



United States  
Department of  
Agriculture

Forest Service

Eastern  
Region



March 2008

# Ottawa National Forest

# Fiscal Year 2007 Monitoring and Evaluation Report



O·T·T·A·W·A  
NATIONAL FOREST

Caring for the Land and Serving People

Citation:

USDA Forest Service. 2008. Ottawa National Forest Fiscal Year 2007 Monitoring & Evaluation Report. Ironwood, MI.

Short name for citations in documents produced on the Forest – FY 07 M&E Report

Responsible Official:  
Kent Connaughton, Regional Forester  
USDA Forest Service  
Eastern Region  
626 E. Wisconsin Avenue  
Milwaukee, WI 53202

For further information contact:

Ottawa National Forest  
E6248 US 2  
Ironwood, MI 49938  
Phone: 906-932-1330  
Fax: 906-932-0122  
TTY: 906-932-0301

# FY 2007 MONITORING AND EVALUATION REPORT

## TABLE OF CONTENTS

<b>Introduction and Forest Plan Overview .....</b>	<b>1</b>
<b>Purpose and Scope of the Report .....</b>	<b>1</b>
<b>Previous Monitoring .....</b>	<b>2</b>
<b>Monitoring Program.....</b>	<b>2</b>
<b>Monitoring Activities for FY 2007 .....</b>	<b>3</b>
Comparison of Projected and Actual Outputs and Services .....	5
Insect and Disease Population Levels.....	6
Current Infestations.....	6
Potential Threats .....	8
Harvest Lands Adequately Restocked .....	8
Management Indicator Species (MIS) .....	9
Mayfly, Stonefly, Caddisfly (EPT).....	9
Ruffed Grouse.....	10
American Marten .....	11
Cutleaf Toothwort.....	13
Public Involvement and Coordination .....	13
Non-Native Invasive Species.....	14
Plants.....	14
Animals .....	15
Off-Highway Vehicle (OHV) Opportunities .....	17
Range of Motorized and Non-Motorized Recreation Opportunities .....	17
Heritage Resources .....	18
Tribal Rights and Interests.....	18
Wilderness Management.....	19
Vegetation Composition and Spatial Landscape Patterns .....	20
Soil Quality .....	23
Species of Viability Concern .....	24
Breeding Bird Census .....	24
Frogs and Toads.....	25
Black-throated Blue Warbler .....	26
Common Loon .....	27
Forest Raptors .....	29
Wood Turtle.....	30
Osprey/Bald Eagle .....	31
Remote Habitat Area Road Density.....	33
Canada Lynx .....	33
OHV Impacts to Wildlife.....	35
Minerals and Mineral Materials.....	36
Land Adjustment.....	36
Hazardous Fuels Objectives.....	36
Wildland Fire Use .....	37
Road Decommissioning .....	37
<b>Findings.....</b>	<b>37</b>
<b>Future Monitoring Needs.....</b>	<b>38</b>
<b>Preparers .....</b>	<b>39</b>
<b>Literature Cited .....</b>	<b>40</b>

## Tables

Table 1. Monitoring activities for FY 2007 .....	3
Table 2. FY 2007 Actual Volumes Sold & Harvested by product type. ....	5
Table 3. FY 2007 and First Decade Actual Harvest Acres compared to Forest Plan Estimated Average Annual Timber Harvest Practices.....	6
Table 4. Acres of Insect and Disease agents on the Ottawa FY 2007. ....	6
Table 5. Summary table of results from EPT surveys by 300' stream reach.....	9
Table 6. Number of Marten Registered in the Western UP 2000-2006.....	12
Table 7. 2007 NNIP treatments. ....	15
Table 8. NNIS animals found on, or relatively near, the Ottawa National Forest.....	16
Table 9. MA 1.1a Forest Type Composition Comparison.....	21
Table 10. MA 2.1 Forest Type Composition Comparison.....	21
Table 11. MA 2.2 Forest Type Composition Comparison.....	21
Table 12. MA 3.1a Forest Type Composition Comparison.....	22
Table 13. MA 4.1a Forest Type Composition Comparison.....	22
Table 14. MA 4.2a Forest Type Composition Comparison.....	22
Table 15. MA 6.1 Forest Type Composition Comparison.....	22
Table 16. MA 6.2 Forest Type Composition Comparison.....	23
Table 17. Common Loon Monitoring Data 1985-2006 .....	28
Table 18. Wood Turtle Monitoring Data 2006-2007.....	31
Table 19. Road Density in Remote Habitat Area. ....	33

## Introduction and Forest Plan Overview

The Ottawa National Forest encompasses about one million acres within the western end of Michigan's Upper Peninsula within six counties: Baraga, Gogebic, Houghton, Iron, Marquette, and Ontonagon. The Ottawa land base lies in the transition between the northern boreal forests and eastern deciduous forest. The Ottawa provides a great diversity of species, both flora and



Figure 1. Vicinity Map

fauna, and a wide variety of recreation opportunities.

In March 2006, the Ottawa NF 2006 Land and Resource Management Plan (Forest Plan) was approved, replacing the 1986 Forest Plan. The Forest Plan provides guidance for all resource management activities on the Ottawa. It establishes: forest-wide multiple use goals; implementation objectives standards and guidelines; and Management Area (MA) direction, including area specific standards and guidelines, desired future conditions, and

monitoring and evaluation requirements. To determine the efficacy of a Forest Plan, the National Forest Management Act (NFMA) regulations (36 CFR 219) require regularly scheduled monitoring and evaluation.

Through implementation of the Forest Plan, the Ottawa will provide a variety of resource uses, recreational opportunities and services to the public, while ensuring protection of soil, water, cultural resources, as well and native and desired non-native plants and animals. The Forest Plan provides broad, strategic, landscape-level direction for managing the Ottawa. The Forest Plan works toward the desired conditions and achieving the objectives in the plan will be accomplished through project decisions that meet the requirements of the National Environmental Policy Act (NEPA) as well as other laws and regulations.

The National Forest Land and Resource Management Planning Regulations permit amendments to the Forest Plan that may result in either significant or non-significant changes (36 CFR 219.10 (e)(f)). The 2006 Forest Plan has been amended to incorporate the development of a Wild and Scenic River Comprehensive River Management Plan for all rivers designated through the Michigan Scenic Rivers Act of 1991.

## Purpose and Scope of the Report

The purpose of monitoring and evaluation is to determine whether resource management activities conducted on the Ottawa National Forest are meeting the management direction and multiple use objectives described in the Forest Plan. Monitoring determines the effects of different resource management activities and the degree to which desired conditions and objectives are being achieved through on-the-ground management. Through this process, the quality of project implementation is assessed; addressing physical, biological, social, and cultural

elements along with any emerging issues. Additionally, this process allows for appropriate adjustment to allow for unanticipated changes in conditions.

The Ottawa is in the early in the stages of implementing the 2006 Forest Plan; therefore, type of monitoring reported in this document is still primarily implementation monitoring. It is important to first ensure that the Forest is properly following the objectives, standards and guidelines established in the Forest Plan. Other types of monitoring will play a larger role in the following years when the effectiveness of Forest Plan implementation will be more apparent. On-the-ground changes to forest type composition, age structure, and other attributes within MAs have been minimal during the early stages of Plan implementation.

## **Previous Monitoring**

The 2006 Monitoring and Evaluation Report was limited in its scope because it was a partial year of implementation, although monitoring data was collected for the entire year. A more comprehensive report is reflected for FY 2007; however there is still little trend information available for some items due to monitoring for only 2 years. Other items monitored for longer timeframes have more detailed information and trend data.

## **Monitoring Program**

Monitoring and evaluation are separate activities. Monitoring is the process of collecting data and information. Evaluation is the analysis and interpretation of the information and data collected. Monitoring tasks are scaled to the Forest Plan, program or project to be monitored. Monitoring is not performed on every single activity, nor is it expected to meet the statistical rigor of formal research. If budget levels limit the Forest's ability to perform all monitoring tasks, then those specifically required by law are given highest priority.

Chapter 4 of the 2006 Forest Plan provides programmatic direction for monitoring and evaluating implementation. The aim of monitoring is to have the ability to respond to changing conditions, to make appropriate changes based on new information or technology, and to test the effectiveness of the direction in the Forest Plan. The results are used to identify when changes are needed to either the 2006 Forest Plan or the way it is implemented.

The Ottawa developed a Monitoring Guide from the monitoring questions in Chapter 4 of the Forest Plan. This guide outlines the monitoring question or tasks, the type of monitoring category, who is responsible for that question and the monitoring methods or protocols and requirements that will be used to measure the monitoring items. The Monitoring Guide is available on the Ottawa NF internet site.

Using the Monitoring Guide, the FY 2007 Monitoring Work Plan was developed with an interdisciplinary review of the monitoring questions and guidance in Chapter 4 of the Forest Plan. The review included a prioritization of monitoring items and uses criteria such as requirement by law or regulation, ecological importance, management importance or response to a key issue. From this review, a subset of the entire Monitoring Guide was chosen for monitoring work to be completed and upon which this reported is based.

## Monitoring Activities for FY 2007

Table 1 displays the monitoring activities that were completed for FY 2007. These activities are a selected set from the complete Monitoring Guide that was developed following completion of the 2006 Forest Plan.

**Table 1. Monitoring activities for FY 2007**

Monitoring Item ID	Monitoring Question	Responsibility
01	How do actual outputs and services compare to those outputs and services projected in the 2006 Forest Plan?	Timber Program Manager
04	Are insect and disease population levels compatible with objectives for restoring or maintaining healthy forest conditions?	Forest Silviculturist
06	Are harvested lands adequately restocked after 5 years?	Forest Silviculturist
10a	To what extent are forest management activities providing habitat for Management Indicator Species (EPT)?	Aquatic Ecologist
10b	To what extent are forest management activities providing habitat for Management Indicator Species (ruffed grouse)?	Forest Wildlife Biologist
10c	To what extent are forest management activities providing habitat for Management Indicator Species (American marten)?	Forest Wildlife Biologist
10d	To what extent are forest management activities providing habitat for Management Indicator Species (cutleaf toothwort)?	Forest Botanist
11	To what extent does the Forest emphasize agency, tribal and public involvement and intergovernmental coordination with federal, state, county governments and agencies?	Public Affairs Officer, Tribal Liaison
12a	To what extent is Forest management contributing or responding to non-native invasive plant species?	Forest Botanist
12b	To what extent is Forest management contributing or responding to non-native invasive animal species?	Forest Aquatic Ecologist, Forest Fisheries Biologist
13	What amount of road routes and recreation trails are designated open for OHV riding and provide connections to other public trails?	Forest Recreation Program Manager, Forest Engineer
14	To what extent is the Forest providing a range of motorized and non-motorized recreation opportunities that incorporate diverse public interests yet achieve applicable management area objectives and desired conditions?	Forest Recreation Program Manager
15	To what extent are Forest management activities in semi-primitive non-motorized management areas in alignment with the Recreation Opportunity Spectrum Objectives?	Forest Recreation Program Manager
16	To what extent is Forest management contributing to the preservation, evaluation of and education for heritage resources?	Forest Archaeologist
17	Monitor implementation of the 2006 Forest Plan with respect to tribal treaty rights applicable on the Ottawa with respect to the tribal MOU.	Tribal Liaison
18	To what extent is wilderness management contributing to improvement or preservation of wilderness characters and values?	Forest Recreation Program Manager

Monitoring Item ID	Monitoring Question	Responsibility
19	To what extent are Forest management activities restoring vegetation composition and spatial landscape patterns and moving toward desired conditions at the Forest, management area and other appropriate landscape scales?	Forest Silviculturist
29	To what extent is Forest management affecting soil quality?	Forest Soil Scientist
33b	To what extent is Forest management providing ecological conditions to maintain viable populations of native and desired non-native species? (Breeding Bird Census)	Forest Wildlife Biologist
33c	To what extent is Forest management providing ecological conditions to maintain viable populations of native and desired non-native species? (Frogs)	Forest Wildlife biologist
34c	To what extent is Forest management contributing or responding to the conservation of species of viability concern (such as Regional Foresters Sensitive Species) and moving toward desired habitat conditions for these species? (Black-throated Blue Warbler)	Forest Wildlife Biologist
34d	To what extent is Forest management contributing or responding to the conservation of species of viability concern (such as Regional Foresters Sensitive Species) and moving toward desired habitat conditions for these species? (Loon)	Forest Wildlife Biologist
34e	To what extent is Forest management contributing or responding to the conservation of species of viability concern (such as Regional Foresters Sensitive Species) and moving toward desired habitat conditions for these species? (Raptors)	Forest Wildlife Biologist
34f	To what extent is Forest management contributing or responding to the conservation of species of viability concern (such as Regional Foresters Sensitive Species) and moving toward desired habitat conditions for these species? (Turtles)	Forest Wildlife Biologist
34g	To what extent is Forest management contributing or responding to the conservation of species of viability concern (such as Regional Foresters Sensitive Species) and moving toward desired habitat conditions for these species? (Osprey)	Forest Wildlife Biologist
36	To what extent is Forest management affecting the density of open roads within the Remote Habitat Area, and moving toward the Forest density objective of < 1.0 miles/square mile?	Forest Wildlife Biologist
37	To what extent is Forest management contributing to the development and maintenance of foraging and denning habitat, and connectivity of habitats for Canada lynx?	Forest Wildlife Biologist
38	To what extent are OHVs producing impacts to wildlife or wildlife habitats?	Forest Wildlife Biologist, Forest Recreation
39	To what extent is the Forest providing minerals and mineral materials to help support economic growth?	Lands Program Manager
40	To what extent has land ownership adjustment facilitated forest management activities?	Lands Program Manager



Monitoring Item ID	Monitoring Question	Responsibility
41	To what extent is forest management meeting hazardous fuels objectives?	Fire Management Officer
42	To what extent is wildland fire (natural and prescribed) used to maintain or mimic natural processes, and/or restore natural processes and functions to ecosystems?	Fire Management Officer
44a	To what extent are the unneeded roads being decommissioned?	Forest Engineer

### ***Comparison of Projected and Actual Outputs and Services***

The 2006 Forest Plan determined 488,100 acres of land to be suitable for timber production. The active management of the renewable timber resource not only provides raw materials for industry that in turn generates finished goods, jobs, and strengthens the economy, but also fulfills a wide range of resource objectives aimed at achieving forestwide goals identified in the 2006 Forest Plan.

The Allowable Sale Quantity (ASQ) is the quantity of timber that may be sold from the area of suitable land covered by the Forest Plan for a specified time period, usually expressed as the average annual allowable sale quantity. The 2006 Forest Plan set the ASQ at 14.6 million cubic feet (MMCF) or 90.1 million board feet (MMBF) (2006 Forest Plan Appendix E p. E-1). The amount of timber that may be sold in a single year may exceed the average annual ASQ as long as the decadal total ASQ is not exceeded each decade.

The actual volume sold and harvested for FY 2007 was obtained from the Periodic Timber Sale Accomplishment Report (PTSAR). This information comes from the Automated Timber Sale Accounting (ATSA) and Timber Information Management (TIM) Systems. The FY 2007 actual acres accomplished information was collected from the Forest Activity Tracking System (FACTS).

**Table 2. FY 2007 Actual Volumes Sold & Harvested by product type.**

	Sawtimber		Pulpwood		2007 Total		Decade 1 Average	
	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF
Volume Sold	4.7	0.8	32.5	5.1	37.2	5.9	49.4	7.9
Volume Harvested	5.7	1.0	29.2	4.2	34.9	5.2	34.5	5.3

The volume sold for FY 2007 is below levels allowed for in the Forest Plan. The volume sold depends on the amount of funding available to accomplish project development, planning, and implementation and the amount of volume available from specific projects through implementation of the Forest Plan.

**Table 3. FY 2007 and First Decade Actual Harvest Acres compared to Forest Plan Estimated Average Annual Timber Harvest Practices.**

<b>Treatment Method</b>	<b>Forest Plan Estimate (acres)</b>	<b>FY 2007 Harvest (acres)</b>	<b>FY 2007 % of Forest Plan Estimate</b>	<b>2006-2007 Average Harvest Acres</b>	<b>2006-2007 Average % of Forest Plan Estimate</b>
Selection	6,700	3,024	45	2,654	39
Thinning	3,100	1,318	42	1,291	41
Shelterwood	400	249	62	130	32
Clearcutting	1,900	516	27	411	21
Totals	12,100	5,107	42	4,487	37

The acres harvested for FY 2007 categorized by timber harvest practice is below levels proposed in the Forest Plan. Poor market conditions and a mild winter resulted in lower levels of harvest than were anticipated. One percent (1%) of the acreage determined suitable for active timber production in the Forest Plan was treated in 2007 on the Ottawa.

Because this is only the second year of monitoring under the 2006 Forest Plan, more detailed analysis and trend determinations will be identifiable in following years.

### ***Insect and Disease Population Levels***

The Ottawa annually monitors the location and severity of insect and disease population levels on the Forest to ensure that insect and disease populations are compatible with objectives for restoring or maintaining healthy forest conditions.

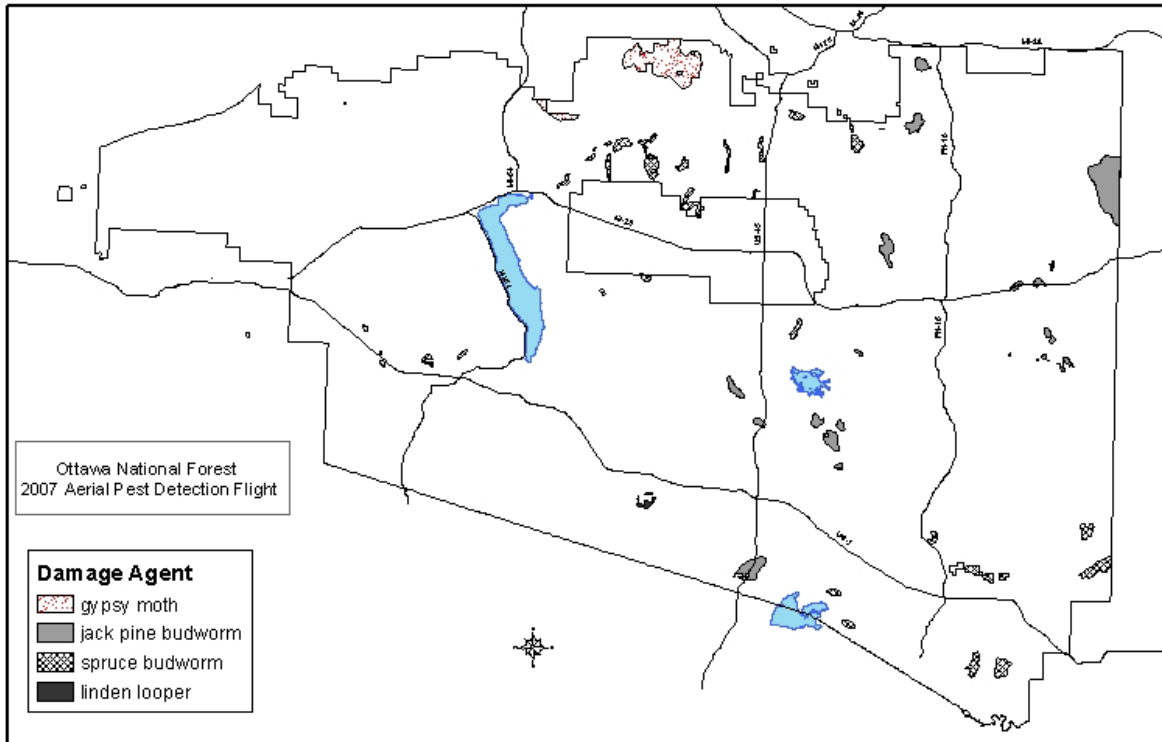
### **Current Infestations**

Aerial pest detection flight surveys are an effective way to accomplish insect and disease monitoring. The Northern Research Station conducts annual flights over the Eastern Region to determine the extent of the insect and disease population levels on Eastern Forests. A trained observer views the forest from the air and documents any patterns of mortality or defoliation and delineates these areas onto a map. Attributes, such as host, damage agent, symptom, and an estimate of intensity or number of trees affected, may also be recorded. The areas are then ground-truthed to ensure that the information is reliable. The Forest then monitors these areas and takes appropriate control actions if necessary.

**Table 4. Acres of Insect and Disease agents on the Ottawa FY 2007.**

<b>Image Agent</b>	<b>Damage</b>	<b>Severity</b>	<b>Host Name</b>	<b>Acres</b>
Gypsy Moth	Defoliation	Low	Aspen	18,900
Jack Pine Budworm	Defoliation	High	Jack Pine	13,000
Jack Pine Budworm	Defoliation	Low	Jack Pine	6,600
Spruce Budworm	Defoliation	Low	White Spruce	15,000
Linden Looper	Defoliation	Low	Hardwoods	1,300

**Figure 2. Map of 2007 Aerial Pest Detection flight**



Gypsy moth defoliated nearly 19,000 acres of hardwoods, mainly aspen, on the Ottawa in 2007. Most of the activity was in the Norwich area, south of Ontonagon. There have been small numbers of gypsy moth in the area for years, but the population greatly expanded in 2007. From the high number of gypsy moth egg masses present, the 2008 gypsy moth population numbers could also be high. Oftentimes gypsy moth outbreaks in aspen stands are very intense. But usually the outbreaks are short-lived, and aspen will rebound and grow back their foliage the following year. The gypsy moth population will be monitored closely in 2008.

Jack pine budworm defoliated jack pine trees on nearly 20,000 acres in 2007 on the east half of the Forest. The largest block of defoliation occurred on the Baraga Plains. Although many acres were classified as high severity, no need for salvage was identified at this time. The majority of the trees are expected to survive unless multiple attacks occur in future years. Salvage sales are currently being planned on the Watersmeet Ranger District just north of Land O' Lakes, Wisconsin. Several years of budworm defoliation in that area killed many jack pine trees.

Spruce budworm caused defoliation on over 15,000 acres of white spruce and balsam fir across the Forest. Most of the larger trees can survive one year of spruce budworm defoliation provided the same areas aren't repeatedly attacked in following years, and other agents don't also attack the trees. The largest blocks of spruce budworm defoliation occurred on the Bergland Ranger District, where some of those defoliated stands outside of river corridors have been proposed for treatments. Some spruce plantations across the Forest are in declining health from spruce decline, which is caused by a combination of factors including: spruce budworm, needle cast, fungi, drought stress, root disease, and marginal site conditions. The Forest is currently planning a Forest-wide inventory and assessment to determine the condition of the spruce on the Forest.

Linden looper caused defoliation on approximately 1300 acres on the south end of the Wateresmeet Ranger District. Usually linden looper infestations are short-lived and most trees are expected to survive the attack.

## **Potential Threats**

One of the biggest threats to forest health currently is the emerald ash borer (EAB). The EAB is an exotic pest from Asia that has killed millions of ash trees in Michigan, Ohio, Indiana, Illinois, Pennsylvania, Maryland, and Ontario, Canada.

The Forest Service has cooperative agreements with the Michigan Department of Agriculture (MDA) and Michigan Technological University (MTU) to monitor for the EAB insect in Michigan. Trap trees are located strategically across the state to attract and trap the insects to determine if they are present, so that control measures can be started before populations increase to uncontrollable levels. No EAB have been found on the Ottawa in four years of efforts (2004-2007).

EAB infections are commonly spread through the movement of infected firewood from infected sites. A closure order has been in effect on the Ottawa since 2004 which restricts the movement of firewood from all EAB infected areas. In October 2007, in an effort to further reduce the chances of the spread of EAB onto the Ottawa, a new order was placed into effect which further restricted the movement of firewood from anywhere from outside the UP, as well as from infected areas on the eastern end of the UP. EAB was located in two small areas on the eastern end of the UP in 2007, likely from the illegal movement of firewood from the Lower Peninsula.

The sirex woodwasp is a new exotic insect from Europe, Asia, and North Africa that was first detected in New York in 2004. The woodwasp has also been found in northern Pennsylvania, southern Ontario, and in the Lower Peninsula of Michigan. The woodwasp larvae kill jack pine, red pine, and scotch pine trees.

Michigan Technological University, in a cooperative agreement with Animal and Plant Health Inspection Service (APHIS), the MDA, the Michigan Department of Natural Resources (DNR), and the Forest Service placed funnel traps in Michigan, including the Ottawa, to detect the presence of the sirex woodwasp. Traps confirmed the presence of sirex woodwasp in the Lower Peninsula in 2007. However, no woodwasps were detected on the Ottawa.

Current insect and disease levels on the Ottawa are compatible with restoring and maintaining healthy forest conditions. The Ottawa strives to maintain healthy forest conditions through the use of silvicultural practices and integrated pest management techniques as described in the Forest Plan on page 2-35.

## ***Harvest Lands Adequately Restocked***

To ensure compliance with the NFMA and the Ottawa Forest Plan, the Forest regularly monitors final timber harvests on NFS lands to determine if those stands have been adequately restocked. The Ottawa performs stocking surveys to monitor the success of natural and artificial regeneration on all final timber harvests. Stands that are adequately stocked with suitable tree species are usually certified by the fifth year after final harvest. Oftentimes additional treatments are needed to improve stocking levels. These treatments are planned following the timber harvest, or after the first or third year stocking surveys if the surveys indicate a need. The treatments would include such things as site preparation to prepare an adequate seed bed,

seeding, or planting. Final harvests, site preparation treatments, stocking surveys, and regeneration certification information are all stored in the FACTS database.

In FY 2002, a total of 4,124 acres received final timber harvests (shelterwood removal cuts, single tree selection cuts, and clearcuts). To determine whether the FY 2002 final timber harvests were adequately stocked after five years, stocking surveys were performed on all stands that were not already certified to determine if they could be certified as adequately stocked.

Of the 4,124 acres of final timber harvest acres, 3,976 acres (96%) were certified as adequately stocked. The 148 acres that were not yet certified all had site preparation done in 2003. Stocking surveys are planned for those 148 acres in FY 2008 and certification is expected to be accomplished at that time.

## ***Management Indicator Species (MIS)***

### **Mayfly, Stonefly, Caddisfly (EPT)**

Biological indicators are commonly used to determine the condition of streams based on the species of macroinvertebrates or fish present. One common indicator uses the presence of three orders of aquatic insects that are associated with cold, high quality water. They are the Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies). This indicator is referred to as the EPT metric. This metric is the density or percentage of EPT individuals or taxa in a sample compared with other taxa. Basically, the more EPT taxa, compared to other taxa in a sample, the better the water quality. EPT are a management indicator for cold water streams and for riparian areas because they are sensitive to increases in sedimentation and changes in water temperature and oxygen levels.

2007 was the second year of monitoring for EPT as a MIS utilizing the developed protocol (Dunlap 2006). In 2007, 30 streams were sampled across the Forest. Thirteen new sites were sampled to increase coverage of the Forest. Seven sites sampled in 2006 were not sampled in 2007; two of the streams were dry in 2007 due to drought conditions, and late season rains prevented the remaining five sites from being sampled. The results of the surveys are summarized in Table 5.

**Table 5. Summary table of results from EPT surveys by 300' stream reach.**

<b>Stream</b>	<b>EPT Density (#/ft.<sup>2</sup>)</b>	<b>Mean % EPT</b>	<b># EPT Taxa</b>	<b>Estimated Population</b>	<b>suitable habitat (ft<sup>2</sup>)</b>
<b>Cascade Creek</b>	<b>13.2</b>	<b>0.48</b>	<b>9</b>	<b>40963</b>	<b>3103</b>
<b>Clear Creek</b>	<b>19.8</b>	<b>0.6</b>	<b>5</b>	<b>741</b>	<b>37</b>
Cooks Run 1	114.0	0.67	15	630026	5527
Cooks Run 2	117.8	0.72	11	836894	7104
<b>Cooks Run 3</b>	<b>53.6</b>	<b>0.51</b>	<b>13</b>	<b>397945</b>	<b>7424</b>
<b>Duck Creek</b>	<b>35.0</b>	<b>0.65</b>	<b>11</b>	<b>103478</b>	<b>2957</b>
EB Ontonagon River	52.4	0.75	19	300871	5742
EB Presque Isle	103.0	0.87	11	308572	2996
<b>Ellis Creek</b>	<b>39.0</b>	<b>0.76</b>	<b>9</b>	<b>200300</b>	<b>5136</b>
Jumbo River	27.2	0.58	13	154387	5676
Little Presque Isle River	41.2	0.65	16	283533	6882
<b>Leveque Creek</b>	<b>71.0</b>	<b>0.69</b>	<b>16</b>	<b>182243</b>	<b>2567</b>
<b>MB Ontonagon River</b>	<b>45.2</b>	<b>0.31</b>	<b>13</b>	<b>363271</b>	<b>8037</b>
<b>MBOR (headwaters)</b>	<b>5.4</b>	<b>0.4</b>	<b>10</b>	<b>10807</b>	<b>2001</b>

Stream	EPT Density (#/ft. <sup>2</sup> )	Mean % EPT	# EPT Taxa	Estimated Population	suitable habitat (ft <sup>2</sup> )
<b>Mustard Creek</b>	<b>4.8</b>	<b>0.42</b>	<b>11</b>	<b>168</b>	<b>35</b>
<b>Pelton Creek</b>	<b>22.8</b>	<b>0.51</b>	<b>14</b>	<b>90923</b>	<b>3988</b>
SB Paint River	18.0	0.46	10	52618	2923
Shane Creek	37.0	0.73	12	29937	809
Sidnaw Creek	41.2	0.48	15	131600	3194
Slate River	28.6	0.49	11	141146	4935
Spargo Creek	15.2	0.39	9	26654	1754
Stoney Creek	24.8	0.59	13	166876	6729
Sucker Creek	38.0	0.65	13	158866	4181
<b>Tamarack River</b>	<b>54.6</b>	<b>0.66</b>	<b>11</b>	<b>379407</b>	<b>8796</b>
<b>Tenderfoot Creek</b>	<b>5.6</b>	<b>0.31</b>	<b>5</b>	<b>54363</b>	<b>9708</b>
Thirty-three Creek	17.0	0.48	13	8439	496
Trout Creek	22.0	0.5	14	28783	1308
<b>Twomile Creek</b>	<b>37.4</b>	<b>0.59</b>	<b>10</b>	<b>235297</b>	<b>6291</b>
WB Ontonagon River	66.6	0.46	10	1080662	16226
Wellington Creek	122.2	0.85	8	227512	1862

**Note:** **Bold** streams were sampled in 2007, but not sampled in 2006.

It will be necessary to collect 3-5 years of data to establish a baseline against which to make comparisons with future monitoring to evaluate the effects of Forest management on stream quality. Once the expected amount of variability is established, it will be possible to identify cases that exceed this level and that could indicate problems with water quality.

## Ruffed Grouse

Ruffed grouse are a gamebird that relies largely on aspen habitats in a variety of age classes. Dense, young sapling stands are used for brood rearing, pole stands are used for cover, and mature aspen stands provide food, even through winter, and additional cover. Ruffed grouse populations are inherently cyclical, following a 7-10 year cycle.

The 2006 Forest Plan long-term objective is to maintain 12,000 acres of well-distribute 0-9 year aspen/paper birch regeneration for ruffed grouse habitat. Over time this will ensure the presence of all age classes of aspen. At the time the Forest Plan was developed there was 10,655 acres of aspen in this 0-9 age class on suited lands on the Ottawa. There are currently 8,598 acres of aspen/paper birch in the 0-9 year age class, which is below the long-term objective for the Forest and represents a reduction since Plan revision was started. Over the next 10 -20 years, the Forest will need to conduct regeneration harvests on mature stands to ensure a suitable mix of the aspen/paper birch forest type exists. With the large amount of aspen/paper birch in the 70 year age class and older (39,400 acres), the amount of aspen/paper birch in the 0-9 year age class is expected to increase over the next decade.

Ruffed grouse populations on the Ottawa are monitored through standard drumming survey routes in cooperation with MDNR. Grouse populations peaked in 1999 and declined in the following years bottoming out in 2004 at 9.1 drums per route. Populations have increased since 2004 reaching 17.4 drums per route in 2007. The highest number of responses was 50 and the lowest number of responses was 7. A total of 13 routes were run across the Ottawa. As a whole, ruffed grouse populations are highly variable between years, and seem to follow a 7-10 year cycle. Populations appear to be on the rebound and should peak again around 2009-2010.

The Forest should continue to seek opportunities to regenerate aspen in appropriate locations, and monitor population trends through cooperation with Michigan DNR. The Forest will continue to work with groups such as the Ruffed Grouse Society to improve grouse habitat and look into areas that have potential for non-commercial aspen management. Aspen regeneration harvests have been low over the past few years due to poor conditions for winter harvest. This has resulted in an inability to maintain or increase the amount of aspen in the 0-9 age class on the Forest. The Ottawa will continue to look for opportunities to achieve this long-term objective.

## **American Marten**

American marten were extirpated from the western UP during large-scale logging that accompanied settlement of the area during the 1880s-1920s. After many decades of absence, marten were re-introduced to the Porcupine Mountains Wilderness State Park in the 1960s and multiple additional areas in the western UP during the 1970s and 1980s. Since reintroduction efforts, marten populations have been recovering slowly but steadily across the western UP. Marten are an MIS for large tracts of mature forest habitat with abundant vertical and horizontal cover. They are considered a game animal (furbearer) by the State of Michigan. They are considered a Regional Forester's Sensitive Species (RFSS) on the adjacent Forest to the south, the Chequamegon-Nicolet, and listed as threatened by the state of Wisconsin, where the species is not recovering to the extent they are in Michigan.

The Forest Plan includes direction that is pertinent to marten habitat features. For example, there is direction to increase acreage of long-lived conifers across the Forest, especially hemlock and white pine (Page 2-2); increase the number of large-diameter standing dead trees and volume of large logs on the forest floor (page 2-2); accelerate restoration of northern hardwood stands to more complex, mature conditions through silvicultural treatments (page 2-6); develop old growth conditions (page 2-24). Guidelines specific to marten can be found on page 2-31 of the Forest Plan, which state that events such as blowdowns, fires, or insect/disease outbreaks that topple trees in patches <5 acres should be left to contribute to coarse woody debris on the forest floor; and to expand the proportions of hemlock, white pine and white spruce in stands where these species are currently <10% of the existing stand basal area, on appropriate ELTPs.

The Ottawa is an aging second-growth forest, with northern hardwoods being the dominant forest type. As such, the structural conditions for optimal marten habitat are lacking across much of the Ottawa, but great potential exists for future optimal habitat to develop with time. As these stands age, forest structure generally improves, thus, a generally-improving trend in marten habitat quality is occurring. Most of the highest quality marten habitat ("old-growth") that remains is off-limits to timber harvesting due to its location within Wilderness, Wild and Scenic River corridors, or otherwise inaccessible areas. Further, as described in Appendix A of the Forest Plan EIS, over half of the forested acreage of the Ottawa is not within the suited timber base where, with some minor exceptions, natural forest succession will be allowed to continue unabated. In time, most of this acreage will probably develop into optimal marten habitat.

Within the portion of the Forest (about 488,100 acres) comprising the suited timber base most of the harvesting and acreage is scheduled for uneven-aged management. This means that those stands will remain as suitable habitat for martens, albeit of somewhat lower quality than stands that are unharvested. Nearly all MAs on the Ottawa contain potentially suitable marten habitat, with the possible exception of MA 4.2a which has a short-lived conifer emphasis. Not all suitable habitats on the Ottawa have resident marten as yet, since the populations are still expanding.

The best forestwide dataset on marten is available via Michigan DNR’s fur harvest registration program. Every year since 2000 Michigan DNR has had a trapping season for marten extending from December 1-15, with an annual harvest limit of 1 marten/trapper/year. Registration is mandatory with trappers reporting the location of kill to the township/range/section level. Since the methods of harvest and season structure have remained unchanged over that period, the data can be used as an approximation of marten occupancy across the Ottawa, as well as an index to population changes. The table below shows the number of marten registered within the portion of the western UP that comprises the Ottawa. The number of trapped marten has been steadily going up, with an increase evident every year except 2005. According to harvest reports published by Michigan DNR, trapping effort was down substantially in 2005, but rebounded to normal levels in 2006.

**Table 6. Number of Marten Registered in the Western UP 2000-2006**

<b>Year</b>	<b>Number of Marten Registered</b>
2000	26
2001	27
2002	35
2003	44
2004	51
2005	47
2006	52

Additional population data can be gleaned from winter mammal tracking efforts across the Ottawa. These tracking efforts are largely directed toward pre-project monitoring efforts in timber sale areas. Many parts of the Ottawa have not been surveyed; therefore we have no data on marten presence in those areas. There were a few areas where marten were surveyed for but not found. Conversely, many marten have been found in some areas where there are no trapping registrations, such as the Papa Bear and Choate Vegetation Management Project areas. The mammal tracking data indicates 281 marten records over many years (1974-2007), and indicates an increasing and expanding population of marten across the Ottawa.

Marten have been slow to colonize their former range across the western UP. There are a number of factors involved, which will not be explored here. Comparatively speaking, fishers, which were also extirpated then reintroduced, have quickly expanded across the region and have reached what appears to be maximum carrying capacity. The data seem to indicate that geographically marten are well distributed across the Forest, and overall, there has been trend of more marten trapped each year. Trapping effort is known to vary from year-to-year for most species, based on fur prices, fuel prices, and weather conditions (i.e. accessibility). However, since marten pelt prices have been fairly stable over the period, and the season structure has been exactly the same since onset of trapping in 2000, we are fairly confident that the trends displayed here reflect to a large degree the changes in marten population across the Ottawa. In addition, mammal tracking indicates there are marten present in areas where trappers have not been capturing marten.

In the future the Ottawa will continue to work with MDNR to obtain yearly trapping records and record martens detected while doing winter mammal tracking in lynx emphasis areas and as needed in vegetation management projects, but should abandon marten-specific tracking transects as the data are of little or no additional value at this time.



## **Cutleaf Toothwort**

Cutleaf toothwort is a low-growing native spring ephemeral in the mustard family. Cutleaf toothwort typically inhabits northern hardwoods and occasionally rocky areas. It was selected as an indicator species for management in northern hardwoods, a dominant forest type which is managed for timber on the Ottawa. Since cutleaf toothwort populations are vulnerable to disturbance and slow to recolonize, their decline or absence in treated hardwood stands could indicate that forest management is causing changes in native plant composition. If the toothwort is disappearing, other less sensitive species may follow. Conversely, if toothwort is present, then less sensitive species also should be. Many Ottawa hardwood stands were heavily harvested in the early 1900s (prior to establishment of the National Forest), which likely resulted in loss of cutleaf toothwort populations; populations may still be recovering in some areas of the Forest.

Cutleaf toothwort was designated a MIS in 2006 and the first monitoring occurred that year. In 2007, the initial monitoring was continued to develop a habitat model, by looking in the most likely places for this plant.

Based on literature and local experience, cutleaf toothwort occurrences are expected to be most likely in rich hardwood sites. Using the Forest geographic information system (GIS), stands mapped as northern hardwoods and that occurred on richer ELTPs were selected. Stands were divided into harvested and unharvested groups, and several of the larger, easily accessible stands in each category were selected for survey. No stands from 2006 were resampled in 2007.

In each stand, a meander survey was conducted, where the surveyor wanders through the stand looking for toothwort plants and collecting some basic site data such as abundance of the common, often co-occurring, plants wild leek (*Allium tricoccum*), Carolina spring beauty (*Claytonia caroliniana*), and wood crinkleroot (two-leaf toothwort, *Dentaria [Cardamine] diphylla*), and stand characteristics such as abundance of coarse woody debris, level of sugar maple regeneration, and deer use of the stand. All data collected were categorical and were given numerical values for recording (such as “trace” = 1, “occasional” = 2).

The 2006 and 2007 data sets were combined for analysis. Cutleaf toothwort was found in 17 of 39 stands (44%); it was found in 7 (35%) of the managed stands and 10 (53%) of the unmanaged stands. Toothwort abundance data were plotted against possible correlating stand factors, such as presence of other spring ephemerals, amount of coarse woody debris, microtopography, sugar maple regeneration or weedy ground flora. No particular patterns were noted, except that wood crinkleroot (*Dentaria diphylla*) has a somewhat similar occurrence pattern to cutleaf toothwort.

In 2008, a third round of initial monitoring is planned to continue to explore occurrence patterns and site needs. In the future, some toothwort monitoring may occur where toothwort abundance is surveyed in hardwood stands before and after harvest treatments. Before and after monitoring can be easier to interpret since the stand conditions are fixed except for the variables of interest.

## **Public Involvement and Coordination**

The Forest’s program of work is widely known through the use of cooperative and collaborative efforts involving tribal governments, local communities, state and local governments, federal agencies, organizations, and interest groups. By maintaining relationships and working together to meet common objectives with governments and organizations interested in the management of the Ottawa, the Forest is better situated to assist tribal governments, rural communities, and

private landowners to adapt to economic, environmental, and social changes related to the management of the Forest's natural resources.

Public involvement is achieved through a variety of methods, including formal scoping of proposed projects, open houses, and participation of Forest Service employees at local and Regional meetings. This occurred throughout 2007. Examples include:

- District Rangers participated in monthly County Commission meetings.
- The Forest designated a representative to the UP RC&D (Rural Conservation and Development) Council.
- The Forest participated in monthly Loggers breakfast meetings in Iron County and logging industry quarterly meetings across the Great Lakes area.
- In 2007 the Forest hosted a series of open houses across the western UP to solicit public comments regarding designation of Off-Highway Vehicle (OHV) trail routes. A total of 7 meetings were held with varying levels of participation from the public.
- Close working relationships with the Michigan Department of Natural Resources were developed and are maintained.
- The Forest implemented Stewardship Contracting, and is looking for opportunities to contribute to the development of sustainable rural communities, restore and maintain healthy forest ecosystems, and provide a continuing source of local income and employment. The Forest successfully awarded several contracts in 2007.

The Forest Service shares in the United States' trust responsibility and treaty obligations to work with federally-recognized Tribes on a government-to-government basis to protect the tribes' ceded territories on lands administered by the Forest Service. In furtherance of this relationship, Ottawa National Forest deciding officials lead consultation efforts on all project level decisions. The deciding officials, along with interdisciplinary team members, made themselves available to tribal elected officials, tribal natural resource staff and Tribal Historic Preservation Officers to discuss project proposals, solicit tribal concerns, and encourage further input on projects. This occurred throughout 2007 at various times and with varied degrees of interest and input from the tribes.

## ***Non-Native Invasive Species***

### **Plants**

The Ottawa maintains a list of Non-Native Invasive Plants (NNIP) of concern; it was last updated in May, 2005. Annually, Ottawa botanists, biologists, technicians, botany contractors, and volunteers record new infestations of high priority invasive plants and larger, non-roadside, infestations of medium priority invaders that are encountered during other field work. Since much of the Forest has not been surveyed for invasive plants, newly reported infestations usually represent baseline information. The number of sites reported annually varies with the search effort, thus an increase in infested acres mapped from year to year may represent increased search effort and/or increasing infestation.

Aquatic invasive plants are of special concern, since these are mostly spread by recreationists and can have severe impacts on water bodies. Surveys specifically for aquatic invaders are conducted yearly in selected lakes and rivers.

Annually, the Forest treats some infestations, prioritized by type of NNIP, size and location of infestation, and resources available. Treatment includes manual and mechanical methods such as hand pulling and mowing, and herbicides. To date, the Forest has not used biological controls for NNIP.

NNIP infestations are recorded in the Natural Resource Information System. Treatments are recorded in FACTS. In 2007, a new national requirement for monitoring invasive plant treatments was initiated. Each national forest is required to monitor at least half as many acres as are treated in a given year.

**Table 7. 2007 NNIP treatments.**

Infested acres treated	146.4
Terrestrial	145.8
Aquatic	0.6
Manual treatment	43.4
Mowing/mechanical	6.0
Herbicide	97.0
Species treated	Japanese barberry; purple loosestrife; bush honeysuckles; garlic mustard; Japanese and giant knotweeds; garden valerian; Eurasian watermilfoil; marsh, bull and Canada thistles; leafy spurge; glossy and common buckthorns; crown vetch; brown knapweed; burdock; sweet clover
New infestations mapped	331 gross acres, 33.7 infested acres, 129 NNIP sites on NFS land
Water bodies surveyed by FS for aquatic nuisance plants	21 lakes
New aquatic NNIP infestations found	0 in FS surveys (Partners found curlyleaf pondweed in Fishhawk Lake (Gogebic County) and Eurasian watermilfoil in Smokey Lake (Iron County))
Treatment sites monitored	56 sites (treated in 2006 and 2007), 203.5 acres
Treatment efficacy, average by acre	62% of sites = "fair", that is, "over half of the target species population was controlled"
Efficacy rated "good" or "complete"	36 sites (64%)
Poorest efficacy	19.5 acres of Eurasian watermilfoil herbicide treatments in Langford and Pomeroy Lakes in 2006, where little control was accomplished

## Animals

All Non-native Invasive Animal (NNIA) monitoring was done to identify new infestations and to show that the Forest is responding to non-native invasive animal species. It was also to document the effects of the rusty crayfish removal and temporary smallmouth bass regulation changes in Lake Ottawa, through monitoring changes in crayfish species composition and numbers, and changes in smallmouth bass numbers and sizes in both Lake Ottawa and the control lakes after previous treatments in Lake Ottawa. The information gained will help us to decide which treatments are effective for control of rusty crayfish and to prioritize other infested lakes where the future use of these types of treatments might also be effective.

Six aquatic non-native invasive animal species are known to occur on the Ottawa NF. These six species have been found in 21 lakes, streams, and rivers (Table 1). Two species have not been found on the Ottawa, but have been found relatively nearby. The zebra mussel has been found in two locations in Iron County, Michigan, and two lakes in Dickinson County, Michigan. The New

Zealand mud snail has recently been found in Duluth Harbor, Duluth, Minnesota. Five species of exotic earthworms are also known to occur on the Ottawa (Table 8.). Surveys have found that earthworms are very widely distributed across the Forest (Dunlap 2007); they even appear to be well established in all of the wilderness areas except Sylvania. This wide distribution suggests a long residence time on the Ottawa.

**Table 8. NNIS animals found on, or relatively near, the Ottawa National Forest.**

Scientific name	Common Name	Site	Year
<i>Aporrectodea tuberculata</i>	Earthworm	Various	2003
<i>Aporrectodea rosea</i>	Earthworm	Various	2003
<i>Bythotrephes cederstroemi</i>	Spiny water flea	Black River Harbor, Lake Gogebic	2005
<i>Cipangopaludina chinensis</i>	Chinese mystery snail	Lac Vieux Desert	2005
<i>Dendrobaena octaedra</i>	Earthworm	Various	2003
<i>Dreissena polymorpha</i>	Zebra Mussel	Fortune Pond	2005
		Chicagon Lake, Moon Lake	2007
		Lake Antoine	2001
<i>Gymnocephalus cernuus</i>	Eurasian ruffe	Ontonagon and Black River Harbors	2005
<i>Heterosporis sp.</i>	Yellow perch parasite	Lac Vieux Desert	2005
<i>Lumbricus rubellus</i>	Earthworm	Various	2003
<i>Lumbricus terrestris</i>	Earthworm	Various	2003
<i>Orconectes rusticus</i>	Rusty Crayfish	Pomeroy Lake	2004
		Bond Falls, Bush Creek, Cisco Lake, Duck Lake, Golden Creek, Lac Vieux Desert, Lake Ottawa, Moosehead Lake, Paint River Forks, Perch Lake, Smokey Lake, Tamarack Lake, Thousand Island Lake	2005
		Brule Lake, Brule River, Pendleton Creek	2006
<i>Potamopyrgus antipodarum</i>	New Zealand mud snail	Duluth Harbor	2006
<i>Viviparus georgianus</i>	Georgia mystery snail	Lac Vieux Desert, Lake Gogebic	2005

In 2007, 21+ lakes and streams were surveyed for aquatic invasive species. The majority of the surveys focused on invasive plants, but other species, such as rusty crayfish and zebra mussels, were also included in the surveys. The monitoring was performed by a combination of Forest Service personnel, contractors, lake associations, counties, and townships. No new infestations of any invasive animals were discovered in 2007, but the extent of rusty crayfish infestation increased in Pendleton Creek. They were found approximately 1.6 miles upstream of their previously known location.

In addition to surveys for new NNIS occurrences in 2007, control treatments and prevention activities for rusty crayfish were tracked. Trapping and removal of large rusty crayfish performed by Ottawa personnel occurred in Pomeroy Lake, Gogebic County. Thirty-two commercial crayfish traps baited with fish carcasses were set and pulled daily for one month. This effort resulted in the removal 518 rusty crayfish from the lake. Perch Lake (Houghton County) lakeside landowners also trapped rusty crayfish in 2007. 2007 was the third year of special catch and release regulations for smallmouth bass in Lake Ottawa instituted by the Michigan Department of Natural Resources (MDNR). These regulations will continue for a total of five seasons. The regulations are designed to increase average bass size in order to increase the effectiveness of their predation on small rusty crayfish.

Crayfish and smallmouth bass populations were monitored in Lake Ottawa and three control lakes containing rusty crayfish (Perch Lake, Houghton Co., MI and Little Star and Papoose lakes, Vilas Co., WI). The abundance of all species of crayfish was and population size of smallmouth bass was estimated. The lengths of sampled bass were also recorded. These parameters were assessed to determine if rusty crayfish control efforts, including the temporary no-kill bass regulation, were successfully controlling the crayfish and allowing Lake Ottawa to recover. The monitoring occurred between April and August 2007. Forest Service personnel tracked aquatic invasive control activities; graduate students and staff from the University of Notre Dame Environmental Research Center (UNDERC) monitored the crayfish; and both cooperatively sampled the bass. This project is part of an ongoing effort instituted in 2001. Data collected through these monitoring efforts resides in a local database at UNDERC. A report summarizing the results of the 2006 and 2007 UNDERC data collection has been released, and these preliminary results indicate that the control efforts appear to be reducing the rusty crayfish population considerably in Lake Ottawa (Peters and Lodge 2007).

### ***Off-Highway Vehicle (OHV) Opportunities***

Under the 1986 Forest Plan, the Ottawa was generally open to OHV use on Objective Maintenance Level (OML) 1 roads and OML 2 roads, unless posted closed. Cross-country OHV use was also allowed. The 2006 Forest Plan prohibits OHV cross-country use and requires that OHV use occur only on roads or trails designated for such use.

The Ottawa's implementation of the 2006 Forest Plan is a multi-staged approach. The first stage was to issue a Forest closure order to prohibit cross-country OHV travel, after publication of the 2006 Forest Plan. The second stage was to develop a Motor Vehicle Use Map (MVUM), which displayed road routes/trails available for motorized travel (including OHV travel). The first MVUM was published in April of 2007. The map displayed the existing condition of the 2006 Forest Plan. Roads with associated resource concerns, such as wet areas or the potential of sedimentation to stream channels, were not on the MVUM (i.e. not open for travel). Approximately 630 miles of road routes and 1,800 miles of trail were designated for use on the 2007 MVUM. The majority of the routes and trails, approximately 86%, were under a mile in length.

Within the Ottawa Forest administrative boundary, there are two OHV routes on State of Michigan multi-use railroad grades (Iron River to Marenisco, and Sidnaw to Bergland). None of these trails provides loop systems or connections to other trails. The revised Forest Plan provides direction to establish two north/south connector routes to the existing State of Michigan east/west multi-use trails. These new connectors would give OHV users opportunities and improve access to essential services and recreational destination points. In order to provide connector routes between these two trails, OML 3 (and potentially some OML 4 roads) would have to be designated for OHV use.

### ***Range of Motorized and Non-Motorized Recreation Opportunities***

There are approximately 57,000 acres of NFS lands in Management Area (MA) 6.1, Semi-Primitive Non-Motorized. This MA restricts trail use to non-motorized uses with two limited exceptions: administrative use (or under written authorization) and OHV/snowmobile use of existing Forest Service-designated OHV/snowmobile trails and routes. There are approximately 52,400 acres of NFS lands in MA 6.2, Semi-Primitive Motorized. This MA allows for motorize recreation on designated roads and trails.

On the Ottawa's first MVUM, approximately 1,800 miles of OML 1 (OHV trails) and 630 miles of OML 2 were identified for OHV use. Of these miles, approximately 8 miles of OML 1 roads and 9 miles of OML 2 roads are in MA 6.1. MA 6.2 consists of approximately 110 miles of OML 1 roads and 14 miles of OML 2 roads. The first MVUM was a mapping of existing condition; therefore, future monitoring reports will use this information as a baseline.

Recreation Opportunity Spectrum Objectives for MA 6.1—maintain or increase opportunities for quiet and remote experiences in semi-primitive non-motorized areas—are currently being met largely through the Plan's changes in OHV use in the Forest.

### ***Heritage Resources***

The heritage resources program responds to and is guided by preservation laws, executive orders, and federal regulations. Management of heritage resources on the Ottawa is accomplished through identification, evaluation, and documentation of prehistoric/historic sites. To date approximately 781,848 acres (~78%) of the Ottawa has been inventoried for heritage resources; as a result, 2,552 sites are recorded. Examples of these historic and cultural sites include mining and logging sites and Native American copper mining, sugar maple and long term subsistence sites, among others.

The annual Federal Archeology Program Report to Congress is provided through retrieval of data from the INFRA database. By having all heritage resource information in INFRA and GIS databases, this information is readily available for upward reporting of accomplishments and activities of the forest Heritage Resources Program. All heritage surveys conducted on the Ottawa have been entered in the INFRA database as of FY 2007. Entry of heritage resource site information is underway; with sixty-five percent of recorded sites entered into INFRA.

Priority assets, which are historic properties eligible for National Register listing, are identified and entered in the INFRA database. These priority assets are part of the Heritage Resources Program annual targets requiring management of properties to standards under the Primary Purpose Rule. Four priority assets were managed to standard in FY 2007 meeting program targets for the year. These assets are the Civilian Conservation Corps (CCC) Bergland Heritage Center, Nesbitt Recreation Camp, and Pori Camp, as well as the Lac Vieux Desert-L-Anse Trail.

### ***Tribal Rights and Interests***

The Forest Service shares in the United States' trust responsibility and treaty obligations to work with federally-recognized tribes on a government-to-government basis to protect the tribes' ceded territories on lands administered by the Forest Service. The Ottawa outlines its policies and responsibilities on tribal relations in a 1999 Memorandum of Understanding (MOU) including tribal consultation on proposed forest projects and policies. Through provisions laid out in the MOU, projects and processes have been put into place without notable instances of complications. Some activities include notification of birch bark gathering opportunities, implementation of camping fee and length of stay waivers for tribal members exercising treaty rights, and implementation of an off-reservation National Forest gathering code. Implementation of the 2006 Forest Plan has facilitated MOU implementation.

## ***Wilderness Management***

Since 2005, the Ottawa has been working to achieve the minimum accomplishment levels outlined in the 10 Year Wilderness Stewardship Challenge established by the Chief. In 2007, one of the three—the Sylvania Wilderness—met the minimum stewardship level when evaluated against the ten primary elements outlined in the Challenge. Through this multi-disciplinary focus on wilderness management, the Ottawa has established baseline data in a number of areas, and continues data collection that aids in the improvement and preservation of wilderness values.

Following are the ten elements of the 10 Year Wilderness Stewardship Challenge, and the steps the Ottawa has taken to incorporate them into wilderness management.

- 1) Direction exists in either the Forest Plan or subsequent planning document that updated or amended the Forest Plan that addresses the natural role of fire in wilderness and considers the full range of management responses.
  - The Ottawa National Forest Fire Management Plan (FMP) addresses wilderness fire management.
  - In 2006, following several fire suppression efforts in the wilderness, events were evaluated by fire staff and wilderness rangers to determine the effectiveness of the FMP and the need for any changes. No fires occurred in the wilderness in 2007.
- 2) The wilderness was successfully treated for non-native, invasive plants.
  - In 2007, priority areas within each wilderness were identified for surveys of non-native invasive species. These populations were treated through various methods and will be monitored.
- 3) Monitoring of wilderness air quality values is conducted and a baseline is established for the wilderness.
  - In 2006 work began to establish a baseline for air quality monitoring using existing data (e.g. lake pH levels), and to identify sensitive receptors for air quality values. Efforts to monitor air quality for the Sylvania Wilderness continued in 2007.
- 4) Priority actions identified in a wilderness education plan are implemented.
  - In 2006 a unified education plan for all three wilderness areas was drafted. Actions outlined in the former Sylvania Wilderness Education Plan continued to be implemented. These included, but were not limited to; ensuring visitors were exposed to Leave No Trace Ethics via video and personal contact; educating local groups, schools, agencies, etc. on wilderness principles; and monitoring the effectiveness of these efforts through informal surveys.
- 5) The wilderness has adequate direction, monitoring, and management programs to protect opportunities for solitude or primitive and unconfined recreation.
  - Existing Plan direction provides opportunities for solitude and unconfined recreation through such tools as group size limit, designated campsites, and permit requirements. The effectiveness of these management techniques was evaluated informally through discussions with visitors on their perceptions of how “crowded” they felt during their visit. It will also be evaluated formally through such means as the National Visitor Use Monitoring (NVUM) survey.
- 6) The wilderness has a completed recreation site inventory.
  - In 2006, the Ottawa completed the latest of three campsite inventories in Sylvania, and information on site impacts from visitors was measured for each of the 50 sites. Measurements included; percentage of bare soil, number of trees with root exposure or damage, amount of vegetation, etc. Site inspections were conducted in 2007.

- 7) Existing outfitter & guide operating plans for the wilderness direct outfitters to model appropriate wilderness practices and incorporate appreciation for wilderness values in their interaction with clients and others. Needs assessments are completed for new operations or for major changes to existing outfitter programs.
  - In 2006, the one outfitter serving a wilderness area incorporated additional language into their annual operation plan, which specifically addressed the need for emphasis on Leave No Trace principles and wilderness values. This action further ensures that they serve as ambassadors for wilderness and provides a direct benefit to the wilderness they operate in. Leave No Trace principles were implemented again in 2007.
- 8) The wilderness has adequate direction in the Forest Plan to prevent degradation of the wilderness resource.
  - In 2006, the Forest Plan continued to provide direction that protected the character of the wilderness areas with specific objectives for; social conditions (party size), ecological conditions (fire, invasive plants) and managerial conditions (trails, O&G) so that these aspects of the wilderness character can be protected or restored. These efforts continued in 2007.
- 9) The priority information needs for the wilderness have been addressed through field data collection, storage and analysis.
  - Much of the field data collected in an effort to meet the 10 Year Wilderness Stewardship Challenge was incorporated into a local database. Updated annually, this database will help to identify what data needs are the most important for long-term, effective Wilderness stewardship.
- 10) The wilderness has a baseline workforce in place.
  - The Ottawa continues to employ the minimum staffing necessary, as identified by the Wilderness Advisory Group, to ensure good wilderness stewardship.

### ***Vegetation Composition and Spatial Landscape Patterns***

One of the goals in the 2006 Ottawa Forest Plan is to provide for ecosystems that are healthy, diverse, and functioning in a sustainable manner. In the 2006 Forest Plan, management area boundaries were realigned using Ecological Classification System information to better align management direction with the capability of the land. To restore vegetative conditions new management areas were created, along with new management prescriptions, and revised standards and guidelines.

Over the last two years of implementing the 2006 Forest Plan, there has been little change in the vegetative composition percentages on the Forest. Two years is a short period of time for Forest-wide averages to change. In addition, logging has been reduced over the last two years due to poor markets and less than desirable winter logging conditions. Meeting the vegetative composition desired condition is a long-term goal which will take several years and likely more than one planning period to accomplish.

The following tables show the desired condition vegetative composition percentage for each forest type group by management area, along with the current vegetative composition percentage and the percentage used during development of the Forest Plan FEIS.



**Table 9. MA 1.1a Forest Type Composition Comparison**

<b>Forest Type Group</b>	<b>Desired Condition (%)</b>	<b>FEIS</b>	<b>FY2007</b>
Aspen/Paper Birch	60-70	64	63
Long Lived Conifers	5-10	7	7
Short-lived Conifers	10-20	12	12
Northern Hardwoods	5-20	17	18

MA 1.1a emphasizes early successional ecosystem community types, with a strong emphasis on maintaining aspen. Since the Forest Plan was implemented, the vegetation composition percentage of aspen/paper birch in MA 1.1a has gone down 1% and the northern hardwoods increased by 1%. The long-lived conifers and short-lived conifers percentage remained the same. All of the forest type groups are within the desired condition range.

The actual acres of aspen in MA 1.1a have increased by 20 acres since 2006. The 1% vegetation composition reduction of aspen/paper birch is a result of Amendment #1 which realigned river corridor boundaries. The realignment resulted in an increase in acres of northern hardwoods in MA 1.1a, which changed the vegetation composition percentages.

Much of the aspen on the forest are on lands classified as unsuitable for timber production. Many of these stands are mature and naturally converting to more shade tolerant northern hardwoods and conifers through natural succession.

**Table 10. MA 2.1 Forest Type Composition Comparison**

<b>Forest Type Group</b>	<b>Desired Condition (%)</b>	<b>FEIS</b>	<b>FY2007</b>
Aspen/Paper Birch	15-20	12	12
Long Lived Conifers	0-10	5	5
Short-lived Conifers	10-20	21	20
Northern Hardwoods	50-70	63	63

MA 2.1 emphasizes uneven-aged northern hardwood ecosystems. Since the Forest Plan was implemented, the vegetation composition percentage of aspen/paper birch, long-lived conifers, and northern hardwoods in MA 2.1 has remained constant. Only short-lived conifers decreased slightly. Aspen/paper birch is below the desired condition range, and short-lived conifers are right at the upper limit.

**Table 11. MA 2.2 Forest Type Composition Comparison**

<b>Forest Type Group</b>	<b>Desired Condition (%)</b>	<b>FEIS</b>	<b>FY2007</b>
Aspen/Paper Birch	5-15	14	14
Long Lived Conifers	5-10	5	5
Short-lived Conifers	10-20	14	14
Northern Hardwoods	65-75	67	67

MA 2.2 emphasizes late successional northern hardwood forest types with an even greater emphasis on uneven-aged hardwood management than in MA 2.1. Since the Forest Plan was implemented, the vegetation composition percentage for all forest type groups has remained constant. All groups are within the desired condition range. Long-lived conifers are at the lower end of the range.

**Table 12. MA 3.1a Forest Type Composition Comparison**

<b>Forest Type Group</b>	<b>Desired Condition (%)</b>	<b>FEIS</b>	<b>FY2007</b>
Aspen/Paper Birch	35-45	39	39
Long Lived Conifers	10-20	13	13
Short-lived Conifers	10-20	11	11
Northern Hardwoods	25-45	36	36

MA 3.1a emphasizes a mix of northern hardwoods, softwoods, and aspen vegetation types. Since the Forest Plan was implemented, the vegetation composition percentage of all forest type groups has remained constant. All forest type groups are within the desired condition range.

**Table 13. MA 4.1a Forest Type Composition Comparison**

<b>Forest Type Group</b>	<b>Desired Condition (%)</b>	<b>FEIS</b>	<b>FY2007</b>
Aspen/Paper Birch	15-25	26	26
Long Lived Conifers	30-60	27	28
Short-lived Conifers	20-25	24	24
Northern Hardwoods	15-25	22	22

MA 4.1a provides for a mix of aspen, northern hardwoods, and conifer types with an emphasis on long-lived conifers. Since the Forest Plan was implemented, the vegetation composition percentage of long-lived conifers increased slightly, while all other groups remained the same. There was a net increase of about 400 acres of long-lived conifers in MA 4.1a. Red pine and white pine acres increased, while white spruce and hemlock acres were slightly reduced. The aspen/paper birch group is slightly above the desired condition range, and the long-lived conifers are below the range.

**Table 14. MA 4.2a Forest Type Composition Comparison**

<b>Forest Type Group</b>	<b>Desired Condition (%)</b>	<b>FEIS</b>	<b>FY2007</b>
Aspen/Paper Birch	10-25	12	12
Long Lived Conifers	10-25	19	19
Short-lived Conifers	50-60	50	51
Northern Hardwoods	0-15	18	18

MA 4.2a emphasizes short-lived conifers, with a strong emphasis on maintaining jack pine. Since the Forest Plan was implemented, the vegetation composition percentage of short-lived conifers increased slightly, while the remaining forest type groups remained the same. The jack pine forest type increased by about 200 acres. All forest type groups are within the desired condition range, except northern hardwoods which is above the desired condition.

**Table 15. MA 6.1 Forest Type Composition Comparison**

<b>Forest Type Group</b>	<b>Desired Condition (%)</b>	<b>FEIS</b>	<b>FY2007</b>
Aspen/Paper Birch	10-55	10	10
Long Lived Conifers	1-45	5	5
Short-lived Conifers	1-30	7	7
Northern Hardwoods	15-90	78	78

MA 6.1 emphasizes a largely uneven-aged northern hardwoods ecosystem. Since the Forest Plan was implemented, the vegetation composition percentage of all forest type groups has remained constant. All forest type groups are within the desired condition range. However, aspen/paper birch is right at the lower limit. The desired condition percentages for MA 6.1 were designed to

have maximum vegetation composition flexibility since this management area was positioned more for maintaining a semi-primitive recreational experience than vegetation potential.

**Table 16. MA 6.2 Forest Type Composition Comparison**

<b>Forest Type Group</b>	<b>Desired Condition (%)</b>	<b>FEIS</b>	<b>FY2007</b>
Aspen/Paper Birch	10-55	27	27
Long Lived Conifers	1-45	4	4
Short-lived Conifers	1-30	8	7
Northern Hardwoods	15-90	61	61

MA 6.2 emphasizes a largely uneven-aged northern hardwood and aspen ecosystem. Since the Forest Plan was implemented, the vegetation composition percentage of short-lived conifers increased slightly, while the remaining forest type groups remained the same. This was mainly a result of Amendment #1 which realigned river corridor boundaries. The realignment resulted in a slight increase in acres of northern hardwoods in MA 6.2, which changed the vegetation composition percentages. All forest type groups are within the desired condition range.

### **Soil Quality**

Management activities are designed to minimize detrimental impacts on soil and water quality and other riparian values. All projects planned or designed on the Ottawa have an appropriate level of involvement from soil, hydrology and/or watershed staff. These experts assist in planning projects so as to minimize detrimental soil disturbance, erosion, or impacts to water quality or other riparian values. When needed, project specific design criteria are developed to protect the soil, water and riparian values.

In FY 2007, the Ottawa continued to implement Regional Handbook direction for soil quality monitoring. This monitoring has been done since 2003. Each year, areas with vegetation management activity have been randomly selected within strata of the landform and season of operation. Ocular estimating techniques are applied to determine the amount of disturbed soils in each payment unit. In order to ensure that ocular estimates were valid, ocular estimates were compared to the transect data taken on the units that were above a low level of disturbance.

In FY 2007, active timber sale information was consolidated and stratified by major landform, type of activity, and season of operation. Thirty-four payment units were randomly selected for monitoring. One of the 34 units selected in FY 2007 had a level of disturbance that indicated potential concern. A transect was set up in that unit to determine the actual amount of disturbance. The results of the transect monitoring was that the unit was over 75% undisturbed, with less than 5% in a potentially detrimentally disturbed condition. The remaining 33 units had very little to no evidence of detrimentally disturbed soil conditions. In order to ensure that ocular estimates were valid, ocular estimates were compared to the transect data taken on the units that were above a low level of disturbance. For the transected unit, ocular estimate of potential detrimental disturbance was within 10% of the transect results. Generally, 85% or more of the units monitored in FY 2007 were considered to be undisturbed with small percentages having low to moderate soil disturbance.

Over 800 cutting units have been included in the monitoring effort over the 5 year period, and nearly 75% of these were selection harvests in hardwoods. Approximately 15% of these were monitored through ocular estimation. Less than 1%, or a total of 7 units over the 5 year period,

had a level of concern that initiated transecting. Of all the units that were monitored, undisturbed ground ranged from 60 to 100%, and detrimental disturbance generally ranged from 0 to just over 5% of any one payment unit. One exception was a unit that showed 12% detrimental disturbance. Region 9 Soil quality standards set a 15% detrimental disturbance limit.

Generally, 90 % more of ground surface within all units was considered to be undisturbed with small percentages having low to moderate soil disturbance. This monitoring confirms the effectiveness of project design criteria in protecting soil quality. This type of monitoring will be continued.

## ***Species of Viability Concern***

### **Breeding Bird Census**

In 1991, the Ottawa initiated its first annual “Breeding Bird Census” (BBC). All major habitats are covered by 104 permanent plots using “Point Count” survey methods to collect data.

Bird populations on the Ottawa are generally stable. Some declines in species known to be susceptible to West Nile Virus (crows and ravens) have been noted. The two most common species recorded during BBC, the ovenbird, and the red-eyed vireo, are generally associated with maturing forests, as are seven of the top ten most common species tallied during the survey. The top ten are ovenbird, red-eyed vireo, Nashville warbler, hermit thrush, white-throated sparrow, American robin, black-throated green warbler, yellow-rumped warbler, chipping sparrow, and black-capped chickadee.

In 2004, the Ottawa worked with an avian researcher to analyze data from 1992 through 2003. Ottawa biologists created habitat-based guilds of birds and population trends of those guilds as well as population trends of individual species through the 12 years of records were analyzed. The full text of the report is available upon request.

Highlights of recent (2004-2007) data compared to first 12 years (1991-2003):

- The ovenbird remains the most common species with stable numbers throughout the history of the program.
- The top ten common species remain the same.
- Nashville warbler has replaced the red-eyed vireo as the number 2 most commonly recorded species.
- American crow and common raven show significant declines. Most of the change is likely due to West Nile virus, but some change may be attributed to stricter enforcement of 100 meter recording distance and distinguishing flyovers from territorial individuals.
- Two species (evening grosbeak and Cape May warbler) influenced by spruce budworm outbreaks show significant declines. One species (Blackburnian warbler) shows significant increase.
- Species associated with interior forest generally show stable numbers; Ovenbird, red-eyed vireo, black-throated blue warbler, or increasing numbers; Blackburnian warbler, yellow-bellied sapsucker, rose-breasted grosbeak, black-capped chickadee, and black and white warblers.
- Species associated with interior forest showing declines, such as scarlet tanager, veery, wood thrush, and Canada warbler may be affected by long migration journeys including collisions with radio towers and buildings, and/or declining habitat on wintering grounds.

The northern hardwood forests of the Ottawa are aging as the Forest continues to manage the majority of the stands with selective management. This is evident by the stable populations of our most common species (e.g. ovenbird, red-eyed vireo, black-throated green warbler and black-throated blue warblers) that inhabit the mature deciduous and mixed forests in the area.

The data indicates that conifer-dependent species are increasing. We have noticed more balsam fir (and to a lesser degree spruce) in the understories of our aging second-growth stands. This can be expected, as spruce and fir are not readily browsed by deer, and thus, able to invade areas where other shade-tolerant, though palatable, species cannot gain a foothold.

Interestingly, smaller primary excavators (those species that excavate their own nest cavities) are showing increases (brown creeper, red-breasted nuthatch and black-capped chickadee) while larger species are showing decreases (pileated, hairy and downy woodpeckers, northern flicker, and white-breasted nuthatch). This result is hard to explain from a habitat perspective, as the number, diameter and quality of cavity-capable trees on the Ottawa is gradually increasing as the second-growth forests age. Perhaps predation by the nest robbing red squirrel is having an effect on the larger species as it is more likely to obtain access into the cavity of these species. The great crested flycatcher, a secondary cavity user that uses larger nest holes created by woodpeckers, also shows a decline.

High deer densities are reducing shrub and tree understory in some portions of the forest, and non-native earthworms are responsible for reducing leaf litter on the forest floor. Some species of ground nesters and low canopy shrub nesters (e.g. American redstart, chestnut-sided warbler wood thrush, and veery) are showing declines, while others (e.g. Nashville warbler, black and white warbler, rose-breasted grosbeak and blue-headed vireo) are increasing. Others such as ovenbird, red-eyed vireo, hermit thrush, chipping, song, and white-throated sparrows are relatively stable. This again illustrates the point that no one factor such as forest management, can by itself, explain what is happening to individual bird species on the Ottawa.

The temporary conversions of small percentages of habitat through forest management may serve to alter populations of certain species for short periods of time, but has little negative effect on the long term outlook for bird populations. The Ottawa is one of many national forests serving as a stable environment for breeding birds year after year.

## **Frogs and Toads**

An overarching goal of the Forest Plan is to provide habitat that supports viable populations of native and desired non-native species, including frogs and toads. With regard to aquatic habitats, a Forest Plan goal states that lakes, streams, rivers, and wetlands are functioning appropriately and provide high quality habitat for plants and animals, including frogs and toads. There are also several objectives related to protection of water quality, and aquatic habitats for fish and wildlife. In addition, the Plan contains guidelines which serve to maintain or enhance the ecological function of riparian areas. Generally, the aquatic habitats in which most of these species live have not been directly influenced by Forest Plan implementation. Adherence to guidelines for management of riparian areas insures that these habitats, which help support many of the frog and toad species listed above, are fully protected.

Some species, such as the American toad, gray tree frog, and wood frog, are somewhat more terrestrial, and can also be found in damp woodlands and meadows. There is an abundance of these types of habitat across the Ottawa, so habitat is not a limiting factor.

The Ottawa has three frog and toad survey routes distributed across the Forest that are surveyed most years (three surveys per year – early, mid, and late). These surveys are conducted using procedures and forms provided by the Michigan Department of Natural Resources – Michigan Frog and Toad Summary. Data from survey routes across the State are provided to Michigan DNR, which consolidates and analyzes the data.

Data from just the three Ottawa NF survey routes is still fairly limited and short-term, and therefore it is premature to draw any conclusions based upon a review of this data. Based on data accumulated for the 12 years (1996-2007) that the MDNR survey has been in effect, however, it appears that trends in populations of most species appear to be relatively stable across the state. The most abundant species within the Ottawa are the spring peeper, wood frog, green frog, gray tree frog, and American toad. Much less common are the mink frog, Western chorus frog, and northern leopard frog. Pickerel frogs were not detected in 2006 or 2007. However, since the call of the pickerel frog is similar to the northern leopard frog, it is possible that some observers confuse these two calls (Mich. Frog and Toad Survey – 2007 Data Summary).

The Ottawa will continue to conduct surveys for frogs and toads and contribute that data to the Michigan Frog and Toad Survey, as funding permits. As additional years of data are accumulated, it should help us to discern any trends in frog and toad abundance that are occurring here. No further actions are believed to be needed at this time.

### **Black-throated Blue Warbler**

The black-throated blue warbler (BTBW) is thought to prefer mature forest interior habitats with dense shade and moderately dense shrub-sapling cover used during the nesting season. It has not been classified as a Regional Forester Sensitive Species (RFSS) on the Ottawa, but is a species of management concern due to its dependence upon northern hardwood forests and potential effects of Ottawa forest management upon habitat suitability for this species of viability concern throughout much of its range.

An overarching goal of the Forest Plan is to promote landscape conditions and habitat diversity to support viable populations of native animal species. Along with that goal is one to promote the conservation, restoration, and recovery of populations of species of viability concern.

Approximately 25% (253,981 acres) of the Ottawa exists as hardwood or mixed hardwood forests, potential habitat for the BTBW. In 2004-2005, the Ottawa contracted an assessment of black-throated blue warbler habitat needs on the Ottawa. Findings emphasized the importance of groupings of conifer saplings (e.g., white spruce, balsam fir, white pine, and eastern hemlock) under primarily hardwood or mixed hardwood/conifer canopies for nest-site location. These habitat conditions were more often associated with forest stands that had received a selection cut or shelterwood treatment, whereby the canopy had opened up enough to allow for regeneration of these conifer species amidst a predominantly sugar maple sapling layer. Continued monitoring of forest composition conditions indicates an increase in conifer species in the understories of restored hardwood stands, which continues to afford suitable nesting substrate opportunities for the BTBW.

Breeding Bird Census indicate a stable trend in BTBW numbers on the Forest. The contracted habitat assessment also showed that BTBWs seem to be well-distributed throughout managed northern hardwood habitats that included an understory conifer component.

The Ottawa will continue to conduct the Breeding Bird Census to monitor BTBW and other bird populations, as funding allows. As additional monitoring of BTBW populations and conifer presence in forest understory composition continues to occur, we should be able to detect changes in either BTBW populations or suitable nesting habitat that would lead to adapting management actions to promote viable populations of the BTBW. No further actions are believed to be needed at this time.

## **Common Loon**

Loons are a RFSS on the Ottawa. They are also listed as threatened in Michigan, but are not federally listed under the Endangered Species Act. Regionally, loons are still relatively common in good habitat, but are declining.

The Forest Plan includes guidelines calling for: a) protection of loon nest sites and rearing habitat; b) protection of loon nesting islands from disturbance from ice-off through July 15<sup>th</sup>; c) retention of natural shoreline buffers along lakes to protect habitat for loons and other species; and d) support for efforts to reduce the use of lead fishing tackle, which is toxic to loons when ingested.

Generally, loon habitat quality has not been directly influenced by Forest Plan implementation as vegetation management on the Ottawa does not affect habitat quality for loons. Most of the boat launches and other water-based recreation facilities on the Forest have been in place for many years, and no new such facilities are planned for construction.

Private land around many lakes used by loons for both nesting and feeding continues to be developed for residential use, which may result in a deterioration of overall habitat quality over time. Other factors which have the potential to negatively impact loons in this area include higher levels of watercraft use and the spread of aquatic nuisance species.

The Ottawa annually surveys on average 150 lakes to obtain data on territory occupancy by loons, and productivity of loon chicks. This survey is conducted in partnership with Commoncoast Research and Conservation, an organization which has been studying loons in our area for more than 20 years, as well as volunteer loon rangers from the Michigan Loon Preservation Association. This information can be used to help determine trends in loon productivity over time, as well as identifying lakes where adverse impacts of some type may be causing nest failure.

In 2006, 74 loon chicks of fledging-age were known to be produced on the Forest. The following table displays the productivity of loon chicks on the Ottawa since the survey began in 1985. Also included are the numbers of lakes surveyed, and the ratio of chicks produced to number of lakes checked, which may provide a better indication of actual productivity in any given year. One year (1987) is not included because of very limited survey effort in that year.

**Table 17. Common Loon Monitoring Data 1985-2006**

<b>Year</b>	<b>No. Chicks</b>	<b>no. lakes checked</b>	<b>prod/effort</b>
2007	69	195	0.35
2006	74	213	0.35
2005	62	171	0.36
2004	49	164	0.30
2003	50	209	0.24
2002	51	210	0.24
2001	59	217	0.27
2000	55	206	0.27
1999	64	124	0.52
1998	70	103	0.68
1997	40	106	0.38
1996	52	115	0.45
1995	74	192	0.39
1994	49	198	0.25
1993	48	149	0.32
1992	48	163	0.29
1991	42	136	0.31
1990	35	70	0.50
1989	43	100	0.43
1988	46	51	0.90
1986	33	98	0.34
1985	59	110	0.54

Based on the data, it would appear that loon productivity has remained relatively stable over the last several years, but may have decreased slightly since the late 1990s. However, it should be noted that fewer lakes were surveyed from 1996-1999, which may have influenced the relatively high ratio of loon chicks produced per unit of survey during those years. This may be especially true considering that the 120 or so lakes surveyed during the late 1990s are, on average, better long-term producers of loon chicks than the additional 80 or so lakes that were added to the survey effort since 2000. In addition, some year-to-year variation in productivity is likely due to factors beyond the Forest's control such as weather during the breeding season or mortality of adult loons once they leave the Ottawa (on wintering grounds and/or during migration), which could affect the number of returning breeding adults.

There has been a trend toward earlier ice-off of lakes in the area over the last two decades, which appears to be accelerating the date at which adult loons return and begin nesting in the spring. It is unknown if this trend has or will affect loon productivity. In recent years, there has been significant mortality of adult loons on the Great Lakes during fall migration due to botulism poisoning. Breeding adults from the Western Upper Peninsula mainland have not yet been confirmed as part of these botulism mortality events, although loons from Isle Royale and other portions of the U.P. are known to have been included. Thus, it seems likely that at least some loons from this area have been or will be affected by these botulism events, should they continue.

The Ottawa will continue to work with groups such as Commoncoast Research and Conservation, and the Michigan Loon Preservation Association volunteers, to monitor loon breeding success on the Forest, as well as threats to loons or loon habitat. The Forest will also continue to protect loons and loon habitat through the efforts described above.



## Forest Raptors

The northern goshawk and red-shouldered hawk are RFSS on six national forests in the Western Great Lakes Region including the Ottawa. Both species are considered to be on the edge of their range in the western UP. The northern goshawk is a boreal species; the UP and northern 1/3 of Wisconsin at the southern end of its breeding range. Conversely, the red-shouldered hawk is in the extreme northern edge of its breeding range.

As dominant predators in the food chain, both raptors are found in low numbers and are hard to detect and monitor in the wild. Due to the secretive nature and low numbers of individuals of northern goshawk and red-shouldered hawks, monitoring at a local level to determine a population estimate is not feasible. The Forest monitors known territories, especially those requiring protection measures from human disturbance. In the Western Great Lakes region (Michigan, Minnesota, and Wisconsin), there is a major concerted effort planned involving state, federal, and private landowners to obtain a statistically reliable population estimate for the goshawk in the region.

The best information regarding population status of these species at this time is a continental assessment produced by Partners in Flight (PIF), 2004. North American population estimates are derived from PIF's global population estimate multiplied by the percent of the population in the US & Canada. The global population of northern goshawk is estimated at 490,000 with 49% of the population estimated in the US and Canada. The global population of the red-shouldered hawk is estimated at 830,000 with 99% of the population estimated in the US and Canada. Thus, the northern goshawk and red-shouldered hawk populations are estimated at 240,000 and 821,700 respectively in North America. To date, no reliable estimates are known for either species of forest raptor in the western Great Lakes or in particular the western UP. From 1999 to present, Ottawa biologists have compiled records of over 30 nest territories for northern goshawk and approximately 7-8 for red-shouldered hawk. New territories are discovered each year through pre-project surveys and reports from timber sale lay-out crews.

Currently, about half (457,000 ac) of the total acres of the Ottawa is upland or lowland hardwood habitat. Of this, the vast majority (~435,000 ac) is upland habitat consisting of oak, maple or mixed hardwoods. None of the (~22,000 ac) lowland hardwoods are managed for timber production. Of the upland acres, about 55% (237,000 ac) are in the suited category managed for timber value and production. With respect to prey producing habitat, the forest is managing about 55% (109,000 ac) of the current aspen types, and about 59% (10,000 ac) of jack pine for early seral habitat and prey production.

Of the suited acres of upland hardwoods, Forest Plan goals are treatment of 6,700 acres of selection harvest per year during the first decade of implementation. Goals for clearcutting aspen habitats are 1,700 acres per year during the first decade. In 2007, the Forest accomplished 2,832 acres of selection harvest in hardwoods, and 284 acres of clearcut in aspen and jack pine types.

Nesting habitat for raptors continues to improve on the Ottawa with maturation of the second growth hardwood stands, and to a lesser degree conifer stands, dating back to the early twentieth century. Many acres of the Forest are already suitable nesting habitat, evidenced by the fact that most of our nests are discovered in proposed timber sale areas.

If a limiting factor exists, it would be lack of a suitable prey base, especially snowshoe hare and grouse, to serve the many species of predators that would benefit. An effort to increase timber harvest to the Forest's desired quantity of early successional forest will certainly benefit a number of species, including the northern goshawk and red-shouldered hawk.

Forest management practices are improving or maintaining adequate quality nesting habitat for both species of forest raptors. Selection harvest may temporarily displace individuals for periods due to disturbance, but within a short time frame, habitat is of better quality and suitable for re-occupancy by breeding pairs. The fact that about half the acres of upland hardwoods, and half the total acres of the Ottawa are in the land base unsuited for timber harvest, assures adequate quality habitat is available for these raptors.

## **Wood Turtle**

The wood turtle is listed as threatened in Wisconsin, a species of special concern in Michigan, and a RFSS on the Ottawa. Populations in Michigan are believed to have declined, but only limited data are available. The wood turtle is protected by the MDNR under a Director's Order.

Factors that influence or limit wood turtle populations include the lack of available nesting habitat, nest predation, shooting, and illegal collection. In some parts of the turtle's range, illegal collection is a serious problem. Nest destruction and adult mortality associated with recreational vehicle use in nesting areas have not been quantified, but it is known to occur, and research is needed to determine potential effects to populations. This impact should be further limited due to the closure of cross-country OHV use.

The wood turtle appears to be widely distributed across all the major watersheds on the Ottawa, but since the species is declining across its range, and the population is vulnerable to the same threats seen elsewhere, therefore a concerted monitoring effort is the prudent course of action.

As a RFSS, the wood turtle is a Species of Viability Concern (SVC), therefore some of the Forest Plan guidelines for SVC apply. The guidelines for SVC that pertain to the wood turtle include: a) protect known occurrences and their zones of influence, and continue protection until population or habitat objectives are defined and met; b) conduct inventories at and above the project level where appropriate given existing habitat; and c) provide habitat for possible population growth and expansion, where practical.

Specific wood turtle guidelines include: a) identify roads, gravel pits and nesting beaches where human uses pose a threat to wood turtle viability, and where feasible, consider these as priorities for decommissioning, rehabilitation or seasonal closures; and b) undertake vegetation treatments near wood turtle nesting habitat to provide forage in small openings (1-2 acres).

The wood turtle will usually be found along large rivers, but it will occasionally venture well into the uplands ( $\frac{1}{4}$  to  $\frac{1}{2}$  mile from the nearest river or stream habitat) when foraging. Nesting sites are always within a few hundred yards of rivers.

Preferred habitat for wood turtles is in or near third order or larger streams passing through sandy regions such as those found in glacial outwash plains, or areas of mixed till deposits. Historically, wood turtles mainly used the sandy cutbanks and points created by rivers to nest on. However, now with the prevalence of roads crossing and paralleling streams, it is not uncommon

to see wood turtles using the shoulders, fill-slopes, and cutbanks of sand and gravel roads to lay their eggs in.

The Ottawa initiated a long-term monitoring program for wood turtles as a result of a two-year pilot study conducted in 2004 and 2005. This study focused on significant nesting beaches in all major river systems that drain the Forest.

In 2007, the methodology used for determining and recording nest predation was refined to improve accuracy. Therefore, this report will not compare the number of predated nests between 2006 and 2007; only the number of nest predations counted during 2007 will be reported. It is not easy to differentiate between a wood turtle egg and a painted turtle egg after predation. Therefore, some of predated nests counted in 2007 could be painted turtle eggs, but it is believed that most of the predated nests counted were wood turtle nests because wood turtles were seen in the nesting areas while painted turtles observations were somewhat rare.

There are fourteen nesting areas on seven major rivers being monitored for wood turtles on the Ottawa. Within each area are nesting sites (often beaches) that are known to be wood turtle nesting habitat.

**Table 18. Wood Turtle Monitoring Data 2006-2007.**

<b>Year</b>	<b># Turtles</b>	<b># Site Visits</b>	<b># WT/visit</b>	<b># WT Nest Predations</b>
2006	142	160	0.89	N/A*
2007	145	202	0.72	129

\* methodology for determining nest predation was modified the following year.

As previously mentioned, in order to determine adult survival, several years of data are likely necessary. The Ottawa has two full years of data to date. Considering it is not unusual for turtles to not return to areas where they were captured the year before, and then return two or three years later, it would not be appropriate to report adult survival results at this time. It will likely take five years of data to determine adult survival for a particular point in time, and ten or more years of data to determine trends with any confidence.

The wood turtle monitoring program is still being revised, though future adjustments should be minor. It will likely take several more years before enough data is collected to perform rigorous statistical analyses or to model populations.

### **Osprey/Bald Eagle**

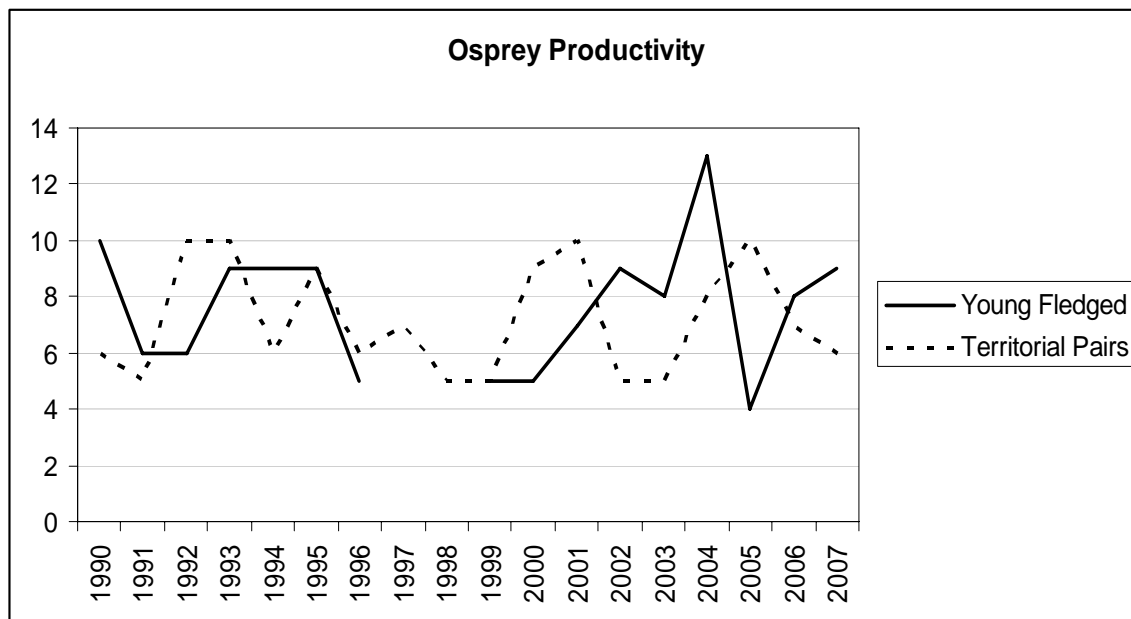
On August 8th, 2007, bald eagles were removed from the threatened species list under the Endangered Species Act (ESA). However, eagles will continue to be protected under the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA), as well as being listed on the RFSS List. Ospreys are not classified as a RFSS on the Ottawa. Ospreys are not listed under the Endangered Species Act. However, this species is listed as threatened, endangered or a species of special concern in several U.S. states, including Michigan. Ospreys are also protected under the MBTA. Both eagles and ospreys usually select tall trees in marshes or along streams, lakes or flooded man-made water bodies and adapt to artificial nesting platforms. Abundant, quality habitat seems to be available for these species on the Ottawa.

Generally, eagle and osprey habitat quality has not been directly influenced by Forest Plan implementation. However, large water bodies, preferred eagle and osprey nesting and foraging

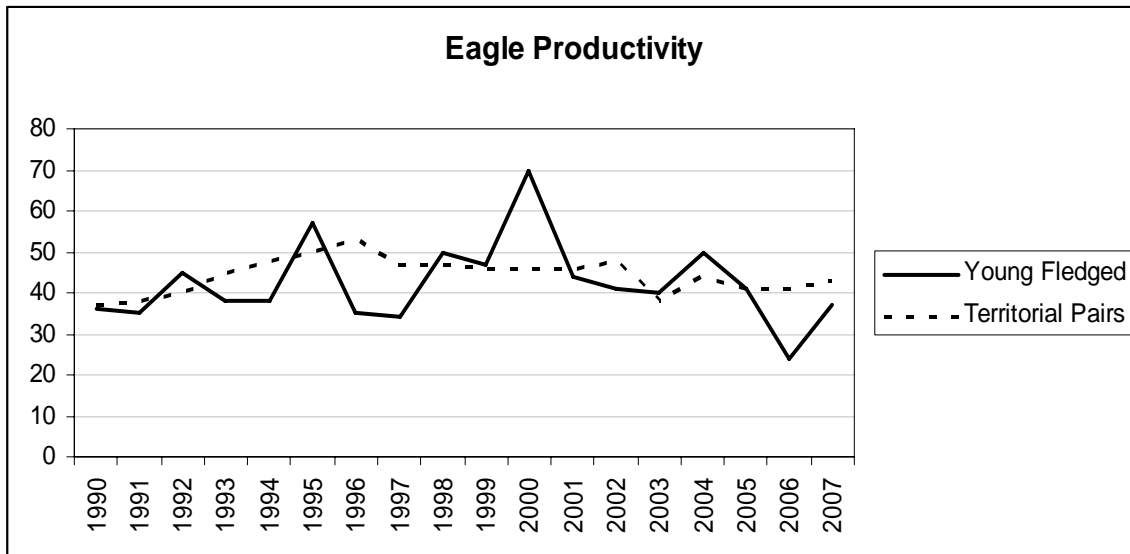
habitat, also have high recreational watercraft value. Recreational watercraft use may impact eagle and osprey foraging through disturbance or more direct impacts on or near open water (USDI US FWS, 2007). With riparian buffers in place, vegetation management on the Ottawa does not appear to affect habitat quality for these species. Several eagles are killed every year in this fashion along the major state and federal highways that transect the Ottawa.

On the Ottawa, the population of eagles has been relatively constant. However, fledgling production seems to have decreased in the past few years. The number of known, active territories for ospreys on the Ottawa seems to have declined in recent years. Ospreys are rare and may be becoming less common as eagle populations expand on the Ottawa. Bald eagles and ospreys often compete for the same foraging and nesting areas. Eagles often push ospreys into less suitable, less productive areas. Ospreys are sometimes relegated to smaller bodies of water where they are more difficult to detect. Quality habitat for eagles and ospreys persists on the Ottawa.

The data below shows that osprey and eagle productivity appears to have decreased over the last few years on the Ottawa. However, it is expected that there may be some natural variation due to factors beyond the Forest’s control, such as weather conditions in any given year, or mortality of adults once they leave the Ottawa (on wintering grounds and/or during migration). Factors such as these could affect the number of returning breeding adults.



**Note:** Osprey data for 1997 and 1998 were lost.



The Ottawa will continue to work with agencies and groups such as the Departments of Natural Resources for both Michigan and Wisconsin, to monitor eagle and osprey breeding success on the Forest, as well as threats to habitat. Protection of ospreys and eagle habitat through the efforts described above will continue.

### **Remote Habitat Area Road Density**

The Remote Habitat Area (RHA) is approximately 296,000 acres of the Ottawa comprised of parts of several management areas in the southern part of the Forest. The objective to maintain a relatively low density of roads open to passenger vehicles, primarily to provide habitat for wildlife species that require some degree of remoteness from human activity. These species include, but are not limited to, the gray wolf, black bear, American marten, northern goshawk, red-shouldered hawk, and others. The road density objective for the RHA is an average of less than or equal to 1 mile of road open to passenger vehicles (2- and 4-wheel drive) per square mile of NFS lands.

**Table 19. Road Density in Remote Habitat Area.**

<b>Year</b>	<b>Open System Roads (mi)</b>	<b>Road Density (mi/mi<sup>2</sup>)</b>
2006	272	0.59
2007	253	0.55

The 0.04 mi/mi<sup>2</sup> decrease in road density from 2006 is primarily a result of the recent road assessments conducted during the revision process for the Ottawa NF MVUM. Additionally, there are a few large vegetation projects in the area that included decommissioning some roads as part of their objectives. It is likely that more adjustments will be made as the MVUM evolves over the next few years and through other forest management activities.

### **Canada Lynx**

Canada lynx are listed as federally threatened throughout the contiguous United States, and endangered in the State of Michigan. They were extirpated from the west UP region during large-scale logging that accompanied settlement of the area during the 1880s-1920s. Periodic immigration of lynx into the UP has been documented since that time, correlating with snowshoe hare population cycles within core lynx range located north of Lake Superior. That is, when hare

populations decline, lynx disperse far and wide to find prey. Lynx are a boreal species, and populations in Ontario are considered viable and secure. However, lynx do not become established as permanent residents of the UP as a result of the more-or-less decadal influxes. The western UP is not prime habitat for this boreal species, as described in the “Broad-scale Assessment of the Ottawa National Forest Relative to Canada Lynx” (Broad-scale Assessment) (2005).

As part of Forest Plan revision, the Ottawa decided to manage the Forest to create favorable dispersal conditions for immigrating lynx. In large measure this decision equates to providing suitable habitat for snowshoe hare—the main prey item for lynx. Hares attain maximum densities in landscapes with abundant low-to-the-ground conifer cover and abundant deciduous browse within hares’ reach. These conditions are best provided in a young-forest landscape, or in swampy alder/conifer terrain.

Overall, the Forest has not been meeting the habitat metrics described in the Forest Plan relative to lynx habitat. For example:

Aspen Forest:

- only about 160 acres of aspen and about 250 acres of aspen/fir were clearcut in FY 2007 (total of about 410 acres), which is below the pace of 1700 acres/year required to meet the aspen targets presented in the Forest Plan;
- approximately 22% of the aspen type is between 5-20 years of age, compared to the Forest Plan’s Guideline stating 25% of the aspen acreage should be between 5-20 years of age.

Jack Pine:

- only about 113 acres of jack pine were clearcut in fiscal year 2007;
- about 27% of the jack pine is between 10-30 years of age, compared to the Forest Plan’s Guideline of 30%.

Lowland Conifers:

- essentially no harvesting was done in the lowland conifer forest types, which was identified in the Forest Plan as a source of optimal hare habitat that could be explored for regeneration opportunities;
- only about 53 acres of lowland conifer types, out of 23,605 acres on suited lands, are between the ages of 0-9 years.

Spruce/Fir Forest:

- no regeneration harvesting was done in the spruce/fir forest type in fiscal year 2007;
- only about 88 acres are currently between 0-9 years of age out of nearly 31,000 acres of spruce/fir forest type;
- approximately 10% of the spruce/fir forest type is between 10-40 years of age, compared to the Forest Plan guideline indicating 30% as the desired level.

Since early 2006, winter mammal tracking has been conducted in primary snowshoe hare habitat areas, and every other year in the secondary areas, with no lynx tracks detected. The Ottawa has been devoting about 15 person days per winter to this effort. Additionally, pre-project winter mammal tracking surveys in our timber management areas are completed, looking for lynx in the most-likely habitats within those areas. This is approximately 10 person days per winter. No lynx have been detected during these surveys.

No reports of lynx presence were received in fiscal year 2007. However, the Forest received two unconfirmed reports of lynx in the summer of 2006 along M-28 east of Trout Creek, MI. Tracking and baiting efforts to confirm the sightings in the area were unsuccessful.

The western UP has a bobcat hunting and trapping season (October 25-March 1) with mandatory registration by hunters and trappers. No reports of lynx killed or seen have been reported to Michigan DNR as a result of these seasons. Additionally, Michigan DNR has conducted thousands of miles of winter furbearer transects across the entire UP for many winters, and have not detected lynx tracks in several years. Specifically in 2007, Michigan DNR conducted 6,567 miles of winter tracking surveys across the entire UP and no lynx tracks were seen.

The Forest is behind in regenerating forest types important to lynx, when compared to the metrics described in the Forest Plan. This is due to several factors:

- Overall timber markets were depressed in fiscal year 2007, and many timber sale purchasers did not harvest their stumpage due to poor markets.
- Volume of timber offered for sale by the Ottawa was down (42 MMBF in 2006 and 39 MMBF in 2007) compared to projected volumes offered under the new Plan of about 90 MMBF per year.
- The past few winters have not resulted in optimal winter harvest conditions, which impacted aspen regeneration opportunities.

There is a very low likelihood that a population of resident lynx exists in the western UP at this time. Data gathered by Ottawa staff and Michigan DNR Wildlife staff have been extensive in geographic coverage, and extend over many years, with no evidence of lynx presence detected. We continue to monitor suitable habitat for lynx presence.

### ***OHV Impacts to Wildlife***

Motorized access can impact wildlife species. These impacts can be measured indirectly by analyzing the total open road and trail mileages. Some species, such as wolves and black bears, seek more remote habitat, and they may be impacted more than other species by higher road densities. Since lower standard roads (OML 1 and 2) are more likely to transect and impact wildlife habitat, and are most likely to be used most by OHVs, the focus of this discussion will be on the potential impacts from OHV use on the Ottawa.

Potential negative impacts to wildlife and wildlife habitat by OHVs can be characterized as habitat loss or a loss in suitability. Habitat loss can be described as degrading portions of the suitable habitat and leaving it unfavorable to wildlife. Habitat may become unfavorable due to a change in the plant or animal composition or changes in disturbance levels. Habitat loss is closely tied to other impacts such as loss of native plants, invasive species introduction, disturbance, and erosion (Stokowski and LaPointe, 2000). Wildlife can be negatively impacted by the presence and noise of OHVs, although some animals (whitetail deer, for example) may become habituated to these vehicles over time.

Cross-country OHV use on unauthorized trails can damage wetlands, can cause harm to wetland species, create habitat destruction, degrade water quality, and spread invasive species (plants, animals and disease-causing pathogens). (Stokowski and LaPointe, 2000)

The status of the general wildlife habitat condition can be inferred from the relative mileage of roads and trails open to OHVs compared to the total mileage of roads and trails on the Ottawa.

Higher mileages can be translated to mean that there may be potentially more disturbance and degradation of wildlife habitat on the Ottawa. The inverse can be applied to lower mileages of roads and trails open to OHVs.

At the present time, OHV use on the Ottawa is restricted to designated Operational Maintenance Levels (OML) two (2) roads and motorized trails (OML 1 roads). There may be some OML 3 roads designated for OHV use in the future. The Ottawa will continue to monitor the amounts and types of roads and motorized trails designated open to OHV use in the future. Roads and motorized trails across the Forest will be monitored for OHV designation or closure based on a few processes. Roads and trails will be evaluated through project analysis, ranger district reviews, and as a response to public comments.

With only one year of data (2007) to monitor the open road mileage on the forest, there have not been enough survey years to determine any trends in the amount of open mileage. However, the restriction of cross-country use on the Ottawa is expected to benefit wildlife and wildlife habitat. The restriction of cross-country use is expected to lessen wildlife habitat degradation and direct disturbance to wildlife species. More data and further analysis is needed to better analyze the potential impacts of OHVs to wildlife and wildlife habitat on the Ottawa.

### ***Minerals and Mineral Materials***

During FY 2007 one permit for private mineral exploration was issued and activities occurred. In addition, one other private mineral exploration project was proposed as well as a prospecting proposal for federal minerals. Analysis began, but was not completed for these additional two projects during FY 2007. Both are anticipated to have decisions signed in 2008.

One gravel/sand pit development plan was completed. Exploration occurred to evaluate the expansion potential of five pits. In addition, 12 new permits were issued for mineral material use.

### ***Land Adjustment***

During FY 2007, one land exchange was completed. This exchange resulted in acquisition of lands within a designated Wild and Scenic River corridor. In addition, a segment of snowmobile trail system was also acquired. This exchange reduced the amount of landline that the Forest needs to maintain.

Under the Forest Service Facility Realignment and Enhancement Act of 2005, two administrative sites were sold during FY 2007. One site, approximately 20 acres in size, was sold near Ironwood following a determination that it was not adequate for future development as an administrative site for co-locating the Forest Supervisor's Office and Bessemer Ranger District. The other site, the Bessemer Ranger Station location, was sold as part of implementation of the Ottawa's Facilities Master Plan, which called for the co-location of the Supervisor's Office and Bessemer Ranger District Offices.

### ***Hazardous Fuels Objectives***

In 2007, the Ottawa accomplished its hazardous fuels targets with the exception of one insect-killed jack pine unit that failed to receive any bids and was held over for re-bid in the next fiscal year. The Ottawa's goal is to perform hazardous fuels risk assessments across the forest as well



as the development of a five year fuels treatment plan in order to ensure that the highest risk acres are being treated. Work is currently underway to achieve these goals.

### ***Wildland Fire Use***

In FY 2007, the Ottawa utilized prescribed fire as a tool to reestablish wildlife open areas on approximately 63 acres. This was the first time in approximately 10 years that the forest has been able to successfully complete a prescribed burn. The future fuels management objectives for the forest include the use of prescribed fire as well as utilizing wildland fire use (WFU) as resource management tools.

In FY07 the Ottawa responded to 32 wildland fires of varying causes. The total acreage burned was 1,197, of which approximately 325 acres were National Forest Service (NFS) acres. The Baraga Bump wildfire (1,121 acres) is believed to have started as a result of an escaped prescribed burn in the jack pine forest type of the Baraga Plains ecosystem. The wildfire began on NFS land and quickly moved onto state forest land. The Baraga Bump fire was driven by high winds and exhibited crown fire stand replacement fire behavior, which is consistent with the historic jack pine ecosystem fire regime. The immediate result was the formation of a mineral soil seedbed and the release of billions of seeds from the serotinous jack pine cones. The soil type associated with this ecosystem is generally dry, sandy soils of glacial outwash or lacustrine origin and thus the expectation is that the jack pine will naturally regenerate into pure stands throughout the entire 1,121 acres. The expected growth rate would be rapid early growth during the first 20 years with free-growing seedlings reaching breast height in 5 to 8 years. With the natural regeneration of pure young stands of jack pine, it is expected that favorable habitat for the federally endangered Kirtland's warbler will result and persist in this area for the next 20 years.

There is currently an effort underway to work with our interagency partners to develop a long range plan for the entire 30,000 acre Baraga Plains ecosystem and it will likely include up to 9480 acres of NFS land. This plan would seek to restore the jack pine and sand plains ecosystems and to identify other areas which could make suitable habitat for native species as well as federally listed sensitive, threatened, and endangered species.

### ***Road Decommissioning***

Approximately 140 miles of unneeded roads have been identified for decommissioning each year through the vegetative management planning process. Most of these roads receive little or no use and are decommissioning naturally by growing in on their own. Between 10 and 20% of these roads are being blocked using berms, stumps, boulders, culvert removal etc. to facilitate the "natural" process. Another 5 to 10% are decommissioned more extensively by not only blocking the entrances but also receiving additional culvert removal, waterbarring, riprapping, scarifying, seeding & mulching and tree planting along the entire length of the roadway.

### ***Findings***

Monitoring activities and eventual evaluation of the data in this and future reports will make it possible to chart progress toward the direction outlined in the Forest Plan. The evaluation process determines whether the observed changes are consistent with Forest Plan desired future conditions, goals, objectives and what adjustments may be needed.

Monitoring activities in this year of Forest Plan implementation will contribute to more in depth evaluation reports in future years. This report was accomplished through an interdisciplinary process involving Forest Service resource specialists and participation from many of our partners.

## **Future Monitoring Needs**

Monitoring needs for 2008 have been outlined in the 2008 Monitoring Workplan. As in previous years, the 2008 Workplan was developed with an interdisciplinary review of the monitoring questions in the Forest Plan Monitoring Guide. The review included a prioritization of monitoring items included in each years monitoring plan and uses criteria such as requirement by law or regulation, ecological significance, management significance or response to a key issue.

## Preparers

The following Ottawa National Forest employees have contributed to the preparation of this report.

Steve Babler	Wildlife Biologist
Bill Baer	Recreation Program Manager
Brian Bogaczyk	Wildlife Biologist
Susan Davis	Timber Resource Specialist
Dave Dillman	Wildlife Biologist
Karen Dunlap	Environmental Coordinator
Sean Dunlap	Aquatic Ecologist
Joel Enking	Assistant Forest Planner/Acting Forest GIS Coordinator
Bob Evans	Wildlife Biologist
Chuck Frank	Lands Program Manager
Dean Karlovich	Fire Management Officer
Lisa Klaus	Public Affairs Officer
Katie Koch	Integrated Resource Analyst
Loreen Lomax	Forest Archaeologist
Sarah Mase	Forest Soil Scientist
Robin McCartney	Zone GIS Coordinator
Mike Mayer	Forest Planner
Steve Plunkett	Wildlife Biologist
Stephen Popkowski	Forest Engineer
Mary Rasmussen	Tribal Liaison
Len Scuffham	Forest Silviculturist
Gayle Sironen	Zone GIS Coordinator
Jim Sobrack	Timber Program Manager
Dave Steffensen	Silviculturist
Susan Trull	Forest Botanist
Randall Wollenhaup	Wildlife Biologist

## Literature Cited

- Beyer, D.E. Jr., B.J. Roell, J.H. Hammill, and R.D. Earle. 2001. Records of Canada Lynx, *Lynx canadensis*, in the Upper Peninsula of Michigan, 1940-1997. *The Canadian Field Naturalist*. Vol. 115:234-240.
- Dunlap, M. S. 2006. Ottawa National Forest Ephemeroptera-Plecoptera-Trichoptera (EPT) Management Indicator Species Monitoring Protocol and Information Manual. 41 p.
- Dunlap, M. S. 2007. Exotic Earthworms on the Ottawa National Forest: Summary of findings from earthworm and botany surveys, 2002-2006. Unpublished Report, USDA Forest Service. Ironwood, MI. 8 pp.
- Kirschbaum, K. and P. Watkins. 2000. "Pandion haliaetus" Osprey(On-line). Animal Diversity Web. Accessed March 20, 2008 at [http://animaldiversity.ummz.umich.edu/site/accounts/information/Pandion\\_haliaetus.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Pandion_haliaetus.html)
- Michigan Dept. of Natural Resources. 2007. Michigan Frog and Toad Data Survey - Annual Data Summaries, 1996-2007. [http://www.michigan.gov/dnr/0,1607,7-153-10370\\_12143\\_12194---,00.html](http://www.michigan.gov/dnr/0,1607,7-153-10370_12143_12194---,00.html)
- Peters, B. and D. Lodge. 2007. Annual report covering 2006 cost share agreement (and including results from summer 2007). University of Notre Dame Environmental Research Center. 12 pp.
- Stokowski, P.A., and C.B. LaPointe. 2000. Environmental and Social Effects of ATVs and ORVs: An Annotated Bibliography and Research Assessment. School of Natural Resources, University of Vermont, Burlington, VT. 32pp.
- USDA Forest Service. 2005. Broadscale Assessment of the Ottawa National Forest Relative to Canada Lynx. Unpublished Report. 69 pages plus appendices.
- USDI U.S. Fish And Wildlife Service. 2007. National Bald Eagle Management Guidelines. U.S. Dept. of Interior - Fish and Wildlife Service. Washington, DC.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326 W. Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.