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Finger Lakes National Forest

Monitoring Program Trends Report

Fiscal Years 2006 to 2013



Grassland Maintenance with Prescribed Fire

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**Monitoring Program Trends Report
Fiscal Years 2006 to 2013
Finger Lakes National Forest**

USDA Forest Service, Eastern Region
August 2015

Monitoring and evaluation of forest plans is required by the National Forest Management Act and associated National Forest System Land Management Planning Rule (planning regulations) at 36 CFR 219 dated September 30, 1982. Monitoring plans provide what resources should be monitored to help determine how well management activities are meeting forest plan components including goals, objectives, desired future conditions, and forest-wide and management area standards and guidelines. The Finger Lakes National Forest (FLNF) monitoring plan is described in Chapter 4 (Monitoring and Evaluation) of the FLNF Land and Resource Management Plan (Forest Plan) revised in 2006. Monitoring and evaluation of select resources included in the monitoring plan has been conducted since the completion of the revised Forest Plan. Monitoring results and the evaluation of information collected have been documented in monitoring and evaluation reports annually through 2013. This report documents recommendations to change Forest Plan components based on evaluation and conclusions from identified resource trends associated with each monitoring question.

1. Introduction

The revision of the FLNF Forest Plan was completed in 2006 under the authority of the National Forest Management Act and associated National Forest System Land Management Planning Rule, or planning regulations (36 CFR 219 dated September 30, 1982). The intent of the monitoring program cited in the rule (36 CFR 219.12(4)(k)), specifically the annual monitoring and evaluation reporting process, was designed to determine Forest Plan implementation effectiveness. In other words, it serves as the basis to determine how well management activities are meeting Forest Plan direction and identifying important discernable resource trends.

Monitoring questions and associated measurement indicators are driven by one or more Forest Plan components (goals, objectives, desired future conditions, and standards and guidelines). Evaluation of information collected to answer monitoring questions provide Forest Service resource specialists with the basis to determine whether changes are needed to Forest Plan components. These changes can be made through the amendment process to ensure the Forest Plan remains current by adapting to new information and changed conditions. Evaluation of monitoring information may also provide the basis for design changes to management activities to better meet Forest Plan direction.

Annual monitoring and evaluation reports were completed each year to document results of monitoring from fiscal year 2006 to fiscal year 2013. These reports describe monitoring questions by resource category, provide data pertaining to the effects and effectiveness of Forest Plan management direction, and discuss various resource management efforts implemented during this period. The *Finger Lakes National Forest Monitoring Program Trends Report - Fiscal Years 2006 to 2013* documents discernable change to resource conditions identified from annual monitoring and evaluation reports since Forest Plan implementation began in 2006. It includes the evaluation and key conclusions for each monitoring question, and recommendations for potential change to Forest Plan components, the monitoring program, or project design for more effective implementation of management activities to meet Forest Plan direction.

2. Trends Identified from Monitoring Reports – Fiscal Years 2006 to 2013

Forest Service staff reviewed annual monitoring and evaluation reports from fiscal years 2006 to 2013 to identify discernable resource trends specific to the effectiveness of implementing Forest Plan direction. Each monitoring question was evaluated including recommendations to potentially improve plan components by changes to Forest Plan direction, development of more meaningful monitoring questions, or design changes to management activities. The primary questions they attempted to answer included:

- What has been the overall trend for the monitoring question (resource)?
- Has the monitoring resulted in meaningful information and understanding of Forest Plan components?
 - (Implementation) Have management activities been implemented according to Forest Plan direction?
 - (Effectiveness) Is the Forest Plan achieving desired outcomes?
 - (Validity) Does the Forest Plan need to be changed?
- Does the monitoring item (question, indicator/measure, monitoring protocol/methodology) need to be continued, dropped from further consideration, or changed?

The following section provides the evaluation, conclusion, and recommendation for each monitoring question identified from the review of annual monitoring and evaluation reports from fiscal years 2006 to 2013. The order of monitoring questions and associated information follows the same alphabetical order of resource categories found in the *2007 Finger Lakes National Forest Monitoring and Evaluation Guide*.

Aquatic Habitat

Monitoring Item Name: Pond Habitat

Monitoring Question: To what extent do Forest Service Management activities contribute toward restoration and maintenance of habitat for native and desirable non-native species?

Detailed Monitoring Question: Are habitat quality and quantity being maintained in FLNF ponds? Is aquatic vegetation encroaching upon more of the surface area of ponds? Are water control structures well maintained and support adequate water levels in ponds?

Monitoring Driver: Forest Plan Goal 4 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006, and 2008 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: Forest Plan objectives state management should provide suitable fish habitat in ponds for resource protection and recreational fishing purposes. Aquatic vegetation is a very important component in pond ecology. Pond vegetation is used by many fish species as spawning areas and it provides critical hiding cover for juvenile fish. Often, it provides the only cover for prey species to escape predators. Dense root and leaf structure serve as excellent habitat of insects and invertebrates. The matrix of plant stems and leaves traps organic material and promotes periphyton (attached algae) and attracts zooplankton, both of which serve as a food source for many aquatic organisms.

Aquatic vegetation can also be so prolific that it becomes a detriment to aquatic biota by reducing oxygen and /or light levels. This can be caused by either native or non-native vegetation reaching “nuisance” levels. High levels of decaying organic material in a pond, combined with reduced light when covered with ice and snow can create the low oxygen levels that kill fish during the winter.

Habitat quality and quantity appear to be meeting objectives. Aquatic invasive plants (curly leaf pondweed, water chestnut, and eurasian watermilfoil) are a serious concern for the FLNF ponds that support fisheries. Observation made by walking the edge of ponds in 2010 identified nine of 26 surveyed ponds as having populations of at least one non-native aquatic species. As of 2011, none of the ponds that support recreational fisheries were infested. There have been no substantial issues associated with water control structures and associated water levels noted from monitoring.

Recommendations: No change to the monitoring question. The next anticipated monitoring and evaluation report for this monitoring question is 2014.

Aquatic Populations - Lakes

Monitoring Item Name: Pond Fisheries

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: Are fish populations in ponds maintained at levels to sufficiently support recreational fisheries or natural reproduction. If not, is supplemental stocking or habitat improvement required?

Monitoring Driver: Forest Plan Goal 4 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006, and 2008 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: In general, monitoring data indicates that ponds are supporting healthy fish populations. Many ponds on the FLNF contain a healthy population of largemouth bass (*Micropterus nigricans*). This is the result of a Forest-wide stocking program that began in 1981 when approximately twenty ponds were stocked with bass. Fish surveys in the late 1980s focused on documenting bass survival and identifying the ponds where bass were being sustained through natural reproduction. This pond monitoring has continued since 2006.

The Forest Service management objective is to maintain quality wildlife ponds throughout the FLNF through fish habitat improvements and to enhance recreation fishing opportunities by improving access and aquatic resource education and interpretation. In addition to stocking largemouth bass, the Forest Service stocks brook trout (*Salvelinus fontinalis*) and rainbow trout (*Oncorhynchus mykiss*) in Foster, Potomac, and Ballard ponds to provide recreational fishing opportunities for a highly desirable angling species. Supplemental stocking of non-game fish such as bluegill (*Lepomis macrochirus*) and golden shiner (*Notemigonus crysoleucas*) has also been implemented as needed based on data gathered from monitoring surveys.

Recommendations: No change to the monitoring question. The next anticipated monitoring and evaluation report for this monitoring question is 2014.

Fire

Monitoring Item Name: Fire Agreements

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How many agreements for fire management have been developed and maintained with outside partners?

Monitoring Driver: Forest Plan Forest-wide Standard and Guidelines, Chapter 2.3.11 – Fire Management.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2007 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: Partnership agreements provide valuable services that help the Forest Service achieve desired management objectives associated with fire management. The Forest Service has developed five cooperative fire protection agreements and partnerships with the Volunteer Fire Departments (Table 2-1). These agreements set the framework for responding to wildfires on National Forest System land and sharing resources when needed. Management of these agreements is continuous and on-going, requiring coordination with all parties within the agreement as well as with grants and agreement specialists within the agency. The agreements are re-written every 5 years, with operating plans completed on an annual basis. The agreements were last updated in 2010.

Additional partnerships to address fire management include:

- The continued maintenance of the strong partnerships with the Department of Defense (DOD). Agreements are maintained with the U.S. Army Environmental Center (State and Private Forestry-NA) for Ft. Drum (Army) in New York, Westover Air Reserve Base (Air Force) in

Massachusetts, and New Boston Air Force Station in New Hampshire. Although each has separate agreements, the scope of work remains fairly the same: to plan and implement prescribed burns for the reduction of hazardous fuels, and to provide fire training to DOD employees.

- The Green Mountain and Finger Lakes National Forests have an agreement with the Northeastern Forest Fire Protection Compact, which includes New York, New England States, northeastern Provinces of Canada and the other local federal fire management agencies. The compact provides interagency fire planning benefits.
- The Albany Pine Bush Preserve Commission in New York State, and the Green Mountain and Finger Lakes National Forests have a cooperative fire protection agreement that was created and signed in 2010 to allow for the sharing of resources during wildfire or prescribed fire.
- In October 2011, the Forest Service started the process of creating a Master Cooperative Wildland Fire and Stafford Act Response Agreement which now exists for FLNF and Northeast Area State & Private Forestry, the State of New York Department of Environmental Conservation, USDOJ Fish and Wildlife Service, and the USDOJ National Park Service. This cooperative fire protection agreement allows for the sharing of resources for a wide range of fire and all-hazard related management activities. An annual operating plan is updated and reviewed by all parties each year.

Table 2-1: Fire department agreements with the Finger Lakes National Forest.

Fire Department Name	Agreement Last Updated
Lodi Fire Department	2010
Ovid Fire Department	2010
Trumansburg Fire Company	2010
Interlaken Fire Department	2010
Schuyler Fire Company	2010

Recommendations: No change to the monitoring question. Follow up with the towns to ensure fire protection agreements are updated for use by 2015. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Fire Prevention

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How many wildfires were suppressed with no reportable accidents/injuries or damage to private property? How many acres of private property burned from fires with ignition on Forest Service land?

Monitoring Driver: Forest Plan Forest-wide Standard and Guidelines, Chapter 2.3.11 – Fire Management.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: Based on vegetation conditions and observed fire weather conditions, fire preparedness and other fire management actions were adequate and consistent with the level of risk. Wildland fires were suppressed in a manner that protected firefighter safety and avoided damage to private property. There were 4 reported wildland fires occurring on National Forest System lands from 2006 to 2013 totaling approximately 1.1 acres (Table 2-2). All fires were of short duration, low in complexity, and required minimal fire staff for suppression efforts. None resulted in infrastructure destroyed. More importantly, no major injuries associated with fire suppression activities were reported.

Table 2-2. Reported wildfires on FLNF from fiscal years 2006 to 2013.

2006	2007	2008	2009	2010	2011	2012	2013	Total
<i>Number of Wildland Fires</i>								
0	0	0	0	1	0	0	3	4
<i>Acres Burned</i>								
0	0	0	0	0.1	0	0	1	1.1

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Hazardous Fuels

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: To what extent have hazardous fuels been reduced?

Monitoring Driver: Forest Plan Forest-wide Standard and Guidelines, Chapter 2.3.11 – Fire Management.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: Hazardous build-up of fuels can increase the risk of wildland fire spread that starts in their vicinity. Increased fuel loading can also result in larger wildland fires occurring within the wildland urban interface (WUI) areas. Increased fuel loads can also lead to more intensive burns which can damage natural resources. Prescribed burning and some mechanical treatments (such as using a brush saw, mower, or masticator) can help to reduce these fuels. Additionally, some treatments that are implemented to achieve other resource management objectives, such as timber harvesting or wildlife habitat improvement, can have a secondary benefit of reducing hazardous fuels. Grazing can also have secondary benefits by reducing hazardous fine fuels such as grass and shrubs. Table 2-3 shows the trend of prescribed fire, mechanical treatments, and grazing from fiscal years 2006 to 2013.

Table 2-3: Prescribed fire and mechanical treatment trends from fiscal years 2006 to 2013.

Treatment (Acres)	2006	2007	2008	2009	2010	2011	2012	2013	Total
Prescribed Fire	0	151	90	81	85	0	115	365	887
Mechanical Treatment	0	0	41	40	0	0	0	0	81
Mowing/Grazing	none reported	5,000	6,000	6,000	3,941	none reported	1,613	none reported	22,554
Total Acres	0	5,151	6,131	6,121	4,026	0	1,728	365	23,522

All hazardous fuel treatments were effective in reducing wildland fire risks. Hazardous fuels treatments also provided secondary benefit objectives, which include ecosystem restoration, and wildlife habit maintenance and improvement by way of returning wildlife openings to early successional habitat.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Prescribed Fire

Monitoring Question: What are the effects of management practices prescribed by the 2006 Forest Plan?

Detailed Monitoring Question: Is prescribed fire being effectively used as a tool to meet management objectives set forth in the Forest Plan? Are prescribed burns meeting the fire effect objectives set forth in each burn plan?

Monitoring Driver: Forest Plan Goal 5 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The use of prescribed fire is an integral component of the FLNF fuels treatment program which started in earnest during the mid-1970s to achieve multiple vegetative management objectives. Monitoring the effectiveness of prescribed burns helps support decisions to use fire to meet certain objectives during the planning process. Prescribed fire can be used to meet specific objectives in management areas that allow its use. Some of these objectives include:

- Reduce hazardous fuel loading in the Wildland Urban Interface to reduce the risk of intense wildfire
- Create, maintain, or improve wildlife habitat (grassland, shrubland, and permanent upland openings)
- Prepare sites for restoration of species such as oak, pine, and aspen
- Create, maintain or improve plant community composition by influencing the scale and pattern of vegetation across the landscape including changing successional patterns while maintaining ecological functions and processes
- Control interactions between plant communities and insects and/or disease
- Promote blueberry production
- Create or maintain scenic vistas
- Maintain and enhance rangeland

There are two main objectives associated with every burn plan for the FLNF fire program, one objective focused on broad resource results, and the other targeting specific objectives resulting from fuels reduction. In general, the resource objectives are:

- to truncate approximately 80 percent of invading woody vegetation consisting of shrubs and tree seedlings/saplings through repeated fire entrances
- to promote an increase of native grasses and forbs to cover approximately 90 percent of the unit by repeated fire entrances, maintaining an open grass like state.

On a site-specific level, most of the burn plans had prescribed fire objectives (and acceptable range of results) to reduce the 1-hour fuels by 75 percent and 10-hour fuels by 50 percent.

In general, post-burn monitoring of prescribed fire implementation showed success in reducing overall 1-hour and 10-hour fuel loads to acceptable prescribed levels. Mortality of small diameter woody vegetation (shrubs and tree seedlings/saplings) were at acceptable levels for prescribed burns that were implemented further into the spring season as opposed to burns implemented in early spring which produced less mortality. In all burned units, there were small increases of native grasses and forbs. Fire Regime Condition Class improvements were also obtained.

Recommendations: For future monitoring, an effort should be made to track fire weather and behavior, as well as post-burn vegetative effects by recording burn day data and establishing photo points (taken both before and after burning). This information will provide a biology-based study on fire effects as related to burn conditions. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Forest Health

Monitoring Item Name: Tree Health

Monitoring Question: To what extent are air quality and atmospheric deposition affecting sensitive components of the forest ecosystem?

Monitoring Question: How is tree health changing over time from the influence of acid deposition, climate change, invasive species and other environmental problems, in combination and separate from land management practices?

Monitoring Driver: Forest Plan Goal 8 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any annual monitoring and evaluation report.

Evaluation and Conclusions: Long-term changes are occurring in FLNF ecosystems. Environmental changes such as changes in climate, atmospheric deposition, and the spread of non-native invasive species are known to have effects on forest vegetation and soils. Forest managers must better understand these changes and their effects to make sound land management decisions in the future.

Forest Service staff identified the need to do long-term monitoring on Green Mountain National Forest (GMNF) and FLNF to track changes in vegetation and soil over time. On GMNF, staff worked with partners to develop the Long-term Ecosystem Monitoring Project (LEMP) and established 20 plots across a variety of common ecosystems. Vegetation and soil measurements were taken at these plots from 2008 to 2011. Costs of establishing these plots were greater than expected, and as a result, the agency did not have the staffing or funding capacity to replicate this work on FLNF.

There is still a desire to replicate this study for environmental changes on FLNF consisting of five plots, based on the design implemented on GMNF with modifications to be developed prior to the next sampling interval scheduled for 2018. Similar to GMNF, the project will need partners such as the Natural Resources Conservation Service and a local Youth Conservation Corps or similar organization to help with plot establishment and sampling. Environmental change is becoming more obvious with time, indicating that long-term monitoring plots are even more important in tracking the effects of these changes over time.

As this monitoring activity has not yet been established on FLNF, there are no results or conclusions to report at this time.

Recommendations: This monitoring item should be broadened to include all vegetation measures (tree, sapling, cover, structure, down wood) associated with the LEMP. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Increase of Destructive Insects and Diseases

Monitoring Question: Are insect and disease levels compatible with objectives for maintaining healthy forest conditions?

Detailed Monitoring Question: To what extent have destructive insects and disease organisms increased?

Monitoring Driver: Forest Plan Forest-wide Standards and Guidelines, Chapter 2.3.10 Forest Health and Disturbance Processes - Pests, Diseases, and Non-Native Invasive Species.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: This monitoring item helps track trends in insect and disease (I&D) activity on the FLNF. Monitoring of insect and disease pathogens can be employed to determine when, how much, and what kinds of management actions, if necessary, should take place to prevent or suppress undesirable I&D agents. As FLNF provides a portion of host material for a variety of naturally occurring and introduced I&D agents found within the State of New York, this monitoring element is best undertaken in a more “landscape” context with adjacent landowners, municipalities, and local, State and federal monitoring organizations. For instance, monitoring emerging insects or disease agent threats, such as the emerald ash borer (*Agrilus planipennis*) and an exotic wood wasp (*Sirex noctilio Fabricius*), has become a regional monitoring effort. In this case, early detection efforts are the combined focus of research organizations at the State, federal, and university levels.

Significant damage from forest tent caterpillars (*Malacosoma americanum*) occurred starting in 2006 with detection of approximately 228 acres of hardwood defoliation across FLNF. This increased to approximately 1,364 acres in 2007 but began to subside by 2009.

A 2009 field visit by Cornell University entomologist staff identified hemlock wooly adelgid (*Adelges tsugae*) in the Caywood Point area. In response, *L. Nigrinus* predatory beetles were released at the infestation site in October 2009. Monitoring in the fall of 2010 indicated the beetle had become established but mortality appeared to have increased. Hemlock wooly adelgid populations continued to increase through 2012. An area of high value hemlock was planned for systemic application of *imidicloprid* and basal bark application of *dinotefuran* on 300 large hemlocks covering 134 acres in seven stands at Caywood Point in 2014.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Prescribed Burning Effects on Residual Trees

Monitoring Question: Are the effects of Forest management, including prescriptions, resulting in significant changes to productivity of the land?

Detailed Monitoring Question: What effects has a prescribed burn conducted in 1991 had on the residual trees and regeneration for a stand along the Interloken Trail?

Monitoring Driver: Forest Plan Goal 9 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: The Forest Plan encourages using innovative management practices such as prescribed burning as a demonstration applying ecosystem approaches to forest management. A prescribed burn area implemented along the Interloken Trail in May 1990 was chosen to determine fire

effects on residual trees and regeneration. The sample design and establishment by USDA Forest Service State and Private Forestry and SUNY-ESP include two 1/5-acre plots to monitor the long-term effects of a prescribed burn conducted in May 1990. The plot centers were marked with metal fence posts and selected trees identified with a driven wire and a numbered aluminum tag. The trees have been measured and the condition noted. Although annual measurements for diameter breast height (DBH) growth, morality, and regeneration have been collected annually since plot establishment through 2004, subsequent remeasurement post Forest Plan revision is scheduled every 5 years. No plot information or data evaluation has been reported since 2004.

Recommendations: No change to the monitoring question. Follow-up on plot conditions and data collection since 2006. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Heritage

Monitoring Item Name: Heritage Resource Program Objectives

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Have Heritage Resource program management objectives related to: backlogged site evaluations; meeting curation guidelines; developing a Geographic Information Systems (GIS) model for prehistoric site locations; increasing partnerships for Section 110 activities; consulting with State Historic Preservation Officers (SHPO) and Tribes; and incorporating heritage components into historic building management plans been addressed?

Monitoring Driver: Forest Plan Goal 10 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Every 5 years. Included in the fiscal years 2006, and 2008 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The FLNF has located more than 100 historic period archaeological sites, but only three prehistoric archaeological sites. The condition of most of these sites is fair to good, with very few vandalized or severely disturbed sites. There is one standing structure that is a significant historic property: the “Queen’s Castle,” located at Caywood Point and listed on the National Register of Historic Places. Section 110 (“Heritage outreach”) activities on FLNF have been numerous since 2006. The Forest Service partnership with the Backbone Ridge History Group continues with an emphasis on historic cemetery maintenance. The Forest Service relationship with the Western Michigan University archaeological field and research team continues which included a “public archaeology day”; site evaluation backlog was addressed tangentially by improving the quality of information in the Forest Service site data base (“I-Web”); and the restoration of the National Register of Historic Properties-listed “Queen’s Castle” was finalized as part of the Caywood Point project.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Monitoring Item Name: Heritage Resource Standards and Guidelines

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Have heritage resources within the “Areas of Potential Effect” of FLNF-sponsored projects (undertakings) been protected and managed according to Forest Plan Standards and Guidelines?

Monitoring Driver: Forest Plan Goal 10 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Every 5 years. Although only included in the fiscal year 2006 annual monitoring and evaluation report, this question is redundant with the Heritage Resource Site Protection monitoring item.

Evaluation and Conclusions: There has been proactive direction and attempts to enhance and preserve historic sites through hands-on vegetative management and stabilization activities. Most site-specific project activities on FLNF have the potential to affect one or more heritage resource sites. Considerable effort between resource staff have ensured heritage resource protective measures are included in project design including contracts and permits. Monitoring has indicated the application of Forest Plan Forest-wide and Management Area Standards and Guidelines, and project-specific design criteria or mitigation measures have successfully protected heritage resources from disturbance or damage. See also response to the Heritage Resource Site Protection monitoring item.

Recommendations: Consider combining with the Heritage Resource Site Protection monitoring item question. If retained, the next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Monitoring Item Name: Heritage Resource Site Protection

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Have Heritage Resources across FLNF been inventoried and protected?

Monitoring Driver: Forest Plan Goal 10 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Every 5 years. Included in the fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: Progress has been made to document baseline site conditions for the 100+ historical sites on FLNF. While direct observation is a reasonable and direct method for assessing site conditions, the frequent lack of baseline data has made it difficult to document change over time. Knowledge about the nature of changes caused by natural processes versus human activity over time will help inform the Forest Service about how to minimize these changes. It is relevant to note that the results of the 2006 SUNY Brockport archaeological field school research includes the conclusion that sites located in grazing allotments that otherwise appear (visually, at least) to be severely compromised do, in fact, yield interesting and useful data. Thus, the appearance alone (and visual surface evidence of site disturbance) does not mean the site is not worth protecting.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Human Dimensions

Monitoring Item Name: Forestry Education Sites and Products

Monitoring Question: To what extent have Objectives been attained?

Detailed Monitoring Question: Were sites established on the Forest and interpretation/education products produced for forestry education?

Monitoring Driver: Forest Plan Goal 12 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: Forest Plan objectives include the establishment of one site on FLNF for demonstration forests, discovery trails, or plots and other living laboratories for teacher/non-formal educator use. Objectives also include the delivery of at least one public interpretation and education product annually to better protect and encourage stewardship of resources through increased public Awareness. No information has been reported to indicate these objectives have met.

Recommendations: Remove this question from the monitoring program because its intent is redundant with the Teacher Professional Development in Forest Stewardship monitoring item.

Monitoring Item Name: Partnerships Maintenance and Enhancement

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Are partnerships active and effective on the Forest and are Forest Service personnel participating in partnership activities?

Monitoring Driver: Forest Plan Goal 15 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: Partnerships and collaboration are essential throughout all levels of the Forest Service. Forest Service staff have worked with partners to achieve social, economic, and ecological goals and objectives. Each year, staff have maintained relationships with existing cooperators and developed new ones. This collaboration has resulted in increased public service and improved land stewardship, both which enhance the Forest Service's effort to meet desired conditions. The Forest Service has very active partners and are dependent on partner relationships since 2006. Formal and informal agreements with state, county, local and other federal agencies, and non-profit organizations increase the amount of management and educational activities that occur on FLNF. Partnerships also increase the ownership that these entities have in Forest Service management activities.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Payments to Towns

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: What was the amount paid to each FLNF town through Payments in Lieu of Taxes (PILT), 25 percent fund or Secure Schools? What type of communications has occurred on this topic with each town?

Monitoring Driver: Forest Plan Goal 14 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: Communicating contributions helps inform municipalities of federal programs that impact their financial planning. Tracking payments to towns is a good measurement of contributions to economic sustainability of communities. There are two types of federal payments disbursed to towns that have National Forest System lands: 1) Payments in Lieu of Taxes (PILT); and 2) Public Law 106-393, Secure Rural Schools and Community Self-Determination Act of 2001 (SRS), reauthorized in 2008. Payments in lieu of taxes funds are directed to towns, and the Public Law 106-393 funds are directed to school districts. The Forest Service receives payment information for PILT and SRS funds from the Vermont State Treasurer's office. These fund disbursements are regularly communicated to towns within the FLNF boundary.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Teacher Professional Development in Forest Stewardship

Monitoring Question: To what extent have Objectives been attained?

Detailed Monitoring Question: Did teacher professional development in Forest stewardship occur?

Monitoring Driver: Forest Plan Goal 12 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Every 5 years. Included in fiscal years 2006 to 2011 annual monitoring and evaluation reports.

Evaluation and Conclusions: As a public land base that is close to several colleges and universities, it is a FLNF staff objective to further the understanding and management of sustainable management of natural resources. The Forest Service is committed to promoting an awareness of natural resource management and a strong conservation ethic. Included in the role of the FLNF is the importance of working with local schools and communities to provide educational opportunities on the Forest. Since 2006, Forest Service staff have provided multiple opportunities and assistance related to teacher professional development and opportunities to enhance the understanding of FLNF resources and management objectives.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2016.

Invasive Species Population

Monitoring Item Name: Non-native Invasive Species

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: To what extent are non-native invasive species impacting other Forest resources?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives, and Forest-wide Standards and Guidelines Chapter 2.3.10 Forest Health and Disturbance Processes - Pests, Diseases, and Non-Native Invasive Species.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The impact of non-native invasive plants (NNIP) has been monitored by surveying the extent of infestations in areas or sources of seeds or plant propagules that could be dispersed into areas considered important to protect. It also includes the results of treatment efforts, and in the future may include determinations of invasiveness. Up until 2009, monitoring efforts focused on surveying the extent of infestations in preparation for developing proposed invasive plant treatments across FLNF. That effort led to the completion of the *Invasive Plant Control Project* environmental assessment (EA) and decision dated September 2008 authorizing various NNIP treatments methods as infestations are identified. Monitoring treatment effectiveness is an important aspect of the adaptive management approach included in the invasive plant control project.

More aggressive invasive plant control efforts began in 2009 following the completion of the Invasive Plant Control EA including broadcast herbicide to treat knapweeds and thistles on over 1,100 acres of grasslands, and hand-application of herbicide to treat non-native invasive plant infestations along the road to Caywood Point. Control efforts on grassland areas continued through 2013. Other substantial control efforts implemented include the manual and follow-up herbicide spot treatments in the Cotton Mill project area. Experimental grazing carried out as a collaborative effort with Cornell University began in fiscal year 2009 and was continued through fiscal year 2012, but final data reports are still needed.

While monitoring has indicated the extent of NNIP infestations, Forest Service staff do not currently have a reliable or accurate means of measuring the effect of NNIP species on other resources, nor do they usually have measurements of the same infestations over time indicating the level of species invasiveness. Monitoring protocols were otherwise efficient and easy to use. Monitoring treatment sites for efficacy illustrated that 1) many infestations will need more than one year of treatment to be effective, and 2) better infestation data is needed for more efficient location of infestations to be treated, and more efficient monitoring.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Lands

Monitoring Item Name: Land Ownership Adjustment

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: To what extent has the FLNF land base been adjusted through purchase, exchange, transfer, interchange, boundary adjustment and donation?

Monitoring Driver: Forest Plan Goal 13 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The Forest Service has increased and consolidated NFS lands within the FLNF boundary to increase public benefits and effective management. Land adjustment accomplishments

have varied annually depending on the complexity of the cases. Total land acquired from fiscal years 2006 to 2013 totals 47 acres (Table 2-4). Land acquisitions and adjustments are expected to decrease starting fiscal year 2014, due to the management decision deemphasizing the lands program as part of a Green Mountain and Finger Lakes National Forests reorganization process that occurred in fiscal year 2013.

In addition to new land acquisition, critical public and administrative access in the popular Caywood point area was obtained in 2013 in exchange for less than one half acre of federal land.

Table 2-4. Lands acquired (acres) from fiscal years 2006 to 2013.

FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total
0	0	17	0	30	0	0	0	47

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Special Uses - Lands

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Is the Forest improving its administration of existing authorizations?

Monitoring Driver: Forest Plan Goal 1 and associated Objectives, and Forest-wide Standards and Guidelines, Chapter 2, Section 2.3.20 Special Uses.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: Agency direction is to annually inspect Special Use Authorizations (SUA) that may affect key resources and others per an established schedule, so each permit gets inspected at least every 5 years. Direction also includes keeping all SUAs current and all fees are paid. There are two components to administering existing SUAs. The first is on-the-ground inspection of the authorized area to ensure compliance with the terms, conditions and mitigation measures contained in that authorization. The second is ensuring the authorization is current, fees are paid, and proper records are kept. Monitoring of SUA's includes site inspection(s), documenting the conditions found, taking any corrective action needed, calculating fees and preparing bills, tracking and documenting payments, and reporting all outcomes in the SUDS database.

Forest Service staff continue to meet annual targets for SUA administration, improve administrative efficiency, and focus on increased efforts to reduce the number of current uses that do not have current authorizations.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Program Management

Monitoring Item Name: Costs of Plan Implementation

Monitoring Question: How close are actual costs to projected costs?

Detailed Monitoring Question: To what extent is the Forest Service providing a mix of products, services, and amenities?

Monitoring Driver: Forest Plan Goal 1 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: This monitoring question is intended to compare the expected level of socioeconomic management output with actual levels achieved from project implementation. It also allows the comparison of estimated and actual costs by program area. Although the question also calls for comparing management activity implementation costs with projected cost, estimates associated with project implementation costs are not included in the Forest Plan or associated supporting documentation.

The annual reporting for cost of implementing the Forest Plan is based on each fiscal year budgets for all program areas excluding timber outputs. The Forest Service at the Washington and Regional levels track some outputs related to Forest Plan implementation, otherwise known as targets, on a yearly basis. The cost of providing other outputs was estimated through annual program work plans. Many items included cost of implementing project activities on the Finger Mountain National Forest due to the inability to discern costs between each Forest. Accuracy of some implementation costs may also not reflect actual values.

Recommendations: Consider removing this question from the monitoring program because monitoring project costs is not tied to any Forest Plan component and it does not provide enough meaningful or accurate information to warrant its retention. Additionally, tracking management activity outputs is redundant with the Outputs Accomplished - Other Resources monitoring item. If retained, the next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Desired Future Conditions

Monitoring Question: What are the effects of management practices prescribed by the 2006 Forest Plan?

Detailed Monitoring Question: What activities have occurred in management areas? How have these management actions helped to achieve the desired future condition of the management area? Have activities occurred that detract from the desired future condition of the management area?

Monitoring Driver: Forest Plan Goal 1 and associated Objectives, and Forest Plan Management Area direction (management area major emphasis and desired future conditions).

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2007 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The Forest Plan includes Forest-wide goals and objectives. It also includes the major emphasis and desired future conditions for 10 different management areas (Forest Plan, Chapter

3). It is important to track site specific projects implemented annually to understand how well they are meeting Forest Plan direction and moving management areas toward their respective desired future conditions. Past monitoring and evaluation reports have not included what management areas were targeted for each project implemented. Future monitoring should include the management area where each project is designed to better evaluate how well activities are meeting Forest-wide objectives and goals, and management area emphasis and desired future conditions.

Table 2-5 provides all projects approved for implementation by National Environmental Policy Act (NEPA) analysis level and associated decision. A total of 278 individual projects were approved from fiscal years 2006 to 2013 representing the first eight years of Decade 1 for Forest Plan implementation. With the implementation of these projects, considerable progress has been made to move existing resource conditions toward desired future conditions within management areas.

Table 2-5. Projects approved by level of NEPA decisions for fiscal years (FY) 2006 to 2013.

NEPA Level ¹	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
EIS - Record of Decision	1	0	0	0	0	0	0	0	11
EA - Decision Notice	0	0	1	0	0	0	0	0	1
CE - Decision Memo	1	2	3	4	2	2	1	6	21
CE - Letter to File	1	5	1	7	2	2	0	0	18
SIR	0	0	1	2	1	2	1	0	7
Total	3	7	6	13	5	6	2	6	48

¹ EIS = Environmental Impact Statement; EA = Environmental Assessment; CE – Decision Memo = categorical exclusions citing categories requiring a Decision Memo; CE – Letter to File = categorical exclusion for categories not requiring a Decision Memo but have been documented in a Letter to the File; and SIR = Supplemental Information Report.

EIS and EA level projects:

- FY06: FLNF Land and Resource Management Plan (EIS)
- FY08: FLNF Forest-wide Invasive Plant Control (EA)

Recommendations: No change to the monitoring question apart from including which management areas are affected by project activities. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Innovative, Coordinated Management and Energy Conservation

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How many projects have been completed or undertaken that demonstrate innovative management practice, coordinated vegetation management as a tool to accomplish other resource objectives, and how the Forest is reducing the amount of energy used through conservation and use of renewable energy sources?

Monitoring Driver: Forest Plan Goals 9, and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Included in the fiscal years 2012 and 2013 combined annual monitoring and evaluation report.

Evaluation and Conclusions: The Forest Plan contains goals and objectives covering many resource and subject areas. During the revision of the Forest Plan a desire was expressed for Forest Service staff to use innovative management practices when developing project activity with an interdisciplinary approach to

provide multi-resource benefits particularly through vegetation management. Another desire was to increase energy efficiency and opportunities for the development and use of renewable energy on FLNF.

A Forest Service- Green Mountain and Finger Lakes National Forests sustainability team was formed in 2008 to work with Forest staff to fully integrate sustainable practices across the organization and into day-to-day operations. The team's responsibility has been to assess improvement needs by measuring the Forest's environmental footprint and then identifying priorities to reduce operation impacts. The team's effort led to reductions in electrical consumption at offices, reductions in gasoline consumption through video conferencing, carpooling and purchasing more efficient vehicles, and increases in recycling programs such as composting and battery recycling.

No other information has been collected or evaluated to report on progress for this monitoring item.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Monitoring Item Name: Outputs Accomplished - Other Resources

Monitoring Question: How close are actual outputs and services to projected outputs and services?

Detailed Monitoring Question: How do actual outputs compare to those projected in Forest Plan Appendix D, Proposed and Probable Practices, specifically related to heritage, recreation, roads, vegetation, rare, ecological, wildlife, and fisheries resources?

Monitoring Driver: Forest Plan Goal 1 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: This monitoring question provides a quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan (Appendix D, Proposed and Probably Practices). All resource outputs and services are moving toward estimated total amounts for the first eight years (2006 to 2013) of Decade 1 of Forest Plan implementation. Some activities such as heritage resource protection, range management activities, and threatened, endangered, and sensitive species inventory have already exceeded estimated amounts. Other activities will not reach estimated amounts if the annual accomplishments continue at current rates. Totals for all activities and practices accomplished by the end of 2015 should be used as a basis to determine where adjustments can be made to better achieve Forest Plan objectives during the Decade 2 of Forest Plan implementation (2016 to 2025).

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Standards and Guidelines Compliance

Monitoring Question: To what extent have Standards and Guidelines been applied?

Detailed Monitoring Question: Did any project require guideline modification or a Forest Plan amendment to modify a standard? If so, what was the project? Which standard or guideline was changed? What was the rationale for the change?

Monitoring Driver: Forest Plan Forest-wide and Management Area Standards and Guidelines.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006 to 2011 annual monitoring and evaluation reports.

Evaluation and Conclusions: Standards and Guidelines are designed to achieve the Forest Plan goals, objectives, and desired conditions. They are usually worded as protective measures that minimize or negate the effects of a management action or land use below levels of unacceptable thresholds.

Standards are mandatory permissions, limitations, desirable conditions, or in some instances required courses of action needed to achieve Forest Plan direction. Standards can be Forest-wide or management-area specific. Deviation from standards requires a Forest Plan amendment.

Guidelines are discretionary guidance, permissions, limitations, desirable conditions, or courses of action that should be implemented in most situations. Guidelines can be modified at the project level without a Forest Plan amendment but require the rationale for deviation be disclosed in the project decision analysis documentation.

There were no amendments to the Forest Plan and no known deviations from Forest-wide or management area guidelines from fiscal years 2006 to 2013.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Standards and Guidelines - Implementation and Effectiveness Monitoring

Monitoring Question: To what extent have Standards and Guidelines been applied?

Detailed Monitoring Question: Are standards, guidelines, and mitigation measures being implemented on projects consistent with Forest Plan and project NEPA direction? Are these measures effective at achieving the desired results? Are there other measures that could be more effective?

Monitoring Driver: Forest Plan Forest-wide and Management Area Standards and Guidelines.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Included in the fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The Forest Plan states that Forest-wide Standards and Guidelines (S&Gs) apply to all National Forest System lands for the purpose of protecting or managing forest resources. There are also S&Gs specific to each management area. Standards and Guidelines are designed to achieve Forest Plan goals and objectives and minimize or negate the effects of a management action or land use. Additional design features and mitigation measures have also been developed for site specific projects during the environmental analysis process to further protect resources or lessen impacts.

Monitoring project implementation during or after completion determines if projects have been implemented as designed and whether they have achieved the desired results. Monitoring projects also determines whether Forest Plan S&Gs, and project specific design features and mitigation measures have been implemented and whether they have protected resources as intended. Although this level of monitoring is completed by resource specialists as they visit project sites throughout the year, they also visit sites as a monitoring team on scheduled dates to discuss the interdisciplinary approach to assess implementation effectiveness (Table 2-6).

Table 2-6. Site specific project FLNF monitoring field reviews from fiscal years 2006 to 2013.

Fiscal Year	Date(s)
2010	June 8, 2010
2012	May 8 and 9, 2012

Each project visited was evaluated using a set of questions designed to answer the following Forest Plan implementation monitoring questions:

1. Did the project move the area or resource toward the Forest Plan desired future condition and/or meet the intent of the purpose/need from the decision document? Did the project accomplish what it was planned to achieve?
2. If no, what is it about the project that did not move toward the desired future condition or achieve what it was planned to do? How could the project be improved to do so?
3. Was the project implemented as designed?
4. If no, what was changed and what was the reason for the change? Were the changes effective, and within the project scope of the analysis and decision including mitigation measures? Were the changes reviewed, reported or documented?
5. Were Forest Plan standards and guidelines followed during project preparation and implementation?
6. If no, what is it about the project that did not meet Forest Plan standards and guidelines and how could it be improved to do so?
7. Should the Forest Plan standards and guidelines be changed or improved as a result of the implementation of this project?
8. If yes, how and why should it change?
9. Were the mitigation measures and/or design criteria included in the project decision followed during project preparation and implementation?
10. If no, what is it about the project that did not include required mitigation measures and/or design criteria and how could it be improved to do so?
11. Were the mitigation measures and/or design criteria effective and achieve their desired intent?
12. If no, what changes or improvements should be made so that they are more effective?
13. Were the applicable Forest Plan standards and guidelines, mitigation measures and/or design criteria included in the project contract or force account instructions, or reviewed with partners or Forest Service staff implementing the project?
14. If no, how could this process be improved?
15. Are there any other specific concerns for your resource area that you have identified from monitoring this project?

Except for limited circumstances highlighted below, all projects monitored during the interdisciplinary field visits were found to have Forest Plan S&Gs, and project design features and mitigation measures implemented effectively to achieve their desired level of protection to resources.

- Monitoring timber sale activity associated with the Cotton Mill timber sale revealed possible deviation from soil and water S&Gs specific to Guideline G-10 where a skid trail was constructed within 100 feet of a wetland. Although no unacceptable impact occurred, it was concluded that more attention should be provided to ensure wetland protection during implementation of future projects.
- For several projects monitored, it was inconclusive if equipment was properly washed prior to entering the project site or before leaving the site after project completion. More attention to this important mitigation measure is needed and better communication between Forest staff and contractors is essential to minimize spread of non-native invasive plants for future projects.

- It was noted some specialists were not aware when projects were implemented. In general, better communication is needed between Forest staff responsible for implementing projects and specialists responsible for ensuring Forest Plan S&Gs and project specific mitigation measures are properly applied.

There was no identified need to modify S&Gs or recommended changes to Forest Plan components from routine monitoring efforts conducted by resource specialists or during the interdisciplinary site reviews.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Range

Monitoring Item Name: Animal Unit Months

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Are we maintaining forage production sufficient to support approximately 10,000 Animal Unit Months (AUMs) annually?

Monitoring Driver: Forest Plan Goal 7 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006 to 2010 annual monitoring and evaluation reports, and 2012 and 2013 combined annual monitoring and evaluation report.

Evaluation and Conclusions: There are 39 managed pastures on the FLNF totaling about 5,250 acres with an emphasis to provide grasslands for domestic livestock grazing as provided by direction in the Grassland for Grazing Management Area. Forest Plan objectives set 10,000 AUM's as the average yearly forage production and agreed to in the 2009 FLNF Allotment Management Plan (AMP). A permit issued to the Hector Grazing Association based on approved activities in the AMP provides terms for grazing livestock. Evaluation of the trend in annual AUM is important to track Forest Plan implementation and Forest Service compliance with the Allotment Management Plan. Evaluation of the trend in AUM provides further context to the effect that known or unknown threats to forage production are having. Known management concerns such as goldenrod, non-native invasive plants (NNIP), and woody encroachment may be key factors in fluctuation of forage production, and the analysis thereof may aid in the timing and prescription of effective treatments.

Typically, up to 30 samples per pasture are collected of cool season grasses and forbs. Sampling methodology divides all 39 pastures into six forage productivity classes. Samples are taken from one pasture of each representative soil type within each class. Clippings of each forage type (grasses, legumes and undesirables) are collected and dried to determine a green weight to dry weight conversion factor. Monitoring was incomplete in fiscal years 2011 and 2013 due to staff vacancies.

Annual forage production continues to average near 10,000 AUM with undesirable and NNIP species being the continued target of active management. Hector Grazing Association permittees continue to report good weight gain on average, with some years exceeding others likely because of fluctuations in weather patterns. Despite the growing range of grassland NNIP such as knapweed and thistle, a high percentage of golden-rod and encroachment of woody brush, targeted grassland management activities such as mowing and herbicide application appear to be maintaining capacity. This trend may not last, as complexity and cost of managing NNIP, goldenrod, and woody brush increase.

Goldenrod, NNIP, and woody brush encroachment pose the greatest challenges to livestock grazing and

desirable forage production on FLNF pastures. Herbicide application and targeted mowing of golden rod and woody brush is expected to continue. Anecdotal successes in timing of certain treatments for greater efficacy (such as early mowing to control goldenrod or late mowing to control woody brush) should be monitored to maximize efficiency. Management direction applied through the 2008 Invasive Plant Control Environmental Assessment and Decision Notice and the 2009 AMP are still effective tools to be used in maintaining adequate forage production. Future monitoring should include photo points to serve as a visual aid for long-term monitoring and evaluation.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Watering Facilities Functional

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Are we providing functioning livestock watering facilities to support approximately 10,000 Animal Unit Months (AUMs) annually?

Monitoring Driver: Forest Plan Goal 7 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006 to 2010 annual monitoring and evaluation reports, and 2012 and 2013 combined annual monitoring and evaluation report.

Evaluation and Conclusions: Forest Plan objectives state to provide functioning livestock watering facilities to support approximately 10,000 AUM's annually. Adequate watering facilities are necessary to sustain grazing on FLNF managed pastures. There are 44 human-made ponds providing water to livestock which are maintained according to approved activities in the 2009 Allotment Management Plan. These water sources tend to be stock ponds, with some using a trough system to provide a controlled watering point. Stock ponds fill in periodically from sedimentation over a period of 10 to 20 years depending on access of cattle and other factors. Watering troughs also have life expectancies depending on hardware and amount of use.

The Predmore Pasture and Tunison Pasture ponds were dredged in 2007, and Burdick Pasture pond in 2009 to remove sediment and to repair breached areas of the dams. The was dredged in 2009 to remove sediment and to repair breached areas of the dam on it. Fencing has also been constructed around numerous ponds to prevent bank damage by cattle. Repair and replacement of pipeline and trough fixtures has taken place as funding allows to ensure livestock watering needs are met.

In general, water facilities are adequately supporting grazing needs on managed FLNF pastures. Forest Service range staff and members of the Hector Cooperative Grazing Association annually inspect all watering facilities in place to assess maintenance and adequacy of systems. This is completed before grazing begins each season and is monitored continuously throughout. Monitoring of watering facilities has resulted in periodic improvements, such as with trough installations in fiscal years 2012 and 2013.

Evaluating adequacy of watering facilities over a long-term may provide expected timelines, costs, and expectations necessary to continue adequate support through the near future. Long-term evaluation generally supports the estimated timeframe that stock ponds need dredging every 10 years for unfenced ponds, and 20 years for fenced ponds. Individual site conditions and other external factors (such as weather and topography) may allow for deviations from this timeline in either direction. Cattle exclusion fencing however is found to be in disrepair on many sites, and excessive sedimentation, dyke trampling, and tree growth on pond dykes are common throughout FLNF stock ponds due to lack of proper maintenance. Deferred maintenance has put normal dredging and repair activities behind emergency or urgent repairs, resulting in a continued backlog of deferred watering facility maintenance.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Rare Plants Population

Monitoring Item Name: Regional Forester Sensitive Species - Plant Population Trends

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: What are the population trends for sensitive plants on the Forest? To what extent is management sustaining or enhancing habitat conditions for populations?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives, and Forest-wide Standards and Guidelines, Chapter 2.3.8 Wildlife - Rare and Unique Biological Features.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The Regional Forester Sensitive Species (RFSS) list which includes plants on FLNF for which population viability is a concern was updated in December 2011. There are 20 plants on the updated RFSS list (there were 19 plants listed prior to 2011). Forest Plan Forest-wide Rare and Unique Biological Features Standard S-1 requires all project sites to be investigated for the presence of RFSS, and/or habitat for these species prior to beginning any authorized ground-disturbing activity at the site. Sensitive plant surveys must be completed for all new ground-disturbing projects, when biologists determine sensitive plant species occurrences are likely. Additionally, Forest Service policy requires a plant biological evaluation for project activities to be completed before they are implemented. Biological evaluations must document the proposed management activities do not result in a loss of population viability or trend toward federal listing. Mitigation measures are often included in project environmental analysis decisions to ensure protection of known sensitive plant populations during project implementation.

Although for some project activity it was found there may be impacts to individual plants, no loss of plant population viability or trend toward federal listing has been determined for any project analyzed or implemented from 2006 to 2013.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Recreation

Monitoring Item Name: Effects of Vehicle Use Off Roads

Monitoring Question: What are the trends in the illegal use of vehicles off roads?

Detailed Monitoring Question: Is the use of vehicles off roads causing considerable adverse effects on resources or other forest visitors; how effective are forest management practices in managing vehicle use off roads?

Monitoring Driver: Regulatory requirements (36 CFR 295) state that use of vehicles off roads shall be planned, implemented and monitored to protect resources and visitors from considerable adverse effects, promote public safety, and minimize conflicts with other uses of National Forest System lands.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: There is a long-standing concern about the illegal use of motor vehicles on the FLNF. This is well documented in both the 1987 and 2006 Forest Plans. In addition, this is a national issue that prompted a significant change in policy and direction regarding wheeled motorized vehicles. Though a substantial issue, the development of monitoring protocols is difficult due to the scattered nature of violations that often happen in remote areas at night and during time periods when there are few patrols available. It was decided to use existing protocols used by law enforcement personnel as the starting point for monitoring this activity. Additionally, site specific project analyses also document unauthorized vehicle use as part of the description of existing conditions.

Monitoring reports show a trend of decreasing documentation of off-highway vehicle use in recent years and appears to indicate that illegal use of vehicles off roads is not causing considerable adverse effects on resources or other forest visitors. The Forest Service has made a focused effort to include site specific project design criteria and mitigation measures associated with management activities to deter unauthorized vehicles through public collaboration and education, installation of signing, and engineering controls such as gates, stiles and boulders. These efforts have shown to be effective in managing illegal use of vehicles off roads below unacceptable levels.

Recommendations: Remove this question from the monitoring program. Although the effects of illegal use associated with natural resources remain a concern, recent trends show a decrease in this activity in conjunction with a concerted effort to close or block vehicle access to interior forested areas. Additionally, identifying the amount of illegal use is not accurate when measured by law enforcement incidents given the low level of patrol capacity across the forest. Future project proposals should continue to incorporate design features or mitigation measures to minimize illegal off-road vehicle access.

Monitoring Item Name: Recreation Facility Maintenance

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Is the Forest reducing deferred maintenance on developed recreation facilities and sites. Is the Forest increasing the number of recreation facilities that are maintained to standard.

Monitoring Driver: Forest Plan Goal 11 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Every 5 years. Included in the fiscal years 2006 to 2010 annual monitoring and evaluation reports, and 2012 and 2013 combined annual monitoring and evaluation report.

Evaluation and Conclusions: The FLNF has substantial diversity of recreation facilities, however the Forest Service has a limited budget to operate and maintain all the sites. Although FLNF relies on multiple partners to help address some maintenance backlog, this may not be sufficient to meet long-term needs. With a desire to provide high quality recreation, the Forest Service needs to determine if the management of recreation facilities is being maintained or improved through monitoring efforts. Recreation site monitoring was initiated for FLNF in fiscal year 1999 because of Congressional direction regarding deferred maintenance reporting.

Deferred maintenance condition surveys were completed for 21 separate recreation sites including campground, day use areas, and trailheads using national protocols starting in 2006. These surveys were completed at a level sufficient to maintain FLNF data to national standards. Although surveys were conducted for fiscal years 2006 to 2013 except for no or partial surveys were conducted in 2006, and 2010-2013 due to staffing shortages. Dollar amounts needed to address deferred maintenance are only available for fiscal years 2007 to 2009 (Table 2-7). Deferred maintenance has increased in 2009 compared to the baseline year 2007.

Table 2-7. Recreation site deferred maintenance from fiscal years 2006 to 2013¹.

Recreation Site Description	FY2006	FY 2007	FY 2008	FY 2009	FY 2010 to FY 2013
Buildings	n/a	\$37,299	\$40,750	\$ 110,394	n/a
Water Systems	n/a	0	0	0	n/a
Waste Water Systems	n/a	0	0	0	n/a
Minor Constructed Features	n/a	\$3,748	\$6,848	\$ 7,258	n/a
Total Deferred Maintenance	n/a	\$41,047	\$47,598	\$117,652	n/a

¹ No record available of fiscal years 2006, and 2010 to 2013.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Monitoring Item Name: Recreation Visitor Satisfaction

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Are we providing high quality recreation services that meet the expectations of the public?

Monitoring Driver: Forest Plan Goal 11 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any annual monitoring and evaluation report.

Evaluation and Conclusions: The National Visitor Use Monitoring (NVUM) program survey protocol on FLNF was conducted in fiscal year 2005 and reoccurred in fiscal year 2010. The NVUM program provides science-based estimates of the volume and characteristics of recreation visitation on National Forest System (NFS) lands, as well as the benefits recreation brings to the American public. The NVUM program has two concurrent goals. First, to produce estimates of the volume of recreation visitation to NFS lands. Second, to produce descriptive information about that visitation, including activity participation, demographics, visit duration, measures of satisfaction, and trip spending connected to the visit. The measure for visitor satisfaction is the Mean Visitor satisfaction from the NVUM compared to the Mean importance to the visitor. “Percent Meet Expectations (PME)” is the proportion of satisfaction ratings in which the numerical satisfaction rating for a particular element is equal to or greater than the importance rating for that element. This indicator tracks the congruence between the agency’s performance and customer evaluations of importance. The idea behind this measure is that those elements with higher importance levels must have higher performance levels. Lower scores indicate a gap between desires and performance.

National sampling procedures were developed for each individual sample year. Samples for FLNF occurred throughout the year, using a random sample of locations and days stratified by site type and expected use level at various points where visitors exited FLNF during fiscal years 2005 and 2010 (Table

2-8). About one-third of the recreation visitors surveyed were asked a series of additional questions about satisfaction.

Table 2-8. Finger Lakes National Forest National Visitor Use Monitoring (NVUM) scores for fiscal years 2005 and 2010.

Fiscal Year 2005		
<i>Satisfaction Element</i>	<i>Percent Meets Expectation Scores (%)</i>	
	Developed Sites	Undeveloped Areas
Developed Facilities	100.0	98.3
Access	88.3	70.8
Services	91.6	70.3
Feeling of Safety	91.2	80.7
Fiscal Year 2010		
<i>Satisfaction Element</i>	<i>Percent Meets Expectation Scores (%)</i>	
	Developed Sites	Undeveloped Areas
Developed Facilities	96.9	0.0
Access	87.4	26.2
Services	83.4	73.6
Feeling of Safety	85.8	71.4

The FLNF is meeting the expectations of a large percentage of recreation visitors at developed sites, although the trend in satisfaction between 2005 and 2010 is decreasing. The evaluation question is meaningful, but it is difficult to achieve the number of responses needed on a small unit for the results to be statistically valid.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2015.

Monitoring Item Name: Recreation Opportunity Spectrum (ROS) Settings

Monitoring Question: To what extent are ROS settings being provided?

Detailed Monitoring Question: Is the Forest moving toward the desired future condition for ROS settings?

Monitoring Driver: Forest Plan Goal 11 and associated Objectives.

Monitoring Frequency: Every five years.

Reporting Frequency: Every five years. Not yet included in any annual monitoring and evaluation report.

Evaluation and Conclusions: This monitoring question is intended to compare inventoried Recreation Opportunity Spectrum (ROS) settings at the time of Forest Plan revision with the inventory after 5 and 10 years of plan implementation. The ROS framework is used for identifying, classifying, planning, and managing a range of recreation settings. Six distinct settings: urban, rural, roaded natural, semi-primitive motorized, semi-primitive non-motorized, and primitive are defined using specific physical, managerial, and social criteria. Each Forest Plan management area has a desired ROS class associated with it. During Forest Plan revision, the ROS analysis results showed FLNF had only two settings represented: fifty-five percent had a Rural classification (9,103 acres, mostly on the northern portion of the Forest), and forty-

five percent had a Roded Natural classification (7,336 acres). No area on FLNF meets the size criteria for Primitive or Semi-primitive classification. An inventory of the ROS settings has not been done since completion of Forest Plan revision.

The desired ROS settings are determined and documented during the environmental analysis for each project planned for implementation. Only projects which have a positive effect toward the desired ROS, or no effect at all, are approved for implementation. It is not feasible to determine the amount of change which has occurred without a complete inventory of the existing ROS settings.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Scenic Integrity Objectives

Monitoring Question: To what extent have Scenic Integrity Objectives been attained?

Detailed Monitoring Question: Has the Forest transitioned from the current Visual Management System to the Scenery Management System?

Monitoring Driver: Forest Plan Goal 16 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. This question was first evaluated in the fiscal years 2012 and 2013 combined annual monitoring and evaluation report.

Evaluation and Conclusions: In the late 1990's the Forest Service developed the Scenery Management System (SMS) which evolved from and was designed to replace the Visual Management System (VMS) developed in the 1970s. The SMS is intended to ensure application of the principles of landscape aesthetics, scenery management, and environmental design in project-level planning.

The 2012 planning regulations (36 CFR 219) require the *“use the Scenery Management System (SMS) in all plan revisions to address scenic character and develop scenery-related plan direction unless the Responsible Official provides written justification and obtains concurrence from the Regional Forester.”* Although an objective for Forest Plan Goal 16 is to *“complete a transition from the current Visual Management System to the Scenery Management System”* during the planning period, lack of or changing landscape architect or visual resource staff and competing priorities have prevented this from occurring.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Monitoring Item Name: Special Uses - Recreation

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Is the Forest helping to provide a diverse range of high-quality, sustainable recreation opportunities by improving its administration of existing authorizations?

Monitoring Driver: Forest Plan Goal 11 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any annual monitoring and evaluation report.

Evaluation and Conclusions: There are two components to administering existing special use authorizations (SUAs). The first is on-the-ground inspection of the authorized area to ensure compliance with the terms, conditions and mitigation measures contained in that authorization. The second is ensuring the authorization is current, fees are paid, and proper records are kept.

Revised directives on outfitting and guiding on NFS lands went into effect in October 2008 (fiscal year 2009). At that time, Forest Service staff reorganized and split recreation and non-recreation special use responsibilities into separate areas. In April 2011, Forest Service Handbook 2709.14, Chapter 50, was amended to provide direction for outfitting and guiding, and other concession services. In November 2013, the Green Mountain and Finger Lakes National Forests (GMFL NFs) Forest Supervisor signed a decision memo which established a priority use pool and a temporary use pool of service days. Priority use is authorization of use for up to 10 years. Temporary use authorizations are for short term, non-recurring, seasonal distribution.

Monitoring SUA's includes site inspection(s), documenting the conditions found, taking any corrective action needed, calculating fees and preparing bills, tracking and documenting payments, and reporting all outcomes in the SUDS database. The Forest reports annually how many recreation special uses have been administered to standard (this is a combined report for the GMFL NFs).

In fiscal year 2007, GMFL NFs had a target of 32 recreation SUAs administered to standard. In fiscal years 2008 and 2009, the initial target was to administer 19 recreation SUAs to standard. This increased to 28 in fiscal years 2010 to 2012. The Forest has generally been meeting or exceeding their target accomplishments, ranging from 100 to 129 percent. These changes were likely because of adequate budgets for proper administration.

Monitoring results suggest GMFL NFs is providing a diverse range of high-quality, sustainable recreation opportunities through SUAs. However, it is difficult to discern whether there has been improvement in the administration of existing authorizations since 2006. Although GMFL NFs is meeting targets for 'administered to standard' and have changed from mostly temporary permits to mostly long-term permits for outfitters and guides, there are no clear trends identified.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Trends in Trail Partnerships

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How well is the Forest using partnerships to assist in the operations and maintenance of the Forest trail system?

Monitoring Driver: Forest Plan Goal 11 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the 2008 to 2010 fiscal year annual monitoring and evaluation reports.

Evaluation and Conclusions: This question is intended to track whether there is an increase in the effective use of partnerships for the improvement, maintenance and operation of the FLNF trails system (Forest Plan Goal 11 objective). Although there is an expectation that partner groups will assist with maintenance of the existing trail network, a substantial trail system deferred maintenance backlog exists on FLNF. The annual trails budget covers only about 10 percent of calculated operations and maintenance for the existing system but the public continues to pressure for more new trails.

In general, there are two types of partners that assist in trail management activities on FLNF: 1) those that are technically proficient in trail management and can generate and supervise their own workforce requiring very little Forest Service oversight (such as Twin Lakes Snowmobile Club, Finger Lakes Trail Association and Student Conservation Association), and 2) trail organizations or clubs and individual or group volunteers. Trail organizations that assisted in trail maintenance activities in fiscal year 2008 included the Twin Lakes Snowmobile Club, Finger Lakes Trail Association and Student Conservation Association. Although FLNF has a strong and active partners program, their contribution does not cover total trail system maintenance needs.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Visual Quality Objectives

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: Is the FLNF being managed in accordance with the Forest Plan Visuals Standards and Guidelines (S&Gs) and are the Visuals S&Gs and any additional site-specific design criteria effective in helping to meet the Visual Quality Objectives (VQOs)?

Monitoring Driver: Forest Plan Goal 16 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in the fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The FLNF continues to provide a high-quality scenic resource for residents and visitors. A patchwork pattern of forested areas and open pastures, shrublands and grasslands have created a unique aesthetic for which FLNF is characterized. To some people the Forest is seen as a naturally appearing visual backdrop to their vantage points. To others the scenery is more intimate and offers a variety of environments from grasslands, ponds, wildlife viewing areas, and trailside areas.

Monitoring activities since 2006 have included the review of the overall appearance of the FLNF, review of visual resource concerns related to project planning, and site-specific post-project monitoring done by the landscape architect individually or as part of the monitoring interdisciplinary team. During this period there have been only a couple of vegetation management projects which have been monitored to determine if they have met VQOs and project-specific mitigation measures. Resulting landscape architect observations indicate that projects are being implemented in a manner that meets the desired VQOs and adheres to project mitigation measures. Additionally, regular reviews of the overall appearance of the FLNF landscape show compliance with VQOs.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Soils

Monitoring Item Name: Long Term Soil Quality and Soil Productivity

Monitoring Question: Are the effects of Forest management, including prescriptions, resulting in significant changes to productivity of the land?

Detailed Monitoring Question: Are the effects of Forest management, including prescriptions, resulting

in significant changes to productivity of the land? How are soil/site quality and productivity changing over the long term, in response to factors such as acid deposition, climate change, invasive species, other environmental problems, and forest management? More specifically: A) Are soil nutrient levels changing, and are the changes affecting soil/site productivity? B) What toxins exist in the soil (e.g. from the atmosphere), and how are they changing in quantity and type over time? Is this affecting productivity? C) Are forest management activities affecting soil/site productivity?

Monitoring Driver: Forest Plan Goal 3 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 10 years. Not yet in any annual monitoring and evaluation report.

Evaluation and Conclusions: Forest Plan Goal 3 is to “maintain or restore the natural, ecological functions of the soil.” Maintaining soil ecological functions means sustaining biological diversity, cycling nutrients, providing physical support for vegetation, and filtering pollutants. The condition of soil quality on FLNF, and the effects of forest management activities on soil quality, were characterized in the Final Environmental Impact Statement (FEIS) to accompany the FLNF Forest Plan (FEIS, pp. 3-20 to 3-26). The information in the FEIS about the current condition of the soil resource on FLNF is based mainly on the FLNF Soil Assessment (Tetra Tech 2003). This assessment is summarized as follows:

- General soil health is good, including soil quality, with only occasional exceptions. This means soils are stable (not eroding), have a protective and nutrient-rich cover of organic matter, and support productive forests and grazing lands. Soil quality is the capacity of the soil to function within ecosystem boundaries to sustain biological productivity, maintain or enhance water and air quality, and support human health and habitation. FLNF soils were severely depleted by land use practices during the 1800s and early 1900s. The depletion included erosion of much of the topsoil; reduction of beneficial plant nutrients and nutrient storage capacity; compaction of remaining surface layers and a corresponding reduction in infiltration capacity; and increased surface runoff of precipitation. Reforestation, grassland, and shrubland management has resulted in decreased soil disturbance and general improvement in soil quality.
- Soil health has been good over the past 15 years because State Best Management Practices (BMPs), and Forest Plan Standards and Guidelines (S&Gs) have been followed. BMPs and S&Gs have proven effective in minimizing soil impacts on FLNF.
- Areas exist on FLNF where soil health and quality are poor. These areas most commonly include short segments of roads or trails with gullies or eroding ditch lines due to heavy use, poor road/trail design, or lack of maintenance; bare, eroding soils in pastures due to congregation of livestock; soil compaction and displacement in wetlands due to the presence of livestock, and temporary gully erosion or rutting on skid roads associated with timber harvest and/or heavy rainfall. These exceptions to good soil health are uncommon and have limited extent.
- Acid deposition resulting from air pollution has increased levels of nitrogen, sulfur, and some toxic elements such as mercury, in the soil. Atmospheric deposition of acidic compounds from the air can make the soil more acidic, leach nutrients like calcium and magnesium from the soil, and increase the availability of aluminum. This may be altering the soil nutrient content and thus, soil quality. Research on the effects of acid deposition on soils is a topic of long-term, on-going Forest Service research.

High levels of soil nutrients were found in many FLNF pastures in 2008 (Table 2-9). High nutrient levels often result from fertilizer or liming inputs to the soil and can negatively affect the environment.

Table 2-9. Soil nutrient analysis values falling in the “high” range for samples collected in 2008 from FLNF pastures¹.

Pasture	Ca (lb/ac)	Mg (lb/ac)	K (lb/ac)	P (lb/ac)
Teeter	4,910	660		
South Stephens	5,790	4050	160	
North Stephens	3,270	300	115	
South Velie	2,770	355		
Shannon	3,240	310		
Predmore	3,290			
Pierson	3,300			
Peterson	3,170	460		
North Wilkins	3,590		320	
Peterson	3,420	540		
Knight	5,570		120	
Johnson	5,000			
Haws	4,110			
Dunn	4,980			13
Cronk	5,850			43
Peterson	3,420	540		
Campbell	5,160	460		
Bumpus	3,580			
Ballard	3,080			
Bale	2,970			
Bailey	35,260			

¹ Values for calcium (Ca), magnesium (Mg), phosphorus (P), and potassium (K) are reported in pounds per acre (lb/ac). Values in parts per million (ppm) can be approximated by dividing the lb/ac value by 2.

Long-Term Ecosystem Monitoring Project (LEMP)

In 2008, Forest Service staff managing Green Mountain National Forest (GMNF) initiated a long-term study on NFS lands in Vermont planned to span 50 years led by the Vermont Monitoring Cooperative. The first round of sampling concluded when soil, forest health, and vegetation community data were collected on 20 plots in 2008, 2009, 2010, and 2011 (five per year). Soil parameters monitored include pH, and percent Carbon (C) and nitrogen (N), and extractable Calcium (Ca), magnesium (Mg), Sodium (Na), potassium (K), aluminum (Al), manganese (Mn), phosphorus (P), and strontium (Sr) (mg/kg in pH 4.8 ammonium acetate). Although the project was originally planned to include FLNF, the initiation of the study was never implemented.

The LEMP ongoing for GMNF should be expanded to include FLNF and should encompass both managed and unmanaged forest areas to detect long-term trends in soil productivity, including forest and grass/shrub sites.

Recommendations: No change to the monitoring question recommended at this time but consider expanding the LEMP initiated on GMNF to FLNF managed lands. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2023.

Monitoring Item Name: Soil/Water Standards and Guidelines, Mitigation Measure, and Soil Quality Standard Compliance

Monitoring Question: To what extent have Standards and Guidelines been applied?

Detailed Monitoring Question: Were Forest Plan Standards and Guidelines (S&Gs) and mitigation measures implemented on selected projects, and to a lesser extent, were they effective in protecting the soil, water and wetland resources? Are soil quality standards met?

Monitoring Driver: Forest Plan Goals 3 and associated Objectives, and Forest-wide Soil, Water, and Riparian Area Protection and Restoration and Management Area Standards and Guidelines.

Monitoring Frequency: Variable.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: Soil monitoring activities measured the implementation and effectiveness of Forest Plan Forest-wide and management area Standards and Guidelines associated with soil and water designed to control erosion, prevent sedimentation, protect wetlands, and maintain soil and water quality.

Project activities monitored focused primarily on grazing area practices, harvest areas, and trail construction, use and maintenance. Tree harvest and grazing activities have the high potential to impact soil, water, and wetland resources. Monitoring has confirmed most Forest Plan soil and water related standards and guidelines, and project specific mitigation measure implementation to be effective in protecting the soil, water, and wetland resources. One exception to this was implementation of Soil, Water and Riparian Area Protection and Restoration Standard S-2 (the Protective Strip standard) in grazing areas. Standard S-2 is designed to protect and improve stream water quality, aquatic habitats, riparian vegetative cover, and stream bank stability. More time is needed before we can achieve full compliance with S-2 in managed pastures. Since the completion of the 2009 Allotment Management Plan, many riparian areas and water structures in existing pastures have been fenced to exclude livestock, and remains a high priority by allotment permittees. Over the long-term, this practice will improve riparian communities, stream stability, and some aspects of water quality.

National Soil Quality Standards were abandoned in 2009, when emphasis shifted to implementing Soil Disturbance Monitoring (SDM) protocols to quantify soil disturbance at the local level, and eventually established new soil quality standards for FLNF. Soil Disturbance Monitoring quantifies the degree, extent, distribution, and duration of soil disturbance from project activity. *National Best Management Practices for Water Quality Management on National Forest System Lands* monitoring protocols are also used to assess soil and water standard and guidelines and mitigation measure compliance.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Terrestrial Ecological Units

Monitoring Item Name: Ecological Type Mapping and Representation

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: To what extent are ecological types on the Forest represented within the ecological reference area network? To what extent do ecological types recognized on the Forest accurately represent the diversity of ecosystems and potential natural vegetation on the Forest?

Monitoring Driver: Forest Plan Goal 5 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: Forest Plan Goal 5 supports the concept that ecological processes and systems are to be maintained on FLNF within the desired ranges of variability. This goal includes the objective to manage at least five percent of each ecological type present on FLNF for old growth characteristics. Managing a small proportion of each type in a way that allows natural disturbance processes to regulate forest types and forest structure ensures that the full range of variation in ecological systems on the Forest can be supported.

Ecological types are defined in the FLNF Forest Plan Final EIS (FEIS) in two ways (FEIS, p. 3-213 to 3-214):

- Ecological Landtypes (ELTs) represent unique combinations of soil conditions and late-successional vegetation expected to be at a particular site due to geology, soils, topography, existing vegetation, and land use history.
- Landtype Associations (LTAs) represent groupings of ELTs that represent landscape patterns, such as groups of ELTs associated with lake plains or with ravines and cliffs.

Management for old growth characteristics in the Forest Plan FEIS was done by ensuring these ELTs and LTAs were represented in the “Reference Area Network”, a grouping of management areas and other conditions that “...provide ecological reference or benchmark conditions for baseline monitoring and research, provide refugia for rare species, and provide some ecological conditions or functions that are not otherwise available across the landscape.” (FEIS, p. 3-204). Areas that are or will provide these conditions for FLNF comprise the Reference Area Network (RAN) and include:

- Future Old Forest Management Area (MA)
- Existing and Candidate Research Natural Area MA
- Ecological Special Area MA
- Unsuitable lands

In addition to monitoring adequate representation, another objective associated with this monitoring item was to revise the ELTs and LTAs to ensure they represent the latest science and understanding of ecological classification and natural communities in the Finger Lakes region of NY. If there are ecosystems not captured or well-characterized in the ELT or LTA classifications, then they may not be adequately represented in the RAN.

The Forest Service has been unable to revise its ecological classification system since 2006 due to staff and budget constraints and other priorities. During monitoring of FLNF special areas, as well as other inventory efforts, no new natural communities or ecosystems have been identified that are not either represented by ELTs or LTAs, or represented in the RAN.

In fiscal year 2014, a contract was awarded to survey and classify natural communities at Caywood Point, which is one of a small group of areas not covered by the original ELT classification. It is anticipated that the data and classification from this effort will supplement and improve the current classification. No additional revision efforts are currently planned.

In 2007 the Forest Service agreed to an appeal resolution, which identified 14 stands of mature forest with limited human impacts beyond the original forest clearing, and which obligated management to protect these sites while they were being evaluated. While the evaluation is ongoing, these stands are not considered suitable for timber harvest, and so also contribute to the RAN. Most of these stands were visited in 2008 to conduct a qualitative assessment, and all that were visited were determined to merit

further consideration. No unique ecological types were noted for these stands, but all had mature forest conditions with trees more than 100 years old, limited signs of recent harvesting, no non-native invasive plants, and some structural diversity. These conditions are rarely present on FLNF outside of the RAN.

Representation of ecological types in the RAN appears relatively stable. There have been only 47 acres of land acquisition since Forest Plan revision, and the addition of old forest areas of interest is provisional depending on the conclusions of the evaluation. No new ecological types have been added to the list identified in the Forest Plan FEIS, and no areas have been removed from the RAN.

Based on current information, the full range of ecosystems and processes on FLNF continues to be represented within the RAN at greater than five percent (FEIS, Tables 3.10-9 and 3.10-10, p. 3-223). The current ELTs and LTAs also capture the majority of unique ecological types at two different scales. As these ecosystems age and develop more complexity, they will begin to take on some of the old growth characteristics that are missing from the FLNF landscape. As noted in response to the Rare or Outstanding Natural Areas monitoring item, non-native invasive plants (NNIP) are a concern in several special areas, particularly in areas adjacent to pastures. It will be important to control and hopefully eliminate these plants before significant gap-forming disturbances begin to form openings in these stands. In areas that are more dynamic, like Mill Creek Ravine and The Ravine, where NNIP have a significant presence, reducing the presence and impact of these NNIP will be more of a challenge.

Representation of ecological types in the RAN continues to be important to monitor, particularly within the context of climate change. The abundance and distribution of species is expected to change with time because of changes in temperature and patterns of precipitation. It will be important to monitor how ecological types are changing over the next 100 years in terms of composition, structure, and function. Having representation of all types within a RAN ensures baseline conditions can be maintained, monitored, and compared to management activities outside the RAN and to regional trends in species movements and natural community changes.

Continued efforts at updating and improving existing ecological classifications will be important so that baseline conditions can be better determined as a basis to detect changes in composition and structure. Old forest areas of interest should continue to be investigated and stand histories reconstructed so that disturbance histories are better understood. This is also true for the rest of the RAN, for which limited stand reconstruction efforts have been conducted. Different disturbance histories can influence how other disturbance agents (such as insects, diseases, NNIP, and climate change) impact natural communities, making it important to understand how the old forest areas of interest and the rest of the RAN originated in their current form.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Terrestrial Wildlife Habitat

Monitoring Item Name: Grassland Habitat

Monitoring Question: To what extent do Forest Service Management activities contribute toward restoration and maintenance of habitat for native and desirable non-native species?

Detailed Monitoring Question: What are the conditions of grasslands and pastures on the FLNF? What are the vegetative conditions and wildlife use patterns of grazed and non-grazed grasslands? Do maintenance programs produce desired conditions?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Included in fiscal years 2008, 2009, and 2010 annual monitoring and evaluation reports.

Evaluation and Conclusions: Grasslands and pastures occupy about 5,938 acres, which is 36 percent of total FLNF lands. Of that, about 5,200 acres are open to livestock grazing annually from May 15 to October 15, and the remaining 700+ acres are excluded from any grazing and managed entirely for wildlife. Both grazed and non-grazed grasslands offer high quality nesting and foraging opportunities for many different types of wildlife but is especially important to obligate grassland birds. Many of these species currently are experiencing general population declines. Both types of grasslands are managed in ways that promote native grasses and forbs as provided for by options approved in the 2008 Invasive Plant Control Project Environmental Assessment/Decision Notice. Grasslands are treated on a three-year cycle, dependent on proximity to one another, to allow for desirable vegetation. That preferred vegetation is generally the same in both grazed and non-grazed grasslands, and the prescribed treatments (such as mechanical, chemical, or controlled burning) are effective in providing ideal grassland habitat for wildlife while also providing suitable forage for livestock. The biggest threat to FLNF grasslands is spread of non-native invasive plants (NNIP) and other vegetation invasives wherever management activities such as grazing and mowing have not occurred. Since 2011, the amount of undesirable, and often non-native, vegetation in FLNF grasslands has decreased considerably due to the active treatments applied to these grasslands. Annual grassland bird surveys are completed in May and June each year which provide accurate baseline data that is used to help manage the landscape.

Recommendations: No change to the monitoring question. If modified, the next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2015.

Monitoring Item Name: Management Indicator Species Habitat Trends

Monitoring Question: To what extent do Forest Service Management activities contribute toward restoration and maintenance of habitat for native and desirable non-native species?

Detailed Monitoring Question: What are habitat trends for Management Indicator Species (MIS)? To what extent is Forest Service management accomplishing desired distribution of age class and habitat type as desired and outlined in Forest Plan objectives?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives, and NFMA requirements for MIS (1982 planning regulations at 36 CFR 219.19(a)).

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports. The fiscal year 2011 annual monitoring and evaluation report was the only exception.

Evaluation and Conclusions: Management Indicator Species (MIS) are vertebrate or invertebrate species selected for monitoring habitat conditions on FLNF because their population changes are believed to indicate the effects of management activities (1982 planning regulations at 36 CFR 219.19(a)(1)). The selection of management indicator species was primarily based on their association with habitats subject to active structural manipulation, such as creation of temporary openings, regeneration of aspen or oak stands, or grassland habitat maintenance. Table 2-10 provides the MIS and associated habitat type as provided in the Forest Plan, Appendix C.

Table 2-10. Management Indicator Species habitat types.

Major issue or habitat	Management Indicator Species
Grassland	Savannah sparrow, bobolink, eastern meadowlark
Shrubland	Common yellowthroat
Contiguous mature forest	Black-throated blue warbler
Young deciduous trees (age 0-9 years)	Chestnut-sided warbler
Aspen	Ruffed grouse
Oak-hickory	Gray squirrel

Forest Plan direction to maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals includes striving toward specific forest habitat composition and age class objectives.

Forest Service staff have monitored these species on FLNF since 1987 to assess changes in abundance or availability of their preferred habitats. Collection of population data has been facilitated through the efforts of local universities, the NYDEC, and numerous volunteer groups and individuals. It has proven difficult to consistently collect annual population data due to a variety of factors such as weather, staffing, and funding. Evaluation of data collected since 2006 has not indicated any discernable MIS population trends. Survey and monitoring protocols are effective; in that they are easy to follow and can and do provide information that can be duplicated each year. Monitoring protocols, however, are limited in the amount of data they can provide, and results must be used in conjunction with other information gathered at state-wide and regional levels. Due to small sample sizes and other limitations associated with MIS data, statistically significant trends are very difficult to detect for FLNF.

The use of MIS as a management concept was discontinued in 2012 when the planning regulations were revised (2012 planning regulations, 36 CFR 219) because the effectiveness of MIS monitoring was determined to be unreliable. As a result, MIS monitoring is no longer required as part of NFMA implementation.

Recommendations: Remove this question from the monitoring program.

Monitoring Item Name: Wildlife Reserve Trees

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: Are we retaining the best individual trees and snags? How do they persist/improve/degrade over time? How well did retained future trees and snags develop over time?

Monitoring Driver: Forest Plan Goal 2 and Wildlife Reserve Tree Objectives, and Forest-wide Wildlife Reserve Trees - General Standards and Guidelines.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Included in fiscal years 2006 annual monitoring and evaluation report, and fiscal years 2012 and 2013 combined annual monitoring and evaluation report.

Evaluation and Conclusions: Forest Plan direction includes objectives, and Standards and Guidelines for retention of wildlife reserve trees which include roost, nest, and den trees; cavity trees; snags; and fruit- or mast-producing trees and shrubs. Wildlife reserve trees also include patches of uncut trees retained within areas where harvest reduces basal area of the stand below 30 square feet per acre. Wildlife reserve trees are important for increasing the complexity of habitat structure, which, in turn, supports increased diversity of wildlife species.

Conditions and requirements for the retention of appropriate numbers and distribution of wildlife reserve trees are included in timber marking guides for each individual timber sale. Forest Service staff have verified these conditions are being met throughout the timber sale administration process. Surveys have not been specifically completed to determine the persistence, improvement, or degradation of wildlife reserve trees over time, or how well suitable wildlife trees or snags develop over time. Informal observation suggests that suitable wildlife trees are abundant and well distributed across FLNF.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Terrestrial Wildlife Population

Monitoring Item Name: Bald Eagle

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: Do we have bald eagles on/near the FLNF? Are they nesting? Are they nesting successfully? Do they need site-specific protection or habitat management?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports. The fiscal year 2011 annual monitoring and evaluation report was the only exception.

Evaluation and Conclusions: The bald eagle (*Haliaeetus leucocephalus*) is not federally listed as a threatened or endangered species for FLNF and is not included as a Regional Forester Sensitive Species per the updated list dated December 2011. The New York Department of Environmental Conservation (NYDEC) reports that bald eagles have increased in numbers across New York State since 1993. Bald eagles do not nest on FLNF, but they do nest on the nearby Montezuma Wildlife Refuge. Occasionally transient birds fly over FLNF lands.

Recommendations: Consider removing this question from the monitoring program until bald eagles are confirmed to be nesting on NFS lands. If retained, the next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Management Indicator Species Population Trends

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: What are population trends of Management Indicator Species (MIS)? To what extent are MIS responding to Forest Service management of suitable habitat?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives, and National Forest Management Act (NFMA) requirements for MIS (36 CFR 219.19(a)).

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2010 annual monitoring and evaluation reports.

Forest Plan direction to maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals includes striving toward specific forest habitat composition and age class objectives. Forest Service staff worked with local volunteers, conservation organizations, and state and federal agencies to gather data for MIS following nationally accepted protocols. Monitoring protocols, however, are limited in the amount of data they can provide, and results must be used in conjunction with other information gathered at state-wide and regional levels. The fundamental nature of MIS data severely restricts the ability to draw robust or meaningful conclusions about specific trends of MIS populations and associated habitats resulting from management activities or natural processes.

The use of MIS as a management concept was discontinued in 2012 when the planning regulations were revised (2012 planning regulations, 36 CFR 219) because the effectiveness of MIS monitoring was determined to be unreliable. As a result, MIS monitoring is no longer required as part of NFMA implementation.

Recommendations: Remove this question from the monitoring program.

Monitoring Item Name: Northern Goshawk

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: What is the population trend of northern goshawks on the FLNF and adjacent lands?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports. The fiscal year 2011 annual monitoring and evaluation report was the only exception.

Evaluation and Conclusions: Northern goshawk (*Accipiter gentilis*) remains listed as a Regional Forester Sensitive Species updated December 2011. All project analyses include a biological evaluation to ensure sensitive species viability and to preclude trends toward endangerment that would result in the need for Federal listing. Due to the size of FLNF, goshawk populations are restricted to one or two pairs of nesting birds. Goshawk pairs require large territories with a wide variety of habitat conditions to nest, forage, and raise their young. Goshawks also move between numerous nest sites, therefore occupancy of within FLNF would be expected to be intermittent, at best. Over the years it has been common for forest visitors, volunteers and staff to report seeing or hearing goshawk. Although active nests have been reported to occur in the southern and northern portions of FLNF, generally with more activity in the southern portion, no verifiable nests have been confirmed.

Recommendations: Consider removing this question from the monitoring program because it is unlikely to provide meaningful information. If retained, the next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Threatened, Endangered, and Sensitive Species - Bats

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: Do Indiana and eastern small-footed bats roost, forage, hibernate on the FLNF? Do they need protection or habitat management?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports. The fiscal year 2011 annual monitoring and evaluation report was the only exception.

Evaluation and Conclusions: Indiana bat (*Myotis sodalists*) is Federally listed as an endangered species. All projects must comply with Endangered Species Act consultation requirements prior to implementation to ensure Indiana bat protection. Eastern small-footed bat (*Myotis leibii*) remains listed as a Regional Forester Sensitive Species updated December 2011. Northern long-eared bat (*Myotis septentrionalis*), little brown bat (*Myotis lucifugus*), and tri-colored bat (*Perimyotis subflavus*) were added to the 2011 RFSS list. All project analyses include a biological evaluation to ensure sensitive species viability and to preclude trends toward endangerment that would result in the need for Federal listing.

Since 2006, population of cave- and mine-hibernating bats have suffered unprecedented population declines from White Nose Syndrome (WNS). The impact of this disease on Indiana bats and eastern small-footed bats is not known, as these bats were rare or uncommon prior to WNS occurrence. Other bat species, particularly northern long-eared bats and little brown bats, have suffered population declines ranging from 90 to 99 percent across the New York-Vermont region.

Recommendations: Consider changing this monitoring question to include additional bat species, specifically the northern long-eared bat, little brown bat, and tri-colored bat. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Threatened, Endangered, and Sensitive Species - Herptiles (wood turtle, Jefferson and blue-spotted salamanders)

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: What are the population trends of black rat snake; bog and wood turtles; Jefferson, blue-spotted, longtail, and slimy salamanders on the FLNF and adjacent lands? Do they need protection or habitat management?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal year 2006 annual monitoring and evaluation report, and fiscal years 2012 and 2013 combined annual monitoring and evaluation report.

Evaluation and Conclusions: Bog turtle (*Clemmys muhlenbergii*) was removed from the Regional Forester Sensitive Species list updated December 2011. No other reptile species is included on the list.

The black rat snake; bog and wood turtles; Jefferson, blue-spotted, longtail, and slimy salamanders are all species that occur in the Finger Lakes Region. Although these species could occur on FLNF, no specific surveys have been conducted to determine their presence.

Recommendations: Consider removing this question from the monitoring program because these species are no longer considered sensitive. If retained, the next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Threatened, Endangered, and Sensitive Species - Mammals (wolf, cougar, lynx)

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: Do gray wolves, eastern cougars, or Canada lynx occur on or near the FLNF?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal year 2006 annual monitoring and evaluation report, and fiscal years 2012 and 2013 combined annual monitoring and evaluation report.

Evaluation and Conclusions: Gray wolf (*Canis lupus*) and eastern cougar (*Felis concolor cougar*) are Federally listed as endangered species, and Canada lynx (*Lynx canadensis*) is Federally listed as threatened. These species are protected by the Endangered Species Act. The FLNF has only historical occurrence records for gray wolf, eastern cougar, and Canada lynx. These species are not known to occur on or near FLNF. The presence of these species on FLNF at any time in the foreseeable future is unlikely.

Recommendations: Consider removing this question from the monitoring program since the presence of these species on FLNF at any time in the foreseeable future is unlikely. If retained, the next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: West Virginia White

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: Do West Virginia whites occur on FLNF? Do they need protection or habitat management?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Included in fiscal years 2006 to 2010 annual monitoring and evaluation reports.

Evaluation and Conclusions: The West Virginia white butterfly (*Pieris virginiensis*) remains listed as a Regional Forester Sensitive Species updated December 2011. All project analyses include a biological evaluation to ensure sensitive species viability and to preclude trends toward endangerment that would result in the need for Federal listing. There has been only one West Virginia white (WVW) observed, and subsequently reported, on the FLNF since 2007. One of the primary host plants for WVW is toothwort, which has been located at a few different spots within FLNF. Unfortunately, toothwort populations are being displaced by the non-native and invasive garlic mustard, which is a close but lethal relative. Invasions of garlic mustard are causing local extirpation of the toothworts and are toxic to the larvae of native butterflies such as the WVW. Controlling the spread of garlic mustard is crucial in maintaining vital WVW habitat. Controlling the spread of non-native invasive plants on FLNF is extremely challenging. The localized targeted control treatments of garlic mustard where toothwort is abundant would be highly beneficial to the viability of WVW.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2015.

Vegetation

Monitoring Item Name: Age Class Distribution

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: To what extent are management actions and natural processes moving age class structure of lands managed using even-aged silvicultural systems toward desired objectives in Table 2.2-2 in the revised Plan?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives. Specifically, the objectives that states management should apply age-class objectives found in Forest Plan Table 2.2-2 to suitable lands that will be managed using even-aged silvicultural systems to provide a variety of habitat conditions for wildlife and create a balanced distribution of age classes to meet timber objectives. Also, maintain a full range of age classes from young to old, including late successional and multi-age conditions, within management areas where age class can be actively manipulated toward goals, objectives, and desired future conditions.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: The Forest Plan identified a desire to maintain and enhance age class diversity within forested stands via even-age and uneven-age silvicultural systems as well as natural processes. Age class objectives associated with even-age systems are identified in Forest Plan Tables 2.2-2 and 2.2-3, while the objective for managed uneven-age forest structure is a minimum of 20 percent of lands suitable for timber management. Tables 3.5-9 through 3.5-12 in the Forest Plan Final Environmental Impact Statement (FEIS) display a forest-wide summary of age class distribution by forest community type as of approximately 2004 and can be used in conjunction with the Table 3.5-8 for general comparison.

The Forest Plan states, “Because balancing age classes to meet objectives takes time, it may be decades before these age class objectives are attained” (Forest Plan, p. 11). This caveat also applies to uneven-aged systems and natural processes, as FLNF is still recovering from the land use history of the 19th and early 20th centuries, and most forested stands are less than 100 years old. The area that became FLNF was occupied by the Seneca and Cayuga Nations of the Iroquois Confederacy until around 1790, when they were driven off their lands by the Colonial army. There is evidence that the tribes engaged in agriculture and burning in parts of this area. Once settled by war veterans and others, most of FLNF was cleared for agriculture purposes. Farming was abandoned in large parts of the area by the 1930s, and many of these farms were purchased by the federal government. Reclamation of the worn-out lands occurred through the 1950s via planting of trees to stabilize soils, and eventually FLNF was established. The FLNF consists of a mix of softwood plantations that originated from this effort and native even-age forest that naturally reclaimed other parts of the landscape. Over 80 percent of forested stands on FLNF with age data fall between 60 and 110 years old.

During planning for vegetation management, one of the aspects the agency looks at is structural diversity, including age class diversity. Stands that fall within the young and early mature age classes tend to have lower structural diversity, so the objective generally is to develop the regenerating and older mature and old age class, and balance age class distribution in lands managed using even-age management to work toward the age class objectives (Forest Plan, Table 2.2-2). Uneven-age management diversifies forest structure by creating additional age classes within a forest stand; both maintenance of northern hardwood forests and conversion of softwood plantations to mixedwood forests can be facilitated using this system.

Under natural disturbances, structural diversity develops with the aging of forest stands and the natural development of an uneven-age structure, along with the appearance of small to moderate-sized patches of regenerating trees resulting from wind and ice storms as well as insects and diseases. If the agency did nothing these conditions would develop on their own, probably in another 100 to 150 years, but in the meantime, stands would continue to have low levels of structural diversity.

To balance age classes toward objectives and to diversify age classes, the agency seeks opportunities to regenerate stands to create early successional habitat, as this habitat is ephemeral, lasting 10 to 15 years. The creation of patches of regenerating forest, whether by cutting or natural processes, is the only mechanism by which age class diversity and many elements of structural diversity can be achieved. As an ephemeral habitat, regenerating forest is highly valued by a suite of wildlife species that will search the landscape for this habitat. The agency also seeks areas to thin for forest health and to allow growing room so that trees can continue to be productive into the old age class, particularly in areas managed using long rotations. Based on field inventories, the agency also determines areas and habitats that are best managed using uneven-age systems to develop or enhance those conditions. Lands that are not part of the suitable land base are allowed to develop under the influence of natural disturbances.

The Forest Service periodically analyzes various areas and watersheds to determine if there are management needs. As part of this analysis, specialists gather existing vegetation data and identifies opportunities to balance and diversify age class and structure to move forest conditions toward Forest Plan objectives. These opportunities are then discussed with the public, analyzed further via environmental analysis, and then decided upon. The documentation for these decisions generally includes a table that lists the stands to be managed and the type of treatment to be applied (such as clearcut or selection cut). Management objectives for each stand are further clarified and specified in a management prescription after the decision is made. Once the management prescription is completed, the information about the stand and treatment is updated in various databases and reports.

Monitoring the progress made toward desired age class and structure objectives is conducted by gathering this information and running various reports. Based on these reports, the agency can report on the acres treated to move age class structure toward desired objectives. There has only been one timber sale (Cotton Mill sold in 2007) on FLNF since the revision of the Forest Plan, along with some non-commercial activities to regenerate aspen habitat. Table 2-11 provides a summary of the treatments over the past seven years that have contributed toward moving age class diversity toward the objectives identified in Forest Plan, Table 2.2-2. A comparison table to the FEIS age class tables is provided in Table 2-12.

Table 2-11. Acres treated from 2006 to 2013 to move age class distribution toward Forest Plan objectives.

Age Class Objectives	Acres
Create regenerating age classes ¹	47
Thin to improve health and longevity	54
Uneven-age management	0
Total	101

Source: Forest Service data

¹ Includes both commercial and non-commercial treatments

Table 2-11 indicates treatments implemented to date on FLNF consist of even-age regeneration harvests and thinning and no uneven-age management. However, there has only been one timber sale sold since the revised Plan went into effect, and the focus of that effort was on management for oak, for which even-age management is the most appropriate silvicultural system. No northern hardwood stands have been treated where uneven-age management would be an appropriate system. While the proportion of uneven-age management completed is less than 20 percent, there are at least 20 percent of suitable lands that will be managed using this system when those areas are identified for future management.

Active vegetation management has been occurring on FLNF since 2006, although clearly not at a scale anticipated as indicated in Forest Plan, Appendix D, Table D-5 (Forest Plan, p. D-4). However, as indicated in Table 2-12, the forested lands on FLNF are aging quickly. Across all forest types, the old age class has almost tripled in area, increasing from five percent to 14 percent of the forested landbase. For each habitat type the old age class doubled or tripled as well, and for all but hardwoods the mature age class has decreased, indicating that the shift from mature to old is not being compensated by a shift from young to mature. For hardwoods, which had far more acres in the young age class at the time of Forest Plan revision, some of this young age class has transitioned to mature, over-compensating for the transition of mature to old age class. The trends are similar for the total forested landbase as well as for just the suitable lands.

Table 2-12. Comparison of existing age class distribution across all federal lands with lands suitable for timber management, the existing condition documented in the FEIS, and Forest Plan age class objectives.

Habitat Type	Age Class (years)		Existing Condition (all federal lands) ¹		Existing Condition (suitable) ²		Existing Condition 2006 Plan ³		Forest Plan Objectives
	yrs	class	ac	%	ac	%	ac	%	%
Mixed Hardwoods	0-9	Regen.	0	0	0	0	0	0	5-10
	10-59	Young	601	20	550	22	906	33	30-50
	60-119	Mature	1,810	63	1669	69	1647	60	25-35
	120+	Old	482	17	213	9	192	7	5-10
Oak	0-9	Regen.	21	1	21	1	54	2	5-10
	10-59	Young	154	6	141	7	243	9	30-50
	60-99	Mature	1,995	74	1499	73	2265	84	25-35
	100+	Old	517	19	399	19	135	5	5-10
Softwood	0-9	Regen.	0	0	0	0	0	0	10-20
	10-39	Young	95	3	95	4	242	8	15-35
	40-99	Mature	2,714	93	2382	94	2756	91	35-55
	100+	Old	97	3	70	3	30	1	5-40
Aspen	0-9	Regen.	26	12	26	12	0	0	10-20
	10-49	Yng/Mat	50	22	50	23	158	66	70-80
	50+	Old	149	66	139	65	81	34	5-15
All Types		Regen.	47	1	47	1	54	1	
		Young	899	10	836	12	1549	18	
		Mature	6,519	75	5550	76	6669	76	
		Old	1,245	14	821	11	439	5	

¹ These acres do not include the 464 acres of regenerating age class harvested between 2007 and 2013 that have not been entered into Forest Service databases to date.

² Applies only to federal lands suitable for timber management.

³ Acres are based on FEIS, Table 3.5-8, with proportions by age class for all management areas derived from Tables 3.5-9 through 3.5-12; age class proportions for softwood stands are for native softwood stands, as indicated in the FEIS, but the FEIS text indicates that proportions are similar for plantation stands, and so are applied here to all softwood stands.

The regenerating age class across all types is well below Forest Plan objectives for suitable even-aged lands. While there are 47 acres of regenerating age class represented in Table 2-12, this represents only 0.5 percent of the forested landbase.

The mature and old age classes for hardwoods, oak, and softwoods together comprise 80 to 96 percent of each type, which indicates FLNF is moving apace toward older and more uneven-age structure on

forested lands. This increase in structural diversity is desired and beneficial and will continue for the foreseeable future. However, there are two areas of concern associated with the aging and succession of the forests predominantly through natural disturbance processes.

First, until 5 to 20 acre or larger openings are created through natural processes as these even-aged stands start to fall apart, which may not happen for another 100 years or more, regenerating forest habitat of that size will have very limited availability on FLNF. Without the establishment of larger patches of early successional habitat over the next 100 or more years, a whole suite of early successional species strongly associated with this habitat may decline across FLNF lands.

Second, as the suitable landbase ages along with the other forested lands on FLNF, eventually areas of windthrow damage will become a more common occurrence. For forests that haven't been thinned to sustain productivity and growth, many of these old even-aged stands will decline due to natural insect and disease processes, becoming increasingly vulnerable to being blown down by wind events that are anticipated to increase in frequency and intensity over the next 50 to 100 years. With 87 percent of the suitable landbase in the mature and old age classes, and with the existing rate of regeneration harvesting, it is likely that a substantial proportion of suitable forest land will be affected by a combination of insects, disease, and natural disturbances that will create large areas of dead trees. Allowing the suitable landbase to get to that point reduces the management options, essentially limiting management to wholesale regeneration and creation of a very large area of even-age forest similar to what exists now. Understanding these trends can help lead to the development of strategies to accelerate balancing of age classes and keeping forest management options open.

Management options should consider treating every suitable and accessible acre in the mature age class during project planning to enhance health and longevity. This could be accomplished through thinnings, improvement cuts, uneven-age management, or other alternative silvicultural treatments. By prolonging the health and longevity of these forested stands, as well as increasing structural diversity in some, the agency can prolong options available for management.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Forest Plan, Table 2.2-2 should be evaluated to determine if regenerating age class objectives should be adjusted given the trends discussed. If stands are only entered every 20 years instead of 10 years, then the abundance of regenerating habitat created would need to be double what is identified in the table to keep proportions within the ranges identified for the other age classes. For instance, if only five to ten percent of the hardwood landbase is regenerated every 20 years, then it is impossible to meet the other age class objectives in the table for hardwoods. The ability to achieve age class objectives is further limited by the relatively low Allowable Sale Quantity that caps decadal timber volume to be sold at 2.58 million board feet (see response to the Outputs Accomplished - Volume and Acres of Timber Offered and Sold monitoring item).

Monitoring Item Name: Aspen-Birch and Early Successional Habitat

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How many acres are being treated with varying management actions to maintain and increase aspen-birch and regenerating forest?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives. Specifically, the objective that states management should increase acres of aspen-birch forest and regenerating forest in order to support species that prefer these habitats.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: The Forest Plan identified a set of habitat composition objectives associated with the unique cultural and ecological characteristics of the Forest. Where parts of FLNF are dominated by forests, the desire is to conduct vegetation management to support the natural transition of forested ecosystems toward composition that is more suited to the natural tendencies of the sites within which they are found. A small proportion of these lands would be managed for aspen, and uncommon but important habitat type. For the lands maintained for open conditions, the desire is to maintain grasslands and shrublands at levels higher than would be expected under natural disturbance regimes to provide important habitat for a variety of animal and plant species. These desires are provided in Table 2-13 which reproduces Forest Plan, Table 2.2-1.

Table 2-13. Habitat composition objectives for all FLNF lands.

Forest and Habitat Type	Percent of Forest Area
Mixed Hardwoods (Northern Hardwoods and Oak)	35-50
Aspen	1-3
Softwoods	6-10
Shrubland	10-12
Grassland	33-35

Source: Forest Plan, Table 2.2-1, p. 11.

In addition to management of these habitats, FLNF is also host to a variety of conifer (i.e. softwood) plantations of various species. Most of FLNF had been cleared at least once by the end of the 19th century, and much of it was also farmed through the early 20th century. To restore degraded agricultural lands, the U.S. Soil Conservation Service set about planting the degraded fields with a variety of conifer species that appeared suited to site conditions. Most of these softwood species were not native to the region, but planting them did help to stabilize soils and restore organic material to the forest floor. When the Forest Service was assigned management over these lands, the agency sought to maintain these plantations until they were mature, at which time they would be harvested and restored to native tree species.

While planning for vegetation management in the forested landbase, sites are identified where the forest type dominating the site appears to be less ecologically suited to it than another native type. Mapped ecological landtypes (ELTs) are used to identify these inconsistencies; ELTs use site, soil, and vegetation information to predict the general natural communities expected to occupy a site over the long-term under natural processes. Where there are inconsistencies (e.g. conifer plantations, hardwoods on oak sites), Forest Service staff determine the likelihood of success at converting one general habitat to another and identify management strategies to implement habitat shifts for those areas that have a reasonable likelihood of success.

During planning, Forest Service staff also seek ways to maintain and enhance existing habitats that are short-lived or uncommon and have high value for a variety of wildlife and plant species. Such habitats include forests dominated by aspen and other early successional hardwoods.

Various areas and watersheds are periodically analyzed to identify potential management needs. As part of this analysis, existing vegetation data is compiled to identify opportunities to shift the habitat composition of the area closer toward Forest Plan objectives, as applied to ELT ecological conditions. These opportunities are then discussed with the public, analyzed further via environmental analysis, and then decided upon. The documentation for these decisions often includes a table that lists the current composition of the stands to be managed, and the management objectives for the stands. Those management objectives are further clarified and specified in a management prescription after the decision is made. These prescriptions describe in more detail the current stand composition, the desired stand

composition, and the treatment or type of cutting that will take place to work toward that composition. Once the management prescription is implemented, the information about the stand and treatment is updated in various databases and reports.

Monitoring of the progress made toward desired composition objectives is conducted by gathering this information and running various reports. Table 2-14 displays acres treated since 2006 that have moved composition toward desired objectives (Forest Plan, Table 2.2-1). The FLNF is currently approximately 16,346 acres, so a one percent shift in composition from one type to another would require about 164 acres of treatment. Since 2006, just one timber sale (Cotton Mill) has been implemented on FLNF that contributed toward composition objectives in the Forest Plan. Since 2010, non-commercial aspen management has also been implemented each year.

Table 2-14. Acres treated from 2006 to 2013 to move habitat composition toward Forest Plan objectives.

Habitat Objective	Acres
Maintain and create aspen-paper birch habitat	26
Maintain and create early successional habitat ¹	1,399
Enhance and restore oak habitat	65
Convert non-native softwood plantations to native habitats	11
Maintain grasslands for wildlife in a grass/forb condition	679
Maintain shrublands	683

Source: Forest Service data.

¹ Includes activities that create or maintain these conditions, including shelterwood cuts, seed tree cuts, clearcuts, non-commercial aspen cuts, and grassland and shrubland maintenance.

Forest Service staff have not yet initiated a landscape-scale project on FLNF, so activities on the Forest tend to be mostly limited to maintenance of existing habitats, like grasslands and shrublands. There has been a limited amount of aspen management at levels less than what would be needed to perpetuate aspen within the Forest over the long-term. Early successional habitat is predominantly represented by the grasslands and shrublands (1,362 out of 1,399 acres, or 97 percent). Grasslands are maintained on a 3-year schedule of at least mowing and some burning. Not all existing shrublands have been managed during this period, and will need treatment soon to maintain their desired condition (such as a mix of grasses, forbs, shrubs, and small patches of trees). As part of the Cotton Mill timber sale, an 11-acre plantation was converted to native hardwoods, particularly oak, contributing to the objectives of removing non-native plantations and enhancing oak habitat.

Conifer plantations are actively declining due to Sirex woodwasp and other insects and pathogens. Forest Service staff will be developing a broader proposal to address this issue in the near future, but for now these plantations are beginning the natural transition from composition by non-native trees to native trees. Non-native invasive plants (NNIPs) also continue to occur in abundance on FLNF, and as plantations become more open due to tree mortality or due to harvesting, the disturbed ground and open canopy will provide hospitable conditions for many of the NNIPs. The Invasive Plant Control Environmental Assessment/Decision Notice was completed in 2008, allowing a variety of methods to control NNIPs, and these methods will be important to employ in preparation for conversion of these plantations to native forest habitat.

Aspen stands are still represented on FLNF at levels within the desired range for composition objectives. Over the past four years the Forest has been able to initiate small patch cuts to regenerate some existing aspen stands and create new ones. Continuation of these projects will be important to keep pace with the aging and decline of stands of this species. Most aspen stands are now either mature or over-mature, and once they start to decline, they quickly die and are replaced by species expected to live two to three times as long. Without steady commitment to regenerating existing and creating new aspen stands, it is unlikely that FLNF will meet the objective of 80 acres of regenerating aspen within the first decade. Aspen is the

most likely habitat to fall below the lower threshold of one percent in the Forest Plan composition objectives over the next 50 years at the current level of treatment.

Oak stands are also aging, and trees species growing below large old oaks tend to be northern hardwood species, particularly red maple, beech, and sweet birch. While oak trees are long-lived and these stands will still be considered oak and oak-hardwood stands in 50 years, as the understory ages it will become almost impossible to restore oak to these stands. Understories of red maple and beech make the habitat more moist and humid, which creates a competitive advantage for young northern hardwood species. While it will take longer, at the rate of current management it is likely many of the Forest's existing oak stands will eventually be replaced by northern hardwoods. A warmer climate has the potential to be advantageous to oak, but only if on balance the climate is also drier or includes significant drought periods that kill or stress northern hardwoods in the understory. If the climate is moister on balance, then other hardwoods like maples and beech will likely replace these forests.

The Forest Service should continue to work toward the existing habitat composition objectives identified in the Forest Plan, Table 2.2-1. Progress is progress, however slow, and will ensure that the presence of each of these habitats in the landscape is maintained. Additionally, a strategic plan should be developed for maintaining the presence of oak and aspen in a manner that is cost-effective given expected staffing and funding. This plan should also account for conversion/transition of conifer plantations to native forest habitat, and the risks associated with invasion of NNIPs.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Forest Plan, Table 2.2-1 was developed prior to the development of climate change viability analyses and adaptation strategies for New York. Over the next few years, Forest Service staff will consider the best available science on these issues and identify if any changes are needed to Table 2.2-1.

Monitoring Item Name: Conversion of Conifer Plantations to Native Hardwoods

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How many acres are being treated with varying management actions that remove non-native conifer plantations and replace with native hardwoods?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: See response to the Aspen-Birch and Early Successional Habitat monitoring item.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018. Also, see response to the Aspen-Birch and Early Successional Habitat monitoring item.

Monitoring Item Name: Forest-wide Habitat Composition (landscape scale)

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: To what extent are management actions and natural processes moving Forest composition toward desired objectives in Table 2.2-1 of the revised Plan?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: See response to the Aspen-Birch and Early Successional Habitat monitoring item.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018. Also, see response to the Aspen-Birch and Early Successional Habitat monitoring item.

Monitoring Item Name: Late-Successional Forest

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How many acres are there within the old forest age class, and how many acres are developing late successional forest characteristics?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives. Specifically, the objective that states management should increase acres of late-successional and old forest habitats through natural successional processes within lands not suitable for timber management, and through use of extended rotations within lands suitable for timber management.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: See response to the Age Class Distribution monitoring item.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018. Also, see response to the Age Class Distribution monitoring item.

Monitoring Item Name: Oak and Oak-Pine Forest Maintenance and Restoration

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How many acres are being treated with varying management actions that will likely result in the maintenance and restoration of oak and oak-pine forests, and oak within oak-northern hardwood forests?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions See response to the Aspen-Birch and Early Successional Habitat monitoring item.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018. Also, see response to the Aspen-Birch and Early Successional Habitat monitoring item.

Monitoring Item Name: Oak Regeneration

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How many acres were treated to encourage oak regeneration?

Monitoring Driver: Forest Plan Goals 2 and 5 and associated Objectives. Specifically, the objective that states management should maintain oak-pine natural community presence and continuity using natural as well as human-caused disturbance processes including fire use when necessary.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: See response to the Aspen-Birch and Early Successional Habitat monitoring item.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018. Also, see response to the Aspen-Birch and Early Successional Habitat monitoring item.

Monitoring Item Name: Outputs Accomplished - Volume and Acres of Timber Offered and Sold

Monitoring Question: How close are actual outputs and services to projected outputs and services?

Detailed Monitoring Question: How do actual outputs compare to those projected in Forest Plan Appendix D, Proposed and Probable Practices, specific to timber offered and sold?

Monitoring Driver: Forest Plan Goal 8 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. This question has been included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The Forest Plan, Appendix D, Table D-2 provides the average annual allowable sale quantity (ASQ) by decade (Table 2-15). The average ASQ is the maximum volume that may be offered and sold during a decade of Forest Plan implementation from land identified for timber management. During the first decade (2006 to 2015) the average annual ASQ is 258 thousand board feet (MBF), or .258 million board feet (MMBF) of timber volume. Average annual ASQ means that the amount of timber that may be sold on the Forest in a given year may exceed 258 MBF as long as the decadal ASQ (2.58 MMBF) is not exceeded.

Table 2-15: Forest Plan, Table D-2: Maximum annual average allowable sale quantity for sawtimber and pulpwood combined.

Decade	Annual Allowable Sale Quantity (thousand board feet)	Decadal Allowable Sale Quantity (thousand board feet/ million board feet)
1 (2006 to 2015)	258	2,580/ 2.58
2 (2016 to 2025)	258	2,580/ 2.58

Table 2-16 provides actual timber volume sold annually during the period from fiscal years 2006 to 2013. The amount of timber sold each year remains well below the levels stated in the Forest Plan due mainly to staff and funding limitations. Total 685 MBF of volume sold from 2006 to 2013 is approximately 33 percent of the allowable sale quantity of 2,064 MBF for this period (assuming 258 thousand board feet per year). This reduced application of silviculture, subsequent stand improvement and stand establishment work results in reduced levels of outputs, goods, services and habitat conditions that would result from planned levels of timber management and harvest.

Table 2-16: Actual annual timber volume sold from fiscal years 2006 to 2015.

Fiscal Year	Timber Volume Sold (thousand board feet)
2006	18
2007	505
2008	0
2009	0
2010	0
2011	0
2012	0
2013	0
Total	685

The Forest Plan, Appendix D, Table D-4 lists the estimated acreage of silvicultural practices that would be used to work toward the vegetative and other multiple-use desired conditions and objectives of the Forest Plan. Table 2-17 shows the actual acres harvested by treatment type from 2006 to 2013 compared to the estimated acreage for the first decade of Forest Plan implementation (2006 to 2015).

Table 2-17: Actual acres of harvest by treatment type from 2006 to 2013 compared to the estimated acreage for implementation for 2006 to 2015.

Estimates of Management Practices	Acres in Decade 1 Acres ¹	Acres Harvested Fiscal Years 2006 to 2013	Percent of Total Estimated Acres
Even-aged Regeneration Harvest	156	11 ²	<1
Even-aged Intermediate Harvest	352	54	15.3
Uneven-aged Harvest	360	0	0
Total Harvest	868	65	<1

¹ Forest Plan, Appendix D, Table D-4.

² The only even-aged regeneration harvest treatment implemented from 2006 to 2013 is clearcut.

Actual acres harvested for the first eight years of Forest Plan implementation are well below acres estimated for all treatment types during the first decade. Unless harvest acres are substantially increased in the next few years, the vegetative and other multiple-use desired conditions and objectives envisioned by the Forest Plan will be substantially underachieved. See also response to the Age Class Distribution monitoring item.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Rare or Outstanding Natural Areas

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: To what extent are rare and outstanding biological, ecological, or geological features on the FLNF being protected, maintained, or enhanced?

Monitoring Driver: Forest Plan Goal 6 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports. This question was combined with the Ecological Type Mapping and Representation monitoring item in the reports.

Evaluation and Conclusions: The significant ecological features to be monitored and evaluated for this question are listed in Table 3.10-3, p. 3-213 of the Forest Plan Final Environmental Impact Statement (FEIS). The monitoring schedule established in 2006 includes an average of two significant sites visited every year, and every site visited at least once every five years. The primary emphasis of monitoring to address this question during plan implementation is (1) to evaluate these significant ecological features in terms of quality and disturbances, and (2) to maintain them at their current level of quality or higher. This may mean controlling incursions of non-native invasive plants (NNIP) and all-terrain vehicles, and it could mean using prescribed fire to maintain a natural disturbance regime. Monitoring has occurred before and after management activities to determine if actions contributed to or detracted from composition, structure, and function of the sites in relation to their values.

All but one of the significant ecological features tracked was monitored since 2006. Monitoring approaches during the first round have been variable, depending on time and resources, but continue to demonstrate the importance of gathering precise GPS coordinates for special features and rare plant populations so they can be relocated efficiently. Compiling, maintaining, and updating the data gathered during these monitoring efforts continues to be a challenge, but will need to be completed to develop monitoring objectives for the sites. Looking forward, coordinating among individual monitors will be important to avoid duplication and leverage the capacity of program areas and organizations to conduct monitoring more strategically based on complementary skills.

The presence and abundance of NNIP continues to be a concern with FLNF significant ecological features. Very few areas are un-infested, although some areas and portions of areas appear to have limited infestations which can be more effectively controlled than in areas where they are pervasive. It is important to continue to document known and future identified infestations immediately following the monitoring so that information and management can be effectively coordinated. It is also likely that because of NNIP concerns and other potential issues, sites will need to be visited more frequently than the five-year cycle developed in 2006, particularly if management actions are undertaken. It will be important to prioritize sites for monitoring with least disturbed examples possibly being visited less frequently.

Monitoring has found that impacts to the integrity of FLNF ecologically significant sites and features on are most often associated with recreational uses and further complicated by NNIP infestations. The ecology and recreation programs continue to strive toward a close working relationship so that management of recreation use within these special areas can support their ecological integrity.

See also response to the Ecological Type Mapping and Representation monitoring item.

Recommendations: No change to the monitoring question but consider combining it with the Ecological Type Mapping and Representation monitoring question and changing the monitoring and reporting frequency to 5 years. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014. Also, see response to the Ecological Type Mapping and Representation monitoring item.

Monitoring Item Name: Regeneration Harvest Opening Size

Monitoring Question: Are maximum size limits for harvest areas appropriate, and should these limits be retained?

Detailed Monitoring Question: Is the maximum opening size for even-aged harvesting being met and are we accomplishing resource objectives? Are we meeting wildlife habitat regeneration objectives in both size and quantity of openings by habitat types?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives, Chapter 2 Forest-wide Management Direction, Section 2.3.5 Openings Standard S-1, and National Forest Management Act temporary opening size limitation requirements.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Included in the fiscal years 2007 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The 2006 Forest Plan Forest-wide management direction states that temporary openings created through even-aged regeneration harvests should not exceed 30 acres within the Northern Hardwood, Hickory Management, and Future Old Forest Areas (MAs). Exceptions may include salvage of timber resulting from natural catastrophes caused by fire, insects, disease, ice or windstorm.

Forest Service staff tracks and monitors the size of even-aged regeneration harvest units (clearcuts, shelterwoods or variants) produced by timber sale implementation. This is accomplished through timber contract review by interdisciplinary teams prior to advertisement of timber sales. These reviews are documented in the Change Analysis documents signed by the responsible official and filed in sale folders at the Ranger District level. Additionally, site specific project monitoring field reviews have been conducted on a sample of timber sales across the Forest to assess consistency with the Forest Plan (see response to the “Standards and Guidelines - Implementation and Effectiveness Monitoring” monitoring item).

The maximum size limits for temporary openings created by even-aged regeneration harvest have not been exceeded for sales offered or cut between fiscal years 2006 and 2013. Only one even-aged regeneration harvest was implemented (fiscal year 2010, Cotton Mill timber sale) totaling approximately 11.25 acres.

Forest Service staff will continue to incorporate temporary openings through even-aged management to the extent possible in vegetation management proposals and seek opportunities to create openings approaching maximum size limits where appropriate. Increased levels of timber harvest would create additional opportunities to meet habitat and forest structure objectives associated with openings.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Monitoring Item Name: Shelterwood with Reserves

Monitoring Question: What are the effects of management practices prescribed by the 2006 Forest Plan?

Detailed Monitoring Question: Can the shelterwood w/reserves method be used to: 1) maintain the big tree character in visually sensitive areas or to convert low quality stands to uneven-aged structure, 2) the ability to leave good quality, wind-firm trees of sufficient number, size, and distribution to maintain a pleasing overstory, and 3) the ability to retain the overstory until the regenerated stand is commercially thinned in 40-60 years?

Monitoring Driver: Forest Plan Goal 9 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: The Forest Plan includes direction to demonstrate innovative, scientifically, and ecologically sound management practices that can be applied to other lands (Forest Plan, Goal 9). Shelterwood with reserves is a silvicultural technique that has been developed relatively recently and has not been widely applied in the northeast. The technique has the potential to provide flexibility in meeting silvicultural objectives by regenerating stands while maintaining some overstory to address other concerns. In implementing this prescription in a number stands and collecting long-term data, the Forest has the potential to develop demonstration forestry project areas and areas where state-of-the-art silvicultural practices are applied.

The Kelly Sale Plot was established in 1990 and was re-measured annually before Forest Plan revision to provide long term data sets. The purpose for this demonstration site is to better understand survival and growth of overstory trees, epicormic branching response to overstory trees, regeneration response to the shelterwood with reserves harvest method overtime. Approximately 10 regeneration stocking plots have been marked with plastic stakes with 1/700-acre plots to measure sample seedlings, and 1/100-acre plots to measure sample saplings.

There is no record of sampling results, evaluations, or conclusions since 2006.

Recommendations: Consider discontinuation of this monitoring question if no records of sampling results are found. If retained, the next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Stocking Level

Monitoring Question: Are harvested lands adequately re-stocked according to Forest Plan goals?

Detailed Monitoring Question: Are lands adequately re-stocked according to stocking surveys?

Monitoring Driver: The National Forest Management Act requires suitable timberlands are adequately restocked following harvest.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2007 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The National Forest Management Act (NFMA) of 1976 requires all stand regeneration harvest activities on suitable timberlands that create forest openings be quickly reforested.

This monitoring item helps to determine if the Forest Service is meeting the requirements of NFMA. For the FLNF, this requires that any harvest activity effectively beginning stand-origination is reforested within five years of the harvest event.

Restocking sampling work involves visiting harvested stands and observing the new regeneration using numerous 1/700 and 1/100 acre sized circular plots to count seedlings and saplings. A plot is considered stocked if at least one acceptable tree seedling or sapling occurs in it. Reforestation success is measured on new plantations or harvested stands in years one, three, and five (if needed) following the planting or other regeneration effort. Successful reforestation is assured when new stands are certified as “free to grow” by year five. Only one first year evaluation survey was completed since 2006 for a clearcut harvest unit from the Cotton Mill timber sale. The 2011 survey conducted after one year of harvest shows the stand regenerating well with oaks, aspen and mixed hardwood represented. A five-year survey of the stand is scheduled for 2016.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Suited Timber Lands

Monitoring Question: To what extent is timber management occurring on lands suitable for such production?

Detailed Monitoring Question: Are lands termed unsuitable for timber production adequately described and mapped?

Monitoring Driver: The National Forest Management Act requires identification of lands suitable for timber production where commercial harvesting is allowed. The Forest Plan provides direction for harvest of timber on these lands in Chapter 2 Forest-wide Management Direction, Section 2.3.4 Timber or Vegetation Management Standards and Guidelines.

Monitoring Frequency: Every 10 years.

Evaluation Frequency: Every 10 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: The National Forest Management Act (NFMA) requires classification of National Forest System lands as not suited and suited for timber production during the development of Forest Plans. Suitable forest land constitutes the land base for determining the Allowable Sale Quantity (ASQ) where management for timber production occurs on a regulated basis. Land is considered tentatively suitable forest land when it has the capability of producing 20 cubic feet of commercial wood per acre per year. The process for determining forest land suitability for the FLNF Forest Plan is described in the 1982 version of the planning regulations (36 CFR 219.14) and is included in the Forest Plan FEIS (pp. 3-229). Approximately 5,700 acres were classified as suitable for timber production as part of the revision process culminating in the 2006 Forest Plan (Forest Plan FEIS, p. 3-231, Table 3.11-3). The management areas that are appropriate for timber production include the Oak Hickory and Northern Hardwood Management Areas. These management areas also contain some lands that are not appropriate for timber production such as inclusions of steep slopes, wet soils, and riparian areas.

The extent of timber harvesting on suitable lands from 2006 to 2013 is provided in response to the Outputs Accomplished - Volume and Acres of Timber Offered and Sold monitoring item since harvesting toward the ASQ is by definition based on harvest amounts from suitable lands. Forest timber staff refine and map unsuitable lands during timber sale planning from project specific inventory.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2023.

Monitoring Item Name: Sustainability of Special Forest Product Gathering

Monitoring Question: To what extent have Forest Plan Objectives been attained?

Detailed Monitoring Question: How many and what special forest products (SFPs) do people gather? How many require permits, and how many permits were issued annually, for which products/species? How many requests for permits were denied? How many SFPs are being evaluated for permit requirements?

Monitoring Driver: Forest Plan Goal 8 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports.

Evaluation and Conclusions: The public gathering of Special Forest Products (SPDs) is allowed by permit on FLNF. Although there are many miscellaneous SPDs gathered on FLNF such as Christmas trees, boughs, and sustainable harvesting of select species such as leeks, fiddleheads, and other plants. For purposes of addressing this monitoring question the following SPD permits issued for firewood, dead/down wood, and saplings are tracked and reported annually. Table 2-18 displays the annual quantity of each SFP gathered by permit on FLNF from fiscal years 2006 to 2013.

Table 2-18: Quantity of Special Forest Projects permitted from fiscal years 2006 to 2013.

Product	2006	2007	2008	2009	2010	2011	2012	2013
Firewood (cords)	40	10	55	110	72	64	49	100
Dead/down wood	0	0	0	0	0	0	0	0
Saplings	0	0	0	0	0	0	0	0

Firewood is the only product that has been gathered since 2006 on FLNF. Since 2002, the quantity of firewood harvested has steadily increased, doubling from 2008 to 2009, and then sliding back a bit from 2010 to 2012. With differences in quantities of firewood harvested since 2006 has fluctuated, it is difficult to determine if there will be higher future demand. Clearly there is a trend toward more permitted firewood amounts on FLNF and Forest Service staff are evaluating opportunities for additional firewood harvesting to meet this demand. Several factors support the sustainability of this increased use, including (1) timber harvesting on FLNF is well below the Forest Plan Allowable Sale Quantity; (2) the focus of firewood harvesting is on readily accessible dead and down trees; and (3) an increasing abundance of dead and dying trees due to the increasing age of the forests within FLNF.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.

Monitoring Item Name: Trends in Vegetative Community Composition (site-level scale)

Monitoring Question: To what extent are Forest Service management activities contributing toward population viability for native and desired non-native species?

Detailed Monitoring Question: How the vegetation composition is changing over time from the influence of acid deposition, climate change, invasive species and other environmental problems, in combination and separate from land management practices?

Monitoring Driver: Forest Plan Goal 5 and associated Objectives.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. Not yet included in any fiscal year annual monitoring and evaluation report.

Evaluation and Conclusions: See response to the Tree Health monitoring item.

Recommendations: Consider combining with the question for the Tree Health monitoring item. If retained, the next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018.

Monitoring Item Name: Uneven-aged Management

Monitoring Question: To what extent have Objectives been attained?

Detailed Monitoring Question: How many acres of land suitable for timber management were treated using uneven-aged silvicultural systems to create multi-age conditions, and what proportion of the annual harvest acres do these acres represent? What proportion of the lands suitable for timber management has an uneven-aged prescription?

Monitoring Driver: Forest Plan Goal 2 and associated Objectives. Specifically, the objective that states a minimum of 20 percent of lands suitable for timber management should be managed using uneven-age silvicultural systems to create multi-age conditions.

Monitoring Frequency: Every 5 years.

Reporting Frequency: Every 5 years. No yet included in any fiscal year annual monitoring and evaluation report.

See response to the Age Class Distribution monitoring item.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2018. Also, see response to the Age Class Distribution monitoring item.

Water

Monitoring Item Name: Forest-wide Water Quality Monitoring

Monitoring Question: To what extent is Forest management affecting water quality, quantity, flow timing, and the physical features of aquatic, fisheries, riparian, vernal pool, and wetland habitats?

Detailed Monitoring Question: What is the existing status of water quality on the FLNF, and how are our management activities affecting water quality?

Monitoring Driver: Forest Plan Goal 4 and associated Objectives.

Monitoring Frequency: Annually.

Reporting Frequency: Annually. Included in fiscal years 2006 to 2013 annual monitoring and evaluation reports. The only exception is the fiscal year 2011 monitoring and evaluation report.

Evaluation and Conclusions: Water quality is a critical component of aquatic, riparian, fisheries, and wetland resources. Water quality monitoring on FLNF has occurred since fiscal year 2000. From 2000 through 2003, water quality monitoring occurred on several streams and ponds within grazing areas, and

on control streams and ponds throughout FLNF (see response to the Pond Habitat and Pond Fisheries monitoring items). Since 2004, water quality monitoring consisted of monitoring control streams and ponds to characterize the condition of water quality throughout FLNF and monitoring recreational fishing ponds to characterize the condition of water quality in and riparian areas around fishing ponds.

Water quality monitoring on FLNF is essential to meet or exceed all State Water Quality Standards (including biotic); and to minimize the adverse impacts on aquatic, fisheries, riparian, vernal pool, and wetland resources from management activities. Monitoring results were compared to the State of New York standards for Class D Waters (the lowest water quality class). In general, most of the parameters tested (2000 to 2009) met Class D standards, except for turbidity, phosphorus and temperature. The elevated turbidity levels are probably due to sedimentation, and the elevated phosphorus levels are likely due to runoff from current and historic agricultural land-use areas. The elevated temperature levels at fishing ponds may be due to low water levels during the warmer months, and insufficient riparian vegetation for shading.

No water quality monitoring was conducted after 2010 but the *Finger Lakes National Forest Water Quality Report – A Summary of 2000-2009 Monitoring Initiatives* was completed (Wightman 2010). The objective of the report was to summarize the previous 10 years of monitoring, identify key monitoring questions, and recommend future monitoring.

Important report findings include:

- There are no trends in the levels of dissolved oxygen, pH, conductivity, and total dissolved solids. Data indicates good baseline water quality for these parameters.
- Levels of phosphorous, nitrogen, and e.coli sometimes exceed Class D standards, even at control (low impact) sites.
- Monitoring has not revealed the source of consistently elevated phosphorus. Possibilities include residual impacts from historic land use, natural geochemical characteristics, and measurement error.
- Some current grazing practices appear to be impacting water quality.
- Best Management Practices for water protection in grazing areas have repeatedly been shown in research publications to be effective in improving and protecting water quality.
- Determine if the standards for Class C waters (rather than the lower Class D standards) can be achieved throughout FLNF.

Recommendations: No change to the monitoring question. The next fiscal year annual monitoring and evaluation report to include this question is anticipated in 2014.