areas (M.A. 6.1) and Nordhouse Dunes Wilderness (see USDA-FS 2006, p.III-10 and p.III-20). The timeframe for the direct effects analysis is from 2011 to 2021. No roads or motorized trails are proposed to be closed or constructed in any of the Alternatives. (In Alternative 3, snowmobile trails occur on county or Forest Service roads, which would remain in place.) Therefore, environmental effects of all alternatives are the same with respect to soil and water resources. Further, the alternatives are the same as the current condition (Alternative 1 is the No Action Alternative) analyzed in the 2006 FEIS. The effects of the current condition are described in detail in the 2006 FEIS on pages III-9-17 for soils and pages III-17-24 for water related resources. Results indicate that, due to implementation of BMPs, no direct or indirect environmental impacts to the soil and water resource are expected. Any site-specific changes, e.g. road closure or construction that may be proposed in the future after the Forest Service's decision to adopt and implement one of the SEIS alternatives may have direct effects. These direct effects will not be considered in this NEPA document because they are beyond the scope of the SEIS programmatic Forest Plan level of analysis.

Indirect Effects Common to All Alternatives

The indirect effects analysis area for each proposed alternative is all lands contained within a 5 mile buffer placed around the 14 analysis areas. The timeframe for the direct effects analysis is from 2011 to 2021. Because no roads or trails are proposed to be closed or constructed in any of the alternatives, no indirect effects are expected to occur as a result of any of the alternatives (see discussion under direct effects, above). Any site-specific changes, e.g. road closure or construction that may be proposed in the future after the Forest Service's decision to adopt and implement one of the SEIS alternatives may have indirect effects. These indirect effects will not be considered in this NEPA document because they are beyond the scope of the SEIS programmatic Forest Plan level of analysis.

Cumulative Effects

The area of analysis for cumulative effects is the State of Michigan including the current or foreseeable actions that may be undertaken by others in the counties where the areas being studied are located. Because direct and indirect effects are absent, no cumulative effects are expected to occur from any of the alternatives.

Effects on Air Quality

Overview

This air analysis focuses on emissions of air pollutants from the existing snowmobile use on the Forests. An emissions inventory has been obtained from the EPA in order to assess potential impacts to air quality.

Snowmobiles emit air pollution through tailpipe emissions. They emit a number of criteria pollutants directly, such as: nitrogen oxides, carbon monoxide and hydrocarbons and various air toxics. Nitrogen oxide and hydrocarbon emission can mix in the atmosphere downwind from where they are emitted and form another criteria pollutant – ozone (commonly known as smog). Three criteria pollutants, fine particulate matter, ozone and carbon monoxide, are of most interest and are discussed below. Fine particulate matter and carbon monoxide are potentially most affected by snowmobile emissions. Ozone is a pollutant of interest in Michigan due to its high level in comparison to the NAAQS, but should not be an issue for snowmobiles since it is formed in the summer.

Direct and Indirect Effects Common to All Alternatives

The analysis areas for the direct and indirect effects for the potential risk to air quality from snowmobile travel on the proposed routes is the airshed over the Huron-Manistee National Forests. This analysis area was selected because it is the area where the Forest Service has management responsibilities. The temporal scale is also important to understand. Air quality effects are seen only during the time emissions are generated. Therefore the time scale of concern for mobile sources such as snowmobiles tends to be short, such as a 24-hour period. Any effects to the concentration of air pollutants would be immediate during the emissions and then would rapidly dissipate as the pollutants dispersed.

This analysis incorporates the estimation of effects for all proposed routes based upon professional judgment and literature review. This section addresses new information brought forward since the release of the 2006 Forest Plan. More information regarding air quality on the Huron-Manistee National Forests can be found in the 2006 FEIS (USDA-FS 2006 p. III-7, III-24 through 26), Parts I and II of the Air Quality Value Plan for Nordhouse Dunes Wilderness and the specialist's Air Quality report in the project record.

Effects from air pollutants will be estimated by considering current air quality, current estimated impact of snowmobiles on air quality and any differences in the location and amount of snowmobile use between alternatives that could lead to different effects to air quality on the Forests.

The Forest Service characterized the contribution of snowmobile emissions to existing air quality on the Forests. The EPA's 2002 emission inventory was downloaded and a comparison was made of the emissions from snowmobiles in the counties intersecting the Forests with the total from all sources for fine particulates, carbon monoxide and hydrocarbons (as measured by volatile organic compounds (VOC)) in those same counties.

Table 9. Snowmobile Emissions Comparison for Forests' Counties (tons per year)

	Snowmobiles	All Sources
Fine particulate	193	10,171
Carbon monoxide	22,606	243,210
Hydrocarbons (as VOC)	9338	57,331

Source: EPA 2002

As can be seen in Table 9, snowmobile emissions are small source category in comparison to the total, representing less than 2 percent of the total fine particulate emissions, less than 10 percent of the total

carbon monoxide emissions and less than 17 percent of the hydrocarbons in the Counties where NFS lands exist.

Snowmobile emissions are proportional to their engine technology and their use or miles ridden. The EPA has the responsibility to regulate snowmobile engines through the establishment of emission standards. These are applied to new snowmobiles on a schedule that gets increasingly stringent in future years. The EPA engine regulations for snowmobiles focus on reducing hydrocarbons and carbon monoxide over the model years 2006 through 2012 (EPA 2011).

It is estimated that there would not be an appreciable difference in the total number of snowmobile users or miles traveled on the Huron-Manistee National Forests between Alternatives 1, 3 or 4. In the analysis of impacts to recreation, Table 20 shows that 3.3 percent of visitors to the Forests participated in snowmobiling. Under Alternative 2, if snowmobile trails were to be closed, some users may elect to go elsewhere to pursue their recreation activity. Based on the National Visitor Use Monitoring (NVUM) study (USDA-FS 2010), 43.5 percent of visitors would only travel 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. This information infers that of the 3.3 percent of visitors who snowmobile on the Forests, almost half would still remain in the general vicinity, having relocated between 0 and 25 miles to nearby trails. This could be a change in the location of riding opportunities for most riders (See Recreation in this document). However, forestwide air quality should not change at the airshed level due to this minimal shift of snowmobile use and the contribution of snowmobile emissions to forestwide air quality is considered minimal.

Cumulative Effects Common to All Alternatives

The analysis area for the cumulative effects for the potential risk to air quality is the State of Michigan. Air quality is affected by regional environments and activities beyond the Forest Service's control. There are many sources other than snowmobiles that contribute air pollutants to the airshed, including wildfires, prescribed fire, residential and commercial sources within local towns, equipment associated with resource management activities and long range transport of industrial air pollution from other parts of Michigan and from other States.

To support the development of State Implementation Plans for ozone and fine particulate in the States of Illinois, Indiana, Michigan, Ohio and Wisconsin, technical analyses were conducted by the Lake Michigan Air Directors Consortium (LADCO 2008), member States and various contractors. The analyses included preparation of regional emissions inventories and meteorological data, evaluation and application of regional chemical transport models and collection and analysis of ambient monitoring data. Monitoring data were analyzed to produce a conceptual understanding of the air quality problems. Key findings of the analyses include:

Ozone

- Ozone concentrations are strongly influenced by meteorological conditions, with more high ozone days and higher ozone levels during summers with above normal temperatures.
- Inter- and intra-regional transport of ozone and ozone precursors affects many portions of the five States and is the principal cause of nonattainment in some areas far from population or industrial centers. (This would be true for areas in western Michigan due to transport of pollutants across the lake.)

Fine Particulate

- Fine particulate concentrations are also influenced by meteorology, but the relationship is more complex and less well understood compared to ozone.
- On an annual average basis, fine particulate chemical composition consists mostly of sulfate, nitrate and organic carbon in similar proportions.

Air quality models were applied to support the regional planning efforts. Future year strategy modeling was conducted to determine whether existing controls would be sufficient to provide for attainment of the standards for ozone and fine particulate and if not, then what additional emission reductions would be necessary for attainment. Based on the modeling and other supplemental analyses, the following general conclusions can be made:

- Existing controls are expected to produce significant improvement in ozone and fine particulate concentrations and visibility levels.
- Modeling suggests that most sites are expected to meet the current 8-hour ozone standard by the applicable attainment date, except for sites in western Michigan and, possibly, in eastern Wisconsin and northeastern Ohio.
- Modeling suggests that most sites are expected to meet the current fine particulate standard by the applicable attainment date, except for sites in Detroit, Cleveland and Granite City.
- Attainment at most sites is dependent on actual future year meteorology and actual future year emissions (i.e., if the emission reductions associated with the existing controls are achieved, then attainment is likely). If either of these conditions is not met, then attainment may be less likely.

As newer and cleaner snowmobiles replace older more polluting snowmobiles the impacts of snowmobile emissions should decrease below the existing level.

An analysis of air emissions shows that snowmobiles contribute a minor amount of pollutants and future EPA regulations are poised to drive down emissions from the fleet of snowmobiles operating on the Forests. Therefore, the overall cumulative impact of snowmobiles to air quality is minimal and is expected to decrease in the future.

Effects on Availability of Mineral Resources

Overview

This analysis includes the availability of all Federal, State and private mineral interests under NFS lands that could be impacted by management decisions and activities evaluated in this analysis.

Direct Effects Common to All Alternatives

The analysis area for direct effects includes all lands within the 14 analysis areas, and 0.5 mile buffer around the boundaries of these areas. Targets for mineral development are typically defined by subsurface structures. Often, these are delineated by seismic exploration. Leasing and development interest are dictated by the existence of such structures and one cannot assume that if an area is closed to surface occupancy for development that the operator can just move to another location. Under Alternative 4 the Forest Service may choose to implement a less roaded recreation experience and if road closures are proposed in designated Old Growth areas, there may be an opportunity for directional drilling or pooling

of the Federal mineral interest from wells drilled outside of and adjacent to the boundary of one of the 13 (M.A. 6.1, SPNM) areas.

The direct effects of Alternatives 1, 2 and 4 would remain as documented in Chapter III of the 2006 FEIS (USDA-FS 2006). If any site-specific changes, i.e. access to mineral resources via roads in designated Old Growth areas, is changed under Alternative 4, that action would be analyzed through a site-specific NEPA analysis. Those direct effects will not be considered in this NEPA document because they are beyond the scope of the SEIS programmatic Forest Plan level of analysis. Any changes in access would have no direct effect on valid existing rights.

Under Alternative 3 there will be no change in direct effects on the availability of the mineral resource for Nordhouse Dunes Wilderness. The management area designation does not change for this area.

Alternative 3 proposes to modify the management area designation for the 13 (M.A. 6.1, SPNM) areas to better reflect on-the-ground conditions based on the ROS inventory. The new M.A. designations, which include Roaded Natural (2.1 and 4.2) and Semiprimitive Motorized (6.2) have somewhat less restrictive controls over mineral development (USDA-FS 2006a, pp. III-2.1-7, III-4.2-11-14 and III-6.2-6-7), although the change in M.A. does not change the existing restrictions related to development in Old Growth. Under M.A. 2.1 and M.A. 4.2 designations, the “1 surface location per 640 acres” density restriction does not apply. Well spacing will be dictated by State spacing regulations. For M.A. 6.2 designation, the S&Gs limit development to 1 surface location per 160 acres. This may be less restrictive than State spacing regulations, depending upon the formation of interest. Direction related to access via roads in Old Growth does not change from that described in the affected environment.

As shown in Table 8, eight of the analysis areas contain authorized Federal or State leases. Nordhouse Dunes Wilderness Area also has authorized State leases. Recent expressions of interest or nominations for oil and gas leasing indicate that additional leasing in the near term will most likely not occur in four of these areas (all on the east side of the Forests) (Grundman 2011, Storzer 2009). Records indicate that Federal leases have been issued in the past 5 years for lands within three of the SPNM areas although no activity has taken place to date (USDI-BLM 2011). Changes in management area designation will not affect an operator’s ability to exercise valid existing rights under these leases. Any future leases that may be considered would include lease stipulations in accordance with one of the new management area designation.

Based on recent leasing interest, indicated by expressions of interest or nominations filed, Newaygo and Muskegon Counties are the focus for several companies (Grundman 2011, Storzer 2009). There is one area (Condon Lakes), located on the west side of the Forests, that could potentially be involved in this new interest. The management designation of Condon Lakes from M.A. 6.1 to 6.2 will have minimal impact on the availability of the mineral resource. Much of this area is in designated Old Growth or is wet (which precludes surface occupancy). These two resource issues remain regardless of the management area designation and would define the limitations with regard to development of the mineral resource.

Any additional development planned under authorized leases is bound by the terms of the lease document and changes in M.A. designation (and respective S&Gs) will not necessarily modify access under existing lease terms.

Indirect Effects Common to All Alternatives

The analysis area of indirect effects is the same as that used for direct effects. Indirect effects related to the availability of the mineral resources for leasing are the same as those outlined under direct effects.

Indirect effects of specific drilling proposals will not be analyzed through this NEPA document because they are beyond the scope of the SEIS programmatic Forest Plan level of analysis.

Cumulative Effects Common to All Alternatives

The area of analysis for cumulative effects is the State of Michigan including the past, current or foreseeable actions that have been or may be undertaken by others in the counties where the areas being studied are located: Alcona County, Crawford County, Iosco County, Lake County, Manistee County, Mason County, Newaygo County, Oceana County, Oscoda County and Wexford County.

The State of Michigan regularly leases State-owned oil and gas resources at competitive auctions held twice a year. Private mineral owners lease privately held oil and gas resources and the Bureau of Land Management, in cooperation with the Forest Service, leases Federally owned oil and gas under NFS lands based on nominations by industry.

Since 1925, more than 50,000 oil or natural gas wells have been drilled in Michigan. Production has occurred in 64 of Michigan's 83 counties (current production is all in the Lower Peninsula) (Central Michigan University 2011). Oil and gas exploration, development and production continue to be an important industry in the State.

There is potential for increased development from a relatively new oil and gas play in the State known as the Collingwood-Utica shale. More exploration is needed to confirm the economics and productivity of this play, but there is potential for an increased level of development of this resource. Most of the development and interest to date appears to be in the northern Lower Peninsula, outside of the Forests boundary. This play has resulted in an increased level of leasing over the past year. A record-setting State lease sale occurred in May 2010. The auction netted $178 million in bonus payments, far exceeding the previous auction record of $23.6 million set in 1981 (MDNR 2010a).

All impacts associated with any of the alternatives analyzed in the SEIS, together with other past, present and reasonably foreseeable actions in the State, will have immeasurable cumulative effects as it relates to the availability of mineral resources for leasing.

Affected Environment – Biological Resources

Endangered, Threatened and Sensitive Plants and Animals

"Endangered" and "Threatened" are legal terms used pursuant to the Endangered Species Act to describe the relative potential a species has of becoming extinct. "Sensitive" species are those species identified by the Regional Forester for which National Forest management programs and activities may or may not have an adverse effect, causing a trend toward listing as Endangered or Threatened. These species may have appeared in the Federal Register as proposed or under review for official listing as an endangered or threatened species, on an official State list or are recognized by the Regional Forester as needing special management in order to prevent the need for their placement on Federal or State lists. A listing of the Endangered, Threatened and Sensitive species on these Forests can be found on the Forest Service, Eastern Region website (USDA-FS 2008).

Plants

Several Endangered, Threatened and Regional Forester's Sensitive species are key or important parts of the ecosystems that comprise the communities of the Forests (See Table 10). Emphasis is placed on these species and communities through management of individual species across the landscape or management of communities in Research Natural Areas.

Wildlife

Some 382 species of breeding vertebrate animals inhabit the Forests. These include 168 species of birds, 54 species of mammals, 24 species of reptiles, 18 species of amphibians and 118 species of fish. In addition, numerous invertebrates, primarily insects, are found on the Forests. Endangered, Threatened and Sensitive wildlife species are part of the ecosystems that make up the communities of the Forests (See Table 10). The Huron-Manistee National Forests also provide habitat for numerous migratory and seasonally breeding species in addition to those species resident on the Forests.

Vegetative diversity is the key to managing habitats for the great variety of wildlife species found on the Huron-Manistee National Forests. Wildlife and forest management provide diverse communities and vegetative types, including herbaceous openings, savannas, barrens, prairies, aspen, oak, hardwood, pine and lowland conifers and habitat conditions ranging from regenerating stands to Old Growth stands that contain declining trees and snags.

Non-Native Invasive Species

An organism is considered non-native when it has been introduced by humans to a location outside its natural or native range. This designation applies to species introduced from another continent, another ecosystem or even another habitat within an ecosystem. Many non-native species exist in apparent harmony in environments where they were introduced. A relatively small number of non-native plants (for example corn, wheat, rice and oats) form the basis of our agricultural industry and pose little to no known threats to natural ecosystems. The most important aspect of a non-native species is how it responds to a new environment. An invasive species is one that displays rapid growth and spread, establishes over large areas, persists and replaces native species. Invasiveness is characterized by high reproductive rates, abundant seed or offspring reproduction, high germination or survival rate and longevity in the ecosystem.

Some non-native species such as brown trout or ring-necked pheasant are considered desirable. Examples of highly-impacting, non-desirable invasive species that exist on the Forests are Norway rat, brown-headed cowbird, sea lamprey, zebra mussel, gypsy moth and purple loosestrife. Emerald ash borer, Asian long-horned beetle, butternut canker and beech bark disease are non-native invasive insects and diseases.

Table 10. Endangered, Threatened and Sensitive Species found in the 14 Analysis Areas

Common Name	Scientific Name	Au Sable River	Bowman Lake	Briar Hills	Condon Lakes W	Cooke	Hoist Lakes	Manistee River	Reid Lake	S. Br. Au Sable	Wakeley Lake	Whalen Lake	White River	Whitewater Creek	Nordhouse Dunes
A = Found in SPNM/Primitive area **B = Found immediately adjacent to SPNM/P area**															
Bald Eagle	*Haliaeetus leucocephalus*	A, B				A, B		A, B			A	B	B	A	A, B
Bald Rush	*Rhynchospora scirpoides*												B		
Blanding's Turtle	*Emydoidea blandingii*	A			A, B	A, B	B		A, B			A, B	B	A	A
Cerulean Warbler	*Dendroica cerulea*												A, B		A, B
Channel Darter	*Percina copelandi*					A, B									
Common Loon	*Gavia immer*				A, B	A			B		A				
Dusted Skipper	*Atrytonopsis hianna*								A	A, B	A, B			B	
Dwarf Bulrush	*Lipocarpha micrantha*				B										
Eastern Box Turtle	*Terrapene carolina carolina*		B		B								A, B		A
Eastern Massasauga	*Sistrurus catenatus catenatus*	A			A, B	B					A, B			B	
Frosted Elfin	*Callophrys irus*		B										B		

Common Name	Scientific Name	Au Sable River	Bowman Lake	Briar Hills	Condon Lakes W	Cooke	Hoist Lakes	Manistee River	Reid Lake	S. Br. Au Sable	Wakeley Lake	Whalen Lake	White River	Whitewater Creek	Nordhouse Dunes
A = Found in SPNM/Primitive area **B = Found immediately adjacent to SPNM/P area**															
Giant Pinedrops	*Pterospora andromedea*	A, B				A, B									
Hill-prairie Spittlebug	*Lepyronia gibbosa*												A		
Hill's Thistle	*Cirsium hillii*	A, B	A			A, B	A, B	A, B	B	A, B	A, B	B	A, B	A, B	
Karner Blue Butterfly (E)	*Lycaeides melissa samuelis*											B	A, B		
Kirtland's Warbler (E)	*Dendroica kirtlandi*	B				A, B	A, B			A, B	A, B			A, B	
Lake Huron Locust	*Trimerotropis huroniana*														A, B
Michigan Bog Grasshopper	*Appalachia arcana*					B					A, B				
Northern Goshawk	*Accipiter gentilis*	A			B		A, B	A, B		A				A	A, B
Persius Dusky Wing	*Erynnis persius*		A,B												
Piping Plover (E)	*Charadrius melodus*														A
Pitcher's Thistle (T)	*Cirsium pitcheri*														A, B
Prairie Warbler	*Dendroica discolor*	B													A

Common Name	Scientific Name	Au Sable River	Bowman Lake	Briar Hills	Condon Lakes W	Cooke	Hoist Lakes	Manistee River	Reid Lake	S. Br. Au Sable	Wakeley Lake	Whalen Lake	White River	Whitewater Creek	Nordhouse Dunes
A = Found in SPNM/Primitive area **B = Found immediately adjacent to SPNM/P area**															
Purple Milkweed	*Asclepias purpurascens*				B								A		
Purple Spikerush	*Eleocharis atropurpurea*				B										
Ram's -head Lady Slipper	*Cypripedium arietinum*	B				A, B									B
Red-shouldered Hawk	*Buteo lineatus*	B		A	B		B	A, B	B						A
River Redhorse	*Moxostoma carinatum*	B													
Rough Fescue	*Festuca altaica*						B			B	A, B			B	
Southern Grizzled Skipper	*Pyrgus wyandot*							B						B	
Trumpeter Swan	*Cygnus buccinator*	A, B				B		A, B							
Whorled Mountain-mint	*Pycnanthemum verticillatum*				B										
Wild Parsnip	*Berula erecta*				A										
Wood Turtle	*Glyptemys insculpta*	A	A,B		A, B	A, B	B	A		B	A, B		A, B	A, B	

Wildland Fire

The complete description of the affected environment for wildland fire on the Huron-Manistee National Forests is described in the 2006 FEIS (USDA-FS 2006, pp. III-46-47 and III-259-266) and is incorporated by reference. The 2006 FEIS includes a historical perspective for wildland fires in Michigan and fire management issues associated with forest vegetation, fire suppression and the maintenance of Endangered, Threatened and Sensitive species habitat.

The vegetative composition of northern Michigan's forests is shaped by historic large-scale disturbances. Other than glaciations, wildland fires are thought to have affected the forest vegetation more than any other natural disturbance events, including wind, floods, insects and diseases. Many present natural communities and their associated biota are dependent on wildland fire to maintain their viability. A history of fire's influence on the Forests' ecosystems is detailed in the 2006 FEIS.

Wildland Fire Suppression and Hazardous Fuel Reduction

The Forest Service, the State of Michigan and local fire departments are responsible for wildland fire suppression. As part of a comprehensive fire management program, the Huron-Manistee National Forests developed a Forest Fire Management Plan and have implemented a hazardous fuels reduction program. The Fire Management Plan describes the ecology of fire on the Forests and provides direction for addressing fire-related management issues. The hazardous fuels reduction program includes prescribed burning and mechanical fuel reduction methods to reduce wildfire risk, lower fire intensities and improve fire suppression effectiveness. The Forest Service has cooperative agreements in place with the State of Michigan and local fire departments to perform fire suppression activities.

Wildland fires occur in an around the 14 analysis areas on the Forests. These fires can place the safety of the public and firefighters at risk and nearby private property and environmental values can be adversely impacted by the effects of an uncontrolled wildfire.

Forest Vegetation and Timber Harvest

The affected environment for forest vegetation is described in the 2006 FEIS (USDA-FS 2006, pp. III-37–III-40, III-214–III-242 and III-281) and is incorporated by reference. The analysis area for analyzing direct (within 1 mile) and indirect (within 5 miles) effects include the 13 analysis areas (M.A. 6.1, SPNM) as described in this document. Lands under other ownerships within the Forests' proclamation boundaries will not be considered in addressing the effects of the alternatives on forest vegetation composition because data for those stands are not available for comparison.

The analysis area for cumulative effects will be across all forested lands within the State of Michigan. Data will compare trends in changes of vegetation types on the Huron-Manistee National Forests against that found in Forest Inventory Analysis data for the State of Michigan.

Approximately 95 percent of Huron-Manistee National Forests lands are forested, of which 92 percent are capable of commercial timber production. Hardwoods are the most common trees on the Forests, including white and black oak, aspen, sugar maple, white and black ash and red maple. Common softwood trees include red, jack and white pine, balsam fir, northern white cedar, white and black spruce, eastern hemlock and tamarack (larch).

According to the 2006 Forest Plan, the goal of the Forests timber program is to meet species viability needs, achieve fire hazard reduction and accomplish fiber production from regulated (Allowable Sale

Quantity (ASQ)) and non-regulated (nonchargeable) forest lands primarily through timber harvest. The ASQ of timber is the maximum amount of regulated volume that may be offered and sold during a given decade of Forest Plan implementation from land identified as suitable for timber management. ASQ is an outcome of vegetation management activities rather than an objective. Nonchargeable volume is timber that may come from land classified as not suitable for timber production. Volumes from these lands do not contribute to the allowable sale quantity. Management for such things as barrens, savannahs, prairies, Old Growth restoration or riparian habitat managements are the primary reasons why volume is generated from these lands (USDA-FS 2006a, pp. D-1-D3).

To the extent practical, timber management will be used to emulate naturally-occurring disturbances, for instance fire and windstorms. These management practices will include both even-aged and uneven-aged techniques. Clear cutting will continue to be used on the Forests when it is the optimal method to meet the objectives and requirements of the Forest Plan. The Forests will also use shelterwood, group selection, individual tree selection and other harvest methods to create or maintain multi-aged and uneven-aged stands.

The Forests are required to establish re-growth of harvested or other disturbed forests with a variety of silvicultural and reforestation practices. This includes regenerating forests through tree planting, seeding and natural regeneration. Some areas will naturally change through forest succession. Environmentally sustainable management practices, such as timber harvest, provide commodity and non-commodity resources to contribute to the social and economic stability of local communities.

Forest vegetation issues relate to development of existing and establishment of new roads for timber management purposes. The 2006 FEIS provides a background and historical perspective of the management of vegetation on NFS lands within the Forests. The Forests may create new roads if needed for site-specific timber harvest projects. The majority of these roads will be Forest Service maintenance level 1 and temporary roads. Typically, they will be closed to public motorized use after management activities are completed.

Research Natural Areas (RNA)

RNAs are a national network of unique or representative areas which provide baseline or reference information on natural conditions. This network is intended to help protect biological diversity at the genetic, species, ecosystem and landscape levels. Three established RNAs are located on the Forests: Hayes Tower, Newaygo Prairie and Nordhouse Dunes. The Nordhouse Dune RNA is located within the Nordhouse Dunes wilderness and is the only designated RNA within the 14 analysis areas. A candidate RNA is located within the Condon Lakes West area.

Environmental Consequences – Biological Resources

Effects on Endangered, Threatened and Sensitive (ETS) Plants and Animals

Introduction

Ecological conditions that contribute to the long-term abundance and distribution of habitat for species Federally listed as Endangered or Threatened or listed by the Regional Forester as Sensitive, are a concern to the Forests. This section discloses the direct and reasonably foreseeable indirect and

cumulative effects for these Federally listed and Sensitive species and discloses our determinations of those effects.

A review of current conditions and current management direction(s) for these species was discussed in detail in the 2006 Forest Plan Biological Evaluation (BE) (USDA-FS 2005) and Biological Assessment (BA) (USDA-FS 2006b). The BE for the Forest Plan provides additional information for Endangered, Threatened and Sensitive (ETS) species. It discusses species description, life history, habitats, threats, status of species, factors affecting species and makes determinations for each Plan alternative at that time. Findings from the Biological Evaluation are presented in Appendix F of the 2006 FEIS: Federal Threatened, Endangered and Regional Forester Sensitive Species (USDA-FS 2006). That detailed information is not repeated in the SEIS.

The 2006 Forest Plan incorporates specific S&Gs that afford special attention to the needs of Federally listed species (pp. II-23 - II-29) and Sensitive species (pp. II-29 - II-31). That direction is incorporated in project-level planning, analysis and implementation to avoid, minimize or mitigate potential negative impacts and to promote proactive management to benefit species. Any site-specific action that may be proposed in the future, after the Forest Service's decision to adopt and implement one of the SEIS alternatives, is not considered in this NEPA document because it is beyond the scope of the SEIS programmatic Forest Plan level of analysis.

A list of ETS species found within or immediately adjacent (within 1 mile) to the 14 analysis areas discussed here is found in Table 10. Other ETS species, which are not known to occur in the 14 analysis area analysis areas, are not discussed here. A summary of the status and Determinations of Effects for these species is reported in Appendix A, Table A- 3.

Indiana Bat

Overview

Potential summer range of Indiana bats may include the western Manistee National Forest, generally including Mason, Oceana and western Manistee counties. It also encompasses Nordhouse Dunes Wilderness, Whalen Lake and White River areas. The U.S. Fish and Wildlife Service (FWS) (2011) considers Indiana bat range to include these Lake Michigan shoreline counties, as well as known summer locations of Indiana bat in the southern 3 tiers of counties in Lower Michigan, although these bats have never been observed in summer on the Forest. Tippy Dam, a winter hibernaculum for little brown and tri-colored bats, northern myotis and Indiana bats, is downstream from the Manistee River area.

Direct and Indirect Effects Common to All Alternatives

2006 Forest Plan S&Gs (pp. II-23 to II-26), the Indiana Bat Management Plan (Kurta 1995) and Indiana Bat Draft Recovery Plan (FWS 2007) would continue to guide management of these areas, under any alternative. No decision affecting snowmobile trails and use or firearm hunting, is likely to affect these endangered bats, which hibernate within the privately-owned Consumers Energy hydro-electric Tippy dam (closed to the public) during most of the periods that those activities are pursued on the Forest.

Effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions in Michigan.

Direct and Indirect Effects of Alternative 1

Alternative 1 would not change direction for protecting adequate quality breeding habitat annually or change protective measures for Indiana bat over short and long terms. Under Alternative 1, no adverse impacts would occur to Indiana bat or its habitat.

Direct and Indirect Effects of Alternatives 2, 3 and 4

Alternatives 2, 3 and 4 likely would not adversely affect Indiana bat or its habitat over the 15 year life of the 2006 Forest Plan. Firearm hunting prohibition and snowmobile trail closure under Alternative 2 in Nordhouse Dunes Wilderness, Whalen Lake or White River or near (Manistee River) potential summer habitat likely would have discountable effects on Indiana bat, which breeds during a season not affected by those activities. Even spring turkey hunting (various dates, April 18 through May 31 annually) is conducted on the ground, usually during dawn to mid-day hours, outside the evening and night periods during which bats are active outside their roosts and so would have discountable effects upon habitat or Indiana bats, if present. Proposed management area designation of Whalen Lake and White River under Alternatives 3 (to M.A. 4.2 or 6.2) and 4 (to M.A. 8.4, similar to M.A. 6.1 standards) likely would have discountable effects on Indiana bat from greater human access under SPM or RN ROS inventory goals. Bat foraging habitat in Whalen Lake might even improve, under M.A. 4.2 early successional treatment objectives, within Indiana bat management restrictions.

Determinations

Based on analysis of effects of the alternatives on Indiana bat, it is determined that all alternatives May Affect the species but are Not Likely to Adversely Affect (M.A.-NLAA) Indiana bat in its known or potential range on the Forests.

Karner Blue Butterfly

Overview

Throughout its range, Karner blue butterfly historically was associated with landscapes composed of sandy soils, which supported oak or oak-pine barrens and savanna ecosystems. It is now associated with remnant barrens and savannas, highway and utility line right-of-ways, gaps within forest stands, young forest stands, old forest roads and trails, airports, military camps and old fields that occur on landscapes previously occupied by native barrens and savannas. Predominant threats to Karner blue butterfly populations within the Huron-Manistee National Forests are habitat loss due to natural succession (FWS 2006a p.121) and vehicle/ORV use (USDA-FS 2009 p. 23). Indicators of quantity and quality of habitat for Karner blue butterflies include “Acres of barrens restored,” and meeting FWS Karner Blue Butterfly Recovery Plan objectives.

Direct and Indirect Effects Common to All Alternatives

No alternative would affect Recovery Plan (FWS 2003) actions for Karner blue butterfly and Forest Plan direction (USDA-FS 2006 p. II-26 to II-29) retaining existing barrens and upland openings.

Transportation, recreation and related resource management actions implemented under these alternatives may potentially directly adversely affect Karner blue butterfly. Habitat degradation by maintaining or using roads or trails through Karner blue butterfly habitat and trampling, removing or otherwise damaging wild lupine and other nectar plants would foreseeably indirectly affect the suitability of occupied habitat.

Any site-specific action that may be proposed in the future, after the Forest Service's decision to adopt and implement one of the SEIS alternatives, may have direct effects, such as closure of a Forest Service trail in an area being studied that may limit public uses of important nectaring sites for Karner blue butterfly. Such potential direct effects are not considered in this NEPA document because they are beyond the scope of the SEIS programmatic Forest Plan level of analysis.

No alternative would have an effect on Karner blue butterfly on the Huron National Forest, because it is outside the known range of the species and its host plant, wild lupine.

Direct and Indirect Effects of Alternative 1

Alternative 1 would not change 2006 Forest Plan direction (USDA-FS 2006a, pp. II-26 to II-29; III-6.1-6) for producing adequate quality habitat annually or change Recovery Plan (FWS 2003a) protective measures for Karner blue butterfly. Current plans to close unneeded roads and reroute some recreation trails following Forest Plan (USDA-FS 2006a pp. II-26; III-6.1-9 and III-6.1-11) direction would continue to protect butterfly habitat and benefit this Endangered butterfly. The threat of vehicle/ORV use to Karner blue butterfly populations is declining within the Huron-Manistee National Forests due to road closures and their enforcement (USDA-FS 2009, p. 23).

Direct Effects of Alternatives 2, 3 and 4

Alternative 2 would prohibit firearm hunting of white-tailed deer, which would allow deer populations to increase in the 14 analysis areas (see Effects on Deer Population, p. 79). Increased deer browsing of Karner blue butterfly's obligate host plant, wild blue lupine, adversely affects this Endangered butterfly (USDA-FS 2009, p. 23). However, under Alternative 2, closure of the snowmobile trail (DNR-194) bordering the White River area would not directly affect Karner blue butterfly or its habitat.

Management designation of White River to M.A. 6.2 (SPM) under Alternative 3 would not change 2006 Forest Plan (USDA-FS 2006a, pp. II-26 to II-29) direction for producing adequate quality butterfly habitat annually, nor change Recovery Plan (FWS 2003a) protective measures for Karner blue butterfly. Current plans to close unneeded roads and reroute some recreation trails following Forest Plan (USDA-FS 2006a, pp. II-26; III-6.1-9 and III-6.1-11) direction to protect butterfly habitat and benefit this Endangered butterfly could continue, even under M.A. 6.2 (SPM) designation.

Under Alternative 4, designation to M.A. 8.4 (Special Areas) incorporates current M.A. 6.1 S&Gs directing closure of some NFS roads and trails, to protect the butterfly and its habitat.

Indirect Effects of Alternatives 2, 3 and 4

Deer browsing of wild lupine, frequently noted within monitored Karner blue butterfly subpopulations (USDA-FS 2009, p. 23), adversely impacts Karner blue butterfly larval survival. Increased deer populations and browsing resulting from implementing Alternative 2 would indirectly adversely affect Endangered Karner blue butterfly in the current White River area, home of much of the Forest's Karner blue butterfly subpopulations.

Cumulative Effects Common to All Alternatives

The cumulative effects analysis area includes the State of Michigan because Federal and non-Federal actions in potential Karner blue habitat within the Manistee National Forest's proclamation boundary could affect the species' population and, therefore, recovery in Michigan. Karner blue butterfly persists in

Mason, Lake, Oceana, Newaygo, Mecosta and Muskegon counties (primarily on the Baldwin-White Cloud Districts of the Manistee National Forest) and in Montcalm, Ionia, Kent and Allegan counties (primarily on Allegan and Flat River State Game Areas, managed by MDNR) (Rabe 2001).

Given that a significant portion of potential Karner blue butterfly habitat within the Forest's proclamation boundary is Federally-owned, positive effects of current Forest management should help mitigate potential negative effects of non-Federal activity in the analysis area. The overall net long-term cumulative effect of restoration treatments and other protective measures in the analysis area should be beneficial to the species.

Cumulative Effects of Alternatives 1, 3 and 4

Actions implemented under Alternatives 1, 3 or 4 likely would have reasonably foreseeable future effects on Karner blue butterfly that are discountable, as they do not interfere with Forest Plan (USDA-FS 2006a, p. II-26 to II-29) or Recovery Plan (FWS 2003a) direction. Although no major non-Federal actions are reasonably certain to occur within the analysis area, it is assumed that some activities, particularly on private lands, could negatively affect Karner blue butterfly in the analysis area. Human populations in counties with Karner blue butterfly habitat have been rapidly increasing in recent years (USDA-FS 2003), typically accompanied by increased urbanization, including road construction and land development. Past, present and reasonably foreseeable actions performed on private lands may adversely affect Karner blue butterfly, including fire suppression, mowing and grazing, OHV use, application of pesticides and timber harvest activities, resulting in permanent loss of Karner blue butterfly habitat. However, effects of implementing Alternatives 1, 3 or 4 are not expected to be adversely cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions in Michigan.

Cumulative Effects of Alternative 2

Prohibition of firearm hunting (particularly for white-tailed deer) under Alternative 2 is likely to impose additional indirect adverse impacts on Karner blue butterfly and its habitat that are cumulative to current deer browsing, habitat loss due to natural succession and reasonably foreseeable future Federal, State, tribal, local or private actions in the White River area, potentially affecting Karner blue butterfly's viability in the planning area.

Determinations

Based on analysis of effects of the alternatives on Karner blue butterfly, it is determined that Alternatives 1, 3 and 4 May Affect, but are Not Likely to Adversely Affect (M.A.-NLAA) this Endangered butterfly in its known range on the Forests.

Alternative 2, by prohibition of firearm hunting that may cause larger deer populations known to damage Karner blue butterflies, their host plants and butterfly habitat, May Affect and is Likely to Adversely Affect (M.A.-LAA) Karner blue butterfly in its known range on the Huron-Manistee National Forests, potentially adversely affecting its viability in the planning area of Michigan.

Kirtland's Warbler

Overview

Kirtland's warbler habitat is managed in M.A. 4.2 (Kirtland's Warbler). No active habitat manipulation for Kirtland's warbler occurs in the 13 analysis areas (M.A. 6.1, SPNM) and there are no wilderness areas (M.A. 5.1) on the Huron National Forest where all the Forests' Kirtland's warbler habitat currently exists.

Direct and Indirect Effects Common to All Alternatives

While Kirtland's warbler habitat is managed adjacent to 6 of the 14 analysis areas (Au Sable, Cooke, Hoist Lakes, South Branch Au Sable, Wakeley Lake and Whitewater Creek) and Kirtland's warblers have been observed in or within a mile of the 14 analysis areas (see Table 10), no decisions affecting snowmobile trails and use or firearm hunting, are likely to affect these Endangered warblers or their essential habitat. Kirtland's warblers are only present on the Forest between May and early September, outside the seasons of snowmobiling or firearm deer hunting. Spring turkey hunting (various dates, April 18 through May 31 annually) is usually not conducted in jack pine habitat and is not known to affect Kirtland's warblers outside Kirtland's Warbler management areas (KWMAs), that are closed to public entry May 1 through August 15. Kirtland's warbler is protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20), Michigan wildlife laws (Act 451 of 1994, Chapter 2) and Executive Order 13186 during firearm hunting seasons, including the crow season that opens August 1, if it were present.

Effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions in Michigan.

Direct and Indirect Effects of Alternative 1

Alternative 1 would not change 2006 Forest Plan (USDA-FS 2006), Recovery Plan (Byelich et al 1985, FWS 1985) or Management Strategy (Huber et al 2001) direction for producing adequate quality breeding habitat annually or change protective measures for Kirtland's warbler. Under Alternative 1, no adverse impacts likely would occur to Kirtland's warblers or their essential habitat.

Direct and Indirect Effects of Alternatives 2, 3 and 4

Alternatives 2, 3 and 4 likely would not adversely affect Kirtland's warblers or their habitat over the 15 year life of the 2006 Forest Plan. Firearm hunting prohibition and snowmobile trail closure under Alternative 2 in the 14 analysis areas adjacent or near Kirtland's Warbler management areas (KWMAs) likely would have discountable effects on these warblers, which breed during a season primarily unaffected by those activities, primarily in KWMAs. Proposed snowmobile trail closures proposed under Alternative 2 and proposed management area designation under Alternatives 3 or 4 would likely add specialized warbler habitat. Proposed management area designation under Alternative 3 to M.A. 4.2 (RN, the same as current KWMAs), 4.3 (RN) or 6.2 (SPM) likely could have discountable effects on any individual warblers potentially nesting outside KWMAs in these the 14 analysis area analysis areas. Proposed designation of management areas under Alternative 4 to M.A. 4.2 (Whitewater Creek) or M.A. 8.4, which would retain current M.A. 6.1 Objectives, S&Gs, likely would have discountable effects on these Endangered warblers, as well, since they breed primarily in M.A. 4.2 (KW), and not in the 14 analysis areas.

Determinations

Based on analysis of effects of the alternatives on Kirtland's warbler, it is determined that all alternatives May Affect the species but are Not Likely to Adversely Affect (M.A.-NLAA) Kirtland's warbler in its known range on the Huron-Manistee National Forests.

Piping Plover and Piping Plover Critical Habitat

Overview

The Great Lakes piping plover population (*Charadrius melodus*) was listed by the FWS as Endangered on January 10, 1986. Piping plovers were listed as a result of elevated threats to breeding habitat and low recovery potential (FWS 2003). Historically, piping plovers were known to nest in 20 Michigan counties along the Great Lakes. Since 1986, nests have been found at over 30 breeding sites in both the Upper and Lower Peninsulas (FWS 2006b).

Piping plover Critical habitat was designated in May 2001 (FWS 2001) and the current Recovery Plan for Great Lakes Piping Plover was completed in September 2003 (USFWS 2003) by FWS. A total of 201 miles of shoreline in eight Great Lakes States have been designated as Critical habitat, including 4.6 miles of Lake Michigan shoreline located on the Forests and an additional 3.7 miles in Ludington State Park, immediately south of NFS lands in Mason County, Michigan. Critical Habitat for piping plover on the Cadillac-Manistee Ranger Districts includes beaches along Lake Michigan from the property line just south of the confluence of Cooper Creek in the north to the southern boundary of NFS lands adjoining Ludington State Park. This area includes shoreline and dunes in both Nordhouse Dunes Wilderness and Lake Michigan Recreation Area (LMRA).

Human disturbances and a lack of protective measures on non-Federal lands adjacent to Nordhouse Dunes Wilderness area contribute to adverse effects for piping plovers and designated Critical Habitat (FWS 2006b, p. 56). Management activities that control human and animal disturbance reduce impacts to the species and Critical Habitat. Over time, increased numbers of people using beaches, illegal use of OHV, loud noises and other activities may increase disturbances to birds or cause an increased loss of eggs or individual plovers. Active management within Critical Habitat would provide protection into the foreseeable future.

Direct and Indirect Effects Common to all Alternatives

No alternative likely would have direct or indirect effects on piping plover, which is restricted to nesting and feeding on Great Lakes shorelines, unaffected by firearm hunting or snowmobile use during the plover's summer nesting season. Piping plover is protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20), Michigan wildlife laws (Act 451 of 1994, Chapter 2) and Executive Order 13186 during firearm hunting seasons, including the crow season that opens August 1, if it were present.

Maintenance of M.A. 5.1 (Wilderness) Objectives, S&Gs (USDA-FS 2006 pp. III-5.1-1 to III-5.1-6) in Nordhouse Dunes Wilderness, even with reclassification of ROS class to SPNM under Alternatives 3 and 4, would be unlikely to increase human disturbance, since motorized access would still be restricted. Management area designation, Forest Plan Objectives, S&Gs (USDA-FS 2006a) and Recovery Plan (FWS 2003) guidance for piping plover would be unchanged under any alternative.

Only Nordhouse Dunes Wilderness includes designated piping plover Critical Habitat in the Forests. No alternative would have direct or indirect effects on designated Critical Habitat on Lake Michigan shorelines, unaffected by firearm hunting or snowmobile use during the plover's period of occupancy. Maintenance of M.A. 5.1 (Wilderness) Objectives, S&Gs (USDA-FS 2006a, pp. III-5.1-2 to III-5.1-6) in Nordhouse Dunes Wilderness, even with reclassification of ROS class to SPNM under Alternatives 3 and 4, would be unlikely to increase human disturbance of Critical Habitat, since motorized access would still be restricted. Management area designation, Forest Plan Objectives, S&Gs (USDA-FS 2006a p. III-5.1) and Recovery Plan (FWS 2002) guidance for piping plover Critical Habitat would be unchanged under any alternative. No alternative is considered better than the others for the beach/dune community in which this Endangered plover nests.

Effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions in Michigan.

Determinations

Based on analysis of effects of the alternatives on piping plover, it is determined that all Alternatives will Not Affect (NA) piping plover or its Critical Habitat within its limited known range on the Huron-Manistee National Forests.

Pitcher's Thistle (*Cirsium pitcheri*)

Overview

While 2006 Forest Plan S&Gs (USDA-FS 2006a, p. II-29) are designed to provide protection for this species, adverse effects from recreation and related resource management (FWS 2006b, pp.143-144) unrelated to this decision likely would occur and were foreseen in the FWS Biological Opinion on the 2006 Forest Plan. These activities could potentially reduce suitability of existing habitat and cause disturbances that may lead to harm or direct take. Recreation and related resource management could also contribute to increased infestations of deleterious non-native invasive plant species. Limited direct and indirect adverse effects from non-native invasive plant control activities might be expected. While controlling non-native invasive species and monitoring Pitcher's thistle populations would ultimately benefit the species, they could still introduce the risk of harm or direct take, unrelated to firearm hunting or snowmobile use.

Direct and Indirect Effects of All Alternatives

All alternatives likely would have the same direct and indirect effects on Pitcher's thistle because of continued protection, management and monitoring known occurrences and potential habitat; therefore the alternatives are analyzed together. No direct or indirect effects are expected on Pitcher's thistle or Pitcher's thistle habitat, which is restricted to Great Lakes shorelines (similar to piping plover and its Critical Habitat), largely unaffected by firearm hunting or snowmobile use. Maintenance of M.A. 5.1 (Wilderness) Objectives, S&Gs (USDA-FS 2006a, pp. III-5.1-1 to III-5.1-6) in Nordhouse Dunes Wilderness, even with reclassification of ROS class to SPNM under Alternatives 3 and 4 would be unlikely to increase human disturbance, since motorized access would still be restricted. Management area designation, Forest Plan Objectives, S&Gs (USDA-FS 2006a, p. II-29) and Recovery Plan (FWS 2002) guidance for Pitcher's thistle would be unchanged under any alternative. No alternative is considered better than the others for the beach/dune community that supports Pitcher's thistle.

Effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions in Michigan.

Determinations

Based on analysis of effects of the alternatives on Pitcher's thistle, it is determined that implementing any alternative likely will Not Affect (NA) Pitcher's thistle in its known range on the Manistee National Forest. Some unavoidable adverse effects to individuals could occur from monitoring and habitat protection actions unrelated to firearm hunting or snowmobile use and were foreseen in the FWS Biological Opinion (FWS 2006b, pp.152 - 153). Such effects, however, are not anticipated to impair Pitcher's thistle population on NFS lands within the planning area. No alternative would have an effect on Pitcher's thistle on the Huron National Forest because there are no known occurrences there.

Terrestrial and Aquatic Habitats and Sensitive Species

The Species Viability Evaluation conducted for wildlife species for the 2006 Forest Plan addressed 30 habitat communities. The SEIS tiers to those evaluations found in the 2006 FEIS (USDA-FS 2006, pp. III-77 to III-167).

The following effects analyses disclose, by habitat community, the expected direct, indirect and (where appropriate) cumulative effects of each alternative. Representative Sensitive species for each habitat community are described at the beginning of each section. (Some species may be present in multiple habitat communities. For all species, if a viable population exists in at least one habitat community, the species is considered viable across the Forests.) Only some of these representative Sensitive species may have been actually documented inside or within a mile of the 14 analysis areas addressed in this analysis; other community-representative species not known there are denoted by an asterisk (*). All analyzed Sensitive species are listed in Table 10.

Beach and Coastal Dunes Habitat Group

Overview

Beach and dunes communities experience higher relative humidity, milder winters, cooler summers and longer growing seasons than inland communities. They are, however, subject to extreme temperature fluctuations, high solar radiation, wind-blown sand blasting and moisture stress. Dune sand chemistry tends to be more alkaline than outwash sands inland. The Forests manage only about 0.75 mile of shoreline on Lake Huron (Black River block) and about 5 miles on Lake Michigan (Nordhouse Dunes Wilderness and Lake Michigan Recreation Area).

This section summarizes direct and indirect effects for these Sensitive species (USDA-FS 2006, pp. III-77, III-155 to III-157), found primarily within this community:

- Lake Huron Locust (*Trimerotropis huroniana*)
- Prairie Warbler (*Dendroica discolor*)

Direct and Indirect Effects Common to all Alternatives

Neither legal firearm hunting or its prohibition, regulated snowmobiling or snowmobile trail use or closure, motorized trail closures, NFS closures, nor proposed management area designation are expected

to adversely affect these species within this community. Overall, no decision on any alternative is expected to adversely affect any of these species, because firearm hunting or its prohibition and snowmobile use or trail closure are unlikely to affect permanently resident locust species or migratory birds, which are largely absent during snowmobiling or firearm hunting seasons. Prairie warbler is protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20), Michigan wildlife laws (Act 451 of 1994, Chapter 2) and Executive Order 13186 during firearm hunting seasons, including the crow season that opens August 1, if it were present. Habitat quantity and quality for these species are expected to remain the same under all alternatives.

Effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions in Michigan, including increased recreation use on private and State lands adjacent to dunes and shores or habitat destruction and fragmentation due to development on private and State lands.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for species found primarily within beach and dune communities on the Huron-Manistee National Forests, viability will be maintained.

Federal Listing Determination

Effects of proposed actions under any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Federal Listing as Endangered or Threatened (MI-NT).

Large Rivers and Streams Habitat Group

Overview

Large, Great Lakes-accessible rivers in the Huron-Manistee National Forests include the Au Sable, Black, Manistee, Muskegon, Pere Marquette and White Rivers. Medium to large rivers and streams, tributary to those large rivers, include two Pine Rivers, one on each Forest.

This section summarizes direct and indirect effects for these Sensitive species (USDA-FS 2006, pp. III-72 - III-76, III-78 - III-81, III-203 to III-209), found primarily within this community:

- Bald Eagle (*Haliaeetus leucocephalus*)
- Channel Darter (*Percina copelandi*)
- Louisiana Waterthrush (*Seiurus motacilla*)
- Red-shouldered Hawk (*Buteo lineatus*)
- River Redhorse (*Moxostoma carinatum*)
- Slippershell (*Alasmidonta viridis*)
- Trumpeter Swan (*Cygnus buccinator*)
- Wood Turtle (*Glyptemys insculpta*)

Direct and Indirect Effects Common to all Alternatives

2006 Forest Plan S&Gs (USDA-FS 2006, pp. II-7 to II-40), Streamside Management Zone (SMZ) guidelines (USDA-FS 2006, pp. II-17 to II-22), Old Growth designations and guidelines (USDA-FS 2006, p. II-9), Northern States Bald Eagle Recovery Plan (FWS 1983), Bald Eagle Management Plan (USDA-FS 2006c) and National Bald Eagle Management Guidelines (FWS 2007a) remain in place and protect these species, including formerly Threatened bald eagles (USDA-FS, 2006 p. II-31) and red-shouldered hawks (USDA-FS 2006, p. II-30) and their nesting habitat, under all alternatives. S&Gs (USDA-FS 2006, p. II-26, 31) and conservation measures (Bald and Golden Eagle Act of 1940; USDA-FS 2006c) for bald eagle under all alternatives would limit or minimize direct and indirect effects to eagles through restrictions on timing of activities and distances that activities can occur from nest sites and suitable roosting habitat. All bird species are protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20) and Michigan wildlife laws (Act 451 of 1994, Chapter 2) during firearm hunting seasons if they might be present.

Neither legal firearm hunting or its prohibition, regulated snowmobiling or snowmobile trail use or closure, motorized trail closures, NFS road closures, nor proposed management area designation are expected to adversely affect these inhabitants of large river or stream riparian communities on the Huron-Manistee National Forests. Forest Plan S&Gs (USDA-FS 2006, pp. II-17 to II-22) are likely to improve habitat or otherwise benefit these riverine species. (See also Effects on Soil and Water Resources, p. 42)

Expected increases in recreation use over the short term and long term, noted in the Demand section of the summary of the Supplemental Supply and Demand Analysis, could amplify the risk of road mortality for wood turtles, due to increased traffic. Increased recreation use also could result in increased disturbance of nesting bald eagles, red-shouldered hawks and trumpeter swans, by human activities on and near large rivers. But effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions in Michigan, including increased recreation use on private and State lands.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for species found primarily within the large rivers and streams community on the Huron-Manistee National Forests, viability will be maintained.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Large Ponds and Lakes Habitat Group

Overview

Large water bodies in our glaciated landscape are predominantly fed by groundwater or limited watersheds of surface waters (e.g., Big Star Lake, Lake Mitchell, Sand Lake, Wolf Lake), with little or no current. Large ponds form primarily behind human-constructed impoundments on larger rivers (e.g., Alcona, Cooke, Croton, Foote, Hardy, Hodenpyle, Loud, Mio and Tippy Dam Ponds), with variable current based on releases downstream. Natural lakes have formed above “drowned river mouth” sand bars

on rivers (e.g. Hamlin Lake, Manistee Lake), with some current from their feeding rivers, restricted by their outlets to the Great Lakes.

This section summarizes direct and indirect effects for these Sensitive species (USDA-FS 2006a, p. III-77), found primarily within this community:

- Bald Eagle (*Haliaeetus leucocephalus*)
- Black-crowned Night-heron (*Nycticorax nycticorax*) *
- Black Tern (*Chlidonias niger*) *
- Common Loon (*Gavia immer*)
- Trumpeter Swan (*Cygnus buccinator*)

  * Not known from any of the 14 analysis areas

Direct and Indirect Effects Common to All Alternatives

The number and amount of large lakes and ponds that provide habitat for these species is expected to remain stable and the quality of habitat is likely to remain stable or increase under all alternatives. Implementation of 2006 Forest Plan Objectives and S&Gs (USDA-FS 2006, pp. I-17 to II-34) under all alternatives would improve current and potential habitats within the Forests for these species and reduce impacts by restricting human activities near water's edge of lakes and rivers and within essential habitats. Human disturbance could be a significant threat to the species in this habitat group, but is unlikely to occur during snowmobiling seasons, when these migratory birds are usually absent. All these bird species are protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20) and Michigan wildlife laws (Act 451 of 1994, Chapter 2) during firearm hunting seasons if they might be present.

Neither legal firearm hunting or its prohibition, regulated snowmobiling or snowmobile trail use or closure, motorized trail closures, NFS road closures, nor proposed management area designation are expected to adversely affect these inhabitants of large lake or pond communities on the Huron-Manistee National Forests. Forest Plan S&Gs (USDA-FS 2006, pp. I-17 to II-34) are likely to improve habitat or otherwise benefit these lacustrine species.

The majority of large lakes and ponds within the northern Lower Peninsula of Michigan are highly developed, with houses adjacent to shorelines and human disturbance from motorized watercraft use during periods when these species are likely to be present. These developments fragment habitat and reduce nesting opportunities and could lead to nest desertion, nest destruction or the separation of fledglings from adults. However, effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions on large lake or pond communities on the Huron-Manistee National Forests or in northern Michigan.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for species found primarily within the large lakes and ponds community on the Huron-Manistee National Forests, viability will be maintained.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Small Lakes and Ponds, Coastal Plain Marsh and Wetlands Habitat Group

Overview

Small, shallow wetlands encompass a range of habitat conditions from permanent inundation to seasonal drying. Coastal plain marsh, perhaps our rarest community, is a grass- or rush-dominated wetland on the sandy shores of softwater seepage ponds or depressions, associated with postglacial deposits and outwash channels. Its water levels fluctuate seasonally and annually.

This section summarizes direct and indirect effects for these Sensitive species (USDA-FS 2006, pp. III-84 to III-87, III-158 to III-161, III-168 to III-173), found primarily within this community:

- American Bittern (*Botaurus lentiginosus*) *
- Bald Rush (*Rhynchospora scirpoides*)
- Black-crowned Night-heron (*Nycticorax nycticorax*)
- Blanding's Turtle (*Emydoidea blandingii*)
- Dwarf Bulrush (*Lipocarpha micrantha*)
- Eastern Massasauga (*Sistrurus catenatus catenatus*)
- King Rail (*Rallus elegans*) *
- Northern Harrier (*Circus cyaneus*) *
- Purple Spikerush (*Eleocharis atropurpurea*)
- Spotted Turtle (*Clemmys guttata*) *
- Whorled Mountain-mint (*Pycnanthemum verticillatum*)
- Wild Parsnip (*Berula erecta*)
- Yellow Rail (*Coturnicops noveboracensis*) *

  * Not known from any of the 14 analysis areas

Direct and Indirect Effects Common to all Alternatives

Forest Plan S&Gs (USDA-FS 2006, pp. II-34 to II-35) remain in place and protect these Sensitive species, under all alternatives.

Neither legal firearm hunting or its prohibition, regulated snowmobiling or snowmobile trail use or closure, motorized trail closures, NFS road closures, nor proposed management area designation are expected to adversely affect these inhabitants of small lake, pond or wetland communities on the Huron-Manistee National Forests. 2006 Forest Plan S&Gs are likely to improve habitat or otherwise benefit these wetland species. All bird species are protected by the Migratory Bird Treaty Act (Title 50, Code of

Federal Regulations, Part 20) and Michigan wildlife laws (Act 451 of 1994, Chapter 2) during firearm hunting seasons if they might be present.

Land use on adjacent private ownerships may result in adverse impacts to these species. Development of shoreline for recreation and resulting adverse habitat fragmentation and/or conversion results in irreversible loss of habitat. Human development also results in increased density and use of roads, resulting in direct mortality of snakes and turtles and illegal operation of ATVs in fragile wetlands. Illegal ORV or ATV damage to fragile wetlands, especially rare Atlantic Coastal Plain Marsh, poses potential adverse impacts on these species (Keddy et al 1979). Snowmobile trails, which can compact wetland soils beneath the snow, causing prolonged freezing deleterious to these rare plants (Sojda 1978), small mammals and reptiles, are sited in areas outside wetlands (USDA-FS 2006, p. II-13) and thus avoid adverse effects. Blanding's turtles and eastern massasauga snakes are susceptible to direct impacts from operation of motor vehicles and other large equipment, fire management and road and trail use adjacent to water bodies, as well as illegal collection and poaching. While State regulations protect Blanding's and spotted turtles from collection, they are vulnerable to illegal poaching for commercial trade and incidental collection. Eastern massasauga snakes may be persecuted by the uninformed public. However, effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions on small lake or pond, marsh or wetland communities on the Huron-Manistee National Forests or in northern Michigan.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for species found primarily within the lake/pond/wetland community on the Huron-Manistee National Forests, viability will be maintained.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Bog and Fen Wetlands Habitat Group

Overview

Bogs are rain-fed peatlands characterized by sedge or sedge-sphagnum floating mat or deep peat dominated by sphagnum moss and low ericaceous (heath-like) shrubs, requiring organic-rich, moist, yet well-drained acid soil. Bogs occur on the edges of lakes or ponds, in depressions in glacial outwash and sandy glacial lake plains. Fens are seasonal to permanent groundwater-fed wetlands that are primarily alkaline (unlike bogs, which are usually acidic).

This section summarizes direct and indirect effects for these Sensitive species (USDA-FS 2006a, pp. III-88 to III-89, III-158 to III-161, III-168 to III-173), found primarily within this community:

- Michigan Bog Grasshopper (*Appalachia arcana*)
- Olive-sided Flycatcher (*Contopus cooperi*) *
- Spotted Turtle (*Clemmys guttata*) *

* Not known from any of the 14 analysis areas

Direct and Indirect Effects Common to all Alternatives

2006 Forest Plan S&Gs (USDA-FS 2006 pp. I-17 to II-21, II-34 to II-35) remain in place and protect these Sensitive species, under all alternatives.

Neither legal firearm hunting or its prohibition, regulated snowmobiling or snowmobile trail use or closure, motorized trail closures, NFS road closures, nor proposed management area designation are expected to adversely affect these inhabitants of bog or fen wetland communities on the Huron-Manistee National Forests. Forest Plan S&Gs (USDA-FS 2006, pp. III-88 to III-89) are likely to improve habitat or otherwise benefit these unique wetland species.

Historical loss of wetlands and wildfire suppression beginning in the early 1900s likely have reduced the amount and quality of habitat for these species. Wetland alteration, destruction or nearby development would reduce the amount of habitat available on private lands and this may increase the effects of fragmentation and decrease the amount of bog grasshopper, olive-sided flycatcher or spotted turtle habitat. This magnifies the importance of NFS lands to these species. Illegal ORV or ATV damage to fragile bog or fen wetlands poses potential adverse impacts on these species. However, effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions on bog or fen wetland communities on the Huron-Manistee National Forests or in northern Michigan.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for species found primarily within the bog or fen communities on the Huron-Manistee National Forests, viability will be maintained.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Riparian/Lowland Hardwoods/Floodplain (mid to late) Habitat Group

Overview

This mid-late successional riparian/lowland hardwood/floodplain community covers a wide range of habitats and ecological conditions, some associated with mixed hardwood habitat along larger rivers and lakes and others associated within riparian and lowland hardwoods interspersed with small ponds or wetland areas. These hardwood forests are dominated by large, long-lived, mature, slow-growing tree species, generally thought to be late in a successional series from disturbance to self-sustaining climax, whose seedlings are tolerant of shade from the overstory.

This section summarizes direct and indirect effects for these Sensitive species (USDA-FS 2006, pp. III-92 to III-98, III-162 to III-164, III-168 to III-173, III-203 to III-209), found primarily within this community:

- Bald Eagle (*Haliaeetus leucocephalus*)

- Cerulean Warbler (*Dendroica cerulea*)
- Eastern Box Turtle (*Terrapene carolina carolina*)
- Louisiana Waterthrush (*Seiurus motacilla*)
- Red-shouldered Hawk (*Buteo lineatus*)
- Tri-colored Bat (formerly Eastern Pipistrelle) (*Perimyotis subflavus*) *
- Wood Turtle (*Glyptemys insculpta*)

  * Not known from any of the 14 analysis areas

Direct and Indirect Effects Common to all Alternatives

All alternatives provide stable habitat for older riparian forest-associated species with broad spatial distribution on the Forests. 2006 Forest Plan S&Gs for Wild and Scenic Rivers (USDA-FS 2006, pp. III-8.1 and III-9.2), Old Growth (USDA-FS 2006 p. II-9), Wilderness (USDA-FS 2006 p. III-5.1), Semiprimitive areas (USDA-FS 2006 pp. III-6.1 and III-6.2) and riparian areas (USDA-FS 2006 pp. II-17 to II-22) protect a large percentage of this habitat type from vegetation management. Quality of these stands will likely increase as tree diameters increase, large wood and snags increase and canopy gaps develop. Harvesting restrictions under Indiana bat guidelines (USDA-FS 2006 pp. II-23 to II-26) provide some protection for the western Manistee National Forest during cerulean warbler breeding period. 2006 Forest Plan riparian guidelines also focus management toward late seral stages, benefitting these species. All these bird species are protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20) and Michigan wildlife laws (Act 451 of 1994, Chapter 2) during firearm hunting seasons if they might be present.

Direct and Indirect Effects of Alternatives 1, 2, 3 and 4

Alternative 1 would not change current management direction in riparian hardwood areas and thus would affect these species no differently than current management.

Firearm hunting prohibition or snowmobile trail closures under Alternative 2 would have no effect upon Sensitive species in this community, because they are not legally pursued or significantly disturbed by firearm hunting and absent or hibernating during snowmobile season.

Proposed management area designation under Alternative 3 might provide fewer protections for this late-successional, large riparian forest community in M.A. 4.2 or 4.3 (Roaded Natural) settings that have more early-successional management objectives, which could increase detrimental habitat fragmentation effects, such as cowbird parasitism.

Proposed designation of areas to M.A. 8.4 (Special Areas) under Alternative 4 would retain current protective objectives of M.A. 6.1 (SPNM), causing no real change for the majority of this community. Achieving a less roaded condition might reduce disturbance of these species by motorized recreation activities.

A change in land use on adjacent private ownerships from larger forested parcels to smaller, more developed parcels is occurring and is expected to continue and affect this habitat group. These factors likely would increase the effects of fragmentation and parasitism, irrespective of National Forest management in these areas, magnifying the importance of NFS lands to these species. However, effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably

foreseeable future Federal, State, tribal, local or private actions on riparian or floodplain hardwood communities on the Huron-Manistee National Forests or in northern Michigan.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for species found primarily within the mid-late riparian/lowland hardwood/floodplain community on the Forests, viability will be maintained.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Lowland Conifer/ Cedar Swamp Habitat Group

Overview

This groundwater-influenced rich conifer swamp community lies on peaty or marly, acid or alkaline soils. It may be found on nearly pure sand over limestone beach cobble or bedrock, on low, rolling dunes of the upper Great Lakes or as cool, dense white cedar/balsam/spruce swamps dominated by northern white cedar (*Thuja occidentalis*). Its complex microsite conditions provide habitat for a wide variety of (often rare) plant species.

This section summarizes direct, indirect and cumulative effects for these Sensitive species (USDA-FS 2006 pp. III-104 to III-106, III-165 to III-167), found primarily within this community:

- American Marten (*Martes americana*) *
- Black-backed Woodpecker (*Picoides arcticus*) *
- Eastern Massasauga (*Sistrurus catenatus catenatus*)
- Northern Goshawk (*Accipiter gentilis*)
- Ram's-head Lady Slipper (*Cypripedium arietinum*)
- Spruce Grouse (*Dendragapus canadensis*) *

  * Not known from any of the 14 analysis areas

Direct and Indirect Effects Common to all Alternatives

Forest Plan S&Gs (USDA-FS 2006 p. III-4.3), American Marten Conservation Strategy (USDA-FS 1996) and Management Recommendations for Northern Goshawk (USDA-FS 1993 or Ennis et al. 1993) remain in place and protect this community and these Sensitive species, under all alternatives.

Legal firearm hunting, snowmobile trail closure, motorized trail closures, NFS road closures, and management area designations are expected to adversely affect the inhabitants of lowland conifer/cedar swamp communities on the Huron-Manistee National Forests. Best Management Practices (USDA-FS 2006 pp. II-17 to II-22) are designed to mitigate impacts from management or recreation activities that alter water table levels, which may have detrimental effects on cedar swamp communities, highly

sensitive to alterations in hydrology (see also Effects on Soil and Water Resources, p. 42). All these bird species are protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20) and Michigan wildlife laws (Act 451 of 1994, Chapter 2) during firearm hunting seasons if they might be present. Snowmobile trails are usually sited in areas outside cedar swamps (USDA-FS 2006 p. II-13; Eckstein et al 1979) and thus avoid adverse effects on this community. Snowmobile use can compact wetland soils beneath the snow, causing prolonged freezing deleterious to rare plants (Keddy et al 1979; Sojda 1978), small mammals (Bury 1978) and hibernating snakes. Snowmobile trails also facilitate travel by white-tailed deer in winter (Bollinger et al 1973, Bury 1978, Eckstein et al 1979, Horsley et al 2003, Huff and Savage 1972, Kopischke 1972, Richens and Lavigne 1978), allowing deer to forage outside cedar swamp "deer yards". Illegal use of snowmobiles off-trail (Freddy 1977; Malaher 1967) damages fragile lowland conifer swamps and poses potential adverse impacts on these species in this community.

Direct and Indirect Effects of Alternatives 1, 2, 3 and 4

Alternative 1 would not change current management direction in conifer/cedar swamps and thus would affect these species no differently than current management.

Firearm hunting prohibition or snowmobile trail closures under Alternative 2 would have no effect upon Sensitive wildlife species in this community, because they are neither legally pursued nor significantly disturbed by firearm hunting and absent or hibernating during snowmobile season. However, firearm hunting prohibition could have a significant negative effect upon ram's-head lady slipper, if decreased deer harvests resulted in higher deer populations (Rawinski 2008). In areas with high white-tailed deer numbers, browsing on these rare orchids can be significant (Loeffler and Wegner 2000). Orchids damaged by herbivores frequently do not appear above ground the following year. Additionally, increased deer herbivory is of particular significance to this entire community (Côté et al 2004; Horsley et al 2003), because cedar regeneration has become problematic due to intense deer browse pressure.

Historical maps (provided by MDNR, in the project record) indicate "deer yards", where white-tailed deer congregated in cedar swamps to avoid deep snow in adjacent hardwood forest (Eckstein et al 1979), have been present in 7 of the 14 analysis areas (Condon Lakes West, Cooke, Manistee River, South Branch Au Sable, Wakeley Lake, Whalen Lake and Whitewater Creek). Snowmobile trail closures under Alternative 2 could thus either reduce disturbance to wildlife in nearby cedar swamp deer yards (Bury et al 1978; Dorrance et al 1975; Eckstein et al 1979; Huff and Savage 1972; Kopischke 1972; Moen et al 1982; Richens and Lavigne 1978; Severinghaus and Tullar 1978) or reduce opportunities facilitating deer movement to upland forage from deer yards in cedar swamps (Bollinger et al 1973, Lavigne 1976), thus limiting deer overwinter condition and survival.

Proposed management area designation under Alternative 3 would result in management area designations (M.A. 4.2, M.A. 4.3) that have more early-successional management objectives. This could both reduce partial canopy cover ram's-head lady slipper requires, increase detrimental habitat fragmentation effects on goshawks and massasaugas and attract deer herbivory toward areas outside lowland conifer swamps, benefitting cedar regeneration and rare orchids.

Proposed management area designation of 12 of the analysis areas to 8.4 (Special Areas) under Alternative 4 would retain current protective objectives of M.A. 6.1 (SPNM), causing no real change for the majority of this community. Achieving a less roaded condition might reduce disturbance of these species by motorized recreation activities.

Cumulative Effects Common to All Alternatives

The cumulative effects analysis area is the Lower Peninsula of Michigan, chosen because Federal and State ownership encompasses much of this lowland conifer swamp habitat in Michigan, in both the Upper Peninsula and the northern Lower Peninsula. Since these habitats are present throughout the northern Lower Peninsula, actions on both Federal and non-Federal lands have the potential to affect these species in the analysis area.

Cumulative Effects of Alternative 1 and 4

Actions implemented under Alternatives 1 or 4 likely would have reasonably foreseeable future effects on these species and communities that are discountable or beneficial. Although no major non-Federal actions are reasonably certain to occur within the analysis area, it is assumed that some activities, particularly on private lands, could negatively affect these communities and Sensitive species in the analysis area. A change in land use from larger forested parcels to smaller, more developed parcels is occurring and is expected to continue; these factors likely would increase the effects of fragmentation and deer herbivory, irrespective of National Forest management in these areas. However, effects of implementing Alternatives 1 or 4 are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions lowland conifer or cedar swamp communities on the Huron-Manistee National Forests or in northern Michigan.

Cumulative Effects of Alternative 2 and 3

Prohibition of firearm hunting (particularly for white-tailed deer) under Alternative 2 is likely to impose adverse impacts on ram's-head lady slipper and its habitat that are cumulative to current deer herbivory and reasonably foreseeable future Federal, State, tribal, local or private actions in lowland conifer/cedar swamp communities. However, ram's-head lady slipper is sufficiently widely enough distributed that threat of a trend requiring Federal listing as Endangered or Threatened is unlikely. No alternative is likely to significantly affect this orchid's viability in the planning area or northern Michigan.

Effects of implementing Alternatives 2 or 3 (particularly proposed management area designation of M.A. 4.2 or 4.3, increasing early-successional management) are not expected to be adversely cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions in lowland conifer or cedar swamp communities on the Forests or in northern Michigan.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for Sensitive species found primarily within the lowland conifer/cedar swamp community on the Huron-Manistee National Forests, viability will be maintained.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Dry Northern Forest Habitat Group

Overview

In Michigan, dry northern forest with needle duff habitat contains conifers such as white and red pines, eastern hemlock, white spruce, balsam fir or upland white cedar and frequently include aspen or birch. Many occurrences are associated with dry to dry-mesic forests of sand dunes along the Great Lakes shorelines.

This section summarizes direct, indirect and cumulative effects for these Sensitive species (USDA-FS 2006 pp. III-107 to III-110, III-120 to III-122) found primarily within this community:

- Alleghany Plum (*Prunus alleghaniensis*)
- American Marten (*Martes americana*) *
- Giant Pinedrops (*Pterospora andromedea*)
- Imperial Moth (*Eacles imperialis pini*) *
- Red-headed Woodpecker (*Melanerpes erythrocephalus*) *

  * Not known from any of the 14 analysis areas

Direct and Indirect Effects Common to all Alternatives

2006 Forest Plan S&Gs for American marten (USDA-FS 1996), pine barrens (USDA-FS 2006 pp. II-27 to II-29), mixed forest and Old Growth (USDA-FS 2006 pp. II-36; III-2.1-6; III-4.2-9; III-4.3-10; III-4.4-6; III-6.1-8; III-6.2-6) remain in place and protect these Sensitive species under all alternatives.

Neither legal firearm hunting or its prohibition, regulated snowmobiling or snowmobile trail use or closure, motorized trail closures, NFS road closures, nor proposed management area designation are expected to adversely affect dry northern forest (primarily white pine) communities on the Forests. Giant pinedrops typically occurs in forested habitats with a well-developed needle duff, which could be threatened by prescribed burning or wildfire. 2006 Forest Plan S&Gs that preserve ecosystem function, with particular attention to maintenance of soil microbe and mycorrhizal diversity, are likely to improve habitat or otherwise benefit this associated species under all alternatives.

Direct and Indirect Effects of Alternatives 1, 2, 3 and 4

Alternative 1 would not change current management direction in dry northern forest habitats and thus would affect these species no differently than current management.

Little change would occur in the amount of this habitat group in the foreseeable future under Alternative 2, since firearm hunting prohibition and snowmobile trail closures are not likely to affect this community or associated plants. Proposed management area designation under Alternative 3 could increase early successional management in M.A. 4.2 or M.A. 4.3 (Roaded Natural) areas, leading to greater fragmentation and less overstory closure and shade to shelter giant pinedrops. Those changes could benefit American marten, imperial moths and red-headed woodpeckers, however. Under Alternative 4, proposed designation of 12 of the 14 analysis areas to 8.4 (Special Areas) would retain current protective objectives of M.A. 6.1 (SPNM), causing no real change for this community. Achieving a less roaded condition might reduce disturbance of these species by motorized recreation activities.

A change in land use on adjacent private ownerships from larger forested parcels to smaller, more developed parcels is occurring and is expected to continue and affect this habitat group. These factors likely would increase the effects of fragmentation, irrespective of National Forest management in these areas, magnifying the importance of NFS lands to these species. However, effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions on dry northern forest communities on the Forests or in northern Michigan.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for this species, it is determined that for Sensitive species found primarily within the dry northern forest community on the Forests, viability will be maintained.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Mixed Hardwood (late-seral) Habitat Group

Overview

This late-seral mixed hardwood group has a wide range of habitats and ecological conditions, from Land Type Associations 1-3 (hardwood systems with an open understory) to Land Type Associations 3-7 (hardwood systems with a moderate subcanopy layer). These hardwood forests are dominated by large, long-lived, mature, slow-growing tree species, generally thought to be late in a successional series from disturbance to self-sustaining climax, whose seedlings are tolerant of shade from the overstory.

This section summarizes direct and indirect effects for these Sensitive species (USDA-FS 2006 pp. III-111 to III-116), found primarily within this community:

- Northern Goshawk (*Accipiter gentilis*)
- Red-shouldered Hawk (*Buteo lineatus*)

Direct and Indirect Effects Common to all Alternatives:

Forest Plan management directions for Wild and Scenic Rivers (USDA-FS 2006 p. III-8.1), Wilderness (USDA-FS 2006 p. III-5.1), Old Growth (USDA-FS 2006 pp. II-36; III-2.1-6; III-4.2-9; III-4.3-10; III-4.4-6; III-6.1-8; III-6.2-6), Northern Goshawk (USDA-FS 1993; FS 2006 p. II-30) and Semiprimitive areas (USDA-FS 2006 pp. III-6.1 and 6.2) have reduced vegetation management in these areas, providing large blocks of maturing habitat spatially distributed across the Forests. Quality of these stands for goshawks and red-shouldered hawks will likely increase as tree diameters increase, large wood and snags increase and canopy gaps develop. Harvesting restrictions under Indiana bat protective guidelines (USDA-FS 2006 pp. II-23 to II-26) provide some protection in the western Manistee National Forest during northern goshawk breeding. Management of hardwood forest types will continue to provide stable to increasing amounts of mature habitat for these associated species, spatially distributed on both Huron and Manistee National Forests and also provide regenerating hardwood types for prey habitat for these

raptors. Direction for protection of raptor nests generally provides protection for these species during active nesting (USDA-FS 1993). All these bird species are protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20) and Michigan wildlife laws (Act 451 of 1994, Chapter 2) during firearm hunting seasons if they might be present.

Northern goshawk and red-shouldered hawk populations should remain stable or increase slightly on the Forests, irrespective of any alternative selected.

Neither legal firearm hunting or its prohibition, regulated snowmobiling or snowmobile trail use or closure, motorized trail closures, NFS road closures, nor proposed management area designation are expected to significantly adversely affect mixed hardwood forest communities on the Forests.

Direct and Indirect Effects of Alternatives 1, 2, 3 and 4

Alternative 1 would not change current management direction in late-seral mixed hardwood areas and thus would affect these species no differently than current management.

Little change would occur in the amount of this habitat group in the foreseeable future under Alternative 2, since firearm hunting prohibition and snowmobile trail closures are not likely to affect this community or associated raptors, which are protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20) and Michigan wildlife laws (Act 451 of 1994, Chapter 2) during firearm hunting seasons if they might be present.

Proposed management area designation under Alternative 3 could increase early successional management in M.A. 4.2 or M.A. 4.3 (Roaded Natural) areas, leading to greater fragmentation, smaller-diameter trees and less large woody debris and snags. This might lower nesting habitat quality for these raptors, while improving foraging habitat with more prey (grouse, rabbits, etc.) in early successional areas. These activities may also create conditions that would increase competition or predation from other predators, such as red-tailed hawks or raccoons.

Proposed management area designation to M.A. 8.4 (Special Areas) under Alternative 4 (which retains current M.A. 6.1 Objectives, S&Gs), by contrast, would affect this community and these birds much like Alternative 2. However, at a broad scale, these effects would be local; and while potentially affecting individuals, would not affect viability of northern goshawk or red-shouldered hawk across the Forests.

Land use on adjacent private ownerships may affect this habitat group. A change in land use from larger forested parcels to smaller parcels with more development is occurring and is expected to continue; these factors may increase effects of fragmentation and decrease the amount of northern goshawk or red-shouldered hawk habitat on nearby private lands. This magnifies the importance of NFS lands to these species. However, effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions on late-seral mixed hardwood communities on the Forests or in northern Michigan.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for species found primarily within the late-seral mixed hardwood community on the Forests, viability will be maintained.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Jack Pine (open-early-mid-late-seral) Habitat Group

Overview

A special case of pine barrens on poor sandy soils, jack pine habitat historically contained a diverse suite of grasses and forbs, as well. Fire was the major disturbance factor influencing the creation and maintenance of these pioneer barrens communities. Fire frequency in these ecosystems typically ranged from 0 to 38 years, with most open areas burning in successive years, to create conditions supporting this early-seral community. Trees here (jack pine) are typically short-lived, rapidly growing and smaller in mature height than longer-lived pines; their seeds only germinate and seedlings only grow in full sunlight.

This section summarizes direct and indirect effects for these Sensitive species (USDA-FS 2006 pp. III-123 to III-130), found primarily within this community:

- Black-backed Woodpecker (*Picoides arcticus*) *
- Dusted skipper (*Atrytonopsis hianna*)
- Michigan Bog Grasshopper (*Appalachia arcana*)
- Olive-sided Flycatcher (*Contopus cooperi*) *
- Prairie Warbler (*Dendroica discolor*)
- Rough fescue (*Festuca altaica*)
- Sharp-tailed Grouse (*Tympanuchus phasianellus*) *
- Whip-poor-will (*Caprimulgus vociferous*) *

  * Not known from any of the 14 analysis areas

Direct and Indirect Effects Common to All Alternatives

Forest Plan S&Gs (USDA-FS 2006 pp.II-26; III-4.2), the Kirtland Warbler Recovery Plan (FWS 1985), Kirtland's Warbler Management Plan for Habitat in Michigan (USDA-FS 2006a; MDNR 1981) and the Strategy for Kirtland's Warbler Habitat Management (Huber et al. 2001) remain in place and provide habitat not only for Endangered Kirtland's warbler but also for Sensitive species such as dusted skipper, Michigan bog grasshopper, olive-sided flycatcher, prairie warbler and rough fescue under all alternatives. Later jack pine stages provide habitat for black-backed woodpecker, sharp-tailed grouse and whip-poor-will. All these bird species are protected by the Migratory Bird Treaty Act (Title 50, Code of Federal Regulations, Part 20) and Michigan wildlife laws (Act 451 of 1994, Chapter 2) during firearm hunting seasons if they might be present.

Neither legal firearm hunting or its prohibition, regulated snowmobiling or snowmobile trail use or closure, motorized trail closures, NFS road closures, nor proposed management area designation are expected to adversely affect jack pine communities on the Forests. Forest Plan S&Gs are likely to improve habitat or otherwise benefit these associated species under all alternatives.

Combined with similar vegetative management activities on adjacent State and private lands, timber harvest and other management unrelated to this decision should beneficially affect these species, through creation of early successional habitat. Land use on adjacent private ownerships is likely to result in adverse impacts to these species. Suppression of wildfires, construction of temporary roads and trails and increased human development in the northern Lower Peninsula could contribute to loss and increased fragmentation of jack pine (mid-early-open) community habitat. However, effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal, State, tribal, local or private actions on open early- to mid-seral jack pine communities on the Forests or in northern Michigan.

Direct and Indirect Effects of Alternatives 1, 2, 3 and 4

Alternative 1 would not change current management direction in open jack pine areas and thus would affect these species no differently than current management.

Firearm hunting prohibition or snowmobile trail closures under Alternative 2 would have no effect upon Sensitive species in this community, because they are neither pursued nor affected by legal firearm hunting and absent or present only as relatively protected eggs or pupae during snowmobile season. Alternative 2 might benefit these Sensitive species, only if any closed snowmobile trails were currently located off roads, through suitable habitat, by reducing disturbance of that habitat.

Proposed management area designation under Alternative 3 might actually create Michigan bog grasshopper, prairie warbler or rough fescue habitat if areas designated as M.A. 4.2 or M.A. 4.3 (RN) incorporated earlier-successional management, similar to that for Kirtland's warbler. That might, however, also increase indirect detrimental habitat fragmentation effects, such as cowbird parasitism.

Proposed designation of 12 of the 14 analysis areas to M.A. 8.4 (Special Areas) under Alternative 4 would retain current protective objectives of M.A. 6.1 (SPNM) management, causing no real change for this community. Achieving a less roaded condition might reduce disturbance of these species by motorized recreation activities.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for species found primarily within the jack pine community on the Forests, viability will be maintained.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Savannas, Oak and Pine Barrens and Dry Sand Prairie Habitat Group

Overview

Pine, Oak and Oak-Pine Barrens developed on poor sandy soils, grading toward savanna over dry sand prairie on drier sites. Barrens and savannas historically contained a diverse suite of grasses and forbs, as

well. Fire was the major disturbance factor influencing the creation and maintenance of these barrens and savanna communities.

This section summarizes direct and indirect effects for these Sensitive species (USDA-FS 2006 pp. III-128 to III-148), found primarily within this community:

- Doll's Merolonche (*Merolonche dolli*) *
- Dusted Skipper (*Atrytonopsis hianna*)
- Eastern Box Turtle (*Terrapene carolina carolina*)
- Frosted Elfin (*Incisalia irus*)
- Henry's Elfin (*Incisalia henrici*) *
- Hill-prairie Spittlebug (*Lepyronia gibbosa*)
- Hill's Thistle (*Cirsium hillii*)
- Michigan Bog Grasshopper (*Appalachia arcana*)
- Migrant Loggerhead Shrike (*Lanius ludovicianus migrans*) *
- Ottoe Skipper (*Hesperia ottoe*) *
- Persius Dusky Wing (*Erynnis persius*)
- Prairie Smoke (*Geum triflorum*)
- Purple Milkweed (*Asclepias purpurascens*)
- Red-headed Woodpecker (*Melanerpes erythrocephalus*) *
- Regal Frittilary (*Speyeria idalia*) *
- Southern Grizzled Skipper (*Pyrgus wyandot*)
- Sprague's Pygarctic (*Pygarctia spraguei*) *

  * Not known from any of the 14 analysis areas

Direct and Indirect Effects Common to all Alternatives

All alternatives would maintain savannas, oak and pine barrens and dry sand prairie habitat currently available on the Forests, but the amount and distribution of this habitat may be insufficient to maintain viability of these associated species, irrespective of alternative. Neither legal firearm hunting or its prohibition, regulated snowmobiling or snowmobile trail use or closure, motorized trail closures, NFS road closures, nor proposed management area designation are expected to adversely affect savannas, barrens or prairie communities on the Forests. 2006 Forest Plan Objectives and S&Gs (USDA-FS 2006 pp. II-4; II-6; II-27 to II-29; III-4.2-7; III-4.3-8; III-4.4-5; III-6.1-8; II-6.2-5) for savanna, grassland and dry prairie habitat groups also benefit these species associated with oak and pine barrens habitat by creating blocks of openland habitat. These S&Gs are likely to improve habitat or otherwise benefit these associated species irrespective of any alternative.

Agricultural practices and urban development on nearby private lands and OHV/ATV use unrelated to this decision will continue to impact this species habitat group. However, effects of implementing any of these alternatives are not expected to be cumulative to past, present or reasonably foreseeable future Federal,

State, tribal, local or private actions on savanna, oak-pine barrens or dry sand prairie communities on the Forests or in northern Michigan.

Direct and Indirect Effects of Alternatives 1, 2, 3 and 4

Alternative 1 would not change current management direction in oak-pine barrens or prairie areas and thus would affect these species no differently than current management.

Firearm hunting prohibition or snowmobile trail closures under Alternative 2 would have no effect upon Sensitive species in this community, because they are neither pursued nor affected by legal firearm hunting and absent, hibernating or present only as relatively protected eggs or pupae during snowmobile season. Alternative 2 might benefit these Sensitive species, only if any snowmobile trails to be closed were located off roads, through suitable habitat, thereby reducing disturbance of that habitat.

Proposed management area designation under Alternative 3 might actually create barren/savanna/prairie habitat if areas designated as M.A. 4.2 or M.A. 4.3 incorporated management toward savanna/grassland conditions similar to that managed for Karner blue butterfly.

Proposed designation of 12 of the 14 analysis areas to M.A. 8.4 (Special Areas) under Alternative 4 would retain current protective objectives of M.A. 6.1 (SPNM) causing no real change for this community. Achieving a less roaded condition might reduce disturbance of these species by motorized recreation activities.

Determinations

Viability on NFS lands (Huron-Manistee National Forests)

Based on effects analysis for these species, it is determined that for species found primarily within savanna, oak-pine barrens and dry sand prairie community on the Forests, viability may be tenuous, but should be maintained. All Alternatives may impact individuals of these species, but would not significantly adversely affect savanna, barrens and prairie habitat that would provide for these species' viability over the long term.

Federal Listing Determination

Effects of implementing any alternative likely would be insignificant or discountable for these species, leading to a conclusion of May Impact - Not Likely to Cause a Trend Toward Listing as Endangered or Threatened (MI-NT).

Effects on Deer Population

Overview

Management of deer populations has been regulated by the State of Michigan through hunter licensing since 1904. The MDNR utilizes deer range improvement projects for the purpose of improving and maintaining habitat for deer and harvest regulations to manage and guide deer populations, densities, distribution and vigor. Currently, management for white-tailed deer on private lands primarily focuses on providing foraging habitat. Lands managed by the MDNR within the Forests' proclamation boundary are managed for deer forage and winter cover in some areas, but units are generally smaller in size than that available on the Forests.

The 2006 Forest Plan allocates management emphasis areas (USDA-FS 2006 pp. III-2.1-7; III-4.2-14; III-4.3-11 to III-4.3-12; III-4.4-6; III-6.1-9 to III-6.1-10; III-6.2-6) in which activities enhance and increase wildlife habitats, with an emphasis given to managing for white-tailed deer, ruffed grouse and other wildlife. Opportunities exist, outside these emphasis areas, to manage for deer and other wildlife habitat, but this is not the primary objective for those areas. Wildlife diversity and populations are provided for by maintaining short-rotation timber species (for example, early-successional hardwoods, aspen and pines); increasing early-successional age classes; maintaining and improving openings; and designating and identifying forested stands to be maintained as over-mature or Old Growth. None of these management strategies are affected by this decision.

Activities tied to wildlife use make up about half of recreation use on the Forests (see the Recreation Supply and Demand Analysis and project record). Of these recreation uses, hunting makes up a large portion and white-tailed deer is one of the most important game species.

Analysis Area

The analysis area for direct and indirect effects is NFS lands inside or immediately adjacent (within 1 mile) to the 14 analysis areas within the proclamation boundaries of the Forests. The cumulative effects analysis area is the State of Michigan, including public and private land. These areas are chosen because they encompass the deer habitat and hunting areas on the Forests and the State that could be impacted through Federal and non-Federal management actions implementing any of these alternatives.

Direct and Indirect Effects Common to All Alternatives

Since primary deer emphasis areas (M.A.s 4.2D, 4.3D and 6.2D) except Condon Lakes West and White River occur outside the 14 analysis areas, no alternative considered in this decision will impact them. However, implementing a decision under some of these alternatives may affect white-tailed deer populations and their indirect effects on Federal and private holdings within and adjacent to these 14 analysis areas. Overall, these alternatives could have potential long-term effects on local deer populations, as well as affecting recreation activities such as hunting and wildlife viewing.

Several public comments cited scientific studies documenting disturbance of wildlife by snowmobiles' noise and ability to travel rapidly across remote terrain (Aune 1981; Bury 1978; Keddy et al 1979; Richens and Lavigne 1978; Moen et al 1982; Dorrance et al 1975; Huff and Savage 1972; Kopischke 1972; Eckstein et al 1979; Schubert and Smith 1999; Severinghaus and Tullar 1978). However, other research shows that deer may become habituated to the presence of snowmobiles (Reinhart 1999) and that people on foot or skiing may be even more disturbing to deer (Freddy et al 1986, Lavigne 1976). Thus any alternative may perpetuate some level of wildlife disturbance.

Direct and Indirect Effects of Alternatives 1, 2, 3 and 4

Direct Effects

Alternative 1 would not change current management direction regarding deer or deer populations and thus would affect this species no differently than current management.

Under Alternative 2, firearm hunting by persons without rights under treaty would be prohibited in the 14 analysis areas. Based on the number of hunters in the portion of surrounding Deer Management Units

(DMUs) occupied by the 14 analysis areas (Table 12) , an estimated 2,076 - 2,218 firearm deer hunters would be forced to hunt elsewhere, switch to archery or crossbow hunting or give up deer hunting.

It is difficult or impossible to estimate how many hunters would switch to archery or crossbow hunting in these areas, if firearm hunting were prohibited under Alternative 2. On average, deer license buyers are issued 2.2 harvest tags (Frawley 2010). And while archers accounted for 43 percent of deer hunting effort and harvested 27 percent of deer taken (Frawley 2010), most archers also hunt with firearms. For instance, in 2009 (Frawley 2010), Statewide deer hunter numbers are displayed in Table 11 .

Table 11. Statewide Deer Hunting Numbers

	Hunters	Hunter Days
Archery Deer	305,332	4,409,666
Regular Firearm Deer	628,675	4,337,740
Muzzleloader Deer	208,230	1,075,293
Early Antlerless Deer	32,669	76,520
Late Antlerless Deer	74,806	284,712
Youth Deer	27,240	45,047
Disabled Deer	1,594	3,564
All Seasons	686,392	10,232,542

The total number of unique deer hunters for all seasons combined is only 686,392 (91.6 percent of license buyers actually hunted), indicating that deer hunters utilize a variety of methods, seasons and license types to pursue this large game. Whether they would or could switch between them in the 14 analysis areas, if firearm hunting would be prohibited, is unknown and unknowable.

By the same proportion of area as above, an estimated 825 - 874 fewer white-tailed deer would be harvested annually from the 14 analysis area analysis areas (Table 12), compared to current harvests (Frawley 2010). Direct effects of this reduced harvest on deer populations likely would be seen in increased local deer populations (Foster 2002; Young 2004), conflicting with MDNR goals (MDNR 2011b) for the DMUs that include these analysis areas. Not only would surviving does become part of succeeding generations, but they would also bear additional fawns. And older surviving does usually bear more fawns than younger does, so that population growth would accelerate in areas where firearm hunting would be prohibited (Schusler 2004; Verme 1967; Verme 1969; Warren 1991), until habitat became so degraded that it could not support deer populations at that level (Côté et al 2004; DeCalesta and Stout 1997). State agencies report that the greatest increases in deer populations occur where hunting is not allowed or access to public land is limited (Conover 2001; Schusler 2004; Southwick 2008).

Hunting is the most cost-effective method available to manage deer populations at acceptable levels (Conover 2001; Krausman et al 1992). It is ineffective if land is off-limits to hunters (Conover 2001; Young 2004). The State might mitigate the Forests' prohibition of firearm hunting in these areas by encouraging archery hunting with extra permits or kill tags, additional special emphasis archery hunts or even contract harvest by sharpshooters on lands outside Forest Service control, but the possibility and outcome of such measures to control deer populations are unknown and speculative at best. "Considering

the status of the white-tailed deer today, there is no truly compelling reason, philosophical or otherwise, to prohibit the hunting of deer in areas in which the non-hunting populace will not be subjected to undue danger (Young 2004 p.9)."

Au Sable, Cooke, Hoist Lakes, Reid Lake and Whitewater Creek areas are within DMU 487, the six-county Bovine Tuberculosis zone in northeastern Lower Michigan (including Alcona, Alpena, Iosco, Montmorency, Oscoda and Presque Isle counties). (Hoist Lakes and Reid Lake are within the "Core Area" DMU 452 within that larger area of tuberculosis concern.) Any reduction in deer harvest in those areas would conflict with State management goals focused on reducing deer populations and interactions with domestic cattle and thus tuberculosis transmission (Conner et al 2008), in that zone.

Deer populations currently exceed MDNR goals, based on maintaining herd health and habitat quality, in many DMUs (Appendix A, Table A- 4; MDNR 2011; Rudolph 2005). In those DMUs encompassing the 14 analysis areas on the Forests, deer populations exceed sustainability goals by an average 18.1 percent (Appendix A, Table A- 4). Prohibition of firearm hunting in those 14 analysis areas would directly and negatively affect achieving those goals and deer herd and habitat sustainability.

Under Alternative 3, proposed management area designations of most of the 14 analysis areas would change to reflect existing conditions, instead of their current aspirational goal. While it might appear that management area designations incorporating Semiprimitive Motorized or Roaded Natural could allow greater vehicular (and hunter) access, in reality that access would be unlikely changed from current conditions. Since management area designation would be brought into line with current conditions, no real change in hunter access, method of hunting or deer harvest or populations would be likely to occur in the short term. Management for early successional habitat to provide quality forage for deer or optimal thermal cover for deer would be unaffected, where S&Gs would continue to meet resource objectives in the Forest Plan (USDA-FS 2006 pp. III-2.1-7; III-4.2-14; III-4.3-11 to III-4.3-12; III-4.4-6; III-6.1-9 to III-6.1-10; III-6.2-6). White-tailed deer in Au Sable, Bowman Lake, Manistee River and Whitewater Creek, in particular, would benefit by M.A. 4.2 or M.A. 4.3 management.

Under Alternative 4, proposed management area designation for most of the 14 analysis areas would become M.A. 8.4 (Special Areas), incorporating current M.A. 6.1 S&Gs, again incorporating and recognizing current conditions in these areas. While motorized access for deer hunting in areas where Forest System roads could be closed might decrease, "primitive" (less roaded) access, requested by many hunters, would increase. Deer harvest and populations are unlikely to be significantly affected, since the majority of these 14 analysis areas are within 0.5 mi of a road, the maximum distance most deer hunters will trek from a road to hunt (Stedman et al 2004). Management for early successional habitat to provide quality forage for deer or optimal thermal cover for deer, would be unchanged under S&Gs currently in M.A. 6.1 (USDA-FS 2006 pp. III-6.1-9 to III-6.1-10) or M.A. 4.2 (USDA-FS 2006 pp. III-4.2-9 to III-4.2-11), as administrative uses of closed roads could continue to meet resource objectives in the Forest Plan.

Indirect Effects

As Table A- 4 (Appendix A) illustrates, deer-vehicle collisions (DVCs) increase with deer population numbers (Conover 2001; Conover et al 1995; Drake et al 2005). On average, across the DMUs including the 14 analysis areas, DVCs increase by 1.73 for each additional 100 deer. Thus an increase of 825 to 874 deer surviving annually in these areas because of firearm hunting prohibition under Alternative 2 might indirectly result in an additional 14 to 15 DVCs each year, with that indirect effect compounding as more deer survive and reproduce each year. While DVCs affect the deer population by the number, sex and age

of deer struck and killed, they have significant impacts on human drivers. Each deer-vehicle collision costs local communities $3,470, on average (factoring in the value of human life, health care costs, vehicle repairs and losses) (Bissonette et al 2008). By contrast, reducing local deer densities by hunting can significantly reduce DVCs (Conover 2001; DeNicola and Williams 2008; Grovenburg et al 2008; Hussain et al 2007; Mastro et al 2008).

Also, in human terms, damage to landscape and rare plants, crops and forest vegetation by over-abundant deer (an indirect effect of Alternative 2) is even more influential in forming negative human opinions of deer than are DVCs (Schusler 2004; Storm et al 2007; Southwick 2008; West and Parkhurst 2002). Deer damage complaints have increased twice as fast as deer populations (Conover 2001; Southwick 2008). As deer populations increase, so do browsing of rare plants (Côté et al 2004; Loeffler and Wegner 2000) and browsing on regenerating saplings of desirable forest trees; impacts on forest mammals, birds and ecosystems; accelerated invasion of non-native invasive plants (Eschtruth and Battles 2008); and populations of ticks (and thus, incidence of Lyme disease) (Conover 2001; Drake et al 2005; Foster et al 2002; Jones et al 1998; Rawinski 2008; Schusler 2004; Southwick 2008; Warren 1991). States responding to a 2004 survey concluded that if hunting were ever lost as a management tool, deer populations could double, overwhelming sustainable management and making deer pests rather than valued public resources (Conover 2001; Foster et al 2002; Rawinski 2008; Southwick 2008; Stadtfeld 1975; West and Parkhurst 2002; Young 2004).

Table 12. 2009 Deer Hunting Harvest

Deer Management Unit (DMU)	County	Acres	Unique Hunters 2009	Total Harvest 2009	Areas in DMU	Project Ac in DMU	Est. Hunters in Analysis Area	Est. Harvest in Analysis Area
1	Alcona	431,635	8,333	3,537	(N) Au Sable	3,720	72	30
20	Crawford	357,197	9,587	1,912	S. Br. Au Sable, Wakeley Lake, (W) Whitewater Creek	8,002	215	43
35	Iosco	351,430	11,339	5,136	(S) Au Sable, Cooke	9,327	301	136
43	Lake	363,162	16,651	4,277	Bowman Lake	1,145	52	13
51	Manistee	347,910	11,380	3,796	Manistee River	7,985	261	87
53	Mason	316,909	11,417	5,552	Nordhouse Dunes Wilderness, Whalen Lake	6,127	221	107
62	Newaygo	551,757	25,356	13,912	Condon Lakes West	3,301	152	83
64	Oceana	345,894	11,234	5,093	White River	4,825	157	71
68	Oscoda	361,600	10,899	3,156	(E) Whitewater Creek	5,603	169	49
83	Wexford	361,914	12,132	3,339	Briar Hills	3,494	117	32
452	"Core[8]"	365,754	10,067	4,801	Hoist Lakes, Reid Lake	13,069	360	172
	Sum =	4,155,162	138,395	54,511		66,598	2,076	825
	Overall =						**2,218**	**874**

Sources, by column left to right: Acres - U.S. Census Bureau 2009: "Quickfacts" Land Area, 2000; Unique Hunters and Total Harvests - Frawley 2010: MDNR 2009 Deer Harvest Survey Report No. 3513; MDNR 2011: DMIS, "Sex-Age-Kill" (SAK) population model for 2009; MDNR 2011: DMIS, 2008-2010 Deer Population Projections and Goals, NLP

[8] "Core" DMU area included in Alcona, Iosco and Oscoda county totals

Cumulative Effects Common to All Alternatives

The cumulative effects analysis area is the State of Michigan, including public and private land. This area is chosen because it encompasses the deer habitat and hunting areas that could be impacted through Federal and non-Federal management actions implementing any of these alternatives.

Cumulative effects of any alternative would not change State management of deer populations, deer habitat on State lands, nor would they likely affect management of deer habitat on private lands.

Any adverse cumulative effects of Alternatives 1, 3 or 4 on deer populations likely would be insignificant or discountable within the cumulative effects analysis area.

Cumulative effects of Alternative 2, combined with recent increases in posting of private lands, would be to increase local deer populations, with attendant direct negative effects on State deer population goals and deer herd sustainability. Indirect negative effects on forest ecosystems, landscape plantings, crops, desirable tree regeneration, deer tick numbers and Lyme disease incidence and deer-vehicle collisions would result, as well. While Alternative 2 might not adversely affect deer numbers immediately, it would eventually and cumulatively impact their habitat's carrying capacity and thus future numbers. Also, it would indirectly negatively affect white-tailed deer's status as a publicly valued big game resource, detrimental to its management (Conover 2001; Foster et al 2002; Rawinski 2008; Warren 1991; West and Parkhurst 2002).

Effects on Wildland Fire

Overview

The Huron-Manistee National Forests fire management policy under the Forests' Fire Management Plan uses measures to address the site-specific issues associated with wildfires. Currently suppression strategy in the areas under study generally favors the use of minimum disturbance methods while at the same time taking firefighter personnel and public safety into account. When possible, natural and existing fuel barriers such as streams and roads are used for fire control lines. In the Nordhouse Dunes Wilderness, fire suppression strategy is to always use minimum impact suppression tactics (MIST) which limit control methods to hand tools and water. Special authorization is required to use mechanical suppression equipment in the wilderness. In the other areas under study, the use of the tractor plow, water, foam and hand tools to create control lines are the tactics utilized to contain and control wildfires. Generally, fire suppression tactics such as dozer plowed fire lines and heavy fire engines are not used in the areas under study.

Direct Effects Common to All Alternatives

As stated in the introduction to this chapter, the direct effects analysis area for each proposed alternative is within each of the areas being studied and within approximately a 1-mile radius around each area and the timeframe for the direct effects analysis is from 2011 through 2021, the life of the 2006 Forest Plan. Under all of the alternatives, current Forest Plan S&Gs would remain in place for wildfire suppression activities. Firefighting methods would continue to be tailored to address specific firefighter and public safety issues while considering the values of each area. Limiting access to areas via roads and trails or area closures to restrict snowmobiling or firearm hunting may lessen the risk of wildfires starts. Increasing access to areas via roads and trails may increase the risk of wildfires but this impact is offset by the improved access for suppression efforts. Almost all wildfire starts on the Forests are human-caused (rather than due to natural causes such as wildfires started by lightening), so reduced access is expected to

result in fewer persons using an area in the Forests. Reduced use of an area will lower the potential for wildfires starts in the area and reduce the expected need for wildfire suppression activities. These direct effects are expected to occur if Alternatives 2 or 4 are selected. In Alternative 3 the management area direction changes and in some instances provide for a higher road density standard. If following site-specific analysis road density was to increase in an area there would be a corresponding increase in the potential for wildfire starts but this would be offset by improved access for suppression. Consequently, Alternatives 1 through 4 are expect to have similar direct effects.

Indirect Effects Common to All Alternatives

As stated in the introduction to this chapter, the indirect effects of each proposed alternative within approximately a 5-mile radius around each area and the timeframe for the indirect effects analysis is from 2011 through 2021, the life of the 2006 Forest Plan. Under all of the alternatives, current Forest Plan S&Gs would remain in place for wildfire suppression activities. Firefighting methods would continue to be tailored to address specific firefighter and public safety issues while considering the values of each area. Limiting access to areas via roads and trails or area closures to restrict snowmobiling or firearm hunting may lessen the risk of wildfires starts because almost all wildfires starts on the Forests are human-caused so reduced access is expected to result in fewer persons using the area and fewer wildfires that are started NFS lands. This will have indirect effects on the surrounding communities within the analysis area. With fewer wildfires starting on NFS lands, the surrounding communities will have a lower risk of wildfires spreading onto private or public lands outside of the Forests. This is expected to reduce the demands on local fire departments and the MDNR who are responsible for responding to wildfires that escape from NFS lands. This will reduce the expected need for wildfire suppression activities by local fire departments. These indirect effects are expected to occur if Alternatives 2 or 4 are selected. In Alternative 3 the management area direction changes and in some instances provide for a higher road density standard. If following site-specific analysis road density was to increase in an area there would be a corresponding increase in the potential for wildfire starts but this would be offset by improved access for suppression. Consequently, Alternatives 1-4 are expect to have similar indirect effects.

Cumulative Effects Common to All Alternatives

As stated in the introduction to this chapter, the area of analysis for cumulative effects is the State of Michigan including the current or foreseeable actions that may be undertaken by others in the counties where the areas being studied are located. Under all of the alternatives, current Forest Plan S&Gs would remain in place for wildfire suppression activities. Firefighting methods would continue to be tailored to address specific firefighter and public safety issues while considering the values of each area. Limiting access to areas via roads and trails or area closures to restrict snowmobiling or firearm hunting may lessen the risk of wildfires starts because almost all wildfires starts on the Forests are human-caused. Reduced access is expected to result in fewer persons using the area and fewer wildfires that are started NFS lands. With fewer wildfires starting on NFS lands, the surrounding communities will have a lower risk of wildfires spreading onto private or public lands outside of the Forests and this will reduce the expected need for wildfire suppression activities by local fire departments. At this time, the Forest Service is not aware of any Statewide efforts to close other public or private lands to recreation use to discourage snowmobiling, firearm hunting or other recreation activities in the State. It is a well known fact that the State, the counties and the local communities are actively encouraging more of these activities as part of the overall economic strategy for future prosperity. Given this, it is not expected that other closures will occur or that they will have the cumulative impact of reducing Statewide wildfire starts by users and the overall costs of fire suppression. This cumulative impact analysis is the same if alternative 1, 2 or 4 is selected, even though NFS roads, trails or areas may be closed to restrict snowmobiling, firearm hunting

or other activities, it is not expected that the State, counties or private land owners would close roads, trails or areas to discourage outdoor recreation which is being actively encouraged Statewide by both public and private landowners. Consequently, it is not expected that the cumulative impact will be an overall reduction in the number of wildfires and a subsequent reduction in the costs of fire suppression despite any Forest Service closures. In Alternative 3 the management area direction changes and in some instances provide for a higher road density standard. If following site-specific analysis road density was to increase in an area there would be a corresponding increase in the potential for wildfire starts but this would be offset by improved access for suppression. For these reason, Alternatives 1 through 4 are expected to have a similar cumulative impact.

Hazardous Fuel Reduction

Overview

The strategic modification of burnable vegetation over an area can assist firefighters in the control of wildfires. Generally the less 'tons per acre' of burnable vegetation on an area the easier it is to control a wildfire. One example where this is evident is in forest "fuel breaks" where many trees are removed so potential wildfire behavior is more easily controlled.

Hazardous fuel reduction objectives are met through a variety of methods, including timber sales, prescribed fire and a variety of mechanical fuel reduction treatments. The mixture of treatments varies from year to year and acres treated by prescribed fire are dependent on favorable weather conditions. The use of prescribed fire often accomplishes multiple objectives within the same treatment area or unit. For example, a prescribed burn for the purpose of reducing fuel loading may also maintain natural openings, encourage fire dependant plants, increase diversity or improve wildlife habitat. In addition, prescribed fire and mechanical fuels treatment may be used for objectives other than hazard reduction, such as restoring potential Old Growth conditions, maintaining savannas or barrens and controlling non-native invasive species.

Hazardous fuel reduction treatments occur in some of the 13 non-wilderness areas being studied. These activities are tailored to protect and enhance the resource values of each of these areas. A site-specific analysis is conducted to evaluate the potential impacts and benefits of any fuel treatment. No hazardous fuel reduction treatments occur in the Nordhouse Dunes Wilderness.

Direct Effects Common to All Alternatives

As stated in the introduction to this chapter, the direct effects analysis area for each proposed alternative is within each of the areas being studied and within approximately a 1-mile radius around each area and the timeframe for the direct effects analysis is from 2011 through 2021, the life of the 2006 Forest Plan. Under all of the alternatives, current Forest Plan S&Gs would remain in place for hazardous fuels reduction activities. The adjacent area is included since hazardous fuels activities within the 13 non-wilderness areas being studied could directly affect landowners using their property near these areas. Direct effects of hazardous fuels activities typically would not involve areas outside of a 1-mile radius. These lands include State, private and other lands. Land uses include forest lands, agricultural lands, residential areas and business uses.

In all alternatives, current Forest Plan S&Gs would remain in place that detail hazardous fuel reduction activities. Treatments would continue to be tailored to address specific hazardous fuel conditions in these areas. Upon completion of a site-specific analysis, NFS road closures could be implemented in all

alternatives. As part of an analysis, risks from wildfires to firefighters, public safety, private properties and land resources are also evaluated. Consequently, Alternatives 1 through 4 are expect to have similar direct effects on hazardous fuel activities and no unacceptable direct effects are expected.

Indirect Effects Common to All Alternatives

As stated in the introduction to this chapter, the indirect effects of each proposed alternative within approximately a 5-mile radius around each area and the timeframe for the indirect effects analysis is from 2011 through 2021, the life of the 2006 Forest plan. Under all of the alternatives, current Forest Plan S&Gs would remain in place for hazardous fuel reduction activities. The area includes a 5-mile radius since fuel types in the areas are typically Old Growth which in some cases supports higher intensity fires due to an increase in fuel loading. Hazard fuels reduction activities within the 13 non-wilderness areas being studied could indirectly affect lands and landowners within a 5-mile radius. These lands include Tribal, other Federal, State, private and other lands. Land uses include forest lands, agricultural lands, residential areas and business uses.

In all alternatives, current Forest Plan S&Gs would remain in place that detail hazardous fuel reduction activities. Treatments would continue to be tailored to address specific hazardous fuel conditions in these areas. Upon completion of a site-specific analysis, NFS road closures could be implemented in all alternatives. As part of an analysis, risks from wildfires to firefighters, public safety, private properties and land resources are also evaluated. Consequently, Alternatives 1 through 4 are expect to have similar indirect effects on hazardous fuel activities and no unacceptable indirect effects are expected.

Cumulative Effects Common to All Alternatives

As stated in the introduction to this chapter, the area of analysis for cumulative effects is the State of Michigan including the current or foreseeable actions that may be undertaken by others in the counties where the areas being studied are located. Under all of the alternatives, current Forest Plan S&Gs would remain in place for hazardous fuels reduction activities. Hazard fuel treatment methods would continue to be tailored to address specific resource, fuel and public safety issues while considering the values of each area. This cumulative impact analysis is the same if alternative 1, 2, 3 or 4 is selected, even though NFS roads, trails or areas may be closed to restrict snowmobiling, firearm hunting or other activities, it is not expected that the State, counties or private land owners would close roads, trails or areas to discourage outdoor recreation which is being actively encouraged Statewide by both public and private landowners. Consequently, the selection of any of the four alternatives is not expected to have any significant cumulative impact on hazardous fuel activities in Michigan.

Effects on Forest Vegetation and Timber Harvest

Overview

This section describes effects that the proposed alternatives will have on existing and proposed timber harvest activities. The Forests vegetation management program is the primary tool for restoring and providing a diverse range of sustainable habitats for many species, supporting forest health and providing wood fiber. The output of the vegetation program is reflected in the timber ASQ and nonchargeable timber.

Direct Effects Common to All Alternatives

The direct effect analysis area for each proposed alternative is within each of the areas being studied and within approximately a 1-mile radius around each area. These lands include Tribal, other Federal, State, private and other lands. Land uses include forest lands, agricultural lands, residential areas and business uses. The timeframe for the indirect effects analysis is from 2011 through 2021, the life of the 2006 Forest Plan.

Timber harvest is a viable management option in the areas being studied but, it is not a priority. Other values are emphasized, including recreation. Roads could be reopened or new construction could occur, albeit, with a resultant increase in logging costs. ASQ will not be affected.

Under all the alternatives, current Forest Plan S&Gs would remain in place for vegetation management. Ongoing and future timber management practices and activities would not be affected in any alternative. Site-specific actions which may be proposed in the future, after the Forest Service's decision to adopt and implement one of the SEIS alternatives, may have direct effects, such as the closure of a NFS road. Subsequent to such actions, risks from wildfires to firefighters, public safety, private properties and land resources are evaluated. Therefore, these direct effects will not be considered in the NEPA document because they are beyond the scope of the SEIS programmatic Forest Plan level of analysis. No notable direct effects as a result of timber harvest are expected by continued implementation of current Forest Plan direction. ASQ and nonchargeable timber volume will not be affected. No unacceptable direct effects are expected by implementing any of the four alternatives.

Indirect Effects Common to All Alternatives

The indirect effect analysis area for each proposed alternative is within each of the areas being studied (structure and age of vegetative types) and within approximately a 5-mile radius around each area. The timeframe for the direct effects analysis is from 2011 through 2021; or the anticipated 10-year duration between forest plan revisions.

Under all the alternatives, current Forest Plan S&Gs would remain in place for vegetation management. Ongoing and future timber management practices and activities would not be affected in any alternative. No notable indirect effects on forest vegetation or timber harvest are expected by continued implementation of current Forest Plan direction. Vegetation clearing is not associated with any aspect of the alternatives, i.e., is not considered forest vegetation management. There are no differences related to forest vegetation management between the alternatives; therefore, there are no differences in the effects of each alternative on forest vegetation management. ASQ and nonchargeable timber volume will not be affected. No unacceptable indirect effects are expected by implementing any of the four alternatives.

Cumulative Effects Common to all Alternatives

The analysis area for cumulative effects is across all forested lands within the State of Michigan, including the current or foreseeable actions that may be taken by other land owners. Foreseeable timber harvest and other development activities on State and private land are expected to continue at current levels, but will not affect Forests timber outputs. Current Forests' direction would be followed as outlined in the 2006 Forest Plan. No notable cumulative effects on forest vegetation or timber harvest are expected in Alternatives 1 through 4 by continued implementation of current Forest Plan direction. ASQ and nonchargeable timber volume will not be affected.

The Forests timber management adopts mitigation measures to address site-specific issues associated with timber harvest as part of the 2006 Forest Plan. Forest Plan implementation activities are reviewed and amended as necessary to address monitoring and management issues. As a result, no unacceptable direct, indirect or cumulative effects are expected by implementing any of the four alternatives.

Effects on Research Natural Areas (RNAs)

Research Natural Areas are unique or representative areas that provide baseline or reference information on natural conditions. The intent of these areas is to help protect biological diversity at the genetic, species, ecosystem and landscape levels. Each RNA is managed to maintain the natural features and ecological processes for which they were established. Three designated RNAs are located on the Forests: Hayes Tower, designated in 1998 on the Huron National Forest; Newaygo Prairies, designated in 1988 on the Manistee National Forest; and Nordhouse Dunes, designated in 1987 on the Manistee National Forest. The total acres under RNA management prescription are 1,363. Three areas are currently identified as candidate RNA and 33 areas are identified as potential candidate RNA. All of these areas are under consideration for establishment as Research Natural Areas (see Appendix C of the 2006 FEIS – Research Natural Areas).

The 2006 FEIS analyzed the direct, indirect and cumulative effects on all NFS lands managed by the Forests within the boundaries of the designated, candidate and potential candidate Research Natural Areas. The analysis area for direct effects is the 14 areas and the area within a 1-mile radius of them. The analysis area for the indirect effects is the 14 areas and the area within a 5 mile buffer around them. The analysis area for cumulative effects is the State of Michigan. Each RNA was designated to protect and enhance ecological resources specific for that area. Forest S&Gs for RNAs provide direction on general management of research natural areas. Area-specific management plans provide guidance on acceptable recreation uses and improvements, vegetation management activities and prescribed fire utilization. The Nordhouse Dunes RNA is located in the Nordhouse Dunes Wilderness and managed to protect the area's unique dunal ecology. A candidate RNA is located within the Condon Lakes area.

Effects Common to All Alternatives

In all alternatives, current S&Gs in the 2006 Forest Plan would remain in place that detail research natural area direction. Management Activities would continue to be tailored to protect and enhance specific values within each area.

Direct Effects Common to all Alternatives

No notable direct effects are expected to RNAs since all will continue to be managed under the S&Gs found in the 2006 Forest Plan.

Indirect Effects Common to all Alternatives

No notable indirect effects are expected to RNAs since all will continue to be managed under the S&Gs found in the 2006 Forest Plan.

Cumulative Effect Common to all Alternatives

No notable cumulative effects are expected to RNAs since all will continue to be managed under the S&Gs in the 2006 Forest Plan.

Affected Environment – Recreation, Social and Economic Resources

Lands

The affected environment for lands on the Huron-Manistee National Forests is described in the 2006 FEIS (USDA-FS 2006, pp. III-281 and III-324-327) and is incorporated by reference. Land management issues relate to existing uses, rights and potential impacts to adjacent landowners. The 2006 FEIS provides a background and historical perspective of the management of NFS lands within the Forests.

In summary, Michigan has approximately 37.5 million acres of land, not including water bodies. State of Michigan landholdings, totaling 4.7 million acres, include State forests, State park and recreation areas, State wildlife refuges and State game areas. Federal lands include National Forests, National Lakeshores, National Park and National Wildlife Refuges totaling 3.2 million acres; the majority being NFS lands. The three National Forests located in Michigan; the Ottawa, Hiawatha and Huron-Manistee comprise nearly 2.9 million acres.

Some NFS lands have reserved and outstanding rights such as road rights-of-way, rights to regulate hunting and fishing (State of Michigan), rights of access and mineral reservations. State highways and county roads cross NFS lands. Many of these roads existed on lands prior to Forest Service acquisition and continue to be managed under the jurisdiction of the original agency. Some of these State highways and county roads are authorized by the U.S. Department of Transportation. Others have been authorized by the Forest Service through issuance of road easements to the State and county agencies for use and maintenance. Some roads maintained by counties are under the jurisdiction of the Forest Service. An inventory of road jurisdictions within and adjacent to the 14 analysis areas is available in the project record.

As part of the analysis, the Forest Service inventoried reserved and outstanding rights on NFS lands within the 14 analysis areas. A copy of this inventory is available in Appendix C.

The Forest Service continues to acquire lands within the proclamation boundaries on a willing seller, willing buyer basis and through donation. These acquisitions are intended to increase management efficiency by improving land ownership patterns, enhance agency programs such as protection and management of ETS species habitat and improve recreation use opportunities. In addition, the Forest Service works with private individuals, groups organizations and governmental agencies on land exchange opportunities that promote agency goals and address localized issues.

On non-Federal land within the Forests proclamation boundary, the trend has been for owners to subdivide and sell their private parcels. Over time, many of these parcels are developed. When this occurs, rights-of-way across NFS lands may be needed for roads, power lines and telephone lines. The Forest Service, through its special use program, issues and maintains a variety of special use authorizations on Forest System lands. These authorizations are issued for such uses as private roads, county roads, power lines and telephone lines. The Forest Service is required to grant reasonable access for private landowners whose properties have no legal access as stipulated under the Alaska National Interest Land Conservation Act of 1980 (ANILCA). Currently, the Forests maintain approximately 600 non-recreation special use authorizations and receive approximately 25 new requests per year.

Because of the scattered ownership pattern and erroneous landline surveys, land use issues may arise. Common problems include public land users trespassing onto private lands and, occasionally, private

landowners having improvements encroaching onto NFS lands. The Forest Service works with State, county and local governments and with private landowners to resolve issues as they arise.

Recreation

The affected environment for recreation on the Forests is described in the 2006 FEIS (USDA-FS 2006, pp. III-46-47 and III-259-266) and is incorporated by reference. Recreation management issues specifically associated with the purpose and need for the SEIS are discussed. Further information on the recreation program can be found in the 2006 FEIS.

In summary, the Forests serve as a "backyard" playground for many Midwest residents. More than 60 million people are within a day's drive of enjoying recreation opportunities on the Forests. Proximity to population centers and accessibility due to road densities makes the Forests popular for year-round outdoor recreation activities. Recreation emphasis is placed on activities appropriate to a Roaded Natural setting, although developed recreation opportunities are available. Currently, approximately 83.5 percent of the lands within the Forests are managed as having a Roaded Natural class of the ROS. Within these Roaded Natural areas, each Forest provides a variety of developed recreation opportunities at campgrounds, water access sites, picnic sites, observations areas, visitor centers and other facilities. Rural areas contain some of the Forests' most developed recreation facilities. It is important to note that much of the Forests' lands are adjacent to or near private and State lands. The level of development and uses of these lands have both direct and indirect impacts on adjacent NFS lands.

ROS Class Objectives

The Forest Service uses a classification system referred to as the ROS to help describe differences in recreation settings, opportunities and experiences that help guide management activities. Recreation settings vary from primitive-where there is little evidence of other people and more opportunities for self-reliance- to more developed rural areas which offer more facilities, better access and opportunities to interact with other recreationists. The ROS is referred to in two different ways. The first is an inventory tool to describe the existing array of recreation settings. This application describes the existing condition of the Forest and is referred to as the ROS inventory. Secondly, the ROS is used to establish prescriptive management objectives, referred to as "ROS class objectives." The amount and location of land in each ROS class provides an effective way to compare forest settings and recreation opportunities emphasized in each alternative.

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 vs. 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

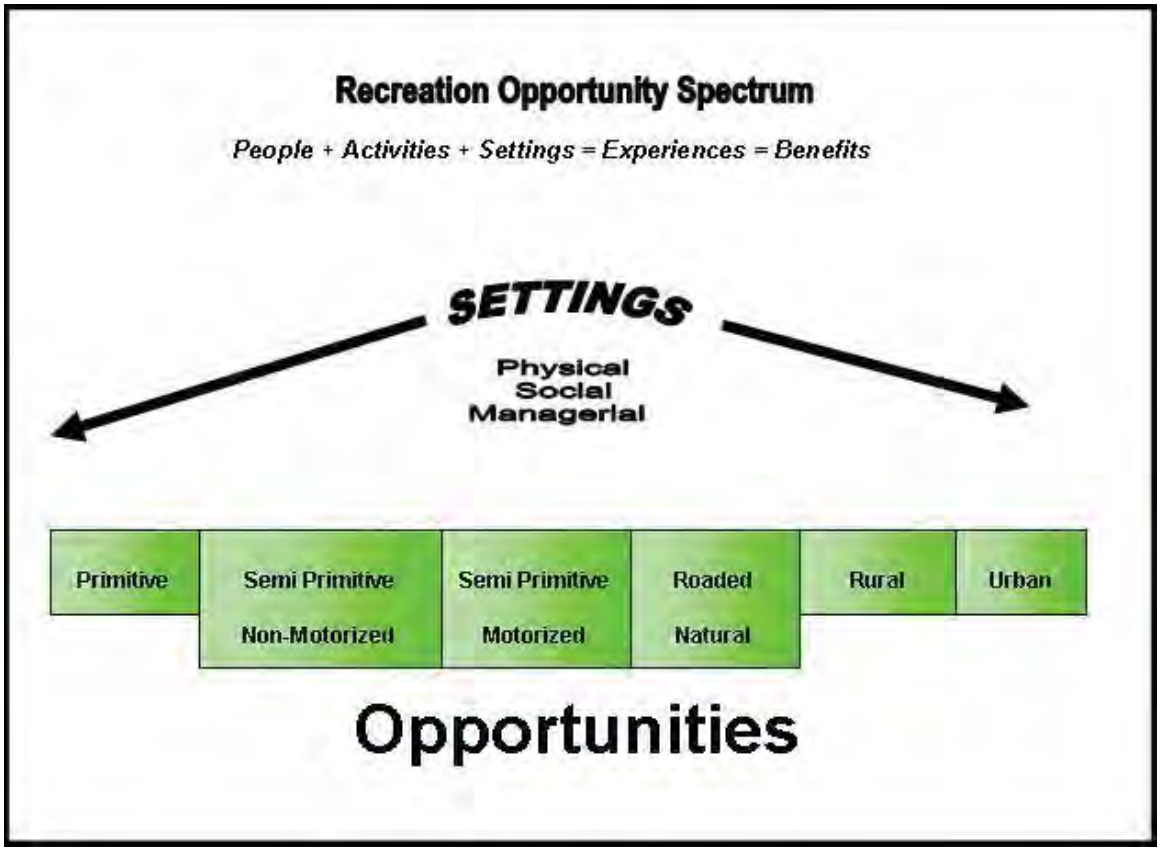
very different settings leading to different kinds of experiences and benefits; that is, they are seeking different kinds of recreation opportunities, desired experiences and outcomes (USDA-FS 1982).

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, Semiprimitive Nonmotorized, Semiprimitive Motorized, Roaded Natural, Rural and Urban (see Figure 1). 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 guide, which states, *"Recognition that NFS 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)."*

The ROS is used to map out the supply of different types of recreation opportunities across the national forest system. Table 13 describes the characteristics of each ROS classification. Figure 2 shows the types of recreation opportunities typically encountered within each of the ROS classifications.

Figure 1. Recreation Opportunity Spectrum



Source: (USDA-Forest Service 1985 and 1986)

Table 13. 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

ROS Class	Acronym	Description
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

Source: USDA-FS 1986

Figure 2. Recreation Opportunity Spectrum Activities Characterizations

Activity	Land Based	Land Based (includes Aircraft)	Water Based	Snow and Ice Based
Primitive Semi-Primitive Non-motorized		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)	Snowplay Skiing/Snowshoeing
Semi-primitive 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 Snowplay Skiing/Snowshoeing

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 Tobagganing Downhill Skiing Snowplay 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 Tobagganing Downhill Skiing Snowplay X-Country Skiing/Snowshoeing

Source: RIM FSH 2309.11

Note: These activity characteristics are illustrative only. Specific additions or exception of activities within a ROS class may occur depending upon local forest situations

ROS Criteria for SPNM and Primitive Opportunities

The Federal, State and private recreation opportunities are managed to differing standards based on the agency administering these lands. To define similar recreation experiences and opportunities, the Forest Service considered the elements established in the Recreation Opportunity Spectrum for both Primitive and SPNM areas (see Table 14 through Table 19). 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 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 14. Primitive ROS Activity Characterization

Activity	Remarks
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 may or may not be 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 15. Primitive ROS Setting Characterization

Characteristic	Remarks
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[9]
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

[9] 1,536 acres were inventoried in the Nordhouse Dunes Wilderness as Primitive; 1,785 acres were inventoried as SPNM

Characteristic	Remarks
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 16. Primitive ROS Experience Characterization

Experience	Remarks
Closeness to nature	Interaction with nature is very high.
Extremely high probability of experiencing isolation from the sights and sounds of humans	An extremely 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

Semiprimitive Nonmotorized Opportunity Criteria

Table 17. Semiprimitive Nonmotorized ROS Activity Characterization

Activity	Remarks
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 may or may not be 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 18. Semiprimitive Nonmotorized ROS Setting Characterization

Characteristic	Remarks
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 19. Semiprimitive Nonmotorized ROS Experience Characterization

Experience	Remarks
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 Forest Plan. The ROS attributes were major determining factors in the classification of management areas. Very developed areas were typically classified under a Rural ROS class. Less developed areas offering activities, setting and experiences meeting Roaded Natural are prevalent in the Forests. Areas with less development and more naturally-appearing environment were classified as Semiprimitive. Managers then considered the attributes of these areas in more detail for each area prior to designation as SPNM or Semiprimitive Motorized. The Nordhouse Dunes Wilderness and the national wild and scenic river ROS classes were reviewed and no changes were made in their classifications.

Supplemental Supply and Demand Analysis

The SEIS is intended to address specific issues as stated in the Purpose and Need. A Supplemental Supply and Demand Analysis was prepared as part of this analysis and is incorporated by reference. The Supplemental 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 court established the market area for the purposes of this analysis as the State of Michigan.

The three primary data sources used for the Supply and Demand Analysis include:

- **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 Huron-Manistee National 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.

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

In 1964, Public Law 88-578 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 State administrator for LWCF monies and the SCORP is the 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/need for outdoor recreation,
- existing initiatives to include under the SCORP,
- 2008-12 directions/initiatives to meet demand including wetlands conservation and,
- the implementation plan for the program.

The National Visitor Use Monitoring Survey (NVUM)

The NVUM 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.

The Forests provide opportunities for many different recreation activities such as hiking, camping, hunting, fishing, picnicking, canoeing, snowmobiling, OHV use, driving for pleasure and gathering forest products. The Forests completed the NVUM survey in 2007 (USDA-FS 2007). Based on the NVUM

survey, the Huron-Manistee National Forests had 4,069,000 National Forest visits and 4,532,000 site visits[10]. Other recreation use measurement units include recreation visitor day (RVD) and persons at one time (PAOT). The most popular recreation activities on the Forests are reported in Table 20.

Outdoor Recreation for 21st Century America

The primary purpose of Outdoor Recreation for 21st Century America (Cordell et al. 2004) was to provide recreation planners, public land managers, academicians and others interested in outdoor recreation with a resource describing trends and contemporary American's participation in outdoor recreation. The publication 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.

Table 20. Activity Participation on Huron-Manistee National Forests

Activity	Percent of visitors who participated in this activity[11]	Percent of visitors who identified activity as primary activity[12]	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

[10] 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.
[11] Survey respondents could select multiple activities. Respondents were asked to select one activity as their main one, some selected more than one.
[12] Computed only for those who indicated the activity was the main activity on their visit.

Source: USDA-FS 2007

The following is a summary of the Supplemental Supply and Demand Analysis prepared for this project. A copy of the Supplement Supply and Demand Analysis is available in the project record.

Demand

Overall, the trend for outdoor recreation participation indicates continued growth in the demand of outdoor recreation opportunities, facilities and services (Cordell 1999). Potential future recreation demand on a regional and national level is addressed in Cordell's *Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends (1999).* According to the report, the five fastest growing outdoor recreation activities through the year 2050 measured in activity days are expected to be: visiting historic places, downhill skiing, snowmobiling, sightseeing and non-consumptive wildlife activity. These activities tend to occur in the more developed ROS classes of Roaded Natural, Rural and Urban.

According to Cordell, days spent and numbers of participants in winter, water-based and developed land activities will, in general, grow faster than the population. These activities generally occur in Roaded Natural and Semiprimitive Motorized ROS classes. Hunting and fishing, along with other dispersed land activities, which occur in all ROS classes, are not expected to increase in activity days or participation numbers as fast as the population is growing. Non-consumptive wildlife activities, such as bird watching, are an exception to this trend; however, non-consumptive wildlife activities are not limited to dispersed settings. That is, non-consumptive wildlife activities would also occur in all ROS classes year-round and can occur in conjunction with other forms of outdoor recreation.

Supply

The overall recreation supply on the Forests was determined utilizing two methods. Capacity of general forest areas was estimated based on acreages within each ROS classification. Developed recreation site capacity was estimated by using designed capacity measured as Persons at One Time, taking into account length of season and estimated use levels. Capacity estimates are subject to a certain amount of subjectivity. 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. Overall, the Forests' demand for recreation did not approach capacity in the general forest areas (includes SPNM areas) utilizing the ROS classification method. The Nordhouse Dunes Wilderness exceeded capacity according to this method.

The total current recreation use for the Forests is less than the capacity based on ROS classifications. All alternatives would be within the total practical maximum capacity in the long-term of 50 years. This capacity would be monitored as part of implementation of the 2006 Forest Plan and re-evaluated when the 2006 Forest Plan is revised.

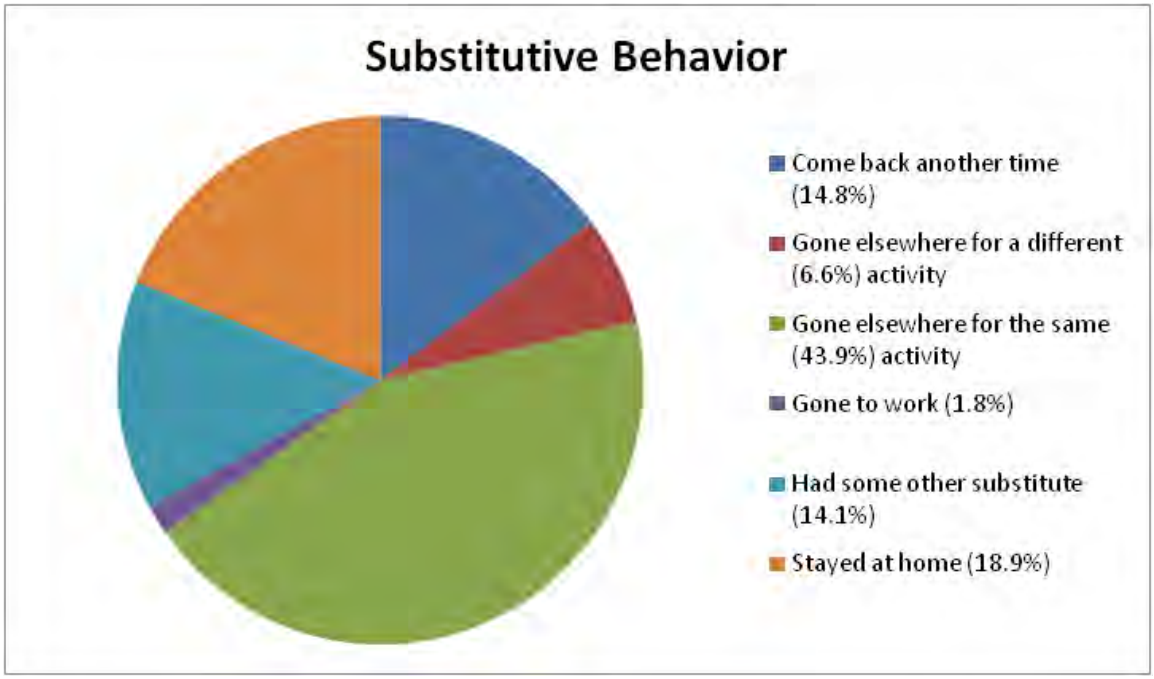
Substitute Behavior Choices

Changes in management of an area can lead to modifications occurring on recreation uses in an area. 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 the Forests. 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.

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 3).

Figure 3. 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 only travel 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. This information is useful to managers to help identify potential changes in recreation uses from modifications to management direction.

Developed Recreation

Developed recreation includes all activities occurring within developed recreation sites, including activities such as camping, picnicking, boat launching, fishing, wildlife watching, swimming and scenic viewing. The Forests maintains approximately 170 developed sites. These facilities include such places as campgrounds, swimming beaches, boat launches, trailheads and picnic areas. Many of the Forest Campgrounds are operated by a concessionaire under a special use permit from the Forest Service. Use fees are generally charged at developed recreation sites. Table 21 displays recreation sites located within the boundaries of the 13 analysis areas (M.A. 6.1 SPNM).

Table 21. Recreation Sites Located within the Boundary of a M.A. 6.1 (SPNM) Area

Area Name	Developed Recreation Areas
Au Sable	Bobcat Creek Carry In Access
	Stairway to Heaven Carry In Access
	Thompson's Carry In Access
	Rollways Recreation Area
Bowman Lake	Bowman Lake Campground
	Bowman Lake North Country Trailhead
Hoist Lakes	Hoist Lakes West Hiking Trailhead
	Hoist Lakes East Hiking Trailhead
Manistee River	Upper River Road North Country Trailhead
	Red Bridge River Access Site
Reid Lake	Reid Lake M-72 Hiking Trailhead
	Reid Lake Little Trout Hiking Trailhead
Wakeley Lake	Wakeley Lake Campground

Dispersed Recreation

Dispersed recreation includes all activities occurring outside the developed recreation sites, including activities such as camping, hiking, forest product gathering, wildlife watching, driving for pleasure and hunting and fishing. The Forests provide opportunities for dispersed recreation that often do not occur except in large public land areas. This portion of the analysis considers dispersed recreation opportunities currently provided on the Forests along with potential impacts of implementation of the four alternatives evaluated in detail. Dispersed recreation opportunities in the 14 analysis areas include activities such as hiking, backpacking, dispersed camping, hunting and fishing. In addition, other motorized activities such as snowmobile and ORV trail use along with recreation use of roads for viewing scenery are discussed since some of these activities occur within or adjacent to these areas.

This section is divided into two sections, SPNM areas and wilderness. Although some of the same uses occur in these areas, the Nordhouse Dunes Wilderness is Congressionally designated area. As such, the Wilderness Act and Michigan Wilderness Act establish specific direction which does not apply to the other areas.

The SPNM and SPM inventoried areas offer a wide variety of trails and dispersed recreation opportunities such as hiking, camping, hunting, fishing, berry picking, trapping, bird watching and many other remote recreation activities. The Nordhouse Dunes Wilderness Area is managed for both SPNM and Primitive recreation opportunities.

These opportunities include nine areas managed to provide nonmotorized use and solitude and an extensive trail system (USDA-FS 2001). The system includes trails for activities such as snowmobiling, cross-country skiing, hiking, mountain biking and horseback riding. The Forests contain excellent

canoeing waters, which include the Pine, Pere Marquette, Big Manistee, Little Manistee, Au Sable, Muskegon, Little Muskegon and White Rivers.

Noise

The affected environment for noise on the Forests is described in the 2006 FEIS (USDA-FS 2006, pp. III-275) and is incorporated by reference. Noise (sounds associated with humans) issues arise from people using NFS and adjacent lands.

When discussing sound and noise, the following definitions were used:

- Sound- A physical phenomenon; a vibration in the air that can be measured.
- Noise- Sound that has characteristics that may irritate or annoy a listener, interfere with the listener's activity or in some other way be distinguished as unwanted (USDA-FS 1980).

"In a recreation situation, the acoustic impact of a sound depends on the measurable inherent characteristics of the sound, the setting in which the sound is heard and the individual attributes of the listener. If the acoustic impact upon the listener is negative enough, the sound may be categorized as noise (USDA-FS 1980)." Sound characteristics include the amplitude, frequency and duration. The setting effects how loud a particular sound seems to a listener. As sound waves travel through air they lose energy. This loss is affected by numerous environmental factors including atmospheric absorption loss, foliage and ground cover, long distance loss, temperature effects and wind effects, barrier effects, hearing threshold and background sound levels. These factors vary from site to site and from time of day to time of year. Equipment and computer models can be used to help provide land managers predict the distances sound travels in areas.

According to Wurzbach, et al. (1975), "The subjective responses are the result, not only of the stimulus and the activity affected, but also of individual differences of the test listeners, previous exposure to noise and attitudes toward noise or those producing the noise. This observation is borne out by the fact that it has been determined that about 10 percent, of a typical population, are so sensitive to noise that they object to any noise not of their own making. Another 25 percent appears to be totally insensitive to the noise around them. Evidently, any meaningful discussion of noise control should be aimed at the two-thirds of the population who lie between these two extremes." Based on these studies, it is not just the sound characteristics, but the source of the sounds and the individual characteristics of the listener which determine whether a sound is considered noise.

Noise within the Forests is generated from many sources which have varying degrees of intensity and duration. These sources include such things as:

- motor vehicle use of highways and other roads,
- recreation vehicles on trails,
- human activities associated with developed and dispersed campsites,
- firearm use during hunting seasons and for target practice,
- power boating on lakes and streams,
- group activities such as canoeing, fishing and horseback riding,

- forest management activities such as timber harvest, mineral development and exploration, road construction and habitat improvement work,
- activities on adjacent private lands.

For the 14 analysis areas, the probability of isolation from the sights and sounds of others, in part, relates to firearm hunting and snowmobiling. In the Nordhouse Dunes Wilderness, opportunities for solitude also relates to how firearm hunting sound and sights could affect a visitor's opportunities for solitude. No snowmobile trails are located in or adjacent to the wilderness, so any sounds from a snowmobile would likely be associated with incidental use by local residents. Solitude is defined as ―the quality or state of being alone or remote from society (Webster 2011).

The Forest Service reviewed ROS direction regarding sights and sounds of humans, literature sources and modeling techniques. Copies of the information considered are available in the project record.

Under the ROS Users Guide (USDA-1982), the physical setting is defined by the absence or presence of human sights and sounds, size and the amount of environmental modification caused by human activity. Remoteness is one criteria used as an indicator of the opportunity to experience greater or lesser amounts of social interaction (sights and sounds of humans) from Primitive to Urban. As a guide, the distance from roads, railroads or trails with motorized use is used to consider the screening out of the sights and sounds of humans. This measure does not take into account such influences on sound as topography, vegetative differences and bodies of water.

Table 22 displays the Remoteness Criteria as displayed in the 1982 ROS guidebook. The distances portrayed are one means to assist managers in determining the opportunity to experience isolation from the sights and sounds of humans.

Table 22. ROS Remoteness Criteria

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
An area designated at least 3 miles from all roads, railroads or trails with motorized use	An area designated at least ½ mile but not further than 3 miles from all roads, railroads or trails with motorized use; can include the existence of primitive roads and trails if usually closed to motorized use.	An area designated within ½ mile of primitive roads or trails used by motor vehicle; but not closer from better than primitive roads.	An area designated within ½ mile from better than primitive roads and railroads.	No distance criteria.	No distance criteria.

Source: USDA-FS 1982, page 18

Table 23 displays the number of acres of NFS lands which are 0.5 of a mile or more from an open public road in the 14 analysis areas. Hoist Lakes has the greatest number of acres of land, 6,846 acres, which are ½ mile from a road. The White River has the lowest number of acres of land, 16 acres, which are 0.5 mile from an open road. A map showing the location of these areas is available in Appendix C.

Table 23. NFS Lands 0.5 Miles or More from Public Road in the 14 Analysis Areas

Area Name	Total Acres of NFS lands	Acres ½ mile from an open public road	Percent of area ½ mile from an open public road
Au Sable	10,628	4,018	39
Bowman Lake	1,145	309	27
Briar Hills	3,494	328	10
Condon Lakes West	3,301	1,209	37
Cooke	2,419	1,074	44
Hoist Lakes	9,862	6,846	71
Manistee River	7,985	393	5
Reid Lake	3,207	1,315	41
South Branch Au Sable	4,008	261	7
Wakeley Lake	2,414	454	22
Whalen Lake	2,754	0	0
White River	4,825	16	0
Whitewater Creek	7,183	835	12
Total	**63,225**	**17,058**	**27**
Wilderness			
Nordhouse Dunes	3,373	1,619	50

Source: USDA-FS 2011

In addition to considering distances from open public roads, the Forest Service considered the number and types of human sources of sounds occurring on private lands within and adjacent to 14 Areas. These lands often have improvements, such as residences, barns, garages, sheds and roads. Appendix C displays maps of the 14 analysis areas along with sources of noises located inside the areas and adjacent to area boundaries. These maps provide a spatial representation of the locations of various sources of noises within the areas. Although other sources of noises likely exist around the areas, the Forest Service identified major sources of noise based on the Remoteness Criteria and other known developments in the 14 analysis areas. Table 24 displays the sources of noises for each of the 14 analysis areas.

Table 24. Noise Sources in and Adjacent to the 14 Analysis Areas

Noise Sources	Au Sable	Bowman	Briar Hills	Condon Lakes	Cooke	Hoist Lake	Manistee River	Reid Lake	South Branch Au Sable	Wakeley Lake	Whalen Lake	White River	Whitewater Creek	Nordhouse Dunes
Within area boundary														
Firearm Hunting on NFS lands	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firearm hunting on private lands	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N/A
Motorized trails	Y	N	N	Y	N	N	Y	N	N	N	Y	N	Y	N
Motorboat use	Y	N	N	N	N	N	Y	N	N	N	Y	N	N	N
NFS Roads	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
County Roads	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	N
Railroad grades	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NFS Recreation Sites	Y	Y	N	N	Y	Y	Y	Y	N	Y	N	N	N	N
Buildings	Y	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N
Active Oil and Gas wells	N	N	N	N	N	N	N	N	Y	N	N	N	N	N
Utility rights-of-way	Y	Y	N	N	N	N	Y	N	Y	Y	N	N	Y	N
Within 1 Mile from area boundary														
Firearm Hunting on NFS lands	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firearm hunting on private lands	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Motorized trails	Y	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	Y	N
Motorboat use	Y	N	N	Y	Y	N	Y	N	N	Y	Y	Y	Y	Y

Noise Sources	Au Sable	Bowman	Briar Hills	Condon Lakes	Cooke	Hoist Lake	Manistee River	Reid Lake	South Branch Au Sable	Wakeley Lake	Whalen Lake	White River	Whitewater Creek	Nordhouse Dunes
NFS Roads	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
County Roads	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
State Highways	Y	N	Y	N	Y	Y	N	Y	Y	Y	N	N	N	N
Railroad grades	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
NFS Recreation Sites	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y
Buildings	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Utility rights-of-way	Y	Y	N	Y	N	N	Y	N	Y	Y	N	Y	Y	N
1-3 Miles from area boundary														
Motorized trails	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N
NFS Recreation Sites	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NFS Roads	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
County Roads	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
State Highways	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N
Railroad grades	N	Y	Y	N	N	N	Y	N	N	N	Y	N	N	N
Buildings	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Utility rights-of-way	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y

Noise Sources	Au Sable	Bowman	Briar Hills	Condon Lakes	Cooke	Hoist Lake	Manistee River	Reid Lake	South Branch Au Sable	Wakeley Lake	Whalen Lake	White River	Whitewater Creek	Nordhouse Dunes
More than 3 Miles from area boundary[13]														
Miles to military aircraft firing range	34	84	53	88	43	32	61	38	6	2	90	108	4	95
Miles to military aircraft flight training run	1.6	0.2	0.3	1.9	crosses	3.7	crosses	1.0	0.7	2.3	3.5	21.6	crosses	19.0

[13] Noticeable noise contributor to area

The Forest Service considered specific sources of noises for each area including motorboat use on adjacent rivers and lakes, oil and gas exploration equipment, utility lines and military exercises at Camp Grayling, Michigan. The Forest Service recognizes this information provided does not include all potential sources of noise, but considers this information as an indicator of the absence or presence of the sights and sounds of humans. This information was considered during the preparation of the ROS review conducted for the 14 analysis areas. More detailed information about the number and distances of these sources of noise in each area is available in the project record.

The concept of solitude tends to be subjective since different people have different perceptions of what constitutes adequate solitude and what might intrude upon it. Therefore, analysis methods used by other agencies for sound impacts were also considered as part of this analysis.

The Park Service evaluated sound from snowmobiles in Yellowstone National Park (USDI-NPS 2007). The Park Service evaluated four management zones; developed area, road corridor, transition zone and backcountry. Developed Area equated to a ROS setting of Rural and Urban. Road Corridor equated to a ROS setting of Roaded Natural. Transition Zone was related to both Roaded Natural and Semiprimitive Nonmotoried. Backcountry equated to a Primitive ROS designation. The Winter Use Plan EA completed by the Park Service was considered along with the analysis process and recommendations developed to address management issues. Yellowstone sets a concept of measuring sound levels as they relate to visitor expectations within each of their management zones. The 14 analysis areas under consideration in the SEIS are located throughout the Forests. Each area has a wide variety of sources of sounds at different locations during different times of the year. Therefore, the Forest Service did not utilize the process and measures adopted in Yellowstone since they were tailored specifically for the noise issues and management situation at Yellowstone. The conditions and issues in the SEIS are different from those at Yellowstone.

The Forest Service considered a recent study completed on the Superior National Forest as part of the South Fowl Lake Snowmobile Access Project (USDA-FS 2006d). A study was completed to analyze potential impacts of snowmobile noise on an adjacent wilderness area using Spread-GIS: a spatial model for the propagation of engine noise in a wildland setting. This analysis and the associated conclusions were reviewed. The Forests considering the site-specific conditions of the areas involved in the SEIS and the numerous sound sources impacting the opportunities for solitude. Based on a review of the Superior National Forests process and measures used for the sound study, the Forests considered the results from this form of study would not provide information in a timely and comprehensive manner that would adequately address the issues in the SEIS.

Other information considered regarding noise measuring and monitoring techniques to address noise issues that were considered during the analysis process is available in the project record.

Law Enforcement

Under the Organic Administration Act and other acts enacted by Congress, the Forest Service has the ability to adopt regulations to address use and management issues on NFS lands. Some regulations have been adopted on a nation-wide basis to address public safety issues such as hunting in and adjacent to developed recreation areas and operating mechanical equipment in sensitive areas, such as wilderness areas. The Forest Service also has the authority to close or restrict the use of NFS roads or trails within an area on NFS lands in accordance with 36 CFR 261.50 (a) and (b).

According to National regulations 36 CFR 261.10 - Occupancy and use, "the following are prohibited … (d) Discharging a firearm or any other implement capable of taking human life, causing injury or damaging property as follows: (1) In or within 150 yards of a residence, building, campsite, developed recreation site or occupied area or (2) Across or on a NFS road or a body of water adjacent thereto or in any manner or place whereby any person or property is exposed to injury or damage as a result in such discharge." Therefore, firearm use in these areas is prohibited across the Huron-Manistee National Forests.

Forest Service Manual direction (USDA-FSM 2643.1) specifies that hunting, fishing and trapping of fish and wildlife and associated practices on NFS lands are subject to State fish and wildlife laws and regulations, unless one or both of the following applies:

1. State fish and wildlife laws and regulations conflict with Federal laws; or
2. State laws and regulations would permit activities that conflict with land and resource management responsibilities of the Forest Service or that are inconsistent with direction in forest plans.

Motorized use is prohibited or restricted in some areas of the Forests. According to 36 CFR 261.13 - Motor vehicle use "After NFS roads, NFS trails and areas on NFS lands have been designated pursuant to 36 CFR 212.51 on an administrative unit or a Ranger District of the NFS and these designations have been identified on a motor vehicle use map, it is prohibited to possess or operate a motor vehicle on NFS lands in that administrative unit or Ranger District other than in accordance with those designations." The Forests are implementing the national direction outlined in the Travel Management Rule (36 CFR 212.51). The Forests provide Motorized Vehicle Use Maps (MVUM) showing roads and motorized trails which are open to motorized travel. Routes not shown on the MVUM are not open to public motor vehicle travel. This MVUM is updated annually to correct mapping errors and update travel management decisions on the Forests.

The MVUM does not include designated snowmobile trails on NFS lands. Snowmobile use on the Forests is restricted to designated trails or areas unless otherwise provided for by law, regulation or by special area management objectives (USDA-FS 2006a page II-13). In Michigan, snowmobile use is permitted along unplowed seasonal county roads and the shoulders of plowed county roads.

When special orders are adopted by the Forest Supervisor, a copy of the order is made available to the public at the Supervisor's office in Cadillac, Michigan, and local ranger district offices. Additional information about orders is available upon request at offices and the Forest Web site. Most Forest orders are not posted on the ground. The Forest Supervisor of the Huron-Manistee National Forests has issued closure orders to address occupancy and use issues in the 14 analysis areas. These orders were adopted to address specific public safety and resource concerns in these areas. A copy of these orders is available in the project record.

Closure orders are enforced by Forest Service special agents and Forest Protection Officers. Orders are typically enforced when violations are noted or reported. Violation penalties are based off of established fee schedules, policies and guidelines.

Hunting

Wildlife is both a focal point and an amenity for recreation users of the Forests. Hunting is one of the top five primary recreation activities on the forests (USDA-FS 2003). Hunting starts with squirrel, grouse and woodcock in mid-September. In October, November and December, deer hunters dominate the activities

of these Forests, while waterfowl hunting overlaps these seasons. Rabbit hunting carries on through winter and wild turkey hunting is mainly a spring activity. In total, about 50 wildlife species can be hunted and/or trapped on the uplands and wetlands of these Forests. Table 25 shows the dates of Michigan's primary hunting seasons as they occurred in 2010.

Based on a review of the Forests annual Monitoring and Survey Reports, no resource damage has been documented from legal firearm hunting on the Forests. According to law enforcement reports, some illegal activities associated with firearm hunting are known to occur, such as illegal deer baiting, illegal hunting stands and cross-country use of off-road vehicles (ORVs). Closure orders for ORV use are in place across the Forests allowing use only on designated trails. Little resource damage has been reported from the use of firearms for hunting in these areas. Following guidance found in 36 CFR261.10 (d) Occupancy and Use, the Forests have closed administrative sites and recreation areas to firearm hunting to provide for visitor safety. No other safety concerns from firearm hunting have been reported. Although Huron-Manistee National Forests' offices have received complaints about the noise of gunshots associated with target practice near popular dispersed camping areas, the Forests have no law enforcement incident reports with noise complaints associated with firearm hunting.

Table 25. 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 2011c

The State of Michigan requires anyone born after January 1, 1960 to complete a hunter safety class prior to being able to acquire a hunting license. The MDNR Law Enforcement Division tracks hunting related accidents. Table 26 displays the number of Michigan fatalities and other non-fatal injuries related to hunting from 2005-2010 listed in MDNR law enforcement annual reports. From 2005 to 2010, 16 hunting-related fatalities occurred in Michigan. Of these fatalities, 15 were hunters and one fatality was not identified as either a hunter or non-hunter. In the 5 year period, 145 hunting related injuries were reported. Eighty-four of the nonfatal injuries were reported to hunters, 5 injuries to non-hunters and 40 injuries identified as unknown.

Table 26. Number of Michigan Fatalities and Other Non-Fatal Injuries Related to Hunting from 2005-2010

Year	Fatal			Non-fatal			Total
	Hunter	Non-Hunter	Unknown	Hunter	Non-Hunter	Unknown	
2005	3	0	0	13	4	4	24
2006	3	0	1	13	0	18	35
2007	2	0	0	22	1	7	32
2008	2	0	0	12	0	8	22
2009	2	0	0	14	0	2	18
2010	3	0	0	10	0	1	14
Total	15	0	1	84	5	40	145

Source: MNDR 2005-2010

During this period of time, the Forest Service has no record of any hunter related fatalities or injuries on the Forests. Based on 2006 NVUM data, approximately 6.1 million hunting related recreation visits occurred on NFS lands. Based on MDNR reports, approximately 66 percent of hunting visits are estimated to be associated with firearm hunting.

Trails

Trails on the Forests have been developed which are designed and managed for a variety of uses including hiking, horseback riding, mountain biking, cross-country skiing, snowmobiling and ORV use. The Huron-Manistee has 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 designs accommodate the user's needs while protecting the resources. 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. Snowshoeing also occurs on these trails in the late fall and winter months. These areas are also well known for the excellent mountain biking opportunities in the spring, summer and fall.

Other hiking trails on the Forests provide ungroomed cross-country skiing and snowshoeing opportunities. Maps displaying the trail systems on the Forests are available in the project record. Table 27 summarizes trail mileages on the Huron-Manistee National Forests.

Table 27. Trail Mileage by Managed Use on the Huron-Manistee National Forests

Hiking	Biking	Snowmobile	Cross-country Ski	Horseback riding	OHV	Motorcycle
450	154	525	268	163	293	250

Source: USDA-FS 2011 Note: The trail mileages cited do not include portions of trails across private lands within the proclamation boundary

The Forest Service and MDNR worked cooperatively for over 30 years in developing the existing snowmobile trail system across NFS lands. This trail system was designed to provide a safe, long-term trail network to connect communities. The trail segments are 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. The current trail system has evolved over many years as the Forest Service and MDNR implemented actions to address land management issues while minimizing conflicts and maintaining recreation opportunities.

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

Table 28 displays the number of snowmobile-use related fatalities in Michigan from 2006-2010. During this period, 115 people died; an average of 23 per year. Only one of the fatalities was a non-snowmobiler. In this instance, the fatality involved a youth struck by a snowmobile which was responding to an injury of a downhill skier at a resort. No fatalities were reported to cross- country skiers on snowmobile trails within the Forests' from 2006 -2010. During this time, the Forest Service estimates 540,000 recreation visits occurred associated with snowmobile use on the Forests (USDA-FS 2007). Michigan does not track injuries related to snowmobile use. The Forest Service has no record of any injuries related to cross-country skiers being struck by snowmobiles on the Forests.

Table 28. Summary of Snowmobile Fatalities and Injuries in Michigan (5 year summary)

Year	Fatalities		Total Fatalities per year
	Snowmobile Driver	Passenger or Other	
2006	20	1 passenger	21
2007	18	1 passenger & 1 non-snowmobiler	18
2008	25	2 passengers	27
2009	25	1 passenger	26
2010	20	3 passengers	23
Total	108	8	115

Source: MNDR 2005-2010

Accident reports did not provide enough information to determine the accident occurrence rates on designated snowmobile trails compared to county road rights-of-way.

Nonmotorized Trails within the 14 Analysis Areas

Both motorized and nonmotorized trails are located in and adjacent to the 13 non-wilderness areas. Table 29 details the trail mileage by area and type of managed use. Maps displaying the trail systems in and adjacent to each of the SPNM areas are available in Appendix A. Nonmotorized trail uses conform to ROS classification standards for activities in SPNM areas.

Table 29. Nonmotorized Trail Mileage in the 14 Analysis Areas

Area Name	Within Area		
	Horseback	Hiking[14]	Cross-country Skiing
Au Sable	10.4	0	0
Bowman Lake	0	5.2	0
Briar Hills	0	0	0
Condon Lakes West	0	0.2	0
Cooke	0	0	0
Hoist Lakes	0	19.5	19.5
Manistee River	0	20.3	0
Reid Lake	0	12.6	12.6
South Branch Au Sable	0	0	0
Wakeley Lake	0.8	8.6	8.6
Whalen Lake	0	0	0
White River	0	0	0
Whitewater Creek	0	1.6	0
TOTAL	**11.2**	**68**	**40.7**

Source: USDA-FS 2011

Nordhouse Dunes Wilderness

Hiking is a popular activity in the Nordhouse Dunes Wilderness. The Forest Service maintains 16.5 miles of hiking/backpacking trails to a wilderness standard. No motorized trails are located in or adjacent to the area. A map displaying the nonmotorized trail system within the Nordhouse Dunes Wilderness Area is available in the project record. Nonmotorized trail uses conform to ROS classification standards for activities in the wilderness area. No motorized uses are authorized within the Nordhouse Dunes Wilderness.

[14] Cross-country skiing and horseback riding trails are also designated hiking trails. However, the mileage in this column is for trails that are designed for the primary use of hiking.

Motorized Trails within the 14 Analysis Areas

Table 30 displays motorized trails within and adjacent to the 14 analysis areas. Motorized trail uses within SPNM areas do not conform to ROS classification standards for activities in these areas. Motorized trail uses adjacent to or near these areas are considered as occurring in other management areas and as such, conform to the ROS classification standards for those adjacent areas.

Nordhouse Dunes Wilderness

There are no motorized trails in Nordhouse Dunes Wilderness.

Table 30. Motorized Trail Mileage in the 14 Analysis Areas

Area Name	Within Area Boundary		Adjacent to Area Boundary	
	Snowmobile	ORV	Snowmobile	ORV
Au Sable	0.2	0	1.6	0
Bowman Lake	0	0	0.7	0
Briar Hills	0	0	6.2	0
Condon Lakes West	0	0.6	5.7	5.7
Cooke	0	0	0	0
Hoist Lakes	0	0	0	0
Manistee River	4.6	0	0	0
Reid Lake	0	0	0	0
South Branch Au Sable	0	0	0	0
Wakeley Lake	0	0	0	0
Whalen Lake	0	1.0	0	0.2
White River	0.6	0	2.8	0
Whitewater Creek	4.1	4.9	0	0
Total	**9.5**	**6.5**	**17.0**	**5.9**
Wilderness				
Nordhouse Dunes	0	0	0	0

Source: USDA-FS 2011

Roads

The analysis area for roads includes NFS lands and private lands within the boundaries of the 14 analysis areas within the Forests. This area represents the total land area where miles of road per square mile calculations were made to determine road density. Road densities discussed are total road densities in an area regardless of jurisdiction. The affected area for cumulative effects includes land within the proclamation boundaries of the Forests.

Current Condition

The affected environment for roads on the Forests is described in the 2006 FEIS (USDA-FS 2006, pp. III-279-280 and III-318-322) and is incorporated by reference. This section addresses road management issues associated with the alternatives evaluated in detail as part of the SEIS. Further information on the roads management program can be found in the 2006 FEIS.

Roads on the Forests are vital to providing access to the public and enable implementation of management activities. However, roads also have associated engine noise, are costly to maintain and may cause adverse resource impacts. Motorized vehicle use on roadways can produce pollutants and degrade soil and water resources. They create openings which can fragment forest ecosystems. Road use can adversely impact wildlife species by inviting noise into areas from vehicle and human uses. Vehicle use can also lead to wildlife mortality from collisions and transport non-native invasive species. Managers balance the number, location and type of roads to address management issues. The Forest Service works with County agencies to address road jurisdiction issues on a case by case basis.

An estimated 7,000 miles of roads exist within the Forests' boundary. Approximately 3,000 miles of road are NFS roads under the jurisdiction of the Forest Service.

Roads provide a key means of accessing the 14 analysis areas. These areas offer a wide variety of trails and dispersed recreation. No roads are located within the Nordhouse Dunes Wilderness. Table 31 displays the miles of open roads within county/State and Forest Service jurisdiction for these areas on the Forests.

Table 31. Roads Open to Motorized Use within the 14 Analysis Areas on the Huron-Manistee National Forests

Area Name	County/ State Jurisdiction (miles)	Forest Service Jurisdiction (miles)	Total of All Roads in Area (miles)
Au Sable	0.81	5.20	6.01
Bowman Lake	1.24	0.45	1.69
Briar Hills	0.00	6.73	6.73
Condon Lakes West	0.00	0.40	0.40
Cooke	0.00	0.23	0.23
Hoist Lakes	0.00	0.17	0.17
Manistee River	12.69	4.49	17.18
Reid Lake	0.00	0.07	0.07
South Branch Au Sable	0.00	5.84	5.84
Wakeley Lake	5.54	2.22	7.76
Whalen Lake	0.00	8.08	8.08
White River	7.62	4.55	12.17
Whitewater Creek	5.14	8.87	14.01
Total	**33.04**	**47.30**	**80.34**

Area Name	County/ State Jurisdiction (miles)	Forest Service Jurisdiction (miles)	Total of All Roads in Area (miles)
Wilderness			
Nordhouse Dunes	0	0	0

Source: USDA-FS 2011

The Forest Plan (USDA-FS 2006 pp. II-39 and 40) identifies guidelines for the maximum average miles of road per square mile for all roads by management areas, as displayed in Table 32. The 2006 Forest Plan direction for roads in the Nordhouse Dunes Wilderness is, "allow no Forest Service roads, except those authorized by the act of establishing the Wilderness (USDA-FS 2006a, page III-5.1-6)." No roads exist in Nordhouse Dunes Wilderness.

Table 32. Maximum Average Miles of Roads per Square Mile for All Roads by Management Area[15]

Average Miles of Road/Square Mile	Management Area and ROS
0-1 Miles	6.1 (SPNM Areas)
0-2 Miles	6.2 (Semiprimitive Motorized Areas)
0-3 Miles	2.1, 4.2, 4.3, 4.4 (Roaded Natural and Rural)

Source: USDA-FS 2006a, page II-40

Table 33 displays the total miles of roads and miles per square mile of roads (road density) for the 14 analysis areas. Currently, 6 of the 14 areas exceed the maximum average of miles of road per square miles of road for M.A. 6.1 (SPNM). They are: Briar Hills, Manistee River, Wakeley Lake, Whalen Lake, White River and Whitewater Creek.

[15] No specific road densities are identified for M.A. 8.4 Special Areas.

Table 33. Road Mileage and Density by Area

Area Name	Total Miles of Road in Area	Square Miles of Area	2011 Road Density
Au Sable	6.01	16.1	0.37
Bowman Lake	1.69	1.73	0.98
Briar Hills	6.73	5.29	1.27
Condon Lakes West	0.46	5.00	0.09
Cooke	0.23	3.67	0.06
Hoist Lakes	0.17	14.94	0.01
Manistee River	17.18	12.10	1.42
Reid Lake	0.07	4.86	0.01
South Branch Au Sable	5.84	6.07	0.96
Wakeley Lake	7.76	3.66	2.12
Whalen Lake	8.08	4.17	1.94
White River	12.17	7.31	1.66
Whitewater Creek	14.01	10.88	1.29
Total	80.34	95.80	0.84
Wilderness			
Nordhouse Dunes Wilderness	0	5.11	0

Source: USDA-FS 2011

National Wild and Scenic Rivers

Congress established a National Wild and Scenic River System to accomplish the goals of the Wild and Scenic Rivers Act (P.L. 90-542 as amended). To qualify, a river must be in a free-flowing condition and must be deemed to have one or more "outstandingly remarkable" scenic, recreation, geologic, fish and wildlife, historic, cultural or other similar values. The rivers and their immediate environments are protected for the benefit and enjoyment of present and future generations. The Forests manage five Congressionally designated National Wild and Scenic Rivers according to their management plans tailored to protect and enhance each river's outstandingly remarkable values.

The following National Scenic Rivers are located on the Manistee National Forest:

- Pere Marquette, 66 miles, includes areas inside and outside the Forests' boundary
- Pine River, 26 miles
- Bear Creek, 6.5 mile

The following National Scenic River is located on the Huron National Forest:

- Au Sable, 23 miles

The following National Recreation River is located on the Manistee National Forest:

- Manistee, 26 miles

All five of the Wild and Scenic Rivers within the Forests' boundary are part of the State of Michigan's Natural Rivers program. The Forest Service coordinates with the State of Michigan when land management activities are proposed within the river corridors.

Designated Wild and Scenic Rivers and their corridors are located in management area 8.1 (Wild and Scenic Rivers) of the Forest Plan. General Forest Plan direction for management of these rivers is designed to ensure protection of the rivers' free-flow, outstandingly remarkable values and the protection and improvement of the aquatic resources and hydrologic function of the river.

Study or Eligible National Wild and Scenic Rivers

The Little Manistee and White Rivers have been identified as Wild and Scenic Study Rivers for potential inclusion into the National Wild and Scenic River System on the Manistee National Forest by the Michigan Rivers Act (P.L. 102-249). The Little Muskegon and Muskegon Rivers were determined to be eligible for inclusion into the National Wild and Scenic River system in 1988 as part of the Huron-Manistee 2006 FEIS, as amended. Suitability studies for these two rivers have not been completed. The Pine River addition area on the Manistee National Forest, a section from the former Stronach Dam to M-55, has been evaluated for potential inclusion into the National Wild and Scenic River System. Eligibility for this segment of the Pine River has been completed.

Forest Contribution to Local Community Economies

Forest Plan decisions contribute to economic sustainability by providing for a range of uses, values, products and services. Concurrently, Forest Plan direction must be consistent with ecological sustainability. The mix of uses, values, products and services provided by each alternative are measured by representative values indicated by employment, income, industry sectors and portion of economic cumulative impacts, within the Forests' defined "economic impact area."

This analysis considers the potential effects to market-related goods and services that are traditionally related to the National Forests, for which monetary values are available and for which analysis tools are generally accepted. Market benefits can include revenue related to the sale of timber and fees from camping. The Forests also provide revenue to the impact areas from expenditures related to the management of the National Forests. These include items such as employee salaries and contracting for trail construction.

Affected Environment and Impact Area

Economic impact areas consider State/local planning regions and associated economies, National Forest supply based regions, Forest Service expenditures and other factors. The impact area for the Huron-Manistee National Forests, for purposes of the economic impact modeling, includes the following 18 counties; Alcona, Alpena, Crawford, Iosco, Lake, Manistee, Mason, Missaukee, Montmorency, Muskegon, Newaygo, Oceana, Osceola, Oscoda, Otsego, Roscommon and Wexford.

The U.S. Department of Commerce (2011) reports that between 1998 and 2008 the travel and tourism industry in these counties showed a very slight increase while the remaining sectors showed a loss of over

3,500 jobs. From 1970 to 2009 the 18-count county area lagged U.S. growth in personal income by 60 percent and employment growth by 34 percent, with Iosco and Muskegon counties lagging the most.

An economic impact modeling tool, IMPLAN© Version 3.0.9.2 (IMpact Analysis for PLANning) was used to estimate current economic activity and impacts of Forest decisions on local economies. IMPLAN allows forest managers to examine how the Forests influence employment and labor incomes within the counties that make up the impact area. Due to potential substitution effects from competing non-government sources, jobs are characterized as being associated with local economic activity initiated by Forest Service programs and activities, rather than caused by these activities. For example, in a situation where 25 percent of logs currently processed by a particular mill are harvested from the Forests, with 75 percent from other sources, if a reduction in available National Forest stumpage reduces the proportion to 20 percent, a substitution effect would be made by wood supplied from other sources, such as State and private lands possibly shipped longer distances to make up the 5 percent.

Economic relationships generated within IMPLAN were extracted and used in the Forest Economic Analysis Spreadsheet Tool (FEAST). FEAST was used at the Forest-level to analyze the impacts of alternatives being compared in this document.

The following table (Table 34) characterizes the IMPLAN model view of jobs and income in the impact area in total and for the current Forest Service-related jobs and income.

Table 34. Current Role of Forest Service-Related Contributions to the Area Economy

Industry	Area Totals	FS-Related	Area Totals	FS-Related
Agriculture	9,286	184	$190,888	$4,996
Mining	1,843	222	$89,064	$12,134
Utilities	891	13	$96,660	$1,384
Construction	10,585	28	$428,934	$991
Manufacturing	23,607	187	$1,454,050	$ 9,529
Wholesale Trade	4,245	186	$221,427	$9,619
Transportation & Warehousing	6,025	118	$200,720	$4,474
Retail Trade	33,219	694	$856,419	$15,919
Information	2,119	39	$106,825	$1,744
Finance & Insurance	5,849	53	$267,640	$2,458
Real Estate & Rental & Leasing	6,897	81	$110,019	$1,343
Prof, Scientific, & Tech Services	4,587	91	$209,211	$4,184
Mngt of Companies	315	7	$24,417	$526
Admin, Waste Mngt & Rem Serv	5,659	89	$139,082	$2,081
Educational Services	3,665	24	$60,508	$395
Health Care & Social Assistance	28,789	177	$1,170,720	$7,222
Arts, Entertainment, and Rec	4,100	318	$60,478	$5,416
Accommodation & Food Services	17,303	1,556	$272,443	$26,741
Other Services	16,268	124	$388,562	$3,268
Government	34,321	281	$1,767,535	$15,827
Total	**219,572**	**4,472**	**$ 8,115,603**	**$130,251**
FS as Percent of Total		2.0%		1.6%

Source: IMPLAN Version 3.0.9.2 and 2009 IMPLAN data for impact counties.; Employment includes full and part-time jobs. Excludes expenditures by local residents for recreational activities, including fish and wildlife.

The figure of 219,572 area jobs is less than the 262,052 full and part time jobs reported in the 2006 FEIS and 224,295 jobs full-time-only jobs estimated by Leefers, et al. (2003). While manufacturing, which includes the forest products industry, accounts for 18 percent of the area total income, it only accounts for 11 percent of the jobs. Area totals for retail trade, arts, entertainment, recreation, accommodation and food services account for 15 percent of the income and 25 percent of the jobs, which include most recreation-related employment. When only Forest Service-related jobs are considered, the retail trade and service industries account for 57 percent of the jobs and 37 percent of the income.

The U.S. Bureau of Labor Statistics reports unemployment in the impact area has risen from 4.9 percent in 2000 to 15.1 percent in 2009. Winter unemployment rate estimates from the U.S. Department of Labor in 2009 were nearly 18 percent when recreation opportunities are much more limited, even when the important activities of hunting and snow sports recreation contributions are factored in.

Data Information

Timber Sales Revenue and Expenditure Data

Information on timber stumpage values was obtained from the Forests' timber sales records. Six different categories of timber products–softwood sawtimber, softwood pulpwood, hardwood sawtimber, hardwood pulpwood and aspen sawtimber and pulpwood–are harvested from the Forests and processed by various sectors. Stumpage values were determined for each of these categories. The IMPLAN model was used to estimate production coefficients for these categories. The economic impact area has a diverse mix of timber processing firms including sawmills, planing, flooring, veneer and plywood, pallet, veneer and plywood, preserving and paper mills. The IMPLAN model was used to estimate employment in the lumber and wood products industry. The model estimated that retail trade and service industry are by far the largest employers based on Forest Service resources.

Recreation Revenue and Expenditure Data

The NVUM survey contains information on the number of visitors to each National Forest, how important the National Forest is to the trip and expenditures of the visitors. A National Forest visit is the entry of one person upon a national forest to participate in recreation activities for an unspecified period. The Forests received an estimated 4,069 million visits in Fiscal Year 2007 (USDA-Forest Service 2010).

Forest Service Program Areas

The impacts of the alternatives are projected based on Forest Service expenditures and the estimated outputs in four program areas of forest management, including recreation/tourism, wildlife and fish, timber and minerals. The output levels used for this analysis represent the projected 10-year average for the planning period. National Forest resource specialists have provided budget estimates based on the best available information and professional judgment.

The existing condition, labeled "Current," is displayed in the tables located within the following discussion of economic indicators. The realistic funding information includes fiscal year 2010 budget values for forest programs.

County Revenue via Payments to States

There are three payments or revenue sources provided to counties via payments to States from the Federal government that are based on the amount of NFS lands within the county. These payments are a source of revenue for counties and local school districts and are meant to offset the loss of potential land, goods and services related tax revenue.

1) 25 Percent Fund payment or The Secure Rural Schools and Community Self-Determination Act of 2000:

The first county payment or revenue is the "25 Percent Fund payment." The 25 Percent Fund payment is based on gross National Forest receipts within a National Forest and is allocated to the counties by the proportion of the total National Forest acreage within each of the counties in the particular National Forest. For example, if a National Forest had $1,000,000 in gross receipts and County A included 20

percent of the acreage of the National Forest, County B, 50 percent and County C, 30 percent; then the $250,000, 25 percent of gross receipts, would be split $50,000 to County A, $125,000 to County B and $75,000 to County C. The counties, that have NFS lands within their boundaries operating under the 25 Percent Payment allocation include Alcona, Alpena, Crawford, Iosco, Lake, Manistee, Mason, Missaukee, Montmorency, Muskegon, Newaygo, Oceana, Osceola, Otsego and Roscommon.

The Secure Rural Schools and Community Self-Determination Act of 2000 became a new option to counties to replace the 25 Percent Fund payment. It is designed to stabilize annual payments to States and counties over five years, beginning in 2001. This program was reauthorized in 2008 for four additional years. The new formula for computing annual payments is based on averaging a State's seven highest payments for the previous seven years to arrive at a compensation allotment or "full payment amount." Counties could choose to continue to receive payments under the 25 Percent Fund or to receive the county's proportionate share of the State's full payment amount under the secure rural schools and community self-determination option. Crawford and Wexford Counties are receiving payments under the Secure Rural Schools and Community Self-Determination Act; therefore, payments to these counties will not be affected by any Forest revenue changes in the revised Forest Plan.

2) Payment in Lieu of Taxes:

Payment in Lieu of Taxes (PILT) is another Federal payment to counties. It is based on the number of Federal entitlement acres within a county and a schedule of maximum and minimum per acre payments, which are adjusted annually by the Consumer Price Index. PILT may fluctuate year to year based partly on the previous year's county income from several Federal programs, including 25 and Secure Rural Schools. The PILT program is administered by the U. S. Department of Interior and funded directly by Congress outside of decisions made by the Forest Service evaluated in this EIS.

3) Mineral Royalties

The third major Federal program that funds States and counties involves mineral royalties generated on Federal lands. For lands acquired by the Forest Service under the Weeks Act, which includes most of the Huron-Manistee National Forests lands, the Federal government shares 25 percent of gross mining receipts with the State. Mineral royalties historically have been added to the 25 Percent Fund, earmarked for schools and roads, but after 1992, an administrative change shifted these payments to a separate fund for counties, not earmarked for schools and roads. Since 1992, royalties for minerals activities on NFS lands have been paid directly to counties by the Bureau of Land Management's Minerals Management Service.

Recreation and Tourism

Outdoor recreation, travel and tourism provide an important contribution to Northern Michigan's regional economy. Tourism has historically been and remains an important part of the area's economy and figures are available to measure market values to an area. Tourism is defined by the United Nations Statistics Commission, "As any person traveling to a place outside their usual environment for not more than one consecutive year." This definition applies to economic activity that stems from both business and vacation purposes, regardless of the duration of the trip, as long as it is less than one year. Likewise, this definition does not distinguish between a non-resident visitor and a resident visitor. It is hard to determine what part of tourism can be attributed to the natural amenities offered in the National Forest area, as compared to developed attractions such as golf courses and downhill ski areas. However, National Forest settings and activities that are tied to the aesthetic qualities of, the abundance of and increased opportunities to experience wildlife, lakes and rivers, large undeveloped forested areas are an important draw to visitors.

Commercial Wood Products

Commercial wood products directly or indirectly derived from forested timberlands, including National Forests, respond to the ongoing demand for these products by society. The primary forest products industry is vital to Michigan's economy and forest health. The industry is especially important to rural Michigan, where highly paid jobs are important to local economies. It is dominated by large pulp and paper producers; oriented strand board mills and flakeboard mills.

There are many suppliers to the demand for wood products across the State. Wood comes from private, public and industry timberlands to meet State, regional and national demand for wood products. NFS lands contain many acres of lands that are not within the suitable land class for timber harvest for a variety of reasons. These include lands excluded because of law or policy, for example, designated Wilderness and Research Natural Areas and other lands that are excluded, such as lands containing wetlands and campgrounds. National Forests are also managed under the guidance of the Multiple Use-Sustained Yield Act of 1960. This Act established the multiple-use and sustained yield policies for management of the National Forests and creates expectations that these lands will be managed for multiple resource products, benefits and values for the people of the United States. The mix of management necessary to sustain the natural resources, social and economic resources at the local and regional level requires forestwide and site-level decisions that do not always maximize timber volume harvested. Factors that influence management decisions include, but are not limited to, threatened and endangered species restrictions, recreation use and opportunities and water-resources considerations.

Scenery Management System

The affected environment for visual resources on the Forests is described in the 2006 FEIS (USDA-FS 2006, pp. III-278 and 279 and III-307-311) and is incorporated by reference. Visual management issues tend to be associated with addressing forest vegetation management, maintenance of Endangered, Threatened and Sensitive species habitat and wildland fire suppression. In addition, management of the visual resource is very important in those areas with high recreation use and with high scenic value.

In summary, scenery is an important natural resource of the Forests, which can enhance people's lives and benefits communities and society. Sightseeing and driving for pleasure are among the Forest's leading recreation activities and demand is expected to continue. Many people are concerned about the scenic values of the landscape they live in, recreate in and/or travel through. Many people desire a natural character be maintained in the forest, but can differ on opinion about what is natural. Some people place high value on landscapes with little evidence of management activity such as timber harvest, roads, utility corridors or other developments. Other people have a higher tolerance for noticeable management activity. Some people prefer a park-like forest that has large trees and that is relatively open beneath the tree canopy. Still others prefer forests where vegetation is multilayered and wood has accumulated on the forest floor.

Some people are also concerned that a strong emphasis on scenic quality would reduce the intensity of forest management activities, especially timber harvest, which occurs.

The Scenery Management System is a tool used by the Forest Service to determine the relative value and importance of scenery on NFS lands. The process involves classifying landscapes, setting goals and objectives for maintaining, enhancing, restoring and monitoring scenic integrity. An explanation of the Scenery Management System can be found in Appendix A of the Forest Plan (USDA-FS 2006a).

Environmental Consequences – Recreation, Social and Economic Resources

Effects on Lands

Overview

Land management policies are established through laws and regulations. The Forest Service is expected to continue implementation of current management direction for the lands program. To understand the potential impact of the Forests management on local communities, it is important to understand the general land ownership patterns within the Forests, as well as the distribution of NFS lands in local counties.

The Forests are comprised of almost 1 million acres of NFS lands. The percentage of NFS lands within each county ranges from a low of 0.4 percent in Montcalm County to a high of 41.4 percent in Oscoda County. Although State, county and private land parcels are scattered within the boundaries of both Forests, the Huron National Forest has a more consolidated ownership pattern than the Manistee National Forest (See Appendix A for Maps). Table 35 depicts the number of acres of NFS lands in each county.

Table 35. National Forest System Lands by County [16]

County	County Acreage	NFS Acres within County[17]	Percent of NFS Lands in County
Alcona	444,840	113,382	25.5%
Crawford	368,280	38,494	10.5%
Iosco	362,340	112,036	30.9%
Lake	374,880	112,437	30.0%
Manistee	359,040	87,706	24.4%
Mason	326,700	60,701	18.6%
Mecosta	366,960	3,459	0.9%
Montcalm	467,280	1,760	0.4%
Muskegon	335,940	12,547	3.7%
Newaygo	555,720	111,359	20.0%
Oceana	356,400	53,341	15.0%
Ogemaw	372,240	20,183	5.4%
Oscoda	372,900	154,494	41.4%
Wexford	373,560	96,994	26.0%
Total	**5,437,080**	**978,893**	

[16] Acreages are based on HMNF Land Status Atlas as of September 30, 2010.
[17] Approximately 25 acres are located within miscellaneous townships outside these counties.

The percent of NFS lands in a county is important, both socially and economically. Although National Forests do not pay property taxes for the land managed by the Federal government, the Federal government does fund State and local governments through three major programs: the Twenty-Five (25) Percent Fund or Secure Rural Schools and Communities Act payments; Payment in Lieu of Taxes and a share of mineral royalties.

Scope of the Analysis

The area of analysis for direct, indirect and cumulative effects is stated in the introduction to this chapter. Effects discussed are those which would have direct, indirect or cumulative effects from selection and implementation of the alternatives evaluated in detail.

Direct Effects Common to All Alternatives

Overall, the direct effects identified in the FEIS would remain unchanged. The Forest Service would continue to work cooperatively with tribal governments, MDNR, other governmental agencies and private groups and organizations in addressing wildlife management, recreation and other land resource management issues. Outstanding and reserved rights of tribal, State, State, County and other governmental agencies are recognized. No change would occur to tribal rights, including the right to firearm hunt in the 14 analysis areas. Hunters would be able to bow hunt and trap in accordance with State laws and regulations. No change would occur to State and County jurisdictions on roads. As issues arise, conflicts will be addressed following current laws and regulations. The Forest Service would continue to work with the MDNR to coordinate and manage a comprehensive snowmobile trail network in Michigan.

Requests for new special use authorizations are expected to continue as more landowners acquire legal access to private lands or desire rights of way for such improvements as power lines across NFS lands. Authorizations are evaluated on a case-by-case basis, considering management area direction. No direct effect is expected to granting of rights-of-way are expected.

Huron-Manistee National Forests acquisitions of properties are expected to help improve management of NFS lands, address outstanding and emerging issues, improve and protect habitat for ETS species and promote the overall agency goals as outlined in the Forest Plan. No direct effect is expected to acquisitions of property are expected.

Direct Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, the Forest Service would continue to work with the MDNR in managing wildlife populations and no modifications to current firearm hunting regulations would occur. No changes would occur to the Forest Service and State designated snowmobile trail systems. The two agencies would continue to address firearm hunting, snowmobiling and other land management issues on a case-by-case basis. No direct impacts are expected to the lands program.

Direct Effects of Alternative 2

Under Alternative 2, the Forest Service would prohibit firearm hunting in the 14 areas to increase opportunities for quiet recreation experiences. The snowmobile trails that are located in or on the boundary of the 13 areas would be either closed or removed from the Forest Service designated snowmobile trail system, depending upon the right-of-way jurisdiction. Table 38 in the Effects to Hunting section of this document details the sections of snowmobile trails which would be impacted by the

alternatives along with the jurisdiction of the right-of-way on which these trails are located. The locations of the snowmobile trails impacted by this alternative are displayed in the area maps in Appendix A of this document.

The section of snowmobile trail through the Manistee River area is located on a road under the jurisdiction of the Manistee County Road Commission. This section of trail is expected to be retained in the State's designated snowmobile trail system and remain open to snowmobile use. The Forest Service would remove this section of trail from the NFS designated snowmobile trail system.

The snowmobile trail through Whitewater Creek is located on sections of roads that fall under Forest Service jurisdiction and Oscoda County Road Commission. When the Forest Service removes sections of trail from the Forest Service snowmobile trail system, the sections joining with County roads would be effectively closed to snowmobile use. Therefore, the snowmobile trail section through Whitewater Creek would be closed to snowmobile use and removed from both the Forest Service and State designated snowmobile trail systems.

The Forest Service would remove snowmobile trails adjacent to the Au Sable, Bowman Lake, Condon Lakes West and White River areas from the Forest Service designated snowmobile trail system. Since sections of snowmobile trail are located on county roads under the jurisdiction of the Oscoda, Lake and Oceana County Road Commissions, these portions of snowmobile trail would remain on the State's snowmobile trail system and open to snowmobile use.

Sections of the snowmobile trail in Briar Hills are under the jurisdiction of the Wexford County Road Commission and others are under the jurisdiction of the Forest Service. When the Forest Service removes sections of the snowmobile trail from the Forest Service designated snowmobile trail system, the snowmobile sections connecting to County roads would be effectively closed to snowmobile use. As such, the snowmobile trail section adjacent to Briar Hills area would be closed to snowmobile use and removed from both the Forest Service and State designated snowmobile trail systems.

Under alternative 2, the Forest Service would work with interested parties to resolve issues as they arise.

Indirect Effects Common to All Alternatives

No indirect effects are common to all alternatives beyond those identified in the 2006 FEIS.

Indirect Effects of Alternatives 1, 3 and 4

Under Alternatives 1 and 3 and 4, the MDNR and Forest Service continue to address firearm hunting and recreation issues a case-by-case basis. No indirect impacts are expected to the lands program.

Indirect Effects of Alternative 2

Under Alternative 2, the Forest Service would prohibit firearm hunting in the 14 areas. Under alternative 2, the Forest Service would work with interested parties to resolve issues as they arise.

Cumulative Effects Common to All Alternatives

Overall, the cumulative effects identified in the FEIS would remain unchanged. Requests for new special use authorizations are expected to continue as more landowners acquire legal access to private lands or desire rights of way for such improvements as power lines across NFS lands. Authorizations are evaluated

on a case-by-case basis, considering management area direction. No cumulative effects are expected to granting of rights-of-way are expected.

Acquisitions of properties are expected to help improve management of NFS lands, address outstanding and emerging issues, improve and protect habitat for Endangered, Threatened and Sensitive species and promote the overall agency goals as outlined in the Forest Plan. No cumulative effects are expected to acquisitions of property are expected.

Under all alternatives, the Forest Service would continue to work cooperatively with tribal governments, MDNR, other governmental agencies and private groups and organizations in addressing wildlife management, recreation and other land resource management issues. Outstanding and reserved rights with tribal, State, State, County and other governmental agencies are recognized. No change would occur to tribal rights, including firearm hunting rights. Hunters would be able to bow hunt and trap in accordance with State laws and regulations. No change would occur to State and County jurisdictions on roads. As issues arise, conflicts will be addressed following current laws and regulations. The Forest Service would continue to work with the MDNR to coordinate and manage a comprehensive snowmobile trail network in Michigan.

Cumulative Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, the Forest Service would continue to work with the State of Michigan in managing wildlife populations and recreation management issues. The agencies would continue to address firearm hunting and other wildlife-related issues on a case-by-case basis.

Cumulative Effects of Alternative 2

Under Alternative 2, firearm hunting and snowmobile use would be prohibited in the 14 analysis areas to increase opportunities for quiet recreation experiences. Under alternative 2, issues may arise over land ownership, road jurisdictions, authorities and outstanding and reserved rights. The Forest Service would work with interested parties to resolve issues as they arise.

Effects on Recreation Use

Overview

The 2006 FEIS process and ROD established establish objectives for recreation opportunities by alternative and associated forest settings, specifically the quantity and location of each forest setting (USDA-FS 2006 and 2006a). The 2006 Forest Plan emphasizes providing developed and dispersed outdoor recreation opportunities with a consideration for health and safety standards, resource protection, cost effectiveness, efficient maintenance and user accessibility. The focus is on maintaining existing facilities before constructing new facilities due to budget constraints and backlog of maintenance. Recreation activities are encouraged, with an emphasis of those meeting the Forests' recreation niche

ROS was used during the process of defining management areas in the 2006 Forest Plan. ROS attributes were major determining factors in the classification and designation of management area numbers. Very developed areas were typically classified under a Rural ROS class. Less developed areas offering activities, setting and experiences meeting Roaded Natural are prevalent in the Forests. Areas with even less development and more naturally-appearing environment were classified as Semiprimitive. Managers then considered the attributes of these areas in more detail for each area prior to designation as

Semiprimitive Nonmotorized (SPNM) or Semiprimitive Motorized (SPM). The Nordhouse Dunes Wilderness and the National Wild and Scenic River ROS classes were reviewed and no changes were made in their classifications. Current conditions for each SPNM area and the Nordhouse Dunes Wilderness were reviewed and are discussed further on in this document.

As part of the SEIS process, the Forest Service prepared a Supplemental Supply and Demand Analysis for recreation opportunities. In accordance with direction from the court, the Forest Service considered all of Michigan when analyzing the quantity and quality of recreation opportunities and experiences on public lands.

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 Supplemental Supply and Demand Analysis analysis considered the supply of these opportunities in three major sectors providing lands for these outdoor recreation uses: Federal, State and other (such as land and nature conservancies, etc). 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 exclusive membership may be required. Other recreation opportunities may exist on other non-public lands as well. ROS standards were considered to help identify where ***comparable*** recreation opportunities might be found. This analysis used ROS classifications and other information into account in an effort to ensure not just the quantity but the quality of recreation opportunities available to the public was considered.

The Supplemental Supply and Demand Analysis found the demand for outdoor recreation opportunities is high in Michigan. The public pursues a wide variety of outdoor recreation, with the most popular activities being walking outdoors, fishing and hunting (Table 20). Over 75 percent of the outdoor recreation activities reportedly occur on public land venues (MSCORP, 2010), with the most occurring on State of Michigan lands. The Huron-Manistee National Forests account for 4,069,000 visits (over 80 percent of the total National Forest visits in Michigan in 2007).

In reviewing recreation opportunities provided on all lands within the State of Michigan, it was determined that Primitive and SPNM settings and recreation opportunities are available, but somewhat limited, for publics seeking those experiences. The Forest Service and Park Service administer wilderness areas in both the Lower and Upper Peninsula of Michigan. People seeking quiet experiences may also find them in some of the State of Michigan's parks and forest quiet areas. Land and nature conservancies provide similar opportunities for public enjoyment of primitive experiences. Although they manage lands differently, combined, 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 indexes, these areas appear to be meeting the public's demand for quality Primitive and SPNM experiences.

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 or another recreation activity. Of those willing to go elsewhere, almost half (49.9 percent) will likely not travel over 50 miles to pursue their activity elsewhere. Most recreationists on the Huron-Manistee live within 200 miles of the Forest (USDA-FS 2007). 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 dissatisfied with the recreation opportunities provided on the Huron-Manistee National Forests.

As part of the court direction, the Forest Service coordinated with the State of Michigan to consider reducing duplication of recreation opportunities. To address this issue, the Forest Service conducted a series of meetings with the MDNR to discuss opportunities to reduce duplication of recreation opportunities provided for those visitors specific to the snowmobiling and hunting issues pertaining to Primitive and SPNM experiences. As part of this process, the agencies reviewed ROS standards, current and projected demands for outdoor recreation experiences in these areas, the recreation opportunities provided in Michigan and past history of cooperative planning efforts. Upon conclusion of this review process, the Forest Service and MDNR did not identify any opportunities to reduce duplication of recreation opportunities in any areas. 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. These opportunities are meeting the current and projected public demand for these uses.

In considering all the information provided in this document, the supply of Primitive and SPNM recreation opportunities appear to meet the current and foreseeable demand for these experiences without providing unnecessary duplication of opportunities. Based on user satisfaction measurements, users appear satisfied in general with the recreation opportunities provided on the Huron-Manistee National Forests. A reduction in some of the existing recreation opportunities could increase some user's satisfaction based on reduced crowding, however, it would also likely result in adversely affect another user's satisfaction.

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

Based on the information provided in the Supply and Demand Analysis developed for the 2006 Forest Plan and Supplemental Supply and Demand Analysis, the 2006 Forest Plan would continue to meet the current and projected demand for outdoor recreation opportunities on the Forests.

Developed Recreation

Area of Analysis

The area of analysis for direct, indirect and cumulative effects is the same as stated in the introduction to this chapter. Effects discussed are those which would have direct, indirect or cumulative effects from selection and implementation of the alternatives evaluated in detail.

Direct Effects Common to All Alternatives

In all alternatives, the current developed recreation experiences provided at Huron-Manistee National Forests' sites would remain unchanged. No developed recreation sites would be closed with this decision. All developed sites would be maintained to current standards. All alternatives, if implemented, would continue to current supply of developed recreation opportunities which is sustainable for the projected population growth. Societal expectations of finding a National Forest developed recreation site that provides for desired outdoor recreation experiences are expected to be met. The impacts of overused sites due to an increasing number of users may cause the need for significant increases to budgets to provide for renovations and improvements, including expansions to these sites to increase capacity. Some sites may need to be hardened and/or put under permit; reservation and/or quotas to reduce impacts to the sites may be needed to maintain the desired ROS objectives. Road closures have potential to impact area users. If new road closures are proposed, a site-specific analysis would be completed to evaluate potential direct impacts and mitigation measures. No direct effects are expected to other Federal, State and other lands providing developed outdoor recreation opportunities in Michigan.

Indirect Effects Common to All Alternatives

In all alternatives, the current developed recreation experiences provided at Huron-Manistee National Forests sites would remain unchanged. Road closures have potential to impact area users. If new road closures are proposed, a site-specific analysis would be completed to evaluate potential indirect impacts and mitigation measures. No notable indirect effects are expected by implementation of any of the four alternatives. No indirect effects are expected to other Federal, State and other lands providing developed outdoor recreation opportunities in Michigan.

Cumulative Effects Common to All Alternatives

In all alternatives, the current developed recreation experiences provided at Huron-Manistee National Forests sites would remain unchanged. Road closures have potential to impact area users. If new road closures are proposed, a site-specific analysis would be completed to evaluate potential cumulative impacts and mitigation measures. No notable cumulative effects are expected to the Forests developed recreation program. No notable cumulative impacts are expected to other Federal, State and private lands providing developed outdoor recreation opportunities in Michigan. Minor changes to recreation use would occur over time as detailed by the Supplemental Supply and Demand Analysis. The Forest Service would continue to monitor recreation use and consider adjustments programs to meet current and project public recreation demands within budget and policy. No cumulative effects are expected to other Federal, State and other lands providing developed outdoor recreation opportunities in Michigan.

Dispersed Recreation

Area of Analysis

The area of analysis for direct, indirect and cumulative effects is the same as stated in the introduction to this chapter. Effects discussed are those which would have direct, indirect or cumulative effects from selection and implementation of the alternatives evaluated in detail.

Direct Effects Common to All Alternatives

The alternatives, to varying degrees, provide dispersed recreation experiences that provide a unique experience within the Lower Peninsula of Michigan. No dispersed recreation sites would be closed. All

dispersed sites would be maintained to current standards. All alternatives, if implemented, would continue to supply land-based recreation opportunities and be sustained for a growing population. Recreation opportunities and use levels for camping, hiking, forest product gathering, wildlife watching, driving for pleasure and fishing are expected to fluctuate in accordance with projections in the Supplemental Supply and Demand Analysis. Direct effects to hunting and hunter associated activities are disclosed in the Hunting section of this analysis. Road closures have potential to impact area users. If new road closures are proposed, a site-specific analysis would be completed to evaluate potential direct impacts and mitigation measures.

Dispersed use levels and locations change for many reasons. The Forest Service monitors these changes and adjusts programs based on numerous factors such as recreation demands, resource issues and economic concerns. As such, societal expectations of finding a recreation experience that relies on large remote land bases on NFS lands are expected to be met. The Forest Service would continue to monitor recreation use and consider adjustments programs to meet current and project public recreation demands within budget and policy.

Direct Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, no new firearm hunting-related closures are proposed. The levels of visitor use are expected to fluctuate from year to year in the 14 analysis areas.

Direct Effects of Alternative 2

Under Alternative 2, firearm hunting would be prohibited, except for outstanding and treaty rights, in the 14 analysis areas. Non-firearm hunting (ie. bow hunting) would continue in the 14 areas and across the Forests.

Based on the 2007 NVUM study, 43.5 percent of visitors would travel 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. Therefore, of hunters displaced by the area closures, some users are expected to hunt in other nearby areas. Some of these hunters may use other Federal, State, private and other lands near the 14 areas to hunt. Some hunters may decide to discontinue hunting. Most hunters displaced by area closures would likely travel to other areas to pursue their hunting and associated dispersed recreation activities.

Indirect Effects Common to All Alternatives

The alternatives, to varying degrees, provide dispersed recreation experiences that provide a unique experience within the Lower Peninsula of Michigan. No dispersed recreation sites are proposed for closure. All dispersed sites would be maintained to current standards. All alternatives, if implemented, would continue to supply land-based recreation opportunities and be sustained for a growing population. Recreation opportunities and use levels for camping, hiking, forest product gathering, wildlife watching, driving for pleasure and fishing are expected to fluctuate in accordance with projections in the Supplemental Supply and Demand Analysis. Indirect effects to hunting and hunter associated activities are disclosed in the Hunting section of this analysis. Road closures have potential to impact area users. If new road closures are proposed, a site-specific analysis would be completed to evaluate potential indirect impacts and mitigation measures.

The Forest Service monitors these changes and adjusts programs based on numerous factors such as recreation demands, resource issues and economic concerns. As such, societal expectations of finding a

recreation experience that relies on large remote land bases on NFS lands are expected to be met. The Forest Service would continue to monitor recreation use and consider adjustments programs to meet current and project public recreation demands within budget and policy.

Indirect Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, no new firearm hunting-related closures are proposed. The levels of visitor use are expected to fluctuate from year to year in the 14 areas.

Indirect Effects of Alternative 2

Under Alternative 2, firearm hunting would be prohibited, except for outstanding and treaty rights, in the 14 analysis areas. Non-firearm hunting (i.e. bow hunting) would continue in the 14 areas and across the Huron-Manistee National Forests. Non-firearm hunting use levels may increase in the 14 areas due to higher wildlife populations from less hunting pressure. Non-firearm hunting may decrease in other areas on the Forests and non-NFS lands due to a shift in these hunters to the 14 areas. Other non-hunting and non-snowmobile recreation uses may increase in the 14 areas due to a reduction in firearm hunting and snowmobiling, increasing opportunity for quiet recreation experiences.

Based on the 2007 NVUM study, 43.5 percent of visitors would travel 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. Therefore, of hunters displaced by the area closures, some users are expected to hunt in other nearby areas. Some of these hunters may use other Federal, State, private and other lands near the 14 areas to hunt. Some hunters may decide to discontinue hunting. Most hunters displaced by area closures would likely travel to other areas to pursue their hunting and associated dispersed recreation activities. As such, dispersed recreation use in other areas is likely to increase.

Cumulative Effects Common to All Alternatives

The alternatives, to varying degrees, provide dispersed recreation experiences that provide a unique experience within the Lower Peninsula of Michigan. All alternatives, if implemented, would continue to supply land-based recreation opportunities and be sustained for a growing population. Recreation opportunities and use levels for camping, hiking, forest product gathering, wildlife watching, driving for pleasure and fishing are expected to fluctuate in accordance with projections in the Supplemental Supply and Demand Analysis. Cumulative effects to hunting and hunter associated activities are disclosed in the Hunting section of this analysis. Road closures have potential to impact area users. If new road closures are proposed, a site-specific analysis would be completed to evaluate potential cumulative impacts and mitigation measures.

Societal expectations of finding a recreation experience that relies on large remote land bases on NFS lands would be met. The Forest Service would continue to monitor recreation use and consider adjustments programs to meet current and project public recreation demands within budget and policy.

Cumulative Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, no new firearm hunting-related closures are proposed. The levels of visitor use are expected to fluctuate from year to year in the 14 areas.

Cumulative Effects of Alternative 2

Under Alternative 2, firearm hunting would be prohibited, except for outstanding and treaty rights, in the 14 analysis areas. Non-firearm hunting (i.e. bow hunting) would continue in the 14 areas and across the Huron-Manistee National Forests. Non-firearm hunting use levels would likely increase in the 14 areas due to higher wildlife populations from less hunting pressure. Non-firearm hunting may decrease in other areas on the Forests and non-NFS lands due to a shift in these hunters to the 14 areas.

Based on the 2007 NVUM study, 43.5 percent of visitors would travel 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. Therefore, of hunters displaced by the area closures, some users are expected to hunt in other nearby areas. Some of these hunters may use other Federal, State, private and other lands near the 14 areas to hunt. Some hunters may decide to discontinue hunting. Most hunters displaced by area closures would likely travel to other areas to pursue their hunting activity. As such, dispersed recreation use in other areas is likely to increase.

Other non-hunting and non-snowmobile recreation uses may increase in the 14 areas due to a reduction in firearm hunting and snowmobiling increasing opportunity for quiet recreation experiences.

ROS Application

Overview

Following direction in the 1982 ROS guidebook, the Forest Service analyzed the various activities, settings and experiences at each of the 14 analysis areas. The Forest Service documented the results in an ROS characteristics review for each area (copy in the project record). A summary of the ROS review for each area is provided in Appendix C. Based on this review, all of the 14 analysis areas have nonconforming characteristics to the ROS designations in the 2006 Forest Plan.

The *Meister* panel of the U.S. Court of Appeals for the Sixth Circuit found that “Gun hunting is inconsistent with the ‘direction in forests plans’ as set forth in the ROS descriptions of the challenged areas, since those areas are supposed to present little chance of encountering noise by humans.” As such, the Court’s determined that gun hunting is inconsistent with areas on the Forests that are managed for an ROS of Primitive and SPNM. The Washington Treaty (1836) and the Treaty of Saginaw (1819) reserved tribal hunting rights on lands within the ceded territories of Michigan. All NFS lands within the Forests are covered under one or both of these treaties. As such, all areas managed for an ROS classification of Primitive and SPNM will have at least some firearm hunting occurring, which is a nonconforming use for these classifications. Firearm hunting is not considered a nonconforming use for the other ROS classifications of SPM, Roaded Natural and Rural, which occur on the Forests.

The Forest Service considered three options in addressing nonconforming characteristics with ROS classifications; no action (Alternative 1); closures for firearm hunting and snowmobiling in the 14 analysis areas (Alternative 2) and; changing the ROS classifications in the area to better reflect conditions in the areas (Alternatives 3 and 4).

Direct Effects of Alternatives 1

Under Alternative 1, no changes would occur to firearm hunting regulations or snowmobile trails in and immediately adjacent to the 14 areas. ROS designations would remain the same as detailed in the Forest Plan. Management direction would continue to allow existing firearm hunting and snowmobiling

activities on the Forests. The 14 areas would continue to have some nonconforming activities, settings and/or experience characteristics, as established in the ROS. Table 36 summarized the ROS characteristics conformity by alternative for each of the 14 areas.

The Nordhouse Dunes Wilderness is identified as having SPNM and Primitive opportunities, however, the wilderness would not be providing the opportunities as detailed by its ROS classification.

The 13 areas would continue to be identified as having SPNM opportunities, however, these areas would not be providing the opportunities as detailed by their ROS classification.

Table 36. ROS Characteristics, Conformity by Alternative

Area Name	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Au Sable	No	No	Yes	Yes
Bowman Lake	No	No	Yes	Yes
Briar Hills	No	No	Yes	Yes
Condon Lakes West	No	No	Yes	Yes
Cooke	No	No	Yes	Yes
Hoist Lakes	No	No	Yes	Yes
Manistee River	No	No	Yes	Yes
Reid Lake	No	No	Yes	Yes
South Branch Au Sable	No	No	Yes	Yes
Wakeley Lake	No	No	Yes	Yes
Whalen Lake	No	No	Yes	Yes
White River	No	No	Yes	Yes
Whitewater Creek	No	No	Yes	Yes
Wilderness Area				
Nordhouse Dunes	No	No	No	No

Direct Effects of Alternative 2

Under Alternative 2, a Forest Supervisor closure order would prohibit firearm hunting in the 14 areas, subject to existing tribal rights. Snowmobile trails in and immediately adjacent to the 14 areas would be closed. These management actions would reduce the amount of nonconforming use, however, the 14 areas would continue to have nonconforming activities, settings and/or experience characteristics.

The Nordhouse Dunes Wilderness is identified as having SPNM and Primitive opportunities, however, the wilderness would not be providing the opportunities as detailed by its ROS classification.

The 13 areas would continue to be identified as having SPNM opportunities, however, these areas would not be providing the opportunities as detailed by their ROS classification.

Direct Effects of Alternatives 3 and 4

Under Alternatives 3 and 4, no changes would occur to firearm hunting regulations or snowmobile trails in and immediately adjacent to the 14 areas. The ROS designations would be changed for each of the 14 areas to reflect current ROS conditions.

The Nordhouse Dunes Wilderness would be managed for SPNM opportunities. Some ROS characteristics in the wilderness would continue to be nonconforming for its ROS classification. Since the area is a Congressionally designated wilderness, classification of the ROS to SPM would be inappropriate since motorized uses are prohibited under law.

In the 14 analysis areas, all activities, setting and experience characteristics would conform to their ROS classification.

Indirect Effects of Alternative 1

Under Alternative 1, management direction would continue to allow existing firearm hunting and snowmobiling activities on the Forests. The 14 areas would continue to have nonconforming activities, settings and/or experience characteristics. No indirect impacts are expected from ROS classifications other than those disclosed in the 2006 FEIS and other sections of this document.

Indirect Effects of Alternative 2

Under Alternative 2, Forest Plan direction would prohibit firearm hunting in the 14 areas, subject to existing tribal rights. Snowmobile trails in and immediately adjacent to the 14 areas would be closed. Changes are likely in visitor use patterns resulting in some associated impacts to area resources. These changes are not expected to create a change in the ROS characteristics of other areas. No indirect impacts are expected from ROS classifications other than those disclosed in the 2006 FEIS and other sections of this document.

Indirect Effects of Alternatives 3 and 4

Under Alternatives 3 and 4, no changes would occur to firearm hunting regulations or snowmobile trails in and immediately adjacent to the 14 areas. These changes are not expected to create a change in the ROS characteristics of other areas. No indirect impacts are expected from ROS classifications other than those disclosed in the 2006 FEIS and other sections of this document.

Cumulative Effects of Alternative 1

Under Alternative 1, management area direction would continue to allow existing firearm hunting and snowmobiling activities on the Forests. No cumulative impacts are expected from ROS classifications other than those disclosed in the 2006 FEIS and other sections of this document.

Cumulative Effects of Alternative 2

Under Alternative 2, Forest Plan direction would prohibit firearm hunting in the 14 areas, subject to existing tribal rights. Snowmobile trails in and immediately adjacent to the 14 areas would be closed.

Changes are likely in visitor use patterns resulting in some associated impacts to area resources. These changes are not expected to create a change in the ROS characteristics of other areas. No cumulative impacts are expected from ROS classifications other than those disclosed in the 2006 FEIS and other sections of this document.

Cumulative Effects of Alternatives 3 and 4

Under Alternatives 3 and 4, no changes would occur to firearm hunting regulations or snowmobile trails in and immediately adjacent to the 14 areas. These changes are not expected to create a change in the ROS characteristics of other areas. No cumulative impacts are expected to ROS classifications other than those disclosed in the 2006 FEIS and other sections of this document.

Effects of Noise

The Forest Service considered the information collected regarding the sources of noise (sounds of humans) on lands in and adjacent to the 14 analysis areas. After reviewing the information on noise presented, the Forest Service considered that adequate information was available to make knowledgeable determinations of the probability of experiencing the absence of sights and sounds of humans. As such, no additional sound studies were deemed necessary to complete this evaluation.

Area of Analysis

The area of analysis for direct, indirect and cumulative effects is stated in the introduction to this chapter. Effects discussed are those which would have direct, indirect or cumulative effects from selection and implementation of the alternatives evaluated in detail.

Direct Effects Common to All Alternatives

In all alternatives, no change would occur to the current types of noise sources on both NFS lands and non-NFS lands in the 14 analysis areas, except for some snowmobile use and firearm hunting. The timing, duration and intensity of noises generated on private property, roads and other recreation uses would continue to adversely impact the opportunity to experience isolation from the sights and sound of humans. The proximity, density and use levels of State, County and NFS roads are expected to continue to be major contributing factors of noise in the areas. Some increase in the opportunity for solitude may occur in the future if road closures occur within areas.

Individual areas would continue to have site-specific noise sources within the area boundaries, such as the motorcycle trails within Condon Lakes and Whalen Lake. Based on the information displayed in Table 23 and Table 24, none of the 13 analysis areas and the Nordhouse Dunes Wilderness provides a high to very high likelihood of experiencing isolation from the sights and sounds of humans.

Under State law, snowmobiles can operate on unplowed County roads and the shoulders of plowed County roads. As such, snowmobile use would likely continue in areas with County road rights-of-way. Therefore, the sounds of snowmobiles are expected to be heard in many of 13 analysis areas. No snowmobile trails or County road rights-of-way are located in the Nordhouse Dunes Wilderness, so no sounds from snowmobiles is expected in the wilderness.

Hunting is a very popular activity on the Forests and adjacent lands. Both non-firearm and firearm hunting is expected to continue on the 14 analysis areas. Firearm hunting would continue in the 14 analysis areas due to tribal hunting rights. As such, firearm hunting would continue to impact the

opportunity for isolation from the sights and sounds of humans. Non-firearm hunting would continue on NFS lands.

The greatest opportunity to experience isolation from sights and sounds of humans is likely to be the Nordhouse Dunes Wilderness due to use limitations and the distance from roads. Hoist Lake provides some opportunities for experiencing isolation from the sights and sounds of humans due to the distance from roads and low road densities (see Roads Section). The highest probability of experiencing isolation from the sights and sounds of humans in all areas is likely during the winter months due to low recreation use levels.

The degree in which visitors experience the isolation from the sights and sounds of humans would vary based on such things as location, time of use and activity. The level to which visitors find these experiences acceptable or unacceptable would likely be highly variable. Based on NVUM 2007 data, the majority of visitors indicate that their substitute behavior choice is activity driven (come back another time or go elsewhere for same activity). Users who are dissatisfied with their recreation experience will likely consider seeking their desired activity elsewhere, do another activity or stay at home.

Direct Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, no change is expected to the direct effects of current recreation activities on the Forests except those disclosed in the Supplement Supply and Demand Analysis and the 2006 FEIS. Current firearm hunting and snowmobiling activities would continue. Firearm hunting and the associated noise would continue to be heard in the 14 analysis areas. As such, no change in the opportunity to experience isolation from the sights and sounds of humans is expected. Opportunities to experience isolation from the sights and sounds of humans will continue to vary based on location, activity and time of year.

Table 37 displays each of the 14 analysis areas by alternative and whether each meets the remoteness criteria established for the ROS classification. In Alternatives1 and 2, the areas do not meet the remoteness criteria as established in the ROS system. In Alternatives 3 and 4, all of the 14 analysis areas except the Nordhouse Dunes Wilderness meets the remoteness criteria as detailed by their ROS classification.

Table 37. ROS Conformity to Remoteness Criteria, by Alternatives

Area Name	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Au Sable	No	No	Yes	Yes
Bowman Lake	No	No	Yes	Yes
Briar Hills	No	No	Yes	Yes
Condon Lakes West	No	No	Yes	Yes
Cooke	No	No	Yes	Yes
Hoist Lakes	No	No	Yes	Yes
Manistee River	No	No	Yes	Yes
Reid Lake	No	No	Yes	Yes
South Branch Au Sable	No	No	Yes	Yes
Wakeley Lake	No	No	Yes	Yes
Whalen Lake	No	No	Yes	Yes
White River	No	No	Yes	Yes
Whitewater Creek	No	No	Yes	Yes
Wilderness Areas				
Nordhouse Dunes	No	No	No	No

Direct Effects of Alternative 2

Under Alternative 2, all current recreation activities on the Forests would continue to occur, except for some changes to firearm hunting in the 14 areas and snowmobile use in and immediately adjacent to the 14 analysis areas. Firearm hunting would be prohibited on NFS lands in the 14 analysis areas, recognizing tribal rights and private landowner's rights. A slight increase in the opportunity to experience isolation from the sights and sounds of humans is expected. Noise from firearm hunting would continue to be heard from tribal members exercising their treaty hunting rights. Since the snowmobile trail through Manistee River is on a County road right-of-way, snowmobile use and the associated noise from this use is expected to continue. Closing of the snowmobile trail in Whitewater Creek is expected to slightly increase the opportunity for isolation from the sights and sounds of humans in the winter. Closing the snowmobile trails on NFS roads adjacent to Au Sable, Briar Hills and Condon Lakes would also slightly increase the opportunity for isolations from the sights and sounds of humans in the winter.

Under Alternative 2, all areas would not meet the remoteness criteria as established under ROS.

Indirect Effects Common to All Alternatives

In all alternatives, no change would occur to the current types of noise sources on both NFS lands and non-NFS lands within 1 mile of the 13 analysis areas and the Nordhouse Dunes Wilderness, except for

some snowmobile use and firearm hunting. The timing, duration and intensity of noises generated on private property, roads and other recreation uses would continue to adversely impact the opportunity to experience isolation from the sights and sound of humans. The proximity, density and use levels of State, County and NFS roads are expected to continue to be major contributing factors of noise in the areas. Some increase in the opportunity for solitude may occur in the future if road closures occur adjacent to the 14 analysis areas.

Individual areas would continue to have site-specific noise sources adjacent to area boundaries, such as snowmobile and ORV trails. Based on the information displayed in Table 23 and Table 24, none of the 13 analysis areas and the Nordhouse Dunes Wilderness provides a high to very high likelihood of experiencing isolation from the sights and sounds of humans. Increased development and other activities immediately adjacent to the 14 analysis areas are likely to increase adverse impacts the opportunities for solitude in all areas.

Indirect Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, no additional changes are expected to the indirect effects of current recreation activities on the Forests except those disclosed in the Supplement Supply and Demand Analysis and the 2006 FEIS. Current firearm hunting and snowmobiling activities would continue. Firearm hunting and the associated noise would continue to be heard in the 13 analysis areas and Nordhouse Dunes Wilderness. As such, no change in the opportunity to experience isolation from the sights and sounds of humans is expected. Opportunities to experience isolation from the sights and sounds of humans will continue to vary based on location, activity and time of year.

Indirect Effects of Alternative 2

Under Alternative 2, changes in management direction would likely create some changes in recreation use patterns. These changes would likely increase noise in some areas due to increased firearm hunting and snowmobiling in areas other than the 14 analysis areas.

Cumulative Effects Common to All Alternatives

In all alternatives, no change would occur to the current types of noise sources on both NFS lands and non-NFS lands in and around the 14 analysis areas. The timing, duration and intensity of noises generated on private property, roads and other recreation uses would continue to adversely impact the opportunity to experience isolation from the sights and sound of humans. The proximity, density and use levels of State, County and NFS roads are expected to continue to be major contributing factors of noise in the areas. Some increase in the opportunity for solitude may occur in the future if road closures occur adjacent to the 14 analysis areas. Increased development and activities on State, National Forest and other lands would likely degrade the opportunities for solitude in all areas.

Individual areas would continue to have site-specific noise sources from outside the area boundaries, such as the Camp Grayling Air National Guard Base and National Guard Artillery Firing Range. Based on the information displayed in Table 23 and Table 24, none of the 14 analysis areas provides a high to very high likelihood of experiencing isolation from the sights and sounds of humans. Increased development and other activities immediately adjacent to the 13 analysis areas and the Nordhouse Dunes Wilderness are likely to increase adverse impacts the opportunities for solitude in all areas.

Under State law, snowmobiles can operate on unplowed County roads and the shoulders of plowed County roads. As such, snowmobile use would likely continue in areas with County road rights-of-way.

Therefore, the sounds of snowmobiles are expected to be heard in many of 13 analysis areas. In addition, some Counties are considering an ORV use ordinance which would allow the use of ORVs on County road rights-of-way. Adoption of this ordinance or similar ordinances, would likely adverse the opportunities for solitude in the 13 analysis areas. No snowmobile trails or County road rights-of-way are located or would be located in the Nordhouse Dunes Wilderness, so no sound from snowmobiles is expected in the wilderness.

Hunting is a very popular activity on the Forests and adjacent lands. Both non-firearm and firearm hunting is expected to continue on the 14 analysis areas. Firearm hunting would continue in the 14 analysis areas due to tribal hunting rights and private landowner rights. As described in the Supplemental Supply and Demand Analysis, firearm and snowmobile use are expected to increase. As such, snowmobiling and firearm hunting may have an increasing impact to the opportunity for isolation from the sights and sounds of humans in the 14 analysis areas. Non-firearm hunting would continue on NFS lands.

Over time, the greatest opportunity to experience isolation from sights and sounds of humans would likely continue to be the Nordhouse Dunes Wilderness due to use limitations and the distance from roads. Hoist Lake provides some opportunities for experiencing isolation from the sights and sounds of humans due to the distance from roads and low road densities (see Roads). The highest probability of experiencing isolation from the sights and sounds of humans in all areas is likely during the winter months due to low recreation use levels.

The degree in which visitors experience the isolation from the sights and sounds of humans would vary based on such things as location, time of use and activity. The level to which visitors find these experiences acceptable or unacceptable would likely be highly variable. Based on NVUM 2007 data, the majority of visitors indicate that their substitute behavior choice is activity driven (come back another time or gone elsewhere for same activity). Users that are dissatisfied with their recreation experience will likely consider seeking their desired activity elsewhere, do another activity or stay at home.

Based on the Supplemental Demand and Supply Analysis and 2006 FEIS, overall recreation use levels are expected to increase over the next four decades. Cumulatively, NFS lands would likely have a decrease in the opportunity to experience isolation from the sights and sounds of others due to higher projected recreation use levels and develop of lands in and adjacent to the Forests.

Cumulative Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, all current recreation activities on the Forests would continue to occur, including firearm hunting and snowmobiling. Firearm hunting and the associated noise would continue in the 14 analysis areas, resulting in no change in the opportunity to experience isolation from the sights and sounds of humans. Snowmobile use and the associated noise would continue to occur in Manistee River and Whitewater Creek, resulting in no change in the opportunity to experience isolation from the sights and sounds of humans.

Based on the Supplemental Demand and Supply Analysis, overall outdoor recreation use levels are expected to increase over the next 4 decades. Hunting and snowmobiling are expected to increase on both NFS and other lands. As a result, a decrease is expected in the opportunity to experience isolation from the sights and sounds of others in all 14 analysis areas. Other portions of the Forests would also likely have a decrease in the opportunity to experience isolation from the sights and sounds of others due to higher projected recreation use levels and activities associated with private lands.

Cumulative Effects of Alternative 2

Under Alternative 2, changes in management direction would likely create some changes in recreation use patterns. Firearm hunting on NFS lands within the 13 analysis areas is expected to decrease. Firearm hunting on private lands within or near these areas is expected to increase. Firearm hunting would likely increase on other Federal, State and other lands which allow firearm hunting in the State. Changes in snowmobile use patterns are also expected to occur. These changes would likely increase noise in some areas due to increased firearm hunting and snowmobiling in areas other than the 13 analysis areas and the Nordhouse Dunes Wilderness. The increased noise is likely to reduce the opportunity to experience isolation from the sights and sounds of others in areas outside of the 14 analysis areas.

Effects of Law Enforcement

Overview

The Huron-Manistee National Forests law enforcement policies are established through laws and regulations. The Forest Service is expected to continue implementation of current enforcement of Federal, State and local laws and regulations. The Forest Service will continue to work in partnership with Tribes, Federal, State, local government and other agencies to address law enforcement and emergency response issues. Based on projections from the Supplemental Supply and Demand Analysis, the population and the demand for outdoor recreation in Michigan are likely to increase within the analysis period. Budgets for some law enforcement programs have been declining, resulting in lower staffing levels of law enforcement officers in some areas. This trend is expected to continue in the foreseeable future. As a result law enforcement response times to calls for support or assistance, will likely increase.

Area of Analysis

The area of analysis for direct, indirect and cumulative effects is the same as stated in the introduction to this chapter. These areas represent the areas where SPNM and Primitive recreation opportunities are available for general public outdoor recreation uses. Effects discussed are those which would have direct, indirect or cumulative effects from selection and implementation of the alternatives evaluated in detail.

Direct Effects Common to All Alternatives

In all alternatives, 2006 Forest Plan S&Gs would remain in place for law enforcement activities. Existing nation-wide and Forest Supervisor regulations and closure orders would remain in effect. Firearm use in certain areas on the Forests would continue to be prohibited. Areas with firearm use closures with existing restrictions include areas within 150 yards of a residence, building, campsite, developed recreation site or occupied area or across a NFS road or a body of water whereby any person or property is exposed to injury or damage as a result in such discharge. No changes would occur to the existing firearm restrictions and any other current regulations and closure orders in any of the alternatives. If new closure orders are proposed, a site-specific analysis would be completed to evaluate potential impacts and mitigation measures. Law enforcement personnel from the Forest Service and other agencies would continue to address issues by established priorities and within available staffing and funding constraints.

Some areas throughout the Forests would continue to have motorized vehicles prohibited. The Huron-Manistee National Forests provides Motorized Vehicle Use Maps (MVUM) showing Forest Service roads and motorized trails which are open to motorized travel. Forest Service roads and motorized trails not shown on the MVUM would continue to be closed to public motor vehicle travel under all alternatives.

Under all alternatives, existing regulations would remain in affect which prohibit snowmobile use in some areas on the Huron-Manistee National Forests. Snowmobile use would continue to be restricted to designated trails or areas unless otherwise provided for by law, regulation or by special area management objectives (USDA-FS 2006 page II-13). Snowmobile use would continue to be legal on unplowed county roads and the shoulders of seasonal county roads in accordance with State law. Under all alternatives, snowmobile use on the Forests would continue to be restricted to designated trails across NFS lands. See the Trails section of this analysis for further details.

Indirect Effects Common to All Alternatives

No changes would occur to the existing firearm restrictions and any other current regulations and closure orders in any of the alternatives. If new closure orders are proposed, a site-specific analysis would be completed to evaluate potential impacts and mitigation measures. Law enforcement personnel from the Forest Service and other agencies would continue to address issues by established priorities and within available staffing and funding constraints.

Direct Effects of Alternatives 1, 3 and 4

No notable direct effects are expected by implementing Alternatives 1, 3 and 4. No new closure order would be adopted which closes some NFS lands to firearm hunting and snowmobiling. As such, no additional workload is expected to law enforcement personnel from implementation of Alternatives 1, 3 and 4.

Direct Effects of Alternative 2

Alternative 2 involves closing of the 14 areas to firearm hunting and snowmobiling. As part of enacting these closures, law enforcement personnel would be required to respond to violations of these closures. In addition, firearm hunters and snowmobilers may trespass onto private property when they are displaced by closures of the areas they traditionally used. Some users may be dissatisfied that some people continue to firearm hunt in the area while other users may be dissatisfied with the inability to continue firearm hunting in the area. As a result, an increase in conflicts between users is expected in the short term as people adjust to the change in management direction. The 14 areas are spread across the Huron-Manistee National Forest. Enforcement of closures is expected to increase law enforcement workload for Forest Service and other local law enforcement agencies, most notably in the short term. Over the long term, the workload to enforce the closure orders is expected to be reduced as users become accustomed to the new regulations.

Indirect Effects of Alternatives 1, 3 and 4

No notable indirect effects are expected by implementing Alternatives 1, 3 and 4. No new closure order would be adopted which closes some NFS lands to firearm hunting and snowmobiling. As such, no additional workload is expected to law enforcement personnel from implementation of Alternatives 1, 3 and 4.

Indirect Effects of Alternative 2

Alternative 2 involves closing of some NFS lands to firearm hunting and snowmobiling. As part of enacting these closures, law enforcement personnel would be required to respond to violations of these closures. In addition, firearm hunters and snowmobilers may trespass onto private property when they are displaced by closures of the areas they traditionally used. The 14 areas are spread across the Huron-

Manistee National Forest. Enforcement of closures is expected to increase law enforcement workload for Forest Service and other local law enforcement agencies, most notably in the short term. Over the long term, the workload to enforce the closure orders is expected to be reduced as users become accustomed to the new regulations.

Cumulative Effects Common to All Alternatives

In all alternatives, current Forest Plan S&Gs would remain in place for law enforcement activities. Law enforcement personnel from the Forest Service and other agencies would continue to address issues by established priorities and within available staffing and funding constraints. As such, no unacceptable cumulative effects are expected by implementing any of the four alternatives.

Effects of Hunting

Overview

The Huron-Manistee National Forests is comprised of almost 1 million acres of NFS lands, almost all of which are available for hunting. Areas with firearm use closures with existing restrictions include areas within 150 yards of a residence, building, campsite, developed recreation site or occupied area or across a NFS road or a body of water whereby any person or property is exposed to injury or damage as a result in such discharge. Historically, the State of Michigan has managed the wildlife populations and hunting seasons. These regulations are intended to address public safety issues. The Forest Service has the authority to adopt new regulations on NFS lands within existing laws and regulations to address public safety, ETS species and specific resource damage issues. The MDNR is the State agency responsible for wildlife management. The Forest Service works cooperatively with the MDNR to address wildlife and hunting related issues.

Wildlife is both a focal point and an amenity for recreation users of the Forests. Hunting is one of the top five primary recreation activities on the forests (USDA-FS 2003a). Hunting starts with squirrel, grouse and woodcock in mid-September. In October, November and December, bow and firearm deer hunters dominate the hunting activities occurring on the Forests, with waterfowl hunting overlapping these seasons. Rabbit hunting carries on through winter and wild turkey hunting is mainly a spring activity although it also occurs in the fall. In total, about 50 wildlife species can be hunted and/or trapped on the uplands and wetlands of these Forests. Based on MDNR annual hunter use reports, hunting use levels fluctuate from year to year.

The Washington Treaty (1836) and the Treaty of Saginaw (1819) guarantees tribal hunting rights in the ceded territories of Michigan. All NFS lands within the Forests are covered under these treaties

Hunting use levels and wildlife populations change for many reasons. As changes in game wildlife populations and hunting levels occur, shifts in hunting activities and wildlife populations can also occur.

Area of Analysis

The area of analysis for direct, indirect and cumulative effects is stated in the introduction to this chapter. Effects discussed are those which would have direct, indirect or cumulative effects from selection and implementation of the alternatives evaluated in detail.

Direct Effects Common to All Alternatives

Under all alternatives, hunting is expected to remain a very popular activity on the Forests. Based on the Supplemental Supply and Demand Analysis, use levels are projected to fluctuate and potentially increase due to hunting initiatives by the MDNR and Federal hunting initiatives, such as Presidential Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation. Firearm hunting use levels on all areas outside of the 14 analysis areas is expected to fluctuate and potentially increase. No changes to non-firearm hunting are proposed in this analysis. Non-firearm hunting on the Forests outside of the 14 areas would continue and use levels are also expected to fluctuate and potentially increase. No direct effects are expected to non-firearm hunting activities, such as bow hunting, on the Forests.

Tribal hunting rights guaranteed under the Washington Treaty (1836) and the Treaty of Saginaw (1819) are honored. Tribal members would continue to firearm hunt all Forests lands. No direct effects are expected to firearm hunting use levels by tribal members covered under these treaties. The levels of tribal use are expected to continue to fluctuate from year to year.

Road closures have potential to impact area users. If new road closures are proposed, a site-specific analysis would be completed to evaluate potential impacts and mitigation measures.

All hunting, including firearm hunting and other firearm use, would continue to be primarily regulated by the MDNR. Current Forest Service regulations to address safety concerns would remain in effect. The Forest Service reviewed Forests law enforcement records and did not identify any hunter related complaints by non-hunters. The Forest Service works with the MDNR and other law enforcement agencies to respond to and address any user conflict complaints. Between 2005 and 2010 (6 year period), no fatalities or injuries related to hunting were reported by the MDNR to users of Forests lands. Based on this information, the Forest Service has not identified a notable risk to the general public associated with firearm hunting on NFS lands. The Forest Service would continue to monitor public safety and resource issues. In additional, the Forest Service and MDNR may adopt additional regulations to address public safety and resource concerns.

Direct Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, no new firearm hunting-related closures would be enacted by the Huron-Manistee National Forests. The levels of visitor use are expected to fluctuate from year to year in the 14 areas. The Forest Service may consider additional firearm hunting restrictions on the Forests as issues arise.

Based on the information presented in Table 38, total hunting use is approximately 302,036 visitor days on the Huron-Manistee National Forests. Under alternatives 1, 3 and 4, the total amount of hunting on the Forests is expected continue to fluctuate from year to year.

Table 38. Projected Change in Hunter Days by Alternative with Adjustment for Substitutive Behavior

	Current Condition	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Firearm Big Game	170,953	No Change	-6,513	No Change	No Change
Small Game	55,655	No Change	-2,120	No Change	No Change
Migratory	22,974	No Change	-875	No Change	No Change
Other	21,103	No Change	-804	No Change	No Change
Total All Hunting[18]	302,036	No Change	-10,312	No Change	No Change

Notes: Based off of hunter day projections in Appendix A-1; Displacement projections are based off of 2007 NVUM Survey.

Direct Effects of Alternative 2

Under Alternative 2, firearm hunting would be prohibited in the 14 areas, except for tribal hunting rights. Non-firearm hunting (i.e., bow hunting) would continue in the 14 areas and across the rest of the Huron-Manistee National Forests. The levels of visitor use are expected to fluctuate from year to year. Table 38 displays the estimated displacement of hunter days in the 14 areas. Based off of 2007 NVUM data, the Forest Service estimates approximately 10,312 firearm hunter days are associated with firearm use in the 14 areas.

Confusion among hunter and non-hunter is expected due to the fragmented ownership pattern of the areas. In many places, NFS lands are intermingled with lands under other ownerships. Hunters and non-hunters may be unsure of location and the associated regulations for those specific areas. Since hunting in these areas is a traditional use, in the short-term, an increase in user conflicts with non-hunters is expected. This increase in conflicts would likely be due to the reluctance of traditional users to seek other hunting opportunities outside the 14 areas and other users desiring a SPNM experience being exposed to the sights and sounds associated with hunting use. Illegal hunting activities would likely occur in the short-term until reduced by law enforcement and/or hunters adjust to the change in management direction. Over the long term, the potential conflicts are expected to decrease as hunters seek other areas for their desired recreation experience.

Indirect Effects Common to All Alternatives

Road closures have potential to impact area users. If new road closures are proposed, a site-specific analysis would be completed to evaluate potential indirect impacts and mitigation measures.

Indirect Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, no indirect effects are expected other than disclosed in the 2006 FEIS.

[18] Includes all non-firearm hunting, such as bow hunting. Actual change in hunter days is expected to vary based on individual preferences and other factors.

Indirect Effects of Alternative 2

Under Alternative 2, firearm hunting would be prohibited, except for tribal rights, in the 13 areas and Nordhouse Dunes Wilderness area. Non-firearm hunting (i.e., bow hunting) would continue in the 14 areas and across the Huron-Manistee National Forests. Non-firearm hunting use levels may increase in the 14 areas due to higher wildlife populations from less firearm hunting pressure. Other non-hunting uses as hiking, dispersed camping and cross-country skiing may increase in the 14 areas. Non-firearm hunting may decrease in other areas on the Forests and non-NFS lands due to a shift in these hunters to the 14 areas.

Based on the 2007 NVUM study, 43.5 percent of visitors would travel 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. Therefore, of hunters displaced by the area closures, some users are expected to hunt in other nearby areas. Some of these hunters may use other Federal, State, private and other lands near the 14 areas to hunt. Some hunters may decide to discontinue hunting. Most hunters displaced by area closures would likely travel to other areas to pursue their hunting activity.

Cumulative Effects Common to All Alternatives

Under all alternatives, hunting would remain a very popular activity on the Huron-Manistee National Forests. Use levels of both firearm and non-firearm hunting are expected to fluctuate on the Forests based on information disclosed in the Supplemental Supply and Demand Analysis. Road closures have potential to impact area users. If new road closures are proposed, a site-specific analysis would be completed to evaluate potential cumulative impacts and mitigation measures. Changes in hunting activities will continue to occur due to numerous factors, such as local wildlife populations, road closures and economic conditions.

Based on information in the Supplemental Supply and Demand Analysis, the Forest Service concludes that overall, the National Forests, National Parks, State Parks and Forests, commercial forest lands and other lands within the State of Michigan provide quality outdoor recreation opportunities in a variety of settings for those seeking hunting opportunities. These opportunities and the visitor's satisfaction will vary between individuals based on numerous factors including the type of use desired, user preferences and expectations.

Cumulative Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, no cumulative impacts are expected to hunting and non-hunting uses except for those disclosed in the 2006 FEIS.

Cumulative Effects of Alternative 2

Under Alternative 2, firearm hunting would be prohibited in the 13 areas and Nordhouse Dunes Wilderness area, except for existing tribal rights. Non-firearm hunting would continue in the 13 areas and Nordhouse Dunes Wilderness and across the Huron-Manistee National Forests. The Forest Service recognizes tribal hunting rights guaranteed under the Treaty of Washington (1836) and the Treaty of Saginaw (1819); therefore, firearm hunting by tribal members would continue to occur in all 13 areas and the Nordhouse Dunes Wilderness covered under these treaties. Illegal hunting activities would likely occur in the short term until reduced by law enforcement and/or hunters adjust to the change in management direction. Table 38 displays the expected reduction in the total amount of hunting projected on the Huron-Manistee National Forests. Based on NVUM data, hunting use is projected to be reduced by

approximately 10,312 visitor days. This amount does not take into consideration that tribal members and private landowners would continue to firearm hunt in the 14 analysis areas. Based on the NVUM study, 43.5 percent of visitors would travel 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. Some hunters may decide to discontinue hunting. Most hunters displaced by area closures would likely travel to other areas to pursue their hunting activity.

Cumulatively, firearm hunting in the 14 areas is expected to decrease but continue to increase on other lands in and adjacent to these areas. A slight increase in game wildlife populations may occur in some areas. As a result of increased game population levels in some areas, a potential shift and increase of non-firearm hunting activities may occur in some areas.

Other non-hunting recreation uses may increase in the 14 areas due to a reduction in firearm hunting and the increased opportunity for quiet recreation experiences.

Effects of Trails

Overview

The Forests manages trails in accordance with direction in the 2006 Forest Plan. Trails are managed for specific uses and seasons. Trail construction, maintenance and administration are specified in Forest Service Manuals and Handbooks. Forest Closure Orders are issued closing areas or trails to particular uses to address specific management concerns.

Area of Analysis

The area of analysis for direct, indirect and cumulative effects is stated in the introduction to this chapter. Effects discussed are those which would have direct, indirect or cumulative effects from selection and implementation of the alternatives evaluated in detail.

Nonmotorized Trails

Direct Effects of All Alternatives

Under all alternatives, no changes to the current NFS nonmotorized trail systems would occur. All trails would continue to be used and maintained for current recreation uses. Any additions or deletions to the Forest's trail system would be determined after a site-specific analysis was completed. No direct effects are expected to the NFS nonmotorized trail system with any of the four alternatives.

Indirect Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, use levels are expected to fluctuate from year to year. No impacts are expected beyond those disclosed in the 2006 FEIS.

Indirect Effects of Alternative 2

Under Alternative 2, firearm hunting and snowmobiling would be prohibited in the 14 areas, except for existing tribal rights. Firearm hunter use of nonmotorized trials is expected to decrease. Recreation use of

nonmotorized trails by other than firearm hunters would likely increase due to an increased opportunity for quiet recreation experiences.

Cumulative Effects of Alternatives 1, 3 and 4

Under all alternatives, no changes to the current NFS nonmotorized trail system would occur. All trails would continue to be used and maintained for current recreation uses. Any additions or deletions to the NFS trail system would be determined after a site-specific analysis was completed. Recreation use levels are expected to fluctuate from year to year and follow projections in the Supplemental Supply and Demand Analysis.

Cumulative Effects of Alternative 2

Under alternative 4, firearm hunting and snowmobiling would be prohibited in the 14 areas, except for existing tribal rights. Firearm hunter and snowmobile use of the Forests may slightly decline in the short term to changes in hunting and snowmobile closures. Recreation use of nonmotorized trails by other than firearm hunters would likely increase due to an increased opportunity for quiet recreation experiences.

Motorized Trails

Direct Effects Common to All Alternatives

The only potential changes to the current motorized trail systems on the Forests would be to those segments of snowmobile trail in and immediately adjacent to the 13 M.A. 6.1 (SPNM) areas. All trails not involved in this decision would continue to be managed for established recreation uses. Based on the Supplemental Supply and Demand Analysis, trail use levels are expected to fluctuate and change over time. Any potential additions or deletions to the Forest's motorized trail systems would occur after a site-specific analysis was completed and mitigation measures developed. No motorized trails are located in or immediately adjacent to the Nordhouse Dunes Wilderness, so no impacts are expected to the wilderness area or users by a decision associated with the SEIS.

Under all alternatives, no change would occur to the existing motorized use regulations. Snowmobile use would continue to be restricted to designated trails or areas unless otherwise provided for by law, regulation or by special area management objectives (USDA-FS 2006 page II-13). Snowmobile use would continue to be legal on unplowed county roads and the shoulders of seasonal county roads in accordance with State law. Under all alternatives snowmobile use on the Forests would continue to be restricted to designated trails across NFS lands.

The Forest Service would continue to coordinate with the MDNR in the development and management of a network of motorized trails which connects communities, provides a variety of recreation experiences and helps support local economies. The Forest Service would work with the MDNR to address program and site-specific issues as they arise.

Between 2006 and 2010 (5-year period), no fatalities on NFS lands related to cross-country skiers being struck by snowmobilers were reported by the MDNR. No record of snowmobile trail use injuries is kept by the MDNR. The Forest Service has no record of any injuries to cross-country skiers from snowmobilers on the Forests. Based on this information, the Forest Service the conclusion is that there is no notable risk to cross-country skiers associated with snowmobiling on NFS lands.

Direct Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, no changes would occur to the current NFS snowmobile and other motorized trail systems. Snowmobile trails passing through or adjacent to the 13 areas would continue to be maintained on the State of Michigan snowmobile trail system. Based Table 39, total snowmobiling use is approximately 65,265 visitor days per year on the Forests. The total amount of snowmobiling is not expected to change under Alternatives 1, 3 and 4 beyond those projections in the Supplemental Supply and Demand Analysis. No notable direct effects are expected beyond those disclosed in the 2006 Forest FEIS.

Table 39. Projected Change in Snowmobile Visitor Days by Alternative

	Current Condition	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Snowmobiling	65,265[19]	65,265	64,242	65,265	65,265
Change		No Change	-1,023	No Change	No Change

Direct Effects of Alternative 2

Under Alternative 2, snowmobile trails that are located in or on the boundary the 13 areas would be either closed or removed from the designated NFS snowmobile trail system, depending upon the right-of-way jurisdiction. Table 40 details the sections of snowmobile trails which would be impacted by the alternatives along with the jurisdiction of the right-of-way on which these trails are located. The locations of the snowmobile trails impacted by this alternative are displayed in the area maps in the appendix of this document.

The section of snowmobile trail through the Manistee River area is located on a road under jurisdiction of the Manistee County Road Commission. This section of trail is expected to be retained in the State designated snowmobile trail system and remain open to snowmobile use. The Forest Service would remove this section of trail from the Forests designated snowmobile trail system.

The snowmobile trail through Whitewater Creek is located on sections of roads that fall under Forest Service jurisdiction and Oscoda County Road Commission. When the Forest Service removes these sections of trail from the Forest Service trail system, the snowmobile sections connecting to County roads would be effectively closed to snowmobile use. Therefore, the snowmobile trail section through Whitewater Creek would be closed to snowmobile use and removed from both the Forest Service and State designated snowmobile trail systems.

The Forest Service would remove snowmobile trails adjacent to the Au Sable, Bowman Lake, Condon Lakes West and White River areas from the Forest Service designated snowmobile trail system. Since sections of snowmobile trail are located on county roads under the jurisdiction of the Oscoda, Lake and Oceana County Road Commissions, these portions of snowmobile trail would remain on the State's snowmobile trail system and open to snowmobile use.

Sections of the snowmobile trail in Briar Hills are under the jurisdiction of the Wexford County Road Commission and others are under the jurisdiction of the Forest Service. When the Forest Service removes sections of the snowmobile trail from the Forest Service designated snowmobile trail system, the

[19] Based off of 2010 Projection in Supply and Demand Analysis

snowmobile sections connecting to County roads would be effectively closed to snowmobile use. As such, the snowmobile trail section adjacent to Briar Hills area would be closed to snowmobile use and removed from both the Forest Service and State designated snowmobile trail systems.

Table 40. Alternative 2 Snowmobile Trail Closures by Road Jurisdiction

Area Name	Road Jurisdiction	Action	Miles of trail
Au Sable	Forest Service	Remove from Forest Service System	1.8
Bowman Lake	Lake County	Remove from Forest Service Trail System[20]	0.7
Briar Hills	Wexford County	Remove from Forest Service Trail System[21]	1.2
Briar Hills	Forest Service	Remove from Forest Service Trail System[21]	5.1
Condon Lakes	Lake County	Remove from Forest Service Trail System[20]	1.9
Condon Lakes	Forest Service	Remove from Forest Service Trail System[20]	3.8
Manistee River	Manistee County	Remove from Forest Service Trail System[20]	4.6
White River	Oceana County	Remove from Forest Service Trail System[20]	2.5
Whitewater Creek	Oscoda County	Remove from Forest Service Trail System[21]	0.5
Whitewater Creek	Oscoda County	Remove from Forest Service Trail System[21]	3.6

The Forest Service would work with the MDNR to address site-specific issues relating to closures of these trails.

In Alternative 2, trail closures are expected to cause a reduction in snowmobile use of approximately 1,000 visitor days. Snowmobile user satisfaction on the Forest is expected to decline due to a reduction in trail system miles. Snowmobile and associated uses would decline in the 13 areas with snowmobile closures.

Snowmobilers would have to seek other routes around the affected areas or transport their snowmobiles to other areas to access the snowmobile trail. Snowmobilers may trespass onto private property when they are displaced by closures of the areas they traditionally used. Some snowmobilers may use County road rights-of-way to connect into trail systems. The 14 analysis areas are spread across the Forests. Enforcement of closures is expected to increase law enforcement workload for Forest Service and other local law enforcement agencies, most notably in the short term. Over the long term, the workload to enforce the closure orders is expected to be reduced as users become accustomed to the new regulations.

Under Alternative 2, the miles of snowmobile trails on the Forests would be reduced. As such, a reduction in snowmobile use is expected. Since snowmobiling in these areas is a traditional use, in the short-term, an increase in user conflicts between snowmobilers and non-snowmobilers may occur. Some illegal use of

[20] Snowmobile trail on County Roads, so trail would be retained on State snowmobile trail system and remain open to snowmobile use

[21] Portions of snowmobile trail on both County and Forest Service roads. Trail would be no longer open to snowmobile use.

portions of closed trails are likely to increase conflicts when cross-country skiers and other users desiring a SPNM experience are exposed to the sights and sounds associated with snowmobile use. The reluctance of traditional snowmobile users to seek other opportunities outside the areas with trail closures and confusion over legal use of snowmobiles in areas may be contributing to conflicts between users. Over time, potential user conflicts would decrease as snowmobilers become accustomed to trail closures.

Indirect Effects Common to All Alternatives

Under all alternatives, the Forest Service would continue to manage designated motorized trail systems under its jurisdictional authority to existing standards. The Forest Service would continue to coordinate with the MDNR in the development and management of a network of motorized trails which connects communities, provides a variety of recreation experiences and helps support local economies. The Forest Service would work with the MDNR to address program and site-specific issues as they arise.

Indirect Effects of Alternatives 1, 3 and 4

Under Alternatives 1, 3 and 4, the existing motorized trail system would be maintained. No notable indirect effects are expected beyond those disclosed in the 2006 FEIS.

Indirect Effects of Alternative 2

Under Alternative 2, snowmobile trails that are located in or immediately adjacent to the 13 areas would be removed from the Forest Service designated snowmobile trail system. The Forests offer many opportunities and choices for snowmobiling. Based on the NVUM study, 43.5 percent of visitors would travel 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. Therefore, of the snowmobilers that would be displaced by area closures, a little under half are expected to travel to other nearby areas to pursue their snowmobiling activity. Some snowmobilers may travel up to 200 miles to pursue their desired recreation experiences. Some snowmobilers may discontinue snowmobiling.

Non-firearm hunting use levels would likely increase in the 14 areas due to higher wildlife populations from less hunting pressure. Non-firearm hunting may decrease in other areas on the Forests and non-NFS lands due to a shift in these hunters to the 14 areas.

In the short term, an increased level of conflict may occur between snowmobilers and non-snowmobile users of the Forest. Some illegal snowmobiling is likely to occur until users adjust to the modifications in the snowmobile trail system. Some snowmobilers are expected to use County road rights-of-way when some sections of trail are closed. Some sections of snowmobile trail may receive more or less use due to closures of some sections of trail.

Confusion would likely occur with users, both snowmobilers and non-snowmobilers, over the legality of using snowmobiles on sections of the State designated snowmobile trail system removed from the Forest Service designated snowmobile trail system.

Sections of snowmobile trail would be closed on Forest System roads traversing or are directly on the boundary of Au Sable, Briar Hills, Condon Lakes West and Whitewater Creek areas. Snowmobile trail segments would be removed from the Forest Service system where trails occur on county roads traversing or are directly on the boundary of Bowman Lake, Briar Hills, Condon Lakes West, Manistee River and White River SPNM areas.

Cumulative Effects Common to All Alternatives

In all alternatives, the Forest Service would continue to coordinate with the MDNR in the development and management of a network of motorized trails which connects communities, provides a variety of recreation experiences and helps support local economies. The Forest Service would work with the MDNR to address program and site-specific issues as they arise. Under all alternatives, the Forest Service would continue to manage the Forest Service designated motorized trail systems to existing standards. Motorized trail use levels and locations change for many reasons. The Forest Service would continue to monitor use levels on trail systems and coordinate with the MDNR to help ensure a safe network of trails to meet the current and future demand for motorized trails.

In the long term, users are expected to adjust use patterns to account for changes in snowmobiling opportunities in an area and relocate their traditional snowmobiling riding to different trail segments adjacent to the 13 M.A. 6.1 (SPNM) areas. In addition, modifications may continue to be made to the State of Michigan snowmobile trail network to address trail connectivity and user demand.

Effects on Wilderness Qualities

Overview

The Huron-Manistee National Forests wilderness management policies are established through laws and regulations. The Forest Service is expected to continue implementation of wilderness management direction outlined in the 2006 Forest Plan. The four qualities of wilderness, as specified by Section 2(c) of the 1964 Wilderness Act (P.L. 88-577), are:

- *Untrammeled* – wilderness is essentially unhindered and free from modern human control or manipulation.
- *Natural* – wilderness ecological ecosystems are substantially free from the effects of modern civilization.
- *Undeveloped* – wilderness is essentially without permanent improvements or modern human occupation.
- *Outstanding opportunities for solitude or a primitive and unconfined type of recreation* – wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge.

Direct Effects Common to All Alternatives

Under all alternatives, no improvements or new activities would occur in the Nordhouse Dunes Wilderness. No changes would occur that are expected to cause any direct impacts to the untrammeled, natural and undeveloped qualities of the wilderness. Visitors would continue to have a very limited opportunity for Primitive and SPNM experiences as defined by the ROS and court opinion on firearm use conformity with these designations. Visitors would likely be able to experience an unconfined type of recreation which provided for the values of inspiration and physical and mental challenge. Visitor satisfaction is high and likely will remain high in all alternatives.

No snowmobile trails are located in or near the Nordhouse Dunes Wilderness area, so no direct impacts would occur from implementation of any of the four alternatives.

Direct Effects of Alternative 1

Under Alternatives 1, no change would occur in the current hunting regulations in the area. No change would occur to the current opportunities for solitude or a more primitive and unconfined type of recreation. During most of the year, visitors would have a good opportunity to experience solitude in certain areas of the wilderness. Since firearm hunting can occur year around for some species of animals, any visitors to the area could hear gunshots associated with hunting. Firearm discharges would likely be heard in almost all of the wilderness area due to the proximity of adjacent areas open to firearm hunting. This sound may disrupt the visitor expectations of isolation from the sights and sounds of humans. Some users may be dissatisfied that some people firearm hunt in the area and may decide to leave and/or not return to the area. No increase in conflicts is expected between user groups since firearm hunting has been an ongoing use in the area.

The 2006 Forest Plan would continue to identify the Nordhouse Dunes Wilderness ROS classifications as both SPNM and Primitive. The Forest Service would continue to manage for these ROS designations, even though the characteristics of these designations are not reflective of the wilderness conditions. Retaining the current ROS classification for the Nordhouse Dunes Wilderness is not expected to change any values for which this area was incorporated into the National Wilderness Preservation System.

Direct Effects of Alternative 2

Under Alternative 2, firearm hunting would be reduced through implementation of a closure order. Tribal rights would be honored which allow for firearm hunting in the wilderness. Hunters without tribal rights to firearm hunt would be limited to non-firearm hunting activities. A slight increase in the opportunity to experience the isolation from the sights and sounds of humans would likely occur due to reductions in the levels of firearm hunting. Since firearm hunting can occur year around for some species of animals, visitors to the area may hear gunshots associated with hunting. Firearm discharges would likely be heard in almost all of the wilderness area due to the proximity of adjacent lands open to firearm hunting. This sound may disrupt visitor expectations of isolation from the sights and sounds of humans.

Some users may be dissatisfied that some people continue to firearm hunt in the area while other users may be dissatisfied with the inability to continue firearm hunting in the area. As a result, an increase in conflicts between users is expected in the short term as people adjust to the change in management direction.

The 2006 Forest Plan would continue to identify the Nordhouse Dunes Wilderness ROS classifications as both SPNM and Primitive. The Forest Service would continue to manage for these ROS designations, even though the characteristics of these designations are not reflective of the wilderness conditions. Retaining the current ROS classification for the Nordhouse Dunes Wilderness is not expected to change any values for which this area was incorporated into the National Wilderness Preservation System.

Direct Effects of Alternatives 3 and 4

Under Alternatives 3 and 4, no change would occur in the current hunting and other uses in the area. The direct effects are similar to those disclosed under Alternative 1.

These alternatives would change the ROS classification in the 2006 Forest Plan for the Nordhouse Dunes Wilderness from both Primitive and SPNM to only SPNM. This change of ROS classification would more reflect the current recreation opportunity offered in the wilderness. The Nordhouse Dunes Wilderness would be managed for SPNM opportunities, even though nonconforming conditions remain.

This ROS classification is the most reflective of the characteristics of the wilderness. Retaining the current ROS classification for the Nordhouse Dunes Wilderness is not expected to change any values for which this area was incorporated into the National Wilderness Preservation System.

Indirect Effects Common to All Alternatives

Under all alternatives, no improvements or new activities would occur in the Nordhouse Dunes Wilderness. No changes would occur that are expected to cause any direct, indirect and cumulative impacts to the untrammeled, natural and undeveloped qualities of the wilderness. No change would occur to the current opportunities for a primitive and unconfined type of recreation. Visitors would continue to have a very limited opportunity for a primitive experience as defined by ROS, but they would likely be able to experience an unconfined type of recreation which provided for the values of inspiration and physical and mental challenge. Visitor satisfaction is high and likely will remain high in all alternatives.

Indirect Effects of Alternative 1

Under Alternative 1, no change would occur in the current hunting uses in the area. No indirect effects are expected to the wilderness beyond those disclosed in the 2006 FEIS and other sections of this document.

Indirect Effects of Alternative 2

Under Alternative 2, firearm hunting would be reduced through implementation of a closure order. Tribal rights would be exercised which allow for firearm hunting in the wilderness. Non-firearm hunting (i.e. bow hunting) would continue in the wilderness. Non-firearm hunting use levels may increase due to higher wildlife populations from less hunting pressure. Non-firearm hunting may decrease in other areas on the Forests. Other non-hunting uses, such as hiking, dispersed camping, cross-country skiing and snowshoeing may increase due to a reduction in firearm hunting and the associated increase in opportunity for quiet recreation experiences.

Based on the 2007 NVUM study, 43.5 percent of visitors would travel 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. Therefore, of hunters displaced by the area closures, some users are expected to hunt in other nearby areas. Some of these hunters may use other Federal, State, private and other lands. Some hunters may decide to discontinue hunting. Most hunters displaced by area closures would likely travel to other areas to pursue their hunting and associated dispersed recreation activities. As such, dispersed recreation use in other areas is likely to increase.

A slight increase in the isolation from the sights and sounds of humans would likely occur due to reductions in the levels of firearm hunting associated sounds within the wilderness. Firearm hunting may increase on lands adjacent to the wilderness, resulting in more sounds originating from outside of the wilderness. Firearm discharges would likely be heard in almost all of the wilderness area due to the proximity of adjacent areas open to firearm hunting. Since some wildlife species may be hunted year around, visitors are expected to continue to hear gunshots associated with firearm hunting from people with tribal rights and from areas outside of the wilderness. As such, the sound of firearm hunting may continue to diminish some people's expectations of solitude.

Some users may be dissatisfied that some people continue to firearm hunt in the area while other users may be dissatisfied with the inability to continue firearm hunting in the area. As a result, an increase in conflicts between users is expected in the short term as people adjust to the change in management direction. Opportunities would be fair to good to experience more primitive and unconfined type of

recreation. During most of the year, visitors would continue to have a good opportunity to experience solitude depending on the areas they recreate in the wilderness.

The 2006 Forest Plan would continue to identify the Nordhouse Dunes Wilderness ROS classifications as both SPNM and Primitive. The Forest Service would continue to manage for these ROS designations, even though the characteristics of these designations are not reflective of the wilderness conditions. This ROS classification would not be consistent with ROS classifications of other wildernesses on NFS lands in Michigan. Retaining the current ROS classification for the Nordhouse Dunes Wilderness is not expected to change any values for which this area was incorporated into the National Wilderness Preservation System.

Indirect Effects of Alternatives 3 and 4

Under Alternatives 3 and 4, no change would occur in the current hunting and other uses in the area. The indirect effects are similar to those disclosed under Alternative 1.

These alternatives would change the ROS direction in the Forest Plan for the Nordhouse Dunes Wilderness from both Primitive and SPNM to only SPNM. This change of ROS direction would more reflect the current recreation opportunity offered in the wilderness. The Nordhouse Dunes Wilderness would be managed for SPNM opportunities, even though nonconforming conditions remain. This ROS classification is the most reflective of the characteristics of the wilderness and consistent with ROS classifications of other wildernesses on NFS lands in Michigan. Retaining the current ROS classification for the Nordhouse Dunes Wilderness is not expected to change any values for which this area was incorporated into the National Wilderness Preservation System.

Cumulative Effects Common to All Alternatives

Under all alternatives, no improvements or new activities would occur in the Nordhouse Dunes Wilderness. No changes would occur that are expected to cause any cumulative impacts to the untrammeled, natural and undeveloped qualities of the wilderness. No change would occur to the current opportunities for a more primitive and unconfined type of recreation. Visitors would continue to have a very limited opportunity for a primitive experience as defined by ROS, but they would likely be able to experience an unconfined type of recreation which provided for the values of inspiration and physical and mental challenge.

No snowmobile trails are located in or near the Nordhouse Dunes Wilderness area. No new snowmobile trails would be designated in or near the Nordhouse Dunes Wilderness in the foreseeable future, so no impacts would occur from implementation of any of the four alternatives.

Cumulative Effects of Alternative 1

Under Alternatives 1, no change would occur in the current hunting uses in the area. No cumulative effects are expected to the wilderness beyond those disclosed in the 2006 FEIS and other sections of this document.

The Forest Plan would continue to identify the Nordhouse Dunes Wilderness ROS classifications as both SPNM and Primitive. The Forest Service would continue to manage for these ROS designations, even though the characteristics of these designations are not reflective of the wilderness conditions. This ROS classification would not be consistent with ROS classifications of other wildernesses on NFS lands in Michigan. Retaining the current ROS classification for the Nordhouse Dunes Wilderness is not expected

to change any values for which this area was incorporated into the National Wilderness Preservation System.

Cumulative Effects of Alternative 2

Under Alternative 2, firearm hunting would be reduced through implementation of a closure order. Tribal rights would be honored which allow for firearm hunting in the wilderness. Non-firearm hunting (i.e. bow hunting) would continue in the wilderness. Non-firearm hunting use levels may increase due to higher wildlife populations from less hunting pressure. Non-firearm hunting may decrease in other areas on the Forests. Other non-hunting uses, such as hiking, dispersed camping, cross-country skiing and snowshoeing may increase due to a reduction in firearm hunting and the associated increase in opportunity for quiet recreation experiences.

Based on the 2007 NVUM study, 43.5 percent of visitors would travel 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. Therefore, some hunters displaced by the area closures are expected to hunt in other nearby areas. Some of these hunters may use other Federal, State, private and other lands. Some hunters may decide to discontinue hunting. Most hunters displaced by area closures would likely travel to other areas to pursue their hunting and associated dispersed recreation activities. As such, dispersed recreation use in other areas is likely to increase.

A slight increase in the isolation from the sights and sounds of humans would likely occur due to reductions in the levels of firearm hunting associated sounds within the wilderness. Firearm hunting may increase on lands adjacent to the wilderness, resulting in more sounds originating from outside of the wilderness. Firearm discharges would likely be heard in almost all of the wilderness area due to the proximity of adjacent areas open to firearm hunting. Since some wildlife species may be hunted year around, visitors are expected to continue to hear gunshots associated with firearm hunting from people with tribal rights and from areas outside of the wilderness. As such, the sound of firearm hunting may continue to diminish some people’s expectations of solitude.

Some users may be dissatisfied that some people continue to firearm hunt in the area while other users may be dissatisfied with the inability to continue firearm hunting in the area. In the short term, an increase in conflicts between user groups is likely to occur. Over time, people are expected to adjust to the change in management direction. Opportunities would be fair to good to experience more primitive and unconfined type of recreation. During most of the year, visitors would continue to have a good opportunity to experience solitude depending on the areas they recreate in the wilderness.

The 2006 Forest Plan would continue to identify the Nordhouse Dunes Wilderness ROS classifications as both SPNM and Primitive. The Forest Service would continue to manage for these ROS designations, even though the characteristics of these designations are not reflective of the wilderness conditions. This ROS classification would not be consistent with ROS classifications of other wildernesses on NFS lands in Michigan. Retaining the current ROS classification for the Nordhouse Dunes Wilderness is not expected to change any values for which this area was incorporated into the National Wilderness Preservation System.

Cumulative Effects of Alternatives 3 and 4

Under Alternatives 3 and 4, no change would occur in the current hunting uses in the area. No cumulative effects are expected to the wilderness beyond those disclosed in the 2006 FEIS and other sections of this document.

These alternatives would change the ROS direction in the Forest Plan for the Nordhouse Dunes Wilderness from both Primitive and SPNM to only SPNM. This change of ROS direction would more reflect the current recreation opportunity offered in the wilderness. The Nordhouse Dunes Wilderness would be managed for SPNM opportunities, even though nonconforming conditions remain. This ROS classification is the most reflective of the characteristics of the wilderness and consistent with ROS classifications of other wildernesses on NFS lands in Michigan. Retaining the current ROS classification for the Nordhouse Dunes Wilderness is not expected to change any values for which this area was incorporated into the National Wilderness Preservation System.

Effects on Wild and Scenic Rivers

Overview

The analysis area includes the five National Wild and Scenic Rivers, designated study rivers and potential study rivers on the Huron-Manistee National Forests. The designated wild and scenic rivers include the Pere Marquette, Au Sable, Pine, Manistee and Bear Creek Rivers. All of these rivers have management plans which provide for the protection and enhancement of the Outstandingly Remarkable Values for which they were included in the National Wild and Scenic River System.

The two legislatively designated study rivers are the Little Manistee and White Rivers. The potential study rivers are sections of the Little Muskegon, Muskegon and the portion of the Pine River from Stronach Dam to M-55. Designated study rivers and potential study rivers have management direction in the 2006 Forest Plan under M.A. 9.2 (Study Wild and Scenic Rivers). This direction is intended to protect and enhance river values until further analysis has been completed to determine eligibility for inclusion into the National Wild and Scenic River system.

Area of Analysis

The area of analysis for direct, indirect and cumulative effects is the same as stated in the introduction to this chapter. Effects discussed are those which would have direct, indirect or cumulative effects from selection and implementation of the alternatives evaluated in detail.

Direct, Indirect and Cumulative Effects of All Alternatives

In all alternatives, current Forest Plan S&Gs for Wild and Scenic Rivers and study rivers are in place to protect each river's values. No direct, indirect or cumulative effects are expected to designated Wild and Scenic Rivers, study rivers and potential study rivers or the Outstandingly Remarkable Values for which they were incorporated into the National Wild and Scenic River System.

Effects on Roads

Effects Common to All Alternatives

Management of roads under State and County jurisdiction will not be affected. NFS roads in the 13 areas designated as M.A. 6.1 (SPNM) would remain open to general public use. NFS roads would continue to be maintained to established standards based on their category of maintenance level. Management direction would continue to emphasize reducing net miles of roads on the Forests. A site-specific analysis would be conducted prior to closing or decommissioning any NFS roads identified as potentially not essential for resource management. Temporary administrative use of closed roads can occur, when

needed, for access to suppress wildfires, implement vegetative management prescriptions and other land management activities.

Roads open for public motorized use are displayed on the Motorized Vehicle Use Map (MVUM), as directed by the Travel Management Rule (December 9, 2005). The MVUM is updated annually to correct mapping errors and to reflect changes to the Forests' transportation system. Private landowners would continue to have legal access across NFS lands as provided for under the Alaska National Interests and Land Conservation Act of 1980. The direction in the Motorized Travel Management Rule, effective December 9, 2005, would continue to be implemented.

Direct and Indirect Effects of Alternatives 1 and 2

Under Alternatives 1 and 2, management area designations would not change for the 14 analysis areas. The maximum road densities prescribed in the Forest Plan for the 13 M.A. 6.1 (SPNM) areas is 0 to 1 miles per square mile of NFS lands. As this table demonstrates, the road density would continue to be exceeded in 6 of the 14 areas. These areas are Briar Hills, Manistee River, Wakeley Lake, Whalen Lake, White River and Whitewater Creek.

Direct and Indirect Effects of Alternative 3

Under Alternative 3, the management area designations and the associated road density guidelines would change for the 13 M.A. 6.1 areas (SPNM). No management area or road density guidelines would change for Nordhouse Dunes Wilderness. Under Alternative 3, the maximum road density prescribed in the 2006 Forest Plan would continue to be exceeded in the Wakeley Lake. Under Alternative 3, the road density guidelines for all other areas are not exceeded. Table 41 displays the guidelines for road densities, by Alternative. The road density guideline in M.A. 6.2 is 0 to 2 mile of road per square mile of NFS lands. The road densities for the remainder of the areas would be consistent with management area guidelines prescribed in the Forest Plan.

Direct and Indirect Effects of Alternative 4

Under Alternative 4, the management area designations would change for the 13 areas (M.A. 6.1, SPNM). No management area or road density guidelines would change for Nordhouse Dunes Wilderness. Under Alternative 4, the proposed management area designation for Whitewater Creek is M.A. 4.2 (Roaded Natural). The road density guideline in M.A. 4.2 is not exceeded. For the remaining 12 areas, the proposed management area designation is 8.4 (Special Areas). The 2006 Forest Plan does not provide road density guidelines for M.A. 8.4. Under this alternative, the road density guidelines established under the 2006 Forest Plan for the 12 areas (M.A. 6.1) would be applied to the M.A. 8.4 designation. Table 41 displays the guidelines for road densities, by Alternative. As this table demonstrates, the road density would continue to be exceeded in 5 of the 14 areas. The road densities for the remainder of the areas would be consistent with management area guidelines prescribed in the 2006 Forest Plan.

Table 41. Area Road Density (Miles of Road per Square Mile) by Alternative

Area Name	2011 Road Density	Road Density by Alternative (miles/ mile^2)			
		Alt. 1	Alt. 2	Alt. 3	Alt. 4
Au Sable	0.37	0-1	0-1	0-3	0-1
Bowman Lake	0.98	0-1	0-1	0-3	0-1
Briar Hills	1.27	0-1	0-1	0-2	0-1
Condon Lakes West	0.09	0-1	0-1	0-2	0-1
Cooke Pond	0.06	0-1	0-1	0-2	0-1
Hoist Lakes	0.01	0-1	0-1	0-2	0-1
Manistee River	1.42	0-1	0-1	0-3	0-1
Reid Lake	0.01	0-1	0-1	0-2	0-1
South Branch Au Sable	0.96	0-1	0-1	0-2	0-1
Wakeley Lake	2.12	0-1	0-1	0-2	0-1
Whalen Lake	1.94	0-1	0-1	0-3	0-1
White River	1.66	0-1	0-1	0-2	0-1
Whitewater Creek	1.29	0-1	0-1	0-3	0-3
Wilderness					
Nordhouse Dunes	0	0	0	0	0

Cumulative Effects

State and county roads remain open to public use. The public would continue to use NFS roads across the 14 analysis areas which access recreation sites or State of Michigan lands. NFS roads would continue to be maintained to established standards based on their category of maintenance level. Management direction would continue to emphasize the need to reduce the net miles of roads on the Forests by closing or decommissioning roads identified as not essential for resource management. As such, road densities in areas would likely continue to decline. Private landowners would continue to have legal access across NFS lands as provided for under the Alaska National Interests and Land Conservation Act of 1980. The direction in the Motorized Travel Management Rule, effective December 9, 2005, would continue to be implemented.

This decrease in road density would slightly reduce motorized access to NFS lands in these areas; however, nonmotorized access to these areas would continue. Motorized access to other areas of the Forests would continue to be provided.

National Forests, State and private lands uses within or adjacent to the 14 analysis are expected to continue with only minor changes over time. Increases in development on private lands adjacent to these

areas are expected in the future. Development of residential and recreation properties that include homes and roads has occurred in recent decades and would continue until available private lands reach capacity as determined by local zoning regulation. Increased development on private land would likely result in an increase in the number of private road easements across NFS lands. Some new roads may need to be constructed or existing roads may need to be improved. As such, road densities within these areas are likely to increase.

Effects on Heritage Resources

Current Forest Plan S&Gs apply in all alternatives. No ground disturbing or other activities which may affect historic properties will occur as a result of selecting any of the alternatives. Any future activities which may affect historic properties will require project specific compliance with section 106 of the National Historic Preservation Act, including surveys to determine the presence or absence of historic resources. Therefore, no direct, indirect or cumulative effects to historic properties are anticipated on as a result of the selection of any of the four alternatives.

Forest Contribution to Local Community Economies Effects

Effects Common to All Alternatives

Quantitative economic effects of any alternative may be recognized more rapidly than long-term social effects in local communities and individuals. As proposed quantities of goods, services and opportunities associated with NFS lands change within each alternative, there would be corresponding changes in employment, revenue and value. Recreation changes would generally be seen over the first decade and while timber management effects will continue over the planning analysis period of 150 years. It is recognized that the economies of Michigan's forest product sectors have been changing over the last decade. There have been job losses, mill closings and disinvestments. The underlying causes of this change operate at multiple scales, from local to global, with far-reaching scope and impact. Some of the main drivers of change are market based, over which government has little influence.

The results of the IMPLAN economic modeling should be viewed as programmatic level estimates of extremely complex economic interactions of the regional economy. Interpretations of the IMPLAN data should be viewed as comparisons among Forest Plan revision alternatives of the potential relative economic effects because of limited economic data, associated assumptions and the limitations of the IMPLAN model itself.

Quantifiable economic analysis methods for passive values are not readily available nor are analysis methods agreed upon for use within the Forest Service. Passive values, such as the value of a sunrise over a lake, associated with the Forests as a whole are no doubt considerable and the Forest Service recognizes the tremendous value of these kinds of opportunities, forest settings and benefits provided for within each alternative.

Passive values are extremely difficult to accurately measure, particularly on the per acre basis, which would be needed in order to make a comparison among alternatives. Such values are described and considered qualitatively within the social and other individual resource sections of this document. While a dollar value is not placed on the experience of hiking or cross-country skiing while not hearing gunshots or gasoline engines, it is recognized these are important values to many visitors to the area.

Resource Protection Methods

All alternatives incorporate a base set of management direction that addresses social and economic sustainability. This direction consists of desired conditions and objectives that would apply to and limit the effects of any alternative selected for implementation in the Forest Plan.

Forest Plan Desired Conditions

The Forests provide commodity resources in an environmentally sustainable and acceptable manner to contribute to the social and economic sustainability and diversity of local communities.

The Forests provide non-commodity opportunities such as birch bark and firewood, recreation pursuits and historical facility access in an environmentally sustainable and socially acceptable manner to contribute to social sustainability and vitality of local resident's way of life, cultural integrity and social cohesion.

The Forests continue to provide rare or unique benefits that may not be common on or available from other ownerships of public or private lands, such as opportunities for experiencing solitude in remote settings, recreating where lakeshores are undeveloped, harvesting unique natural resources and providing habitat for some Federal and/or State Endangered, Threatened or Sensitive species.

The Forests continue to emphasize agency, tribal and public involvement with increases in intergovernmental coordination with Federal, State, county governments and agencies; a high level of communication and dialogue with a broad range of stakeholders and successful dialogue between tribal governments and Huron-Manistee National Forests leadership employees.

Forest Plan Objectives

- Contribute to local-scale social and economic vitality by promoting and/or protecting area cultural values, traditional employment, recreation opportunities, historical landscape features and aesthetic qualities of the forest.
- An annual and sustainable program of commercial timber sales and other products are offered and/or available.
- Improve delivery of services to urban communities.

Direct and Indirect Effects

The discussion below addresses the potential economic effects of various resource management activities associated with each alternative.

Generally the discussion will focus on the economic indicators described at the beginning of this section that respond to issues and concerns commonly expressed by those responding to Forest Service requests for input in the planning process. These include employment, income and community resilience.

The IMPLAN/FEAST analysis and subsequent data include direct, indirect and induced impacts on the economic condition of the assigned impact area only in terms of employment and income. An example of a direct impact is the payment a logger receives from the harvesting and sale of trees to a wood products facility. The indirect effects are when the wages of the logger are spent on car maintenance and groceries. Induced effects are the purchases and payments made by those businesses that receive the indirect effect payments.

Indicator 1 – Employment and Income by Forest Service Program Area:

An indicator for economic sustainability includes the contribution to the economic impact area by the National Forest program area budgets and outputs in terms of the number of jobs and average associated income.

The following examines the effects of the alternatives on employment and labor income opportunities within the expanded impact area.

The National Forests are legally responsible to provide for a variety of uses and benefits by the Multiple Use and Sustained Yield Act of 1960. These uses and benefits are reflected in Table 43 through Table 46 as "Resources." They have been estimated in FEAST by the amount of money expended by the Forests directly related to each resource and activities taking place as a result of decisions, such as timber harvest and recreation visitation. Based on budget information, NVUM and other data gathered and incorporated in IMPLAN/FEAST, subsequent employment and associated income figures have been projected for each alternative. It is essential to remember that IMPLAN/FEAST is analyzing only the first decade for these indicators.

It is also important to note that the "current" column in the following tables display employment and income as it relates to the average of the last 10 years of actual financial allocation and program management implementation by the Forests.

Table 42. Employment by Program by Alternative (Average Annual, Decade 1)

	Total Number of Jobs Contributed				
Resource	**Current**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Recreation: non-local only	2,286	2,286	2,284	2,286	2,286
Wildlife and Fish: non-local only	1,019	1,019	1,011	1,019	1,019
Timber	395	395	395	395	395
Minerals	389	389	389	389	389
Payments to States/Counties	25	25	25	25	25
Forest Service Expenditures	351	351	351	351	351
Total Forest Management	4,465	4,465	4,456	4,465	4,465
Percent Change from Current	---	0.00%	-0.20%	0.00%	0.00%

Source: IMPLAN Version 3.0.9.2 and 2009 IMPLAN data for impact counties

Table 43. Labor Income by Program by Alternative (Average Annual, Decade 1; $1,000,000)

	Thousands of 2009 dollars				
Resource	**Current**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Recreation: non-local only	$53,892	$53,892	$53,865	$53,892	$53,892
Wildlife and Fish: non-local only	$26,459	$26,459	$26,250	$26,459	$26,459
Timber	$14,097	$14,097	$14,097	$14,097	$14,097
Minerals	$18,214	$18,214	$18,214	$18,214	$18,214
Payments to States/Counties	$724	$724	$724	$724	$724
Forest Service Expenditures	$16,577	$16,577	$16,577	$16,577	$16,577
Total Forest Management	$129,964	$129,964	$129,727	$129,964	$129,964
Percent Change from Current	---	0.00%	-0.20%	0.00%	0.00%

Source: IMPLAN Version 3.0.9.2 and 2009 IMPLAN data for impact counties

Table 44. Employment by Major Industry by Alternative (Average Annual, Decade 1)

	Total Number of Jobs Contributed				
Industry	**Current**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Agriculture	184	184	183	184	184
Mining	222	222	222	222	222
Utilities	13	13	13	13	13
Construction	28	28	28	28	28
Manufacturing	187	187	187	187	187
Wholesale Trade	186	186	185	186	186
Transportation & Warehousing	118	118	118	118	118
Retail Trade	694	694	692	694	694
Information	39	39	39	39	39
Finance & Insurance	53	53	53	53	53
Real Estate & Rental & Leasing	81	81	81	81	81
Prof, Scientific, & Tech Services	91	91	90	91	91
Mngt of Companies	7	7	7	7	7
Admin, Waste Mngt & Rem Serv	89	89	89	89	89
Educational Services	24	24	24	24	24
Health Care & Social Assistance	177	177	177	177	177
Arts, Entertainment, and Rec	318	318	318	318	318
Accommodation & Food Services	1,556	1,556	1,553	1,556	1,556
Other Services	124	124	124	124	124
Government	281	281	281	281	281
Total Forest Management	4,472	4,472	4,462	4,472	4,472
Percent Change from Current	---	0.00%	-0.20%	0.00%	0.00%

Source: IMPLAN Version 3.0.9.2 and 2009 IMPLAN data for impact counties

Table 45. Labor Income by Major Industry by Alternative (Average Annual, Decade 1; $1,000)

	Thousands of 2009 dollars				
Industry	**Current**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Agriculture	$4,996	$4,996	$4,993	$4,996	$4,996
Mining	$12,134	$12,134	$12,127	$12,134	$12,134
Utilities	$1,384	$1,384	$1,382	$1,384	$1,384
Construction	$991	$991	$989	$991	$991
Manufacturing	$9,529	$9,529	$9,518	$9,529	$9,529
Wholesale Trade	$9,619	$9,619	$9,589	$9,619	$9,619
Transportation & Warehousing	$4,474	$4,474	$4,465	$4,474	$4,474
Retail Trade	$15,919	$15,919	$15,865	$15,919	$15,919
Information	$1,744	$1,744	$1,741	$1,744	$1,744
Finance & Insurance	$2,458	$2,458	$2,454	$2,458	$2,458
Real Estate & Rental & Leasing	$1,343	$1,343	$1,341	$1,343	$1,343
Prof, Scientific, & Tech Services	$4,184	$4,184	$4,179	$4,184	$4,184
Mngt of Companies	$526	$526	$525	$526	$526
Admin, Waste Mngt & Rem Serv	$2,081	$2,081	$2,077	$2,081	$2,081
Educational Services	$395	$395	$394	$395	$395
Health Care & Social Assistance	$7,222	$7,222	$7,208	$7,222	$7,222
Arts, Entertainment, and Rec	$5,416	$5,416	$5,400	$5,416	$5,416
Accommodation & Food Services	$26,741	$26,741	$26,687	$26,741	$26,741
Other Services	$3,268	$3,268	$3,261	$3,268	$3,268
Government	$15,827	$15,827	$15,820	$15,827	$15,827
Total Forest Management	$130,251	$130,251	$130,014	$130,251	$130,251
Percent Change from Current	---	0.00%	-0.20%	0.00%	0.00%

Source: IMPLAN Version 3.0.9.2 and 2009 IMPLAN data for impact counties

Table 46. Forest Service Revenues and Payments to Counties (Annual Avg., Decade 1; $1,000)

Forest Service Program	Thousands				
	Current	Alt 1	Alt 2	Alt 3	Alt 4
Recreation including wildlife and fish	$370	$370	$370	$370	$370
Timber	$3,123	$3,123	$3,123	$3,123	$3,123
Minerals	$885	$885	$885	$885	$885
Payment to States/Counties	$1,530	$1,530	$1,530	$1,530	$1,530

Evaluation of the alternatives indicates that all alternatives would provide thousands of jobs related to total National Forest program expenditures and resulting activities in the Lower Peninsula of Michigan. Differences between alternative are minimal because alternatives examined do not result in major changes to timber or recreation businesses.

Impacts associated with reduced snowmobile and hunting recreation visitation evaluated in Alternative 2 reflect several interacting results. As described elsewhere, changes to hunting and snowmobiling visitation on specific National Forest locations may result in movement to recreate in other locations in the impact area. Some persons will elect to recreate outside the impact area or not participate in that recreation at all. With respect to all of the diverse economic activities taking place in and around the Forests, the impacts appear very small. If the changes proposed and evaluated in Alternative 2 are centered around any small business or community, then the local impacts can be very large to those directly affected.

There may be concerns that recreation impacts only include non-resident recreation visits. That is because economists define economic impacts as changes in employment and personal income associated with recreation expenditures by persons traveling in to an area to recreate. That does not mean the money spent by residents of a community in those communities is not important to businesses. If all recreation spending were considered “economic impacts” then IMPLAN would estimate nearly 9,000 jobs and almost $300 million in income associated with recreation, including fishing and hunting in the area. However, changes in jobs and income associated with Alternative 2 would still be two tenths of a percent. The importance of considering both local and non-local recreation expenditures is recognized. However, including or not including them in Table 46 does not provide additional insight in to the differences or lack of differences between alternatives.

One shortcoming of this analysis is that without absolutely current survey information about the State and current intention of local business owners, this economic analysis cannot estimate business closings or openings. The analysis does an excellent job of estimating the jobs and income associated with activities modeled. Local economies are constantly changing and current economic trends in the area are downward. It is recognized that even small changes relative to the multi-county economy can result in some business owners deciding there is not enough business to stay open in their current location.

Indicator 2 – Employment and Income by Major Industry

Economic stability is the contribution to the economic impact area by National Forest budgets and outputs in terms of total number of jobs and income within major industry categories. The Forest Service expenditures contribute to a broad range of major industry employment and income as identified in Table 43.

Major industry sectors are defined by the U.S. Standard Industrial Classification system for economic analysis. These sectors are further aggregated by IMPLAN and summarized by appropriate groups in FEAST. A consideration of the number of people employed by and number of employers within the major industry sectors is formulated within IMPLAN/FEAST. The results are dominated by two industry groups that depend on natural resources and include: 1) wood products industries, manufacturing and 2) tourism industries, services and retail trade.

A review of outcomes from each alternative by industry category demonstrates a range in employment and income by major industry. The projected gain or loss, of jobs and income may or may not cause readjustments within an industry category, but a change in employment would considerably affect the individuals involved. IMPLAN/FEAST does not redistribute jobs from one sector to another due to forest management changes. In other words, the system used does not attempt to predict that a person losing a job, say at a local hotel, will find another job, say at a nearby restaurant. Rather, IMPLAN/FEAST restricts job occurrence within each sector, based on the alternative's management theme.

The projected change in number of jobs related to the retail trade and services industry does vary slightly, based on the limited effects of alternative themes on recreation and wildlife expenditures by the Forest Service. Program expenditures remain relatively constant across the alternatives over the decade of IMPLAN/FEAST analysis.

Indicator 3 – Community Resilience

IMPLAN estimates the diversity of business sectors in the Huron-Manistee counties to be similar to the State of Michigan. The Shannon-Weaver index estimated by IMPLAN for the State is 0.74018 and for the combined counties 0.72462. If there was only one industry, then the index would be zero. If there were an equal number of businesses in all possible sectors, then the index would equal one. The similarity between State and counties indicates the counties have relatively high business diversity and should be relatively resilient in the economic sense. No information is available at this time to judge resiliency in the social sense.

These diverse businesses depend heavily on the diverse recreation opportunities in the region. Opportunities are derived from setting both on and off the National Forest. They occur throughout all seasons of the year. Businesses "get by" with patronage from recreation visitors who recreate on private, State and Federal lands. One season may bring in both hunters and people viewing fall color. The next season may see skiers, snowmobilers and ice fishermen. Spring may bring international eco-tourists to view the Kirtland's Warbler, stream fishermen and mushroom hunters. Summer brings families, other fishermen and boaters. Sustainability and resilience depends on all of these pieces of business, there are few single niche markets.

The diversity of opportunity is essential to resilience. A key issue in the profitability of recreation businesses is "length of stay". If visiting snowmobilers have spent a day riding State trails, they may stay another day to ride Forest Service trails. An extra day means additional lodging, food and supply expenditures for the trip. Maintaining resiliency of the businesses in and around the Forest depends on

offering a diversity of opportunities to enjoy the same activity in different locations. These opportunities are enhanced by opportunities on multiple ownerships.

Effects on Scenery Management

This section describes effects that the activities involved in the alternatives in the SEIS would have on scenery management.

Direct, Indirect and Cumulative Effects Common to All Alternatives

In all alternatives, current S&Gs in the 2006 Forest Plan would remain in place for management of scenery resources on the Forest. No direct, indirect or cumulative effects are expected to scenery resources beyond those in the FEIS. Scenery management issues are addressed in the preparation of a site-specific project analysis. No notable direct, indirect or cumulative effects to visual resources are expected from implementation of all alternatives.

Environmental Justice Effects

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, requires that the alternatives be assessed for "disproportionately high and adverse effects…on minority populations and low-income populations."

This section will describe the employment and income that comprise the economic environment of the Huron-Manistee National Forests. These household and local economy based factors assist in characterizing the people who use, benefit from or have an impact on the areas surrounding the Forests.

Household Income

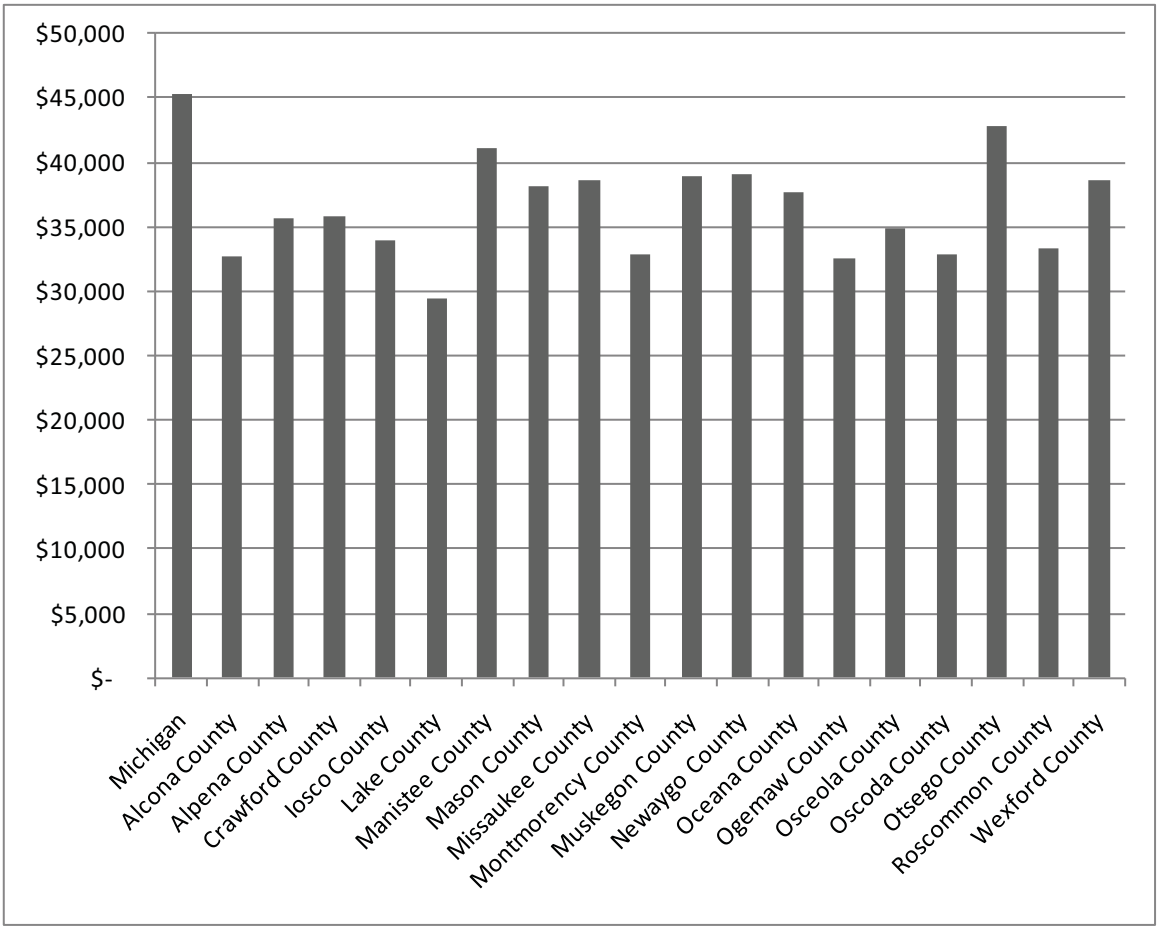
The Huron-Manistee National Forests' economic impact area included 222,938 households in 2010. As shown in Table 47,Table 46 in 2010, the percentage of households in the impact area counties with incomes less than $10,000 ranged from a low of 6.7 percent in Otsego County to a high of 13.3 percent in Lake County. Otsego County had a modest increase from just 6.0 percent in 2000. Lake County decreased from 18 percent in 2000 to 13.4 percent in 2010.

Table 47. Households and Household Income by County and Economic Impact Area

Location	Population	Number of Households	Households with less than $10,000 income	Pecent	Median household income
Michigan	9,969,727	3,860,160	308,694	8.0%	$ 45,254
Alcona County	11,091	4,774	375	7.9%	$32,644
Alpena County	29,289	13,060	1,117	8.6%	$35,710
Crawford County	14,203	5,833	457	7.8%	$35,866
Iosco County	25,817	11,744	1,091	9.3%	$33,976
Lake County	10,926	3,936	524	13.3%	$29,373
Manistee County	24,439	10,736	827	7.7%	$41,067
Mason County	28,637	12,397	1,113	9.0%	$38,073
Missaukee County	14,838	6,039	465	7.7%	$38,657
Montmorency County	10,094	4,447	478	10.7%	$32,809
Muskegon County	173,951	65,654	5,659	8.6%	$38,916
Newaygo County	48,686	19,031	1,548	8.1%	$39,059
Oceana County	27,577	10,180	753	7.4%	$37,655
Ogemaw County	21,234	8,477	869	10.3%	$32,585
Osceola County	22,703	8,914	834	9.4%	$34,823
Oscoda County	8,707	3,963	403	10.2%	$32,928
Otsego County	23,412	9,723	651	6.7%	$42,831
Roscommon County	24,682	11,433	1,179	10.3%	$33,273
Wexford County	31,553	12,597	1,164	9.2%	$38,587

Source: US Census Bureau 2010a

Figure 4. Median Incomes, 2009



As shown in Figure 4, the median incomes of counties in the impact area were 5.6 to 35 percent lower than the median income for the State as a whole. For example, Lake County, at a median income of $29,373, is about 35 percent lower than the overall Michigan median income of $45,254; whereas Otsego County is only about 5.6 percent lower at a median income of $42,831.

Table 48. Household Earnings and Income Sources by County, 2009

County	Households with earnings[22]	Percent with Social Security	Percent with public assistance	Percent with retirement
Alcona County	4,774	54%	2%	41%
Alpena County	13,060	38%	4%	25%
Crawford County	5,833	40%	3%	29%
Iosco County	11,744	46%	3%	36%
Lake County	3,936	51%	4%	29%
Manistee County	10,736	39%	4%	28%
Mason County	12,397	38%	3%	24%
Missaukee County	6,039	34%	4%	24%
Montmorency County	4,447	53%	5%	37%
Muskegon County	65,654	32%	5%	21%
Newaygo County	19,031	34%	4%	22%
Oceana County	10,180	35%	5%	23%
Ogemaw County	8,477	46%	5%	33%
Osceola County	8,914	37%	4%	25%
Oscoda County	3,963	50%	3%	34%
Otsego County	9,723	34%	3%	22%
Roscommon County	11,433	48%	5%	40%
Wexford County	12,597	32%	4%	21%
Michigan	3,860,160	29%	3%	21%

Source US Census Bureau 2009

Table 48 illustrates that in all of the 18 counties in the economic impact area; more than a third of those receiving earnings also received some type of Social Security income. All counties had a much higher percentage of households receiving Social Security income than the State as a whole. Twelve out of 18 counties had a higher percentage of households receiving public assistance than the State average. The one exception was Alcona County, which was below the State average of 3 percent.

Social Security is payable to individuals who have retired or are totally disabled. During public scoping for the SEIS, the issue was raised about how closing the 13 analysis areas to snowmobiling and hunting would impact individuals who face mobility challenges due to age or disability. It is unlikely that closing the areas to snowmobiling would have a significant negative impact to this population because adjacent

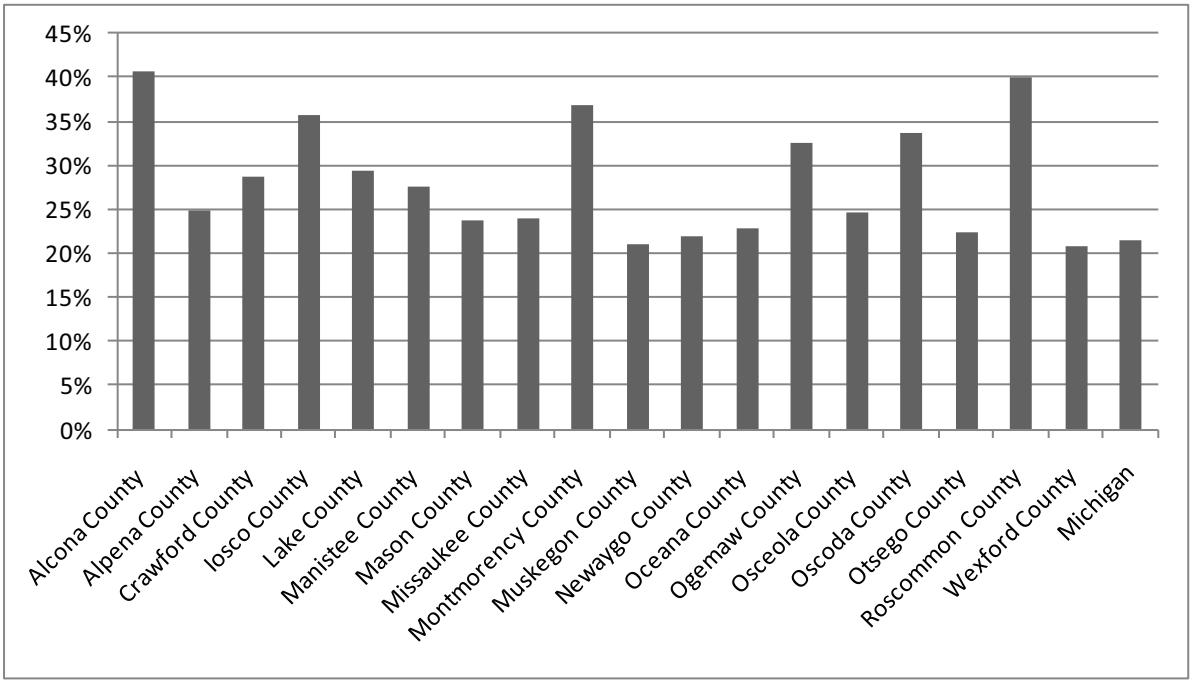
[22] Note: of 3,860,160 Households with income, 308,694 or about 8% had income < $10,000 per year.

county roads would remain open to snowmobiling, providing alternate travel routes. In regards to hunting, the 14 analysis areas have historically had less motorized access than other more highly developed areas of the National Forests, such as areas with the ROS classification of Semiprimitive Motorized or Roaded Natural. It is unlikely that individuals with mobility issues have intentionally sought out areas with less motorized access to pursue hunting.

If an alternative were adopted that precluded all individuals from snowmobiling or all individuals except tribal members from gun hunting within the 14 analysis areas, that would not constitute discrimination against individuals with mobility challenges because all individuals without tribal affiliation would be treated equally. (A discussion of treaty rights follows in this section.) The policy of the Forest Service is that discrimination is denial of access to individuals based on their personal characteristics.

> "The legal requirement to individually "accommodate" a person who has a disability only applies to employment through Section 504, which was amended to follow the law established under Title I of the ADA for disability-related employment issues. Whereas the requirement for program access is not to deny a qualified person who has a disability access to a program that is open to all other people, providing no change is to be made to that program that would "fundamentally alter" that program (7 C.F.R. §15e.103). For example allowing a motor vehicle, including an OHV/ATV, to be used only by individuals who have disabilities, to access an area or route that prohibits motor vehicle use would be a fundamental alteration of that program." (USDA-FS 2006d)

Figure 5. Percentage of Households Receiving Retirement Income Compared to the State of Michigan, 2009.



As shown in Figure 5, households receiving retirement income range from 21 to 41 percent compared to 21 percent for the State, indicating an aging population within the economic impact area.

While management of the Forests has an impact on the economies of local counties, many other factors influence and affect these economies. For example, recreation and timber outputs from other landowners effect local economies as well.

Forest management on the Huron-Manistee National Forests currently contributes about 1.9 percent of area employment and about 1.5 percent of area income (see Table 50). Full implementation of any of the four alternatives would have no effect on the average estimated jobs contributed in the 10-year planning period.

Minority populations in the Huron-Manistee National Forests impact areas comprise less than 14.4 percent on the Manistee and 4.2 on the Huron (See Figure 6 and Tables 49 through Table 51). This is below the Statewide average of 23.1 percent. Nationally, there is a low participation rate for minorities in outdoor recreation.

Approximately 19 percent of the residents in the Huron impact area were below the poverty level in 2010 and can be considered low-income, compared with 10.7 percent in 2000. In the Manistee impact area, approximately 17.6 percent of the residents are below the poverty level, compared with 11.5 percent. See Table 51).

Direct, Indirect and Cumulative Effects of All Alternatives

In all alternatives, there are no known direct, indirect or cumulative effects of the alternatives on the resident or visitor low-income or minority populations. The alternatives do not propose management objectives, goals or activities that would have disproportionately high and adverse impacts on minority or low-income populations or visitors.

Figure 6. Percent of Non-white Populations in Michigan and Within Michigan National Forest Boundaries

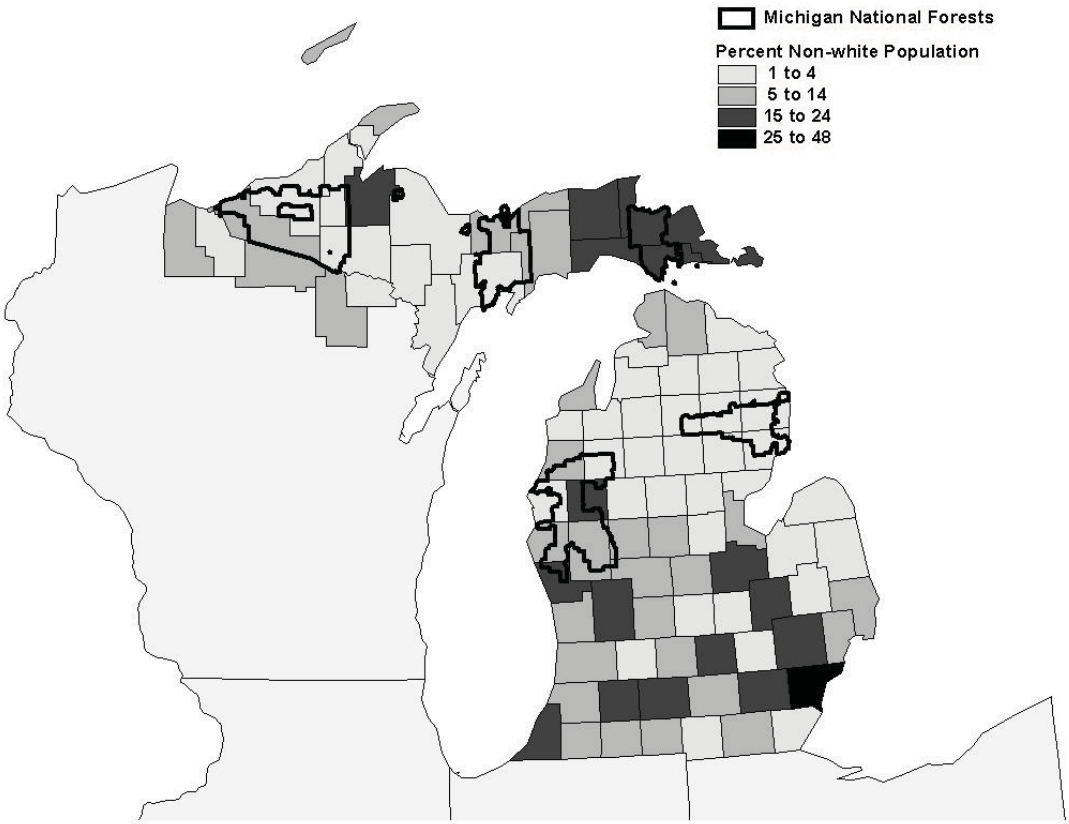


Table 49. Population by Race and Percent Non-white in the United States, Michigan, Wisconsin and National Forest Impact Areas, 2009

Impact Area	American Indian	Asian or Pacific Islander	African American or Black	Multiple Races	Hispanic	White	Total Population	Percent Non-white
Huron National Forest	1,142	768	1,265	1,938	1,922	161,494	168,529	4.2%
Manistee National Forest	3,046	1,861	26,527	5,957	13,719	304,623	355,733	14.4%
MI	62,485	246,034	1,413,582	155,850	421,106	7,670,670	9,969,727	23.1%

Source: US Census Bureau 2010b

Table 50. Percentage of Minority Populations in Michigan

Location	Minorities as a Percent of Population
Michigan	18.8%
Alcona County	2.7%
Alpena County	2.6%
Crawford County	5.2%
Iosco County	3.6%
Lake County	13.6%
Manistee County	6.3%
Mason County	3.5%
Missaukee County	2.7%
Montmorency County	1.8%
Muskegon County	16.9%
Newaygo County	3.8%
Oceana County	3.5%
Ogemaw County	3.1%
Osceola County	3.4%
Oscoda County	2.3%
Otsego County	3.2%
Roscommon County	2.4%
Wexford County	3.2%

Source: US Census Bureau 2010b

Table 51. Michigan's Population Below Poverty

Location	Poverty
Michigan	16.1
Alcona County	16.3
Alpena County	16.6
Crawford County	19.2
Iosco County	18.6
Lake County	23.4
Manistee County	13.9
Mason County	17.8
Missaukee County	15.0
Montmorency County	18.6
Muskegon County	18.6
Newaygo County	18.6
Oceana County	20.6
Ogemaw County	18.9
Osceola County	13.5
Oscoda County	19.1
Otsego County	20.9
Roscommon County	22.6
Wexford County	17.0

Source: US Census Bureau 2010a

Tribal Treaty Rights on National Forest System Lands

Section 1-103 of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, specifically identifies American Indians as a minority population of concern. Through both established treaty rights and traditional use, American Indian tribes have asserted their interests in the Huron-Manistee National Forests.

The 2000 census reported that there are 58,479 Michigan residents who identified themselves as only of American Indian ancestry, representing 0.6 percent of the population. This represents a modest increase from the 1990 census, which reported an American Indian population of 55,600. An additional 124,412 residents identified themselves as American Indian or Alaskan Native and at least one other race.

Lands within the Huron-Manistee National Forests lie within the territories ceded by American Indian tribes in two separate treaties, as shown in Figure 7.

Figure 7. Map of Lands within the Huron-Manistee National Forests within the Territories Ceded by American Indian Tribes

The area of the eastern Huron National Forest labeled Section 111 on the map is covered by the Treaty with the Chippewa, concluded September 24, 1819, at Saginaw, Michigan and published March 25, 1820.

The area shown on the map covering the western Huron National Forest and the entire Manistee National Forest, labeled Section 205 is covered by the Treaty with the Ottawa and Chippewa, concluded March 28, 1836, at Washington, D.C. and published May 27, 1836.

A list of the present-day tribes associated with these treaties can be found in the planning record.

The pre-eminence of treaties was established in clause 2 of Article VI of the U.S. Constitution, which states: “This Constitution and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.”

“When Native American tribes signed treaties consenting to give up their lands, the treaties often explicitly guaranteed hunting and fishing rights. When the treaties created reservations, they usually gave tribe members the right to hunt and fish on reservation lands. In many cases, treaties guaranteed Native Americans the continued freedom to hunt and fish in their traditional hunting and fishing locations, even if those areas were outside the reservations. Even when hunting and fishing rights were not specifically mentioned in treaties, the reserved-rights doctrine holds that tribes retain any rights, including the right to hunt and fish that are not explicitly abrogated by treaty or statute.” (Native American Rights)

Understanding the interpretation of reserved treaty rights requires an understanding of why and how the treaties were negotiated. “The U.S. Government negotiated treaties with Indian tribal governments for western expansion, to keep the peace and to add new States to the Union. *American Indian treaties were not a grant of rights to tribes, but rather a grant of rights from tribes, with the Indian tribes retaining all of the powers and rights of sovereign nations not granted by the tribe pursuant to the treaty or taken from the tribe by Federal statute.”* (USDA-FS-600)

"In other words, the treaty was not a grant of rights to the Indians, but a grant of rights from them – a reservation of those not granted." *United States v. Winans*, 198 U.S. 371 (1905).

Both the 1819 Treaty of Saginaw and the 1836 Treaty of Washington contain clauses that stipulate that the signatory tribes retained what have come to be referred to as “usufructuary” rights, by which the tribes retained rights to certain uses of the lands ceded to the United States. This precedent was established in the 1795 Treaty of Greenville, in which Article VII states: “The said tribes of Indians, parties to this treaty, shall be at liberty to hunt within the territory and lands which they have now ceded to the United States, without hindrance or molestation, so long as they demean themselves peaceably and offer no injury to the people of the United States.”

Article V of the 1819 Treaty with the Chippewa states: “The stipulation contained in the treaty of Greenville, relative to the right of the Indians to hunt upon the land ceded, while it continues the property of the United States, shall apply to this treaty; and the Indians shall, for the same term, enjoy the privilege of making sugar upon the same land, committing no unnecessary waste upon the trees.”

Article XIII of the 1836 Treaty with the Ottawa and Chippewa states: “The Indians stipulate for the right of hunting on the lands ceded, with the other usual privileges of occupancy, until the land is required for settlement.”

Federal courts have ruled several times in recent decades that the signatory tribes still retain these reserved rights. Court cases include the 1972 *Gurno Decision* involving tribal fishing rights in Lake Superior; the 1983 *Voigt Decision*, involving the Lac Courte Oreilles Band; and the 1997 *Mille Lacs*

Decision affirming the 1837 Treaty rights of the Ojibwe, which was later upheld by a 1999 U.S. Supreme Court ruling.

Litigation between five Michigan tribes, the United States and the State of Michigan over the scope of treaty rights under the 1836 Treaty of Washington began in 1973. In the 1979 *Fox* Decision, the Federal District Court ruled that the 1836 Treaty of Washington signatory tribes still had a viable treaty right to fish in the Great Lakes and specifically found that the Great Lakes waters could never be "settled." The judge held:

"The mere passage of time has not eroded and cannot erode the rights guaranteed by solemn treaties that both sides pledged on their honor to uphold. The Indians have a right to fish today wherever fish are to be found within the area of cession – as they had at the time of cession – a right established by aboriginal rights and confirmed by the Treaty of Ghent and the Treaty of 1836. The right is not a static right today any more than it was during treaty times. The right is not limited as to the species of fish origin of fish, the purpose of use or the time or manner of taking. It may be exercised utilizing improvements in fishing techniques, method and gear." *(United States v. Michigan*, 471 F. Supp. 192 (1979))

As a result of the 1979 ruling, the State of Michigan, the United States and those tribes entered into Consent Decrees in 1985 and again in 2000 to implement the court's 1979 ruling.

The 2000 Consent Decree is an agreement that governs allocation, management and regulation of State and Tribal fisheries in the 1836 Treaty waters of the Great Lakes. It was signed in August of 2000 by Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Little River Band of Ottawa Indians, Little Traverse Bay Bands of Odawa Indians, Sault Ste. Marie Tribe of Chippewa Indians, the State of Michigan and the United States and will be in place through 2020. The Decree outlines management of numerous species, but puts particular emphasis on lake trout and lake whitefish.

"In 2002, the State of Michigan entered into a Government-to-Government Accord with the 12 Federally recognized tribes, acknowledging tribal sovereignty, tribal self-governance and cooperation between the State and tribes. This Accord was reaffirmed by the Governor in a 2004 Executive Directive. In doing so, the Governor demonstrated understanding of and respect to tribes as sovereigns, making it easier for the two governments to work together in other areas." (Michigan's Emerging Tribal Economies)

In September 2003, the State of Michigan filed a lawsuit in Federal court to resolve the issue of the inland treaty rights to hunt, fish and gather on land ceded to the United States in 1836. In the 1836 Treaty of Washington, Article XIII provided that the Indians reserved the "right to hunt and the usual privileges of occupancy until the land is required for settlement." The 2003 litigation between the United States, the tribes and the State of Michigan involved a dispute as to the meaning of when the land was "required for settlement."

In 2007, the State of Michigan, the United States and the five signatory tribes of the 1836 Treaty of Washington signed a consent decree in Federal District Court for the Western District of Michigan, Southern Division, that recognized the existence of treaty rights within the ceded territory on public lands and waters, including both Federal and State, as well as private lands and waters "that are required to be open to the public under Federal or State law, such as lands enrolled in the State's Commercial Forest Act." (*U.S. v Michigan*, File No. 2: 73 CV 26)

To date, the continued existence of reserved rights to hunt in the ceded territory under the 1819 Treaty with the Chippewa has not been adjudicated by the courts. An article by Jacqueline P. Hand, director of the Indian Law Center at the University of Detroit Mercy Law School published in the *Michigan Bar*

Journal in July 2004 describes the extant situation: "When in the early-to-mid 19th century, the Chippewa ceded to the United States a substantial portion of their land in this State, they did not explicitly transfer these rights as well. Therefore, these rights remained with the tribe under basic principles of property law and treaty interpretation. While the rights of the Bay Mills Indian Community and Sault Ste. Marie Tribe of Chippewa Indians were explicitly adjudicated in a series of cases revolving around the State of Michigan's assertion of a right to prohibit American-Indian gill netting, these rights for the Saginaw Chippewa have not been explicitly reaffirmed by the Federal courts. Since the same principles apply, this affirmation is arguably pro forma, but the affirmation implicit in the Consent Decree (in *United States* v. *General Motors Corporation, et al.,* Civil No. 98–CV–10368 BC) is a welcome one to tribal members. This is particularly so because it occurs in a cooperative, noncontroversial context, rather than through the sort of acrimonious dispute the earlier adjudications entailed."

The Forest Service has recognized the importance of honoring these reserved treaty rights by signing two Memoranda of Understanding with signatory tribes of the 1836, 1837, 1842 and 1854 treaties.

The first MOU, commonly referred to as the GLIFWC MOU, was signed by the Forest Service and tribes who are members of the Great Lakes Indian Fish and Wildlife Commission in December 1998. GLIFWC's member tribes are: the Bay Mills Indian Community, Keweenaw Bay Indian Community and the Lac Vieux Desert Band in Michigan; the Bad River, Red Cliff, Lac du Flambeau, Lac Courte Oreilles, Sokaogon and St. Croix Bands in Wisconsin; the Fond du Lac and Mille Lacs tribes in Minnesota. Those member tribes retained hunting, fishing and gathering rights in treaties with the U.S. government, including the 1836, 1837, 1842 and 1854 Treaties.

In 2006, the Forest Service signed a subsequent MOU regarding the NFS lands within the territory ceded by the 1836 Treaty of Washington and on any NFS lands located within the exterior boundaries of the Reservation of any signatory Tribe with four Michigan tribes that are not members of GLIFWC and were not signatory to the GLIFWC MOU. Those tribes are: Grand Traverse Band of Chippewa/Ottawa Indians; Little River Band of Ottawa Indians; Little Traverse Bay Bands of Odawa Indians; Sault Ste. Marie Tribe of Chippewa Indians.

Both MOU contain similar language that clarifies the Forest Service' position with respect to treaty rights within the ceded territories of Michigan:

> "The policies of the Forest Service toward Federally recognized Tribes are intended to strengthen relationships and further Tribal sovereignty through fulfilling mandated responsibilities and through support and assistance of various kinds to Tribal governments. The relationships between the Tribes and Forest Service are comprised of several parts, including honoring treaty-based usufructuary rights as well as policies of the Forest Service toward Indian nations. While court decisions, laws, regulations, policies and Executive Orders from the President of the United States all have shaped the policy of the Forest Service toward Indian Tribes, nothing in this agreement, in any way, is intended to abrogate any Treaty right or affect, in any fashion, judicial decisions that have interpreted such treaty rights.
>
> "This MOU recognizes the trust responsibility that the Federal government holds to provide for the exercise of the existing reserved treaty rights of the Tribes with the other usual privileges of occupancy on NFS lands within the ceded territory and on any NFS lands within the exterior boundaries of the Reservation of any signatory Tribe in accord with applicable Federal regulatory authorities having jurisdiction over such activities. Reference in the MOU to such activities are designed to recognize that the Forest Service manages ecosystems which support these activities." (1836 MOU)

As a result of the continued affirmation of reserved treaty rights in Michigan by multiple Federal courts, the Forest Service proposed in all 4 alternatives described in Chapter II of this document to continue to respect the right to hunt by tribal members within the affected areas.

Established case law has shown that courts consider that the reserved rights to hunt, fish and gather within the ceded territories is not limited to historic or traditional Native American practices but rather tribal members may use modern weapons, including firearms. In distinguishing between the use of motorized vehicles to access hunting areas and use of modern hunting and fishing gear, the U.S. Court of Appeals, Eighth Circuit in *U.S. v. Gotchnik* (2000) stated: "A motorboat, all-terrain vehicle or helicopter for that matter, may make it easier to reach a preferred fishing or hunting spot within the Boundary Waters Area, but the use of such motorized conveyances is not part and parcel of the protected act of hunting or fishing, as is the use of a rifle, ice augur or other hunting or fishing instrument." The U.S. Court of Appeal, Sixth Circuit, made a similar finding (as it related to fishing equipment) in *Grand Traverse Band of Ottawa and Chippewa Indians v. Director, MDNR* (1998). Consequently, in no alternative considered here does the Forest Service propose to restrict firearm hunting by tribal members in the affected areas.

Although no alternative considered would directly conflict with existing treaty rights within the ceded territories, any alternative that proposes to close NFS lands to firearm hunting with the exception of tribal members is likely to result in a significant social impact on the tribes. Public perception among non-native citizens of so-called "special rights" that permit unique access to natural resources has historically been a source of conflict. This issue was raised by public comment during the initial scoping period.

An online article entitled "*Anti-Indian Movement: Motivating Factors, Regional Organizing, And National Organizing*" identified this issue as one of five primary factors that has historically motivated anti-American Indian activities.

> "The second factor is access to natural resources, such as fish, game, land and water. Treaty rights guarantee some tribes access to resources on their ceded lands outside their reservations. Anti-treaty activists assert that no citizens should have "special rights" to use natural resources (even though non-Indians also can retain property use rights over land that they sell). Natural resource interests oppose sovereignty when it enables tribes to block projects—such as mines or dams—that may harm treaty resources." (Full report is contained in the project record.)

Many of the present-day tribes associated with the 1819 Treaty with the Chippewa and the 1836 Treaty of Washington experienced firsthand this backlash over the past 40 years as a result of asserting treaty rights in Michigan, Wisconsin and Minnesota. Chapter 8 of "*Chippewa Treaty Rights: The Reserved Rights of Wisconsin's Chippewa Indians*" by Ronald N. Satz, described the conflict:

> "The 1983 Voigt Decision evoked bitter denunciations from white hunting and fishing groups. Supported by generally anti-Indian whites, these groups claimed the Indians would wantonly wipe out all fish and game. Especially objectionable to sportfishers and hunters are the traditional practices of spearing, gill-netting and "shining" (night hunting) employed by the Chippewas who are more concerned with following their traditions and with efficient harvests than with sport. Opponents of the Voigt Decision consider it "unjust" for the Chippewas to have "special privileges" denied other Wisconsin residents-like longer hunting seasons and the right to shoot deer from vehicles-just because of some "old treaties." Charging that Indians have "more rights" today than white citizens, irate critics of treaty rights argue Indians and whites should enjoy "equal" rights, that treaty rights must be abolished. As far away from the reservations as Milwaukee, one hears stories about drunken Indians peddling deer from their pickup trucks at taverns "up north." Anti-Indian sentiment oozed from bumper stickers proclaiming "Save A Deer, Shoot an Indian" and "Spear an Indian, Save a Muskie."

> An unofficial notice circulated in the Ashland County Courthouse declared "open season on Indians" with "a bag limit of 10 per day." A 1984 newspaper headline summed up the situation this way, "North Woods Steaming with Racial Hostility" (Milwaukee Journal 1984c; O'Conner and Doherty 1985).
>
> "Strong opposition to Federal court pronouncements on Chippewa hunting and fishing rights spurred protest and violence at boat landings throughout northern Wisconsin during every fishing season since 1983. Some whites, fearing Indians would destroy all fish and ruin tourism, have argued that Indian treaties and reservations are relics of the past. Such fears have been exacerbated by the fact that per capita income in the region has lagged behind the rest of the State by as much as twenty percent and northern Wisconsin's unemployment rate has nearly doubled the Statewide average during some months. In addition, the efficient Chippewa methods of harvesting fish for subsistence-using gill nets and spears-upset many non-Indian sportfishers who find themselves limited by very strict State regulations. Bait shops in northern towns have sold "Treaty Beer" with labels protesting Indian spearfishing and claiming to be the "True Brew of The Working Man," and many restaurants and taverns display and dispense literature attacking spear-fishing and calling for the abrogation of Chippewa treaties. The peaceful harvesting of fish by Chippewa spearfishers has been disrupted by non-Indians hurling rocks, insults and racial epithets like "timber niggers" waving effigies of speared Indian heads and signs with slogans like "Save Two Walleye, Kill a Pregnant Squaw," and using large motorboats trailing anchors to capsize Indian boats. Treaty protesters have also placed concrete fish decoys in lakes to break the spears of Chippewa fishers. Chippewa women singing religious songs in support of the spearers have faced what one reporter has aptly called "a gauntlet of hate," as some demonstrators jeer and shout vicious taunts, racial slurs and threats while others blow whistles in continuous shrill blasts in their ears. Even Indian schoolchildren have been harassed. One school with a large Indian enrollment has received bomb threats (Fixico 1987, 498-507; Vennum 1988, 276-77; O'Conner and Doherty, 1985; Wilkinson 1987, 72; Strickland *et al.* 1990, 1; *Milwaukee Journal* 1989 a, b; *Milwaukee Sentinel* 1990d; *Masinaigan* 1991c, 8; *Wisconsin State Journal* 1990c, 11; *Eau Claire Leader-Telegram* 1990g)."

More recently, the theme of "special rights" appeared in discussions on public internet forums of the 2007 consent decree regarding inland hunting and fishing rights between the State of Michigan and the signatory tribes of the 1836 Treaty of Washington. (Sample included in the project record.)

Direct, Indirect and Cumulative Effects of All Alternatives

In all alternatives, there are no known direct, indirect or cumulative effects of the alternatives on the Native American treaty rights. The alternatives do not propose management objectives, goals or activities that would impact existing hunting and other rights on NFS lands.

Implementation of Alternative 2, which proposes to close certain areas to firearm hunting to anyone other than tribal members, may have an adverse impact on the civil rights of American Indians as a result of a backlash by non-native citizens.

Chapter 4. Preparers and Contributors

The following lists of individuals; federal, state and local agencies, and tribes identify the key people integral in the development of this Supplemental Environmental Impact Statement (SEIS). Team members are listed alphabetically.

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Contribution: Wildland Fire and Hazardous Fuel Reduction Goals, Objectives and Effects.

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