



United States
Department
of Agriculture

Forest
Service

**Eastern
Region**

R9-FL-ME
Report

August 2026



Finger Lakes National Forest

Monitoring and Evaluation Report

Fiscal Years 2019 to 2024



Pulling water chestnut, an invasive plant, from Hector Falls Creek

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Monitoring and Evaluation Report Fiscal Years 2019 to 2024

Finger Lakes National Forest

USDA Forest Service, Eastern Region
August 2026

This Monitoring and Evaluation Report combines monitoring completed from fiscal years 2019 to 2024 for the Finger Lakes National Forest Land and Resource Management Plan (Forest Plan) dated 2006. Monitoring and evaluation of forest plans is required by the National Forest Management Act and associated 2012 planning rule (36 CFR 219 dated April 9, 2012). The Finger Lakes National Forest Monitoring Program consists of monitoring questions to address whether management activities are meeting or implementing Forest Plan direction including Goals, Objectives, Desired Future Conditions, and Forest-wide and Management Area Standards and Guidelines. The Finger Lakes National Forest Monitoring Program is described in Chapter 4 (Monitoring and Evaluation) of the Forest Plan.

The 2012 planning rule requires Forest Service staff to conduct a biennial evaluation of new information gathered through the monitoring program, complete a written report of the evaluation, and make it available to the public (36 CFR 219.12(d)). Information derived from the monitoring and evaluation of required and other monitoring questions included in the monitoring program forms the basis for continuous improvement of the Forest Plan needed for consideration of adaptive management strategies.

Approval

I have reviewed the *Finger Lakes National Forest – Monitoring and Evaluation Report for Fiscal Years 2019 to 2024* including its findings, conclusions, and recommendations. I find the report meets the intent of both the Forest Plan (Chapter 4) as well as the 2012 planning rule.

**CHRISTOPHER
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1. Introduction

Monitoring and evaluation reporting is required by the National Forest Management Act. The Finger Lakes National Forest (FLNF) Monitoring Program initially developed following the 1982 planning rule effective September 30, 1982, was modified in 2016 to comply with the 2012 planning rule (36 CFR 219.12 (c)(1)). Monitoring Program expectations are included in Chapter 4 of the FLNF Land and Resource Management Plan (Forest Plan). Monitoring and evaluation are critical steps in the process of keeping the Forest Plan responsive to changing conditions, thereby providing the feedback mechanism for an adaptive management framework.

The intent of the Monitoring Program is to provide the Forest Service and the public information to determine how well the Forest Plan is being implemented, whether management activities are achieving desired outcomes, and whether assumptions made in the planning process are valid. It also provides a basis to identify when changes are needed to 1) Forest Plan components (goals, objectives, desired future conditions, suitability of lands, and Forest-wide and management area standards and guidelines), and 2) the design of future management activities to more effectively meet Forest Plan direction. The Forest Plan may be amended to adapt to new information and changed conditions identified through monitoring and evaluation efforts. Through this adaptive management approach, the Forest Plan is kept current.

The Monitoring Program (Forest Plan, Chapter 4) is strategic in nature and provides programmatic direction for monitoring and evaluating Forest Plan implementation. It describes what will be monitored and what Forest Service staff expect to learn from that monitoring and subsequent evaluation. Monitoring falls into three general areas of focus, depending on whether they examine the implementation or effectiveness of management actions, or the validity of the underlying assumptions on which management is based:

1. Implementation - Is the overall direction in the Forest Plan being implemented? This includes goals and objectives, desired conditions, standards and guidelines, and management area direction.
2. Effectiveness - Are the standards and guidelines working? Are there significant changes in productivity of the land?
3. Validation - Are the assumptions and predicted effects used to formulate the Forest Plan accurate?

The Monitoring Program has three major components: the Monitoring Plan, the Monitoring Implementation Guide (or Monitoring Guide), and the Biennial Monitoring and Evaluation Report. Each are described below.

Monitoring Plan

The FLNF *Monitoring Plan* provides a conceptual framework for specific monitoring and evaluation elements as outlined in Chapter 4 of the Forest Plan. It includes detailed questions and associated indicators for monitoring a wide variety of resource items. The 2012 planning rule requires every national forest monitoring program to address each of eight resource monitoring elements with at least one monitoring question and associated indicators (36 CFR 219.12(a)(5)). Ten existing, modified, or new questions and associated measurement indicators selected to comply with the 2012 planning rule were reflected by Forest Plan administrative changes in May 2016. These questions were reviewed in 2025 to evaluate whether they needed changes to better meet the intent of the Monitoring Program. Although nine questions were retained to address the required monitoring elements, some questions were added or modified, and others removed as reflected by Forest Plan administrative changes in May 2026. These nine

required questions, and associated indicators are included in the FLNF Monitoring Plan (Forest Plan, Chapter 4, Section 4.1.4 Monitoring Plan; and Section 4.4.5 Required Monitoring).

Other monitoring questions were also developed to assist in determining how well management activities are meeting Forest Plan direction (Forest Plan, Chapter 4, Section 4.1.6 Other Monitoring). While none of these other questions were selected to address any of the required elements and are not part of the formal Monitoring Plan, Forest Service staff can use them to improve Forest Plan components or refine management activities pending budget and staffing capacity.

Monitoring Implementation Guide

The *Monitoring Implementation Guide* (monitoring guide) is a procedural document that is external to the Forest Plan and describes the Monitoring Program in its entirety. The monitoring guide provides more specific procedural guidance to implement the monitoring strategy outlined in the Forest Plan including monitoring resource elements or items, management and monitoring questions, monitoring drivers, measurement indicators, monitoring methodology, and reporting frequency. Management questions provide an overarching objective for the more detailed monitoring questions. The monitoring guide is intended to be a flexible document that can change as new methodologies and techniques are developed, or to be more responsive to changing needs and new information. This monitoring and evaluation report is based on the most recent version of the monitoring guide (*2025 Monitoring Guide*) which reflects modifications to monitoring questions completed in 2026.

Biennial Monitoring and Evaluation Reports

The 2012 planning rule requires the Forest Service to evaluate and report monitoring results biennially. The first FLNF biennial monitoring and evaluation report covering fiscal years 2017 and 2018 was completed in April 2022. Although important monitoring continued in fiscal year 2019 for most resource program areas, continued staffing turnover, budget constraints, and the covid 19 pandemic exacerbated inattention to the monitoring program in subsequent years. In 2023, Forest Service staff began to earnestly re-evaluate the monitoring program to address identified shortcomings in meeting monitoring obligations. Each question was considered for change to ensure they were meaningful, feasible, cost effective, and scientifically sound. This effort culminated in a modified monitoring program consisting of required and other monitoring questions completed in May 2026.

The final management and monitoring questions have been used retroactively starting in fiscal year 2019 as a basis for this monitoring and evaluation report. The *Finger Lakes National Forest – Monitoring and Evaluation Report for Fiscal Years 2019 to 2024* documents the results of monitoring information covering fiscal years 2019 to 2024 (October 1, 2018, to September 30, 2024). Comparison of results with those from previous years can identify trends and highlight where management is or is not meeting Forest Plan direction.

Monitoring and Evaluation Report Outline

This report is divided into five chapters and multiple appendices:

- Chapter 1 is the introduction providing an overview of the monitoring program.
- Chapter 2 provides the evaluation and conclusions for the monitoring questions addressing the eight required monitoring elements (36 CFR 219.12(a)(5)).
- Chapter 3 provides the evaluation and conclusions for the other monitoring questions retained to help ascertain how well management activities are implementing the Forest Plan and validating the effectiveness of Forest Plan components.
- Chapter 4 is a list of the Forest Service staff that provided information for the report.

- Chapter 5 is literature cited to support evaluation for monitoring items.
- Appendices include detailed information to supplement evaluation of various resource monitoring items.

Each monitoring question is addressed in the following format:

- Monitoring Resource Category
- Monitoring Item
- Management Question
- Detailed Monitoring Question
- Monitoring Measurement Indicator(s)
- Monitoring Driver
- Reporting Frequency
- Last Year Reported
- Next Year Scheduled for Reporting
- Background
- Monitoring Activities
- Evaluation and Conclusions
- Recommended Changes (Monitoring Question or Forest Plan Components)

2. Required Monitoring Questions

This chapter includes consideration of the monitoring questions addressing the eight monitoring resource elements required by 36 CFR 219.12(a)(5). Table 2-1 provides the monitoring questions selected to address these required elements. It identifies the required resource element, monitoring question, and measurement indicators that are discussed in this report.

Table 2-1. Required monitoring questions (from Forest Plan, Chapter 4, Table 4.1-2).

Required Element	Monitoring Question	Measurement Indicator(s)
1. Status of select watershed conditions.	To what extent are management activities maintaining or restoring watershed functions?	- Number of sub-watersheds in each watershed condition class - Number of essential projects completed in priority watersheds per year
2. Status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.	To what extent are management activities and natural processes leading to increased structural diversity within forested stands and across forested landscapes, moving areas toward desired objectives identified under Goal 2 of the Forest Plan?	- Number of acres and proportion of each forest type in each age class - Number of acres and proportion of harvest acres treated with uneven-aged management - Number of acres treated explicitly to enhance early successional characteristics - Number of acres treated explicitly to enhance late successional characteristics - Number of acres treated with various methods to explicitly enhance health, longevity, and/or structural diversity of forested stands at the stand and landscape scales
	To what extent are management activities conserving or improving water quality?	- Miles of stream and acres of lake/ pond on National Forest System lands by Vermont water quality classification - Implementation and effectiveness monitoring for Best Management Practices (BMPs)
3. Status of focal species to assess the ecological conditions required under § 219.9.	Does the grasslands ecosystem provide a full array of habitat types across FLNF and align with the Forest Plan for overall abundance?	Detection and non-detection, and relative abundance of savannah sparrow (<i>Passerculus sandwichensis</i>)
4. Status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.	What are the population trends for sensitive plants (increasing, decreasing, or stable)? To what extent are management activities affecting conditions for sensitive plant populations?	Population trends for plants listed as Regional Forester Sensitive Species: - Number of ramets or genets - Percent reproductive - Spatial extent of population - Number of populations of a species - Ranked condition of populations
5. Status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.	To what extent are management activities providing high quality recreation services that meet the expectations of the public?	Percent Meets Expectations (PMEs) in National Visitor Use Monitoring (mean visitor satisfaction compared to mean importance). PME data reported for developed facilities, access, services, and feeling of safety in developed sites, undeveloped areas, and designated wilderness.

Required Element	Monitoring Question	Measurement Indicator(s)
		Trend in number of visitors, visitor satisfaction and changes in visitor participation by activity over 5-year NVUM reporting periods.
6. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.	To what extent are insects and disease organisms impacting forest conditions?	Insect or disease infestations: - Number of outbreaks by species - Acres affected by species - Trends in outbreak persistence, spread, and associated tree mortality
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.	How do actual resource and service accomplishments compare to those projected in the Forest Plan Appendix D, Proposed and Probable Practices?	Actual annual resource and service accomplishments for management activities listed in the Forest Plan, Appendix D, Table D-5.
8. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)).	To what extent are management activities impacting soil quality and productivity?	Within the Forest Service Soil Disturbance Monitoring Protocol sampling and monitoring areas including select areas where timber harvest, prescribed fire, and other management activities have been implemented: - Amount of forest floor impacted - Amount of topsoil displacement - Severity of rutted, burned or compacted soil - Severity of platy/massive soil structures, or puddled soil

Monitoring Element 1: Water

Monitoring Item: Watershed Function

Management Question

What is the status of select watershed conditions?

Detailed Monitoring Question

To what extent are management activities maintaining or restoring watershed functions?

Measurement Indicators

- Number of sub-watersheds in each watershed condition class
- Number of essential projects completed in priority watersheds per year

Monitor Driver

Forest Plan Goal 4 and associated Objectives

Reporting Frequency

Annually

Last Year Reported

Not applicable; new question starting fiscal year 2019

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

This monitoring question was newly developed to monitor watershed functions starting in fiscal year 2019 to address required Element 1 from the 2012 planning rule (36 CFR 219.12(5)(i)): *The status of select watershed conditions*. This monitoring question helps determine if management activities are meeting the intent of Forest Plan Goal 4 to “*maintain or restore aquatic, fisheries, riparian, vernal pool, and wetland habitats*” (Forest Plan, p. 13).

The U.S. Forest Service Watershed Condition Framework was developed to protect water quality on National Forest System (NFS) lands. This framework includes six steps, the first of which is classifying watershed conditions. A watershed condition classification protocol was developed to serve as a high-level, semi-quantitative tool to assess the function of watersheds as a reflection of 23 attributes representing 12 different indicators that fall into one of four process categories: 1) aquatic physical processes, 2) aquatic biological processes, 3) terrestrial physical processes, and 4) terrestrial biological processes. A detailed technical guide is available for the assessment of the Watershed Condition Classification process (USDA Forest Service 2011). For each sub-watershed, each of the 23 attributes is assessed to determine if the attribute is functioning, functioning-at-risk, or non-functioning and given an associated numerical score of 1, 2, or 3, respectively. The assessment protocol includes a weighting system for the attributes and indicators, ultimately indicating a condition score between 1 and 3 and descriptive assessment of functioning, functioning-at-risk, or non-functioning for the sub-watershed as a whole.

Project-level, long-term, and opportunistic monitoring and assessment along with professional judgement are used to adjust attribute assessments and, therefore, watershed condition classifications over time. As a part of the Watershed Condition Framework, Forest Service staff further identify priority watersheds in which a focused effort can be made to improve the condition of a watershed through the implementation of various management actions, called essential projects. These essential projects are documented in a Watershed Restoration Action Plan (WRAP). Tracking the completion of essential projects and the condition of sub-watersheds across FLNF can help inform whether management activities are meeting Forest Plan Goal 4 and inform the status of select watershed conditions. An interactive map of sub-watersheds across all NFS lands along with their classification, priority designations, and any associated WRAPs is available on the USDA Forest Service website at [Watershed Condition Framework Map Viewer](#).

Monitoring Activities

Forest Service staff maintain a list of 7 sub-watersheds and their functional condition using the U.S. Forest Service Watershed Condition Assessment protocol (Table 2-2). When new information is collected that indicates a shift in watershed condition, that change is updated in the Watershed Condition Assessment Tracking Tool (WCATT), an internal database that provides the background data for the interactive map (linked above). WCATT can be queried to identify if and when adjustments were made to each sub-watershed attributes or overall condition classification.

Table 2-2. Status of sub-watershed conditions on FLNF from fiscal year 2019 to 2024.

Year	Number of Functional Sub-Watersheds	Number of Functional, At-Risk Sub-Watersheds	Number of Nonfunctional Sub-Watersheds
2019	0	7	0
2020	0	7	0
2021	0	7	0
2022	0	7	0
2023	0	7	0
2024	0	7	0

All 7 sub-watersheds monitored on FLNF are considered at risk including:

- Boardman Creek-Cayuga Lake
- Bolter Creek-Taughannock Creek
- Breakneck Creek-Seneca Lake
- Hector Falls Creek-Seneca Lake
- Hencoop Creek-Taughannock Creek
- Mill Creek-Seneca Lake
- Rock Stream-Seneca Lake

Prior efforts to assess all seven FLNF sub-watersheds assessed have made a blanket assumption that the fire regime condition class is departed from what would be expected without past human interventions. This is one attribute that drags all FLNF sub-watershed scores downward. The other compounding factors that may not have been blanket assumptions but apply equally to all seven sub-watersheds and result in an “at-risk” classification are a lack of adequate in-stream woody material and the extent and rate of spread of introduced plant species across each watershed.

Part of the Watershed Condition Framework includes identifying priority sub-watersheds. These generally include those in which a targeted set of projects, referred to as essential projects, will either prevent the loss of watershed function or materially improve watershed functions. A Watershed Restoration Action Plan (WRAP), which includes the essential projects and other background and planning information, is developed for priority watersheds. Only one FLNF sub-watershed is currently identified as a priority, Breakneck Creek-Seneca Lake which has an approved WRAP. Forest Service staff report annually on any essential projects completed in this priority watershed as identified in the WRAP. These data are maintained in the Forest Service Watershed Improvement Tracking database (WIT).

Evaluation and Conclusions

Forest Service staff should continue to seek opportunities to develop WRAPs and implement essential projects. When possible, use newer or improved watershed condition information to adjust watershed condition classifications.

While watershed functions have generally been maintained on FLNF by adhering to Forest Plan Standards and Guidelines, and project-level design features and mitigation measures, large-scale improvement of watershed functions has not been demonstrated. The ability to make measurable improvements at the watershed scale is limited on FLNF due to the presence of roads, the patchwork of ownership and land uses, and the scale of non-native invasive plant populations. While there is one priority watershed on FLNF with an approved WRAP and associated essential projects, the Breakneck Creek-Seneca Lake sub-watershed, the rate of completion of these projects has been slow. Staff and funding capacity along with other competing priorities are likely the cause.

Forest Service staff should continue to ensure that one-time and ongoing projects do not lead to degradation of watershed functions. With the consideration of potential projects through the Finger Lakes Landscape Assessment (USDA Forest Service 2026), Forest Service staff should revisit and provide emphasis for the need to implement essential projects identified in the Breakneck Creek-Seneca Lake WRAP.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Element 2: Vegetation

Monitoring Item: Forest Structure

Management Question

What is the status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems?

Detailed Monitoring Question

To what extent are management actions and natural processes leading to increased structural diversity within forested stands and across forested landscapes, moving areas toward desired objectives identified under Goal 2 of the Forest Plan?

Measurement Indicators

1. Number of acres and proportion of each forest type in each age class
2. Number of acres and proportion of harvest acres treated with uneven-aged management
3. Number of acres treated explicitly to enhance early successional characteristics
4. Number of acres treated explicitly to enhance late successional characteristics
5. Number of acres treated with various methods to explicitly enhance the health, longevity, and/or structural diversity of forested stands at the stand and landscape scales

Monitoring Driver

Forest Plan Goal 2 and associated Objectives

Reporting Frequency

Every 5 years (this report covers fiscal years 2019 to 2023)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report covered the 2014 to 2018 monitoring period

Next Year Scheduled for Reporting

Fiscal year 2028 (anticipated to cover fiscal years 2024 to 2028)

Background

This monitoring question addresses required Element 2 from the 2012 planning rule (36 CFR 219.12(5)(ii)): *The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems*. Forest structure is a key ecosystem characteristic that is important for restoring and maintaining the abundance and distribution of native species. The intent of this monitoring question is to

help determine if management activities are meeting Forest Plan Goal 2 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*” (Forest Plan, p. 10). Age class objectives associated with even-age systems are identified in Tables 2.2-2 and 2.2-3 (Forest Plan, p. 11), while the objective for managed uneven-age forest structure is a minimum of 20 percent of lands suitable for timber management (Forest Plan, p. 11).

Monitoring Activities

Timber harvesting activities and other silvicultural treatments are tracked using the Forest Service Activity Tracking System (FACTS). The FACTS manages information about activities related to fire/fuels, silviculture, Trust Funds, range vegetation improvement, and invasive species used by all levels of the Forest Service. Field Sample Vegetation data is also tracked in the FSVeg system, which is updated to reflect treatments once completed. These systems can provide reports summarizing the number of acres and proportion of harvest acres treated with uneven-aged management (selection, groups, and irregular shelterwood); the number of acres treated explicitly to enhance early successional characteristics (clearcutting, patch cutting, and shelterwood); then number of acres treated explicitly to enhance late successional characteristics; and the number of acres treated with various methods (thinning and improvement) to explicitly enhance the health, longevity, and/or structural diversity of forested stands at the stand and landscape scales.

This data can be used to monitor the progress made toward desired age class and structure objectives. There is some level of error associated with this data entry and consistency of activity classification; however, the data is sufficient for tracking overall trends.

Evaluation and Conclusions

Table 2-3 shows a summary of management treatments during fiscal years 2019 to 2023 that have contributed toward moving age class diversity toward the objectives identified in the Forest Plan, Table 2.2-2. It also provides total acres treated for fiscal years 2006 to 2023 for context. Total acres by treatment type help gauge how well management practices have contributed toward creating structural diversity across the forest landscape.

Table 2-3. Management treatments moving forest habitat type toward Forest Plan objective during fiscal years 2019 to 2023.

Age Class Objectives ¹	Acres Treated 2006 to 2023	Acres Treated 2019 to 2023	Total Acres Treated
Create regenerating age classes ²	47	0	47
Thin to improve health and longevity	54	0	54
Uneven-aged management	0	0	0
Totals	101	0	101

Source: USDA Forest Service data

¹ Applies to suitable forest lands only which is defined as forest land that constitutes the land base for determining the allowable sale quantity (ASQ) and is managed for timber production on a regulated basis (Forest Plan Glossary, p. 106).

² Considered 0 to 9 years of age; includes both commercial even-aged harvest and non-commercial treatments.

Approximately 101 acres have been treated to move age class distribution toward Forest Plan objectives since 2006 which is about 1 percent of total suitable lands on FLNF. No acres were treated between 2014 and 2023. At this level, the effects of management on overall age class distributions are minimal, with natural processes, succession, and the aging of forests having a much greater effect. Some natural disturbance has taken place on the landscape, however no large scale, stand replacing disturbance has

been documented. Most natural disturbance has been small-scale, creating gaps and contributing to more diverse forest structure at the stand level as forests age.

Forest Plan objectives for the regenerating age class on suitable lands range from 5 to 20 percent depending on habitat type (Table 2-4). The 47 acres treated to create the regenerating age class is less than 1 percent, which is well below Forest Plan objectives across all habitat types for suitable lands. Because these acres were treated over 10 years ago, all acres have aged into the young age class.

The percentage of forested acres in the young forest habitat type is also well below Forest Plan objectives across all habitat types for suitable lands and has been steadily decreasing as forests age. Forest Plan objectives for young forest on suitable lands range from 15 to 55 percent depending on habitat type. The level of harvesting on FLNF has not been sufficient to move toward Forest Plan objectives or to maintain 2006 levels. In 2006, approximately 18 percent of suitable forested acres were in the young age class. By 2013 the estimate decreased to 10 percent, and this trend continues through 2023.

Across all forest types, the old age class has almost tripled in area, increasing from 5 to 14 percent of the forested acres land base. For each habitat type, the old age class doubled or tripled, 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 in 2006, some of this young age classes has transitioned to mature, over-compensating for the transition of mature to old age class. These trends are similar for the forested area land base as a whole including suitable and non-suitable lands.

Table 2-4 shows the comparison of the existing age class distribution as of 2013 across all federal lands and lands suitable for timber management with the existing condition in 2006 documented in the Forest Plan Final Environmental Impact Statement (Final EIS) and Forest Plan age class objectives. Acres displayed in this table provide a baseline for age class distribution trends since 2013.

Table 2-4. Comparison of existing age class distribution in 2013 across all federal lands and lands suitable for timber management with the existing condition documented in the Forest Plan FEIS and Forest Plan age class objectives.

Habitat Type	Age Class (years)		2013 Existing Condition (all FS lands) ¹		2013 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	1,669	69	1,647	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	1,499	73	2,265	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	2,382	94	2,756	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

Habitat Type	Age Class (years)		2013 Existing Condition (all FS lands) ¹		2013 Existing Condition (suitable) ²		Existing Condition 2006 Plan ³		Forest Plan Objectives
	yrs	class	ac	%	ac	%	ac	%	%
	10-49	Young/Mature	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	1,549	18	
		Mature	6,519	75	5550	76	6,669	76	
		Old	1,245	14	821	11	439	5	

¹ Applies only to federal lands suitable for timber management.

² Acres are based on Table 3.5-8 of the Forest Plan FEIS, 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.

In addition to age class targets by habitat type, the Forest Plan includes targets for the proportion of suitable lands managed using uneven-aged silvicultural methods. These include single tree selection, group selection and irregular shelterwood methods. Forest Plan objectives include the use of uneven-aged harvesting a minimum 20 percent of management in the first and second decade of Forest Plan implementation (Forest Plan Goal 2 objective, p. 11; and Appendix D, Proposed and Probable Practices, Table D-4). Uneven-aged harvests increase structural diversity, increase habitat diversity, and enhance late successional characteristics within stands. Since 2006, no uneven-aged management has been implemented. Management has consisted of even-aged harvests and thinning; however, it should be noted only one timber sale has been implemented since 2006. This sale (Cotton Mill timber sale) emphasized oak habitat types and conversion of non-native plantations, for which even-aged management is most appropriate.

Overall, age class distribution trends are generally moving toward older and more uneven-age forest structure on FLNF. Increased structural diversity in uneven-aged stands and the development of old forest can be beneficial for habitat diversity. The aging of forests enhances late successional attributes creating forest habitats with large trees, abundant dead and downed wood, and canopy gaps. The complex structure of these forests creates diverse habitats, many of which are not present in younger forests. However, both young and old forest conditions are needed to maintain an ecologically functional landscape. Even-aged regeneration harvest is not being implemented at the rate needed to reverse a declining trend in regenerating and young forest and to reach a level that supports native species that require young forest. This type of management is also necessary to maintain oak and aspen habitat types. Without the establishment of larger patches of early successional habitat over the next 50 or more years, a whole suite of early successional species strongly associated with this habitat will continue to decline.

Existing age class distribution trends also have potential consequences for forest health and resilience to climate change. Relatively homogenous, even-aged stands resulting from agricultural abandonment in the early 1900s make up a large proportion of FLNF. The maturing of these even-aged stands and the lack of diversity present in these forests are risk factors for forest health. Increasing stressors include native and non-native insects and diseases, invasive plants, invasive earthworms, pollution and atmospheric deposition. These stresses are compounded by climate change. These risks can be mitigated by increasing structural diversity and sustaining productivity and growth at the stand and landscape level.

Since 2006, the level of timber harvesting on FLNF has not been sufficient to move age class distributions toward Forest Plan objectives, or even to prevent further departure from these objectives. Forest Service staff should consider opportunities to increase the number of acres treated using all silvicultural methods to move age class distributions toward Forest Plan objectives, or at least to slow the departure.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Element 2: Water

Monitoring Item: Water Quality

Management Question

What is the status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems?

Detailed Monitoring Question

To what extent are management activities conserving or improving water quality?

Measurement Indicators

1. Miles of stream and acres of lake/pond on National Forest System (NFS) lands by New York water quality classification
2. Implementation and effectiveness monitoring for Best Management Practices (BMPs)

Monitoring Driver

- Forest Plan Goal 2 and associated Fisheries Objectives; and Forest Plan Goal 4 and associated Objectives
- Forest-wide Management Direction, Section 2.3.2 Soil, Water, and Riparian Area Protection and Restoration Standards and Guidelines
- Forest-wide Management Direction, Section 2.3.19 Transportation Analysis, Road Design and Construction Standards S-3 and S-6

Reporting Frequency

Biennially (revised from annually starting fiscal year 2019)

Last Year Reported

Not applicable; new question starting fiscal year 2019

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

This monitoring question addresses required Element 2 from the 2012 planning rule (36 CFR 219.12(5)(ii)): *The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems*. The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 2 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*”, and

Goal 4 to “*maintain or restore aquatic, fisheries, riparian, and wetland habitats*” and associated Objectives (Forest Plan, pp. 10 to 12).

There are some water quality influences for which the Forest Service does not have control, such as atmospheric deposition of pollutants, and altered air temperature and stream flow levels related to climate change. There are other influences for which the Forest Service does have control within NFS land boundaries, namely land cover and land uses. Water quality monitoring can be the leading indicator for processes, activities, or discrete disturbances that result in the addition of pollutants to waterbodies.

Monitoring Activities

The state of New York, pursuant to Clean Water Act and Environmental Protection Agency (EPA) requirements, defines water quality criteria for waterbodies within New York, monitors whether water bodies meet these criteria, and reports biennially on these results (Table 2-5). Their reporting provides high quality, consistent data which affords a snapshot of water quality on NFS lands overall. These reports are assessed by the Forest Hydrologist for waterbodies on NFS lands that are not meeting water quality criteria to help determine whether Forest Service management actions or approved activities are leading to the failure to meet those criteria. The state did not complete any water quality classifications or impairment assessments for lakes or ponds during the fiscal years 2019 to 2024 monitoring period.

The state of New York classifies freshwater sources as follows:

- The classifications A, AA, A-S and AA-S indicate a best usage for a source of drinking water, swimming and other recreation, and fishing.
- Classification B indicates a best usage for swimming and other recreation, and fishing.
- Classification C indicates a best usage for fishing.
- Classification D indicates a best usage for fishing, but these waters will not support fish propagation.

The state further identifies whether surface waters can sustain a trout population or support trout spawning. Each classification has related water quality criteria. If a waterbody is found to exceed the water quality criteria for the classified use, it is listed as impaired.

Table 2-5. State reporting results for FLNF streams and rivers for fiscal years 2020 to 2022.

Fiscal Years Reported	Water Quality Classification/ Standard	Total Miles on NFS Lands	Impaired Portion (miles)
2020 to 2022	Fisheries, non-contact activities	42.4	0
	Fisheries, non-contact activities (may support a trout population)	2.2	0
	Fisheries, non-contact activities (may support trout spawning)	0.5	0

To help protect water quality, Forest Service staff use Best Management Practices for Water Quality (USDA Forest Service 2012a) in all projects. They also have developed a standardized monitoring protocol to track the degree to which these Best Management Practices (BMPs) are implemented as well as how effective they are in preventing degradation to water quality. Forest Service staff conduct BMP monitoring on a handful of randomly selected, representative, or targeted projects each year. The results provide a snapshot of how well water quality is protected during project implementation from potential degradation by land management activities and allowable land uses (Table 2-6).

Table 2-6. Monitoring of BMPs efficacy for the fiscal years 2019 to 2024 reporting period.

Composite Rating (Number of Sites)							
Fiscal Year	Excellent	Good	Fair	Poor	Undetermined	No Plan	Missing Data
2019-2020				1			
2021-2022				2		1	
2023-2024	1						

Evaluation and Conclusions

State reporting indicates FLNF is generally supporting good water quality. Conversely, monitoring led by Forest Service staff indicates that improvements could be made to the design and implementation of BMPs to protect water quality when developing projects. These somewhat conflicting indicators may demonstrate that management of NFS lands is sufficient to maintain water quality at a larger scale while smaller, site-specific concerns may be identified by the Forest Service self-identified goals related to water quality.

Most of the “poor” composite ratings identified during BMP monitoring represent livestock ponds that have not been fenced to control livestock use. Staff and funding limitations have been a barrier to the implementation of additional livestock control structures at currently unfenced ponds. Forest Service staff should continue to identify opportunities to add and maintain water access control features at existing livestock ponds. Additionally, BMP monitoring results should be reviewed to identify additional improvements that can be made to protect water quality across the FLNF landscape.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Element 3: Terrestrial Wildlife Habitat

Grasslands Ecosystem (Savannah Sparrow)

Management Question

What is the status of focal species to assess the ecological conditions required under 36 CFR 219.9?

Detailed Monitoring Question

Does the grasslands ecosystem provide a full array of habitat types across FLNF and align with the Forest Plan for overall abundance?

Measurement Indicators

Detection and non-detection, and relative abundance of savannah sparrow (*Passerculus sandwichensis*)

Monitoring Driver

Forest Plan Goals 2 and associated Objectives

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

This monitoring question addresses required Element 3 from the 2012 planning rule (36 CFR 219.12(5)(iii)): *The status of focal species to assess the ecological conditions required under 36 CFR 219.9*. For context, 36 CFR 219.9 is a reference to the planning rule section on ecological conditions to provide for a diversity of plant and animal communities. Focal species are defined as a small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area (36 CFR 219.19).

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 2 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*” (Forest Plan, p. 10). A Forest Plan objective related to Goal 2 calls for maintaining “*acres of grassland habitat at levels higher than ecological tendencies to support species that prefer these habitats*”. Another objective calls for providing “*at least 80 percent of the Grassland for Wildlife Management Area in grass/forb vegetation*” (80 percent of 688 acres = about 550 acres or about three percent of FLNF lands). Dominant grassland ecosystem vegetation includes many varieties of edible grasses and forbs that also provide cover and nesting habitat for a wide variety of game and non-game wildlife species that are dependent on grassland habitats during all, or part of, their life cycle.

Focal species are selected based on their functional role in ecosystems. Savannah sparrow (*Passerculus sandwichensis*) was selected as the FLNF focal species for monitoring because there is a strong tie to ecosystem conditions that can’t be better monitored using more direct indicators. Savannah sparrows are one of the most common grassland birds within the region and can act as an indicator of grassland composition. Savannah sparrows, like many other grassland obligate species, require certain composition of habitat to be able to complete their life processes and since they are numerous within the region it makes them a good species to gauge the composition of the grassland ecosystem. Monitoring conditions of this ecosystem helps determine the efficacy of management activities and provides the basis for potential changes in project planning for improved success in achieving desired objectives.

Monitoring Activities

Savannah sparrow is a ground nesting species that has a rather narrow habitat niche across the landscape. The species is a continental migrant but tends to migrate short distances and winter in areas as close as New Jersey. Savannah sparrow is an obligate grassland species meaning that they will only utilize grassland areas for life history processes. The standard breeding bird survey protocol used for Regional Forester Sensitive Species can be used for monitoring savannah sparrow populations. Using a presence/absence survey indicates that if savannah sparrow is present on the landscape, they are utilizing appropriate grassland areas. If they are present with relative abundance, it is presumed the grassland is functioning with the correct components (composition) to provide cover and food for grassland dependent species.

Forest Service staff coordinate the completion of grassland bird surveys on FLNF annually to help determine if sensitive species are utilizing grasslands or pastures planned for treatment (Table 2-7). Surveys were contracted to a third part for fiscal years 2019 to 2023. Forest Service staff completed the survey in fiscal year 2024. Although savanna sparrow presence was confirmed in fiscal years 2017 and 2018, it was first added to the list of species to formally survey in 2019.

Table 2-7. Bird survey results on FLNF during fiscal years 2019 to 2024.

Fiscal Year	Number of Units Surveyed	Number of Savanna Sparrow Located
2019	31	198
2020	21	199
2021	16	184
2022	24	347
2023	20	252
2024	25	399

Evaluation and Conclusions

Grassland habitats are declining in abundance and quality in much of the Northeast. Without vegetation management, particularly mowing, prescribed fire, and timber management, these habitats quickly revert through succession to forested conditions. The grasslands ecosystem has been identified as a priority for monitoring on FLNF because un-grazed grasslands are rare within the region and support numerous wildlife species that are important for maintaining ecological diversity. The present composition and distribution of this vegetative community on FLNF are the result of a long history of land use. The restoration of ecosystem conditions to desired levels provided by Forest Plan direction are designed to increase ecological integrity across the landscape.

Monitoring results show a stable/increasing savannah sparrow population. The annual difference in savannah sparrow located could be a function of surveyor skills, effort, or other personal factors, but overall, these numbers indicate that FLNF grasslands provide a full array of grassland habitat types evidenced by the number of individuals documented. Overall abundance of the grasslands has not changed since Forest Plan revision in 2006 given grassland habitats have not increased or been converted to non-grassland habitat types.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Element 4: Rare Plants Population

Monitoring Item: Sensitive Plant Population Trends

Management Question

What is the status of a select set of the ecological conditions required under 36 CFR 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern?

Detailed Monitoring Questions

1. What are the population trends for sensitive plants (increasing, decreasing, or stable)?
2. To what extent are management activities affecting conditions for sensitive plant populations?

Measurement Indicators

Population trends for plants listed as Regional Forester Sensitive Species (RFSS):

1. Number of ramets or genets
2. Percent reproductive
3. Spatial extent of population

4. Number of populations of a species
5. Ranked condition of populations

Monitoring Driver

Forest Plan Goal 2 and associated Objectives

Reporting Frequency

Every 5 years for terrestrial species (this report covers fiscal years 2019 to 2024); every 10 years for aquatic species (revised from annually starting fiscal year 2019)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal year 2029 (anticipated to cover fiscal years 2025 to 2029) for terrestrial species; fiscal year 2028 (anticipated to cover fiscal years 2019 to 2028) for aquatic species

Background

This monitoring question addresses required Element 4 from the 2012 planning rule (36 CFR 219.12(5)(iv)): *The status of a select set of the ecological conditions required under 36 CFR 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.* For context, 36 CFR 219.9 is a reference to the planning rule section on ecological conditions to provide for a diversity of plant and animal communities. This section provides for the identification of species of conservation concern, which is *a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area* (36 CFR 219.9(c)).

Although species of conservation concern are not anticipated to be identified for FLNF until the Forest Plan is revised, the focus on plant species listed as Regional Forester Sensitive Species (RFSS) is a good alternative approach to meet the intent of this monitoring element. Regional Forester Sensitive Species are those that have been identified to have population viability as a concern as evidenced by 1) significant current or predicted downward trends in population numbers or density; and 2) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 2 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*” (Forest Plan, p. 10). Forest Plan Forest-wide Standards and Guidelines for Rare and Unique Biological Features (Forest Plan, p. 26) also direct Forest Service staff to maintain a list of federally listed threatened, endangered, or sensitive (TES) species (Standard S-1), and investigate all project sites for presence of federally listed TES species prior to beginning any ground disturbing activities at the site (Standard S-2). Although there are no federally listed threatened or endangered plant species on FLNF, Forest Plan direction states critical habitat and key habitat features upon which RFSS depend should be protected. Agency policy provides direction to develop and implement management practices to ensure that sensitive species do not become threatened or endangered because of Forest Service actions (Forest Service Manual 2670).

Management decisions must not result in loss of sensitive species viability or create significant trends toward federal listing.

Monitoring Activities

Rare plant populations are monitored every five years (every ten years for aquatic species); the subset monitored in any given year is determined by its last monitoring date and its population trend. Monitoring visits are timed to occur within the appropriate phenological window (such as flowering or fruiting time). Data collected includes size and extent of the population, number of reproductive individuals, percent reproductive, number of populations of a species, and known or observed threats. The population trend is estimated using these data. For example, populations with fewer total individuals, fewer reproductive individuals, or a smaller spatial extent, from the last monitoring date, are assumed to be declining.

The 2017 RFSS list includes 23 vascular plants (Appendix B, Table B-2). The RFSS list was updated in 2024 which added 4 species and removed 2 species. Vascular plants dropped from the list were those that: 1) had not been found in 30 or more years; 2) were determined to be more common than previously thought or 3) were believed to be extirpated. The updated 2024 RFSS list now includes a total of 25 vascular plant species.

This report summarizes FLNF rare plant monitoring results for 23 sensitive plants for fiscal years 2019 to 2022, and 25 sensitive plants for fiscal years 2023 to 2024. Uncommon or rare non-RFSS plant species that are monitored (or for which new populations have been found on FLNF) are evaluated for inclusion on the RFSS list with each scheduled list update.

All data was gathered using the USDA Forest Service Natural Resources Information System (NRIS) protocol, to be entered into the Natural Resources Manager (NRM) corporate database. Recorded information from this Forest Service corporate database for botanical data includes: 1) number of ramets or genets, 2) percent reproductive, 3) spatial extent of population, 4) number of populations of a species, and 5) ranked condition of populations. If the available taxa list in NRIS does not keep up with species tracked, data for those taxa are stored in a spatial layer ("Rare Plants not in NRIS").

Monitoring results for fiscal years 2019 to 2024 are listed in Table 2-8, and monitoring trends for each species are summarized in Appendix B, Table B-3. In fiscal year 2024, an additional botanical inventory for rare plants occurred along 10.5 miles of a proposed new mountain bike trail. No RFSS were found.

Table 2-8. Sensitive plant species monitoring results for fiscal years 2019 to 2024.

Monitoring Results	Fiscal Year					
	2019	2020	2021	2022	2023	2024
Number of RFSS plants monitored	0	0	0	16	1	1
Number of sites/populations monitored	0	0	0	2	1	1

Evaluation and Conclusions

Monitoring trends and species-specific recommended management actions are provided in Appendix B, Table B-3. Of the 25 species monitored starting in fiscal year 2023, trends are stable for six species, increasing for five species, and decreasing for three species. The population trends for the remaining eleven species are unknown. These species will be prioritized for monitoring in subsequent years. Causes of decreasing population trends are mostly related to erosion on cliff edges, and hot and dry conditions on exposed cliffs. For one species, *Arabis drummondii*, human trampling could be a contributing factor. However, natural population fluctuations occur in this species, and there are often local population extirpations coupled with new population establishment in other areas.

Biological evaluations were completed for all proposed site-specific projects during the monitoring period. Projects were either modified or mitigation measures developed to ensure the proposals did not result in loss of sensitive species viability or create significant trends toward threatened or endangered federal listing.

The biggest concern regarding sensitive plants on FLNF is the extensive infestations of non-native plants (NNIP) occurring in most habitats that could eventually limit the ability of species to persist due to competition. In addition to monitoring existing rare plant occurrences and inventorying for new ones, NNIP management occurs to benefit RSSL listed plants and other rare plants. Forest Plan Forest-wide Standards and Guidelines for Non-native Invasive Plants (NNIP) (Forest Plan, Chapter 2, Section 2.3.10, p. 28), specifically Guideline G-1 emphasizes the use of basic prevention measures to reduce the potential effect of NNIP on RSSL listed plant species (see the Non-native Invasive Species monitoring item).

To strengthen the capacity of the rare plant monitoring program, Forest Service staff should cultivate partnerships with local volunteers, including The Finger Lakes Native Plant Society and Cornell University or other colleges. There is increasing recognition that climate change impacts rare plants. Keeping abreast of the best available science regarding this issue enables the Forest Service botany program to implement the best management practices to protect RSSL listed and other rare plant populations in the future.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Element 5: Recreation

Monitoring Item: Recreation Visitor Satisfaction

Management Question

Is the status of visitor use and visitor satisfaction meeting recreation objectives?

Detailed Monitoring Question

To what extent are management activities providing high quality recreation services that meet the expectations of the public?

Measurement Indicators

1. Percent Meets Expectations (PMEs) in National Visitor Use Monitoring (mean visitor satisfaction compared to mean importance); PME data reported for developed facilities, access, services, and feeling of safety in developed sites, undeveloped areas, and designated wilderness
2. Trend in number of visitors, visitor satisfaction and changes in visitor participation by activity over 5-year NVUM reporting periods

Monitoring Driver

Forest Plan Goal 11 and associated Objectives

Reporting Frequency

Every 5 years (this report covers fiscal years 2016 to 2020)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report (in accordance with the next NVUM survey data anticipated in 2025)

Background

This monitoring question addresses required Element 4 from the 2012 planning rule (36 CFR 219.12(5)(v)): *The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives*. The intent of this monitoring question is to provide information to help managers assess if visitor expectations are meeting Forest Plan Goal 11 to “*provide a diverse range of high-quality, sustainable recreation opportunities that complement those provided off National Forest System lands*”. Visitor satisfaction tracks the congruence between the agency’s performance and customer evaluations of importance, giving managers an indication of management actions that may need to be taken to meet visitor needs. Overall trip satisfaction is used as a primary management criterion for evaluating the quality of an outdoor recreation experience.

Monitoring Activities

The Forest Service monitors recreation use on national forests through the National Visitor Use Monitoring program (NVUM). Specific NVUM protocols, terminology, limitations, data, annual reports, and other information are available at: <https://www.fs.usda.gov/about-agency/nvum/>

In essence, visitation is estimated through a combination of exiting traffic counts and surveys of visitors leaving a national forest. Both are obtained from random locations and days over a period of one year. Recreation visitors who are surveyed are asked numerous questions, including about their overall satisfaction. About one-third of visitors are also asked a series of detailed satisfaction questions about specific aspects of their visit. Onsite surveys are a key part of the NVUM process, and they help show the characteristics of recreation-related visits.

The NVUM data is collected and reported on a five-year cycle; data for FLNF was collected in 2015 by West Virginia University Research Corporation and in 2020 by the University of New Hampshire (USDA Forest Service 2015 and 2020). To assess visitor satisfaction, recreation visitors were asked through the NVUM program to provide an overall rating of their visit to the national forest, on a 5-point Likert scale, ranging from not important to very important. Visitors rated both the importance and performance (satisfaction) of these elements.

Results from a given sampling effort are assumed to be valid for 5 years, until the next iteration of NVUM. The onset of the COVID-19 pandemic, however, necessitated a revision in NVUM data collection efforts on FLNF starting March 19, 2020, to maintain safety for both visitors and survey staff. At that time, all face-to-face survey interviews were halted in accordance with state and federal social distancing guidelines. A large part of the NVUM process, however, relies on conducting accurate exit-use visitor counts. As such, University of New Hampshire field staff continued to work each of the assigned NVUM sites, while conducting exit-use visitor counts from the safety of their vehicles. Field staff maintained this vehicular based count-only protocol until the end of the NVUM program (September 30, 2020). As a result, data analysis adjustments were made for the COVID-19 pandemic. Changes in traffic volume and/or proxy counts observed in the last half of fiscal year 2020 compared to the last half of fiscal year 2015 were assumed to represent the effects of the pandemic. Those changes were projected to corresponding sampling strata on all other forest units; individual characteristics from the last half of

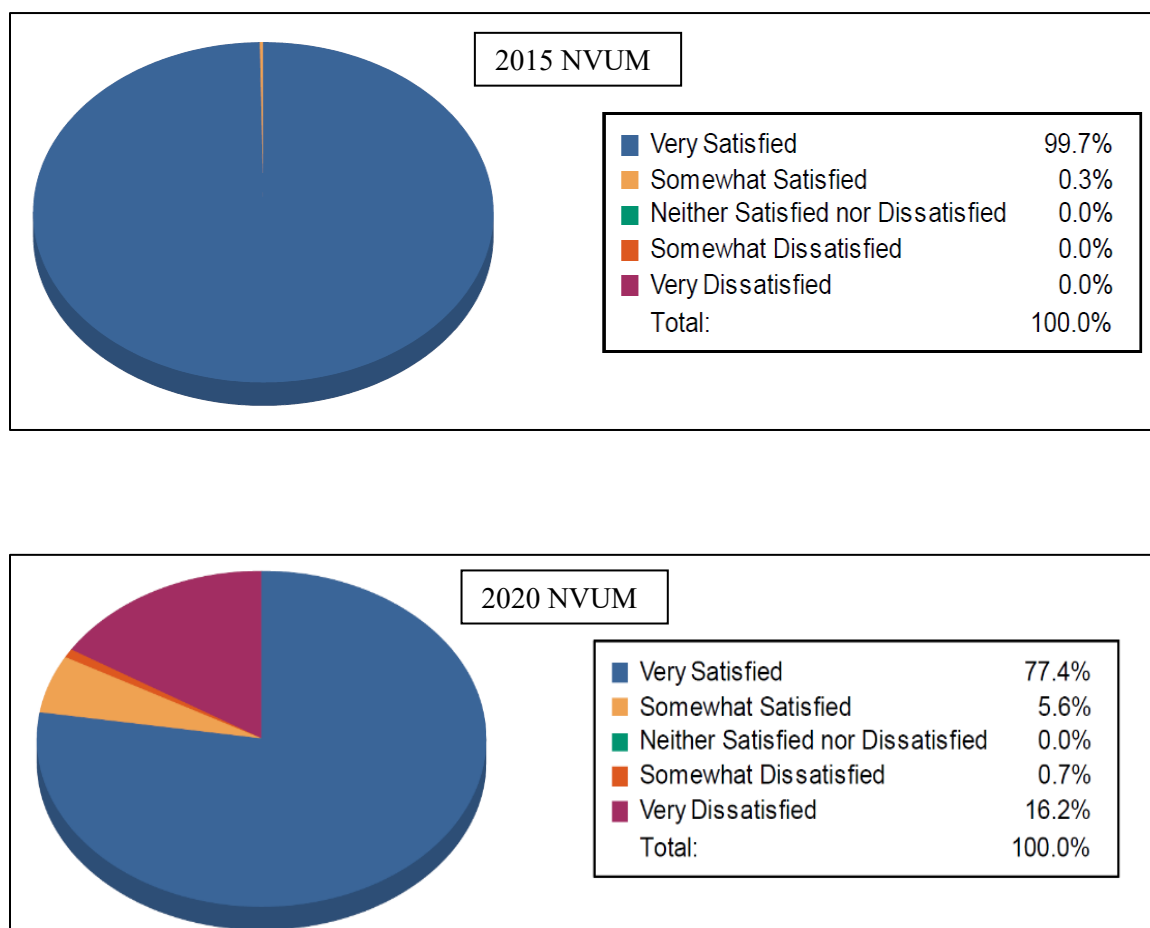
fiscal year 2015 were assumed to be sufficiently accurate. Responses were re-weighted to fiscal year 2020 visitation levels and incorporated into the analysis.

Evaluation and Conclusions

The NVUM results identify 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, known as the “Percent Meet Expectations” (PME). 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.

Based on 2015 and 2020 NVUM data, the majority of visitors (100 percent in 2015 and 83 percent in 2020) to FLNF reported they are either “very satisfied” or “somewhat satisfied” with their overall National Forest experience (Figure 2-1); however, the overall satisfaction results are lower than desirable in 2020 with 16 percent of visitors reporting being very dissatisfied.

Figure 2-1. *Satisfaction Rating for National Forest Visits: 2015 and 2020 National Visitor Use Monitoring.*



In respect to providing high-quality recreation services, NVUM monitoring looks at the satisfaction elements most readily controlled by managers. These are aggregated into four categories: developed facilities, access, services, and visitor safety. The site types sampled are aggregated into two groups for FLNF: developed sites (includes both day use and overnight developed sites) and dispersed areas. The “Percent Satisfied Index” (PSI) identifies the proportion (%) of elements and sites with a numerical rating of 4 or 5, equivalent to the percent of all recreation customers who are satisfied with agency performance. The agency’s national target for this measure is 85 percent. Table 2-9 shows the aggregate PSI scores for FLNF.

Table 2-9. Percent Satisfied Index¹ scores for aggregate categories from 2015 and 2020 survey data.

Satisfaction Element	Satisfied Survey Respondents (%)			
	Developed Sites ²		Undeveloped Areas	
Survey Year	2015	2020	2015	2020
Developed Facilities	88.0	91.0	100.0	100.0
Access	88.5	90.8	88.3	78.7
Services	70.3	87.1	43.2	16.8
Feeling of Safety	100.0	100.0	100.0	100.0

¹ This is a composite rating. It is the proportion of satisfaction ratings scored by visitors as good (4) or very good (5). Computed as the percentage of all ratings for the elements within the sub-grouping that are at or above the target level, and indicates the percent of all visitors that are reasonably well satisfied with agency performance.

² This category includes both Day Use and Overnight Use Developed Sites.

Developed Sites

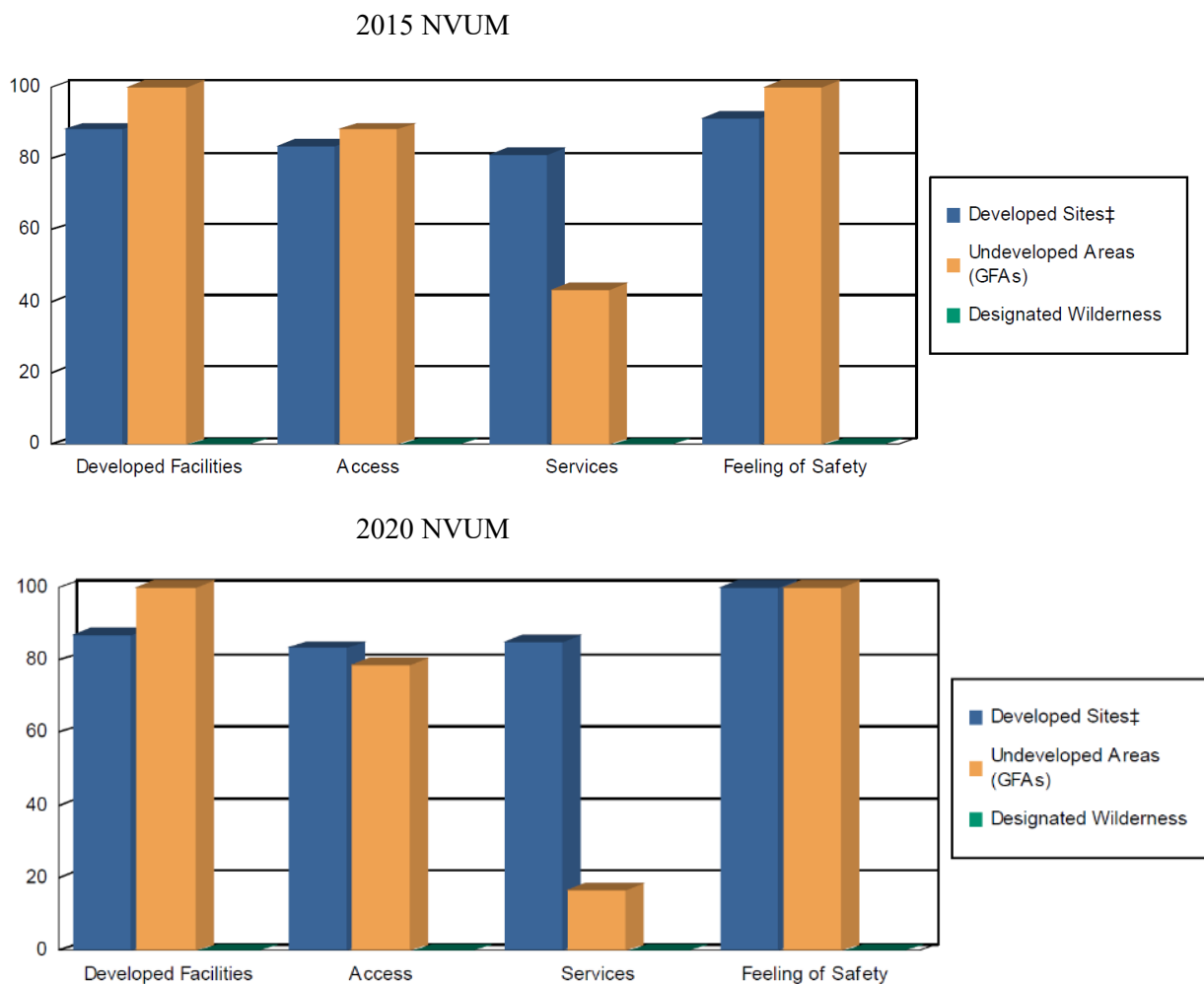
Developed sites on FLNF include both day use sites, such as Foster and Ballard Ponds, and overnight sites, such as Blueberry Patch and Potomac Group Campgrounds. Overall, developed recreation sites met user expectations in 2015 and 2020 with satisfaction indices showing between 70.3 and 100 percent satisfaction rates. Users were most satisfied with the feeling of safety on FLNF and least satisfied with services provided, although the trend shows satisfaction with services jumping from 70.3 to 87.1 percent from 2015 to 2020. Trends over the 5-year period also show an increased level of satisfaction with developed facilities, such as shelters, restrooms and pavilions and access. The PSI scores in 2020 all surpass the Forest Service's NVUM program target of 85 percent PSI.

Undeveloped Areas

In the context of NVUM, undeveloped areas are characterized by the absence of developed facilities and are used to support activities like hiking, nature viewing, hunting, and other dispersed recreation. National forests provide a unique value in offering opportunities for dispersed recreation for visitors who seek a more natural and less crowded experience. Examples of undeveloped sites on FLNF include the Ravine Loop Trailhead and Caywood Point. Visitors to undeveloped areas on FLNF reported that developed facilities and safety met expectations with 100 percent satisfaction. Visitors to undeveloped areas were less satisfied with access and services with both categories showing a downward trend from 2015 to 2020. Services in undeveloped areas fell well-below achieving the NVUM PSI target. The downward trend in service satisfaction may reflect the impact of the Covid-19 pandemic; however, for undeveloped areas, it may indicate that users are expecting or desiring more services than the Forest Service provides in undeveloped settings.

Figure 2-2 shows PME scores for 2015 and 2020. All scores rated above 70 percent except for services provided in undeveloped areas in 2020. This suggests there is no significant gap between public desires and agency performance except for services during the Covid-19 pandemic at undeveloped areas that are managed for users who are prepared for self-sufficient recreation. Additional details from the 2020 NVUM results indicated that PME scores would increase if efforts focused on improving trail conditions.

Figure 2-2. Percent Meets Expectations Scores ($\ddagger$ denotes developed sites include both Day Use and Overnight Use Developed Sites).

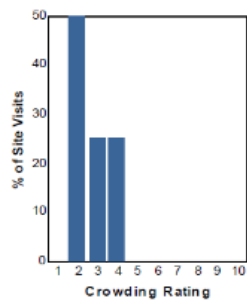
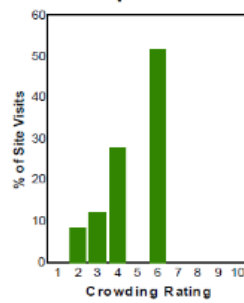
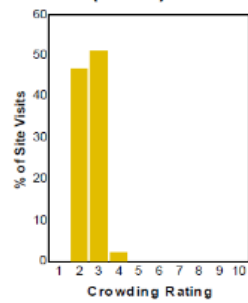


Lastly, the NVUM also assessed visitor perceptions of crowding. Visitors rated their perception of how crowded the recreation site or area felt to them. This information is useful when looking at the type of site the visitor was using since someone visiting a designated Wilderness may think 5 people is too many while someone visiting a developed campground may think 50 people is about right. Figure 2-3 shows the distribution of responses for each site type and reflects that users generally do not perceive recreation on FLNF to be overcrowded. Crowding was reported on a scale of 1 to 10 where 1 denotes hardly anyone was there, and a 10 indicates the area was perceived as overcrowded. The average rating for crowding declined from 2015 to 2020 despite visitation numbers increasing during the pandemic.

Figure 2-3. Percent of Visits by Crowd Rating and Site Type: 2015 and 2020.

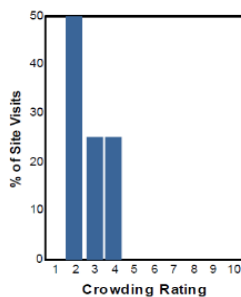
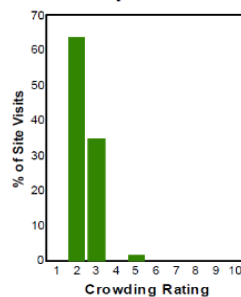
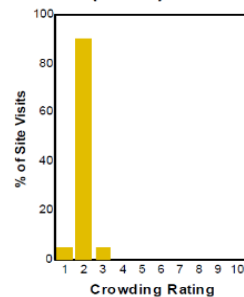
2015 NVUM

Crowding Rating†	Site Types (% of Site Visits)		
	Day Use Developed Sites	Overnight Use Developed Sites	Undeveloped Areas (GFAs)
10 - Overcrowded	0.0	0.0	0.0
9	0.0	0.0	0.0
8	0.0	0.0	0.0
7	0.0	0.0	0.0
6	0.0	51.5	0.0
5	0.0	0.0	0.0
4	25.0	27.8	2.2
3	25.0	12.4	51.1
2	50.0	8.3	46.7
1 - Hardly anyone there	0.0	0.0	0.0
Average Rating	2.8	4.7	2.6

Day Use Developed Sites**Overnight Use Developed Sites****Undeveloped Areas (GFAs)**

2020 NVUM

Crowding Rating†	Site Types (% of Site Visits)		
	Day Use Developed Sites	Overnight Use Developed Sites	Undeveloped Areas (GFAs)
10 - Overcrowded	0.0	0.0	0.0
9	0.0	0.0	0.0
8	0.0	0.0	0.0
7	0.0	0.0	0.0
6	0.0	0.0	0.0
5	0.0	1.4	0.0
4	25.0	0.0	0.0
3	25.0	34.8	4.9
2	50.0	63.9	90.2
1 - Hardly anyone there	0.0	0.0	4.9
Average Rating	2.8	2.4	2.0

Day Use Developed Sites**Overnight Use Developed Sites****Undeveloped Areas (GFAs)**

Additional Monitoring

A University of New Hampshire (UNH) study was conducted in 2024 to assess Green Mountain National Forest (GMNF) and FLNF outdoor recreation visitors' perceptions, attitudes, and behaviors (Ferguson et al. 2024). The UNH study asked visitors to evaluate their overall level of satisfaction with the GMNF and FLNF on both single-item and multi-item satisfaction scales (Tables 2-10 and 2-11). The single-item measurement of overall satisfaction was measured on a seven-point scale where one represented 'poor' and seven represented 'perfect' (Table 2-11). Ferguson et al. found that overall satisfaction was very high among respondents, with the majority of visitors (76.9 percent) indicating their overall trip that day was either *excellent* or *perfect*, with an average of 5.94 on a 7-point scale.

Table 2-10. Visitors' overall satisfaction rating in fiscal year 2024.

Mean	Valid Percentages						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
5.94	0.5%	1.2%	1.4%	4.6%	15.4%	47.1%	29.8%

Note: Percentages may not equal 100 because of rounding

Response Code: 1 = Poor and 7 = Perfect

The multi-item measurement of visitors' satisfaction was measured on a seven-point scale where one represented 'completely disagree' and seven represented 'completely agree' (Table 2-11). Ferguson et al. noted that most respondents (92.6 percent) agreed they thoroughly enjoyed their trip, with an average of 6.30 on a 7-point scale. Approximately 90 percent of the sample agreed that their trip was well worth the time and money spent, with an average of 6.20 on a 7-point scale. Finally, 70 percent of the sample agreed that they could not imagine better trips, with an average of 5.40 on a 7-point scale.

Table 2-11. Visitors' multi-item satisfaction rating in fiscal year 2024.

Variable	Mean	Percentage		
		Disagree	Neutral	Agree
I have thoroughly enjoyed my trips to the forest	6.30	2.9	4.6	92.6
My trips to the forest have been well worth the money and time I spend on them	6.20	3.7	6.2	90.1
I cannot imagine better trips to the forest	5.40	10.4	18.8	70.7

Note: Percentages may not equal 100 because of rounding

Response Code: 1 = Completely Disagree and 7 = Completely Agree

No significant changes to recreation management and maintenance need to be taken based on the findings reported during the monitoring period; however, continued monitoring of the 5-year downward trend in satisfaction with services at undeveloped sites may provide insight as to the 2020 survey results and if the lack of satisfaction with services was a result of the Covid-19 pandemic or if users are expecting/desiring more services than the Forest Service provides in undeveloped settings. Additional education about what users can expect, and not expect, for services in undeveloped areas may help visitors refine what locations they want to visit based on the level of services provided. Increasing services, such as adding restrooms, may be considered where appropriate and with consideration to resource limitations such as available staffing and funding. Both the NVUM and UNH study suggest that one service, increasing the presence of Forest Service staff, will support visitor satisfaction as staff provide valuable information, enhance visitor experiences, and encourage repeat visits.

Continued challenges to fund the NVUM effort may result in increasingly limited data in future survey years. Recreation managers should continue to support NVUM data collection to the extent reasonable and practical to help inform future decisions in addition to assessing and implementing site-specific improvement plans and maintenance to improve visitor satisfaction.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Element 6: Forest Health

Monitoring Item: Increase of Destructive Insects and Diseases

Management Question

Are there measurable resource changes related to climate change and other stressors that may be affecting the FLNF?

Detailed Monitoring Question

To what extent are insects and disease organisms impacting forest conditions?

Measurement Indicators

Insect or disease infestations with the following measurement indicators:

1. Number of outbreaks by species
2. Acres affected by species
3. Trends in outbreak persistence, spread, and associated tree mortality

Monitoring Driver

- Forest Plan Goal 2 and associated Objectives
- Forest-wide Management Direction, Section 2.3.10 - Forest Health and Disturbance Processes; Pests, Diseases, and Non-Native Invasive Species Standards and Guidelines

Reporting Frequency

Every 5 years (this report covers fiscal years 2019 to 2023)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2027 and 2028 biennial monitoring and evaluation report (anticipated to cover fiscal years 2024 to 2028)

Background

This monitoring question addresses required Element 6 from the 2012 planning rule (36 CFR 219.12(5)(vi)): *Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.* The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 2 and associated Objective, and Forest-wide Standards and Guidelines specific to pests and diseases. The occurrence of existing and future insects and diseases represents a potentially major stressor in the ecosystem. It is important to monitor both individual outbreaks of insects and diseases as well as trends that may indicate ecosystem stress resulting from climate change, acid deposition or other factors. Monitoring the extent and magnitude of insect and disease infestations on NFS lands will assist in determining necessary adaptations for management

practices to achieve long-term forest management goals considering ongoing and future anticipated ecosystem stressors.

Monitoring Activities

A variety of monitoring activities are conducted at the state and Forest level by several different agencies and organizations. Forest Service staff review this data and cooperate with partners to assess forest health conditions, and then supplement observations made during inventory and management activities. Table 2-12 shows a summary of monitoring activities conducted during fiscal years 2019 to 2023.

Table 2-12. Fiscal years 2019 to 2023 insect and disease monitoring.

Insect or Disease Agent	Organization & Date of Monitoring	Type of Monitoring Effort
Sirex wood wasp (<i>Sirex noctilio</i>)	NY Department of Conservation (NY DEC), FLNF staff, ongoing	Statewide survey, stand inspections and walk-through examination
Hemlock woolly adelgid (<i>Tsugae adelges</i>)	Cornell University Entomology Department, NY DEC, FLNF staff and partners, ongoing	Walk-through with foliage inspection, and mapping/description of infestation site
Root diseases and invasive insects	Northeastern Area State & Private Forestry- USDA Forest Service, ongoing	Stand inspections and walk-through examination
Thousand cankers disease	NY DEC, FLNF staff, ongoing	Statewide surveys, stand inspections and walk-through examinations

Insect epidemics and resulting population numbers vary greatly from year to year, resulting from a combination of susceptible host habitats, favorable weather conditions, and previous year population levels. Individual tree mortality within mature stands increases as the forest ages. Current harvest levels are low and average stand age is increasing. The most extensive damage observed between 2019 and 2024 is mortality resulting from spongy moth defoliation and emerald ash borer (EAB). Sirex wood wasp has been identified on FLNF, but surveys have not yet shown extensive damage. Non-native and off-site softwood plantations are most at risk from Sirex wood wasp. Forest health risk in these stands is high due to high stem density and overstocking. Planted species and genetics are also not well adapted to sites in many stands. Beech bark disease continues to affect beech trees throughout FLNF and beech leaf disease is expected to cause widespread mortality in beech trees over the next five to ten years.

Several invasive insects and diseases of concern have been detected on or near FLNF since 2006. Currently Sirex wood wasp and hemlock woolly adelgid (HWA) occur on FLNF and EAB was detected in 2017. Populations of these invasive insects have become established across FLNF and tree mortality is ongoing. There is also potential for thousand canker disease (TCD) to afflict black walnut. Spongy moth outbreaks have resulted in widespread, repeated defoliation on FLNF with some infestations resulting in tree mortality. Table 2-13 lists a summary of insect and disease status on FLNF during the fiscal years 2019 to 2023 monitoring period.

Table 2-13. Insect and disease occurrence during fiscal years 2019 to 2023.

Insect or Disease	Monitoring Results
Beech bark disease (caused by <i>Cryptococcus fagisuga</i> and <i>Nectria coccinea</i> var. <i>faginata</i>)	Continues to affect beech trees throughout FLNF. Bark symptoms are a common feature in forested stands and crown symptoms including early yellowing and dieback are noticeable in late summer.
Beech leaf disease (caused by <i>Litylenchus crenatae</i> ssp. <i>mccannii</i>)	Affects all species of beech trees (<i>Fagus</i> spp.) in North America, and causes leaf deformation, dieback, and mortality of infested hosts. Beech is one of the most frequent understory and midstory trees on the FLNF. This pest was first documented in Ohio in 2012 and was first found in New York in 2018. It has expanded rapidly across the state

Insect or Disease	Monitoring Results
	in the past few years. Beech leaf disease has not yet been detected on FLNF but is expected to cause widespread mortality in beech trees over the next five to ten years.
Emerald ash borer (<i>Agrilus planipennis</i>)	Has become established throughout FLNF and mortality is widespread in ash species. It is expected that most ash trees will die within five to ten years. Research into biological control and surveys to locate potentially resistant ash trees are being conducted in all the infested regions of New York by NY DEC.
Hemlock woolly adelgid (<i>Adelges tsugae</i>)	The adelgid population on FLNF continues to grow and hemlock mortality is increasing as evidenced by surveys and walk-through examinations. Despite the establishment of biocontrol agents (<i>L. nigrinus</i>), significant hemlock mortality is expected unless further management is conducted. Hemlock elongate scale has also been detected in hemlock stands at Caywood Point and is likely increasing mortality. Chemical treatments have been implemented at several sites across FLNF since 2015 authorized by the Hemlock Woolly Adelgid Suppression Project to use chemical and biological treatments for HWA on 2,872 acres across FLNF. Treatments were implemented in several stands from 2019 to 2023, but were paused in 2024 because of reduced availability of healthy trees due to mortality resulting from spongy moth defoliation. Biological control has been implemented on FLNF and surrounding region, which uses the natural predators of invasive species to reduce adelgid populations. In 2024, predators were released at more than 20 locations across New York, including silver flies and <i>Laricobius</i> beetles. It is hoped that chemical treatments will help to buy time for biological controls to become established and effective across the landscape.
Oak wilt (caused by the fungus <i>Bretziella fagacearum</i>)	Has been detected in New York but has not yet been found on FLNF. Oak wilt is a disease that causes oak leaves to turn brown and fall off in spring and summer, typically killing the tree. Oak wilt is caused by a fungus and can spread when fungal spores are transported by beetles or when the roots of nearby oaks, especially red oaks, graft together with an infected tree.
Spongy moth caterpillars (<i>Lymantria dispar</i>)	Outbreaks occur every 7 to 10 years and cause severe defoliation of oaks and other hardwoods. When populations get exceptionally high, moths will also feed on conifers like white pine and hemlock. Hardwoods can often recover from 1 to 2 years of defoliation but may die if they are defoliated for multiple years in a row. Conifers do not rebound well and may die after just 1 to 2 years of defoliation. The current spongy moth outbreak began in 2020 in the Finger Lakes region and spread to many areas of the state, peaking in 2021. Outbreaks typically collapse after 3 to 5 years, and this outbreak was much less severe by 2024. Pockets of hemlock mortality have been observed in ravines on FLNF where outbreaks were severe. Areas of oak and other hardwood mortality are also widespread across FLNF where armillaria has become pathogenic following spongy moth defoliating combined with other stressors such as drought.

Other non-native insects and diseases of risk that have not been identified in Western New York include Asian longhorned beetle, winter moth, and the agents that cause thousand cankers disease, and sudden oak death.

Current insect and disease levels do not significantly impact the ability of management activities to work toward Forest Plan resource objectives, however significant forest health risks exist, particularly for eastern hemlock, ash species and softwood plantations. Increasing mortality in plantations should be monitored and salvage opportunities should be evaluated. These stands should also be evaluated for conversion to a more resilient, diverse mix of native species. Overstory mortality can result in increased light conditions which can release invasive plants. Heavy deer browse further reduces the competitiveness of native plant species and increases the risk that infestations will become worse and that ecological function will continue to decrease.

A variety of silvicultural methods can be used to increase forest diversity and resilience in the face of ecological stressors. The Finger Lakes Invasive Pest Strategy project (FLIPS) was approved in 2017

(USDA Forest Service 2017). Approximately 200 acres of FLIPS treatments were included in an Agreement with the National Wild Turkey Federation signed in 2019, but no treatments have been implemented to date.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Element 7: Program Management

Monitoring Item: Outputs Accomplished - Other Resources

Management Question

What is the progress toward meeting Forest Plan desired conditions and objectives, including providing multiple use opportunities?

Detailed Monitoring Question

How do actual resource and service accomplishments compare to those projected in the Forest Plan Appendix D, Proposed and Probable Practices?

Measurement Indicators

Actual annual resource and service accomplishments for management activities listed in the Forest Plan, Appendix D, Table D-5

Monitor Driver

- Forest Plan Goal 1 and associated Objectives
- Forest Plan Appendix D, Proposed and Probable Practices, Table D-5

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

This question addresses required Element 7 from the 2012 planning rule (36 CFR 219.12(5)(vii)): *Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities*. This question provides an excellent means to measure how well Forest Service management activities are meeting Forest Plan resource output and service expectations associated with moving the resource conditions toward desired future conditions. Forest Plan, Appendix D, Table D-5 provides an estimate of the proposed and probable management practices expected during the first two decades of Forest Plan implementation, as well as estimates of the goods and services provided by managing resources on FLNF.

Monitoring Activities

There were numerous outputs and services provided from managing FLNF during fiscal years 2019 to 2024. These outputs are displayed in Table 2-14. Management of FLNF entered the second decade of Forest Plan implementation in fiscal year 2016. Although Appendix D, Table D-5 of the Forest Plan provides estimated measure of unit activity outputs to work toward desired conditions and management objectives for the first decade of Forest Plan implementation (2006 to 2015), these estimated outputs are repeated for the second decade (2016 to 2025). For this report, a summary of total resource output for each management activity during the first decade of Forest Plan implementation is provided in Table 2-14 for context. The monitoring resource outputs are then provided for 2019 to 2024 so they can be compared with amounts estimated for the second decade.

Some outputs listed in Table 2-14 are no longer included or have been modified compared to past monitoring and evaluation reports due to the inability to continue tracking the specificity of implementation for some activities or practices.

These changes include the following activity or practice:

- Miles of trail improvement or rehabilitation no longer tracked
- Breakdown of specific harvest methods which have now been consolidated into three categories: even-aged regeneration harvest, even-aged intermediate harvest, and uneven-aged harvest
- Site preparation/reforestation and stand improvement activities no longer tracked
- Liming and facilities (pasture maintenance) no longer tracked
- Fish stocking and surveys non longer tracked
- Monitor condition of sites and species under special forest product permits no longer tracked

Table 2-14. Estimated and actual outputs achieved in fiscal years 2019 to 2024 (Forest Plan Appendix D, Proposed and Probable Practices).

Activity or Practice	Unit of Measure	Estimated Amount (Decades 1 and 2) ¹	Total Amount Achieved 2006-2015	Amount Achieved 2019	Amount Achieved 2020	Amount Achieved 2021	Amount Achieved 2022	Amount Achieved 2023	Amount Achieved 2024	Total Amount Achieved 2016-2024
Recreation Resources										
Trail Improvement	Miles	3-6	22	Not tracked starting in 2019 ²						n/a
Trail Maintenance – to standard	Miles	50-200	194	Combined into Trail Maintenance – total system starting in 2019						n/a
Trail Rehabilitation	Miles	20-40	2,853	Not tracked starting in 2019 ³						6,931.8
Trail Maintenance – total system ⁴	Miles	380	42	Not available	65	65	65	65	355	
Vegetation Management										
Site Preparation/ Reforestation	Acres	250	1,829	Not tracked starting in 2019						n/a
Stand Improvement	Acres	80-120	400	Not tracked starting in 2019						n/a
Thinning Harvest	Acres	250-300	91	Combined into Total Intermediate Harvest starting in 2019						n/a
Shelterwood Regeneration	Acres	100-150	75	Combined into Total Even-aged Regeneration Harvest starting in 2019						n/a
Shelterwood Removal	Acres	50-100	1,067	Combined into Total Even-aged Regeneration Harvest starting in 2019						n/a
Selection Harvest	Acres	325-375	577	Combined into Total Uneven-aged Harvest starting in 2019						n/a
Clearcut	Acres	30-50	48	Combined into Total Even-aged Regeneration Harvest starting in 2019						n/a
Total Even-aged Regeneration Harvest ⁵	Acres	250 ⁸	n/a	0	0	0	0	0	0	0
Total Intermediate Harvest ⁶	Acres	133 ⁸	n/a	0	0	0	0	0	0	0
Total Uneven-aged Harvest ⁷	Acres	513 ⁸	n/a	0	0	0	0	0	0	0
Wildlife, Fisheries, Rare Plant, Rare or Outstanding Natural Community Resources										
Shrub Opening Maintenance	Acres	1,000-1,500	141	2	4	3	7	4	9	34
Wildlife Pond Maintenance	Ponds	6	10,363	All threatened or endangered wildlife inventoried during site specific project analysis – acres not tracked						n/a
Pasture Maintenance				1,732 (plants)	5,085 (plants)	3,261 (plants)	550 (plants)	222 (plants)	208 (plants)	14,882 (plants)
Pasture Maintenance										

Activity or Practice	Unit of Measure	Estimated Amount (Decades 1 and 2) ¹	Total Amount Achieved 2006-2015	Amount Achieved 2019	Amount Achieved 2020	Amount Achieved 2021	Amount Achieved 2022	Amount Achieved 2023	Amount Achieved 2024	Total Amount Achieved 2016-2024
Mowing	Acres	7,500-10,000	11,892	1,778	1,435	1,442	1,778	1,435	1,442	13,729
Liming	Acres	500-1,000	819	Not tracked starting in 2019; discontinued liming in 2012						n/a
New Fencing	Miles	4-6	8.3	0.10	0.23	0.11	.09	0	0.12	0.65
Reconstruct Fence	Miles	20-30	34.9	0.91	2.75	3.25	2.56	3.82	2.5	19.1
New Stock Pond	Ponds	3	1	0	0	1	0	1	2	4
Facilities	Facilities	5	12	Not tracked starting in 2019						n/a
Total Forage Production	Animal Unit Month	108,500	85,035	7,439	9,000	7,386	7,661	7,992	8,934	72,314
Non-Commercial Clearcutting of Aspen	Acres	80	14	0	0	0	0	0	0	10
Monitor condition of sites and species under special forest product permits	Sites	All	0 plants under special forest project permits	Not tracked starting in 2019						n/a
Inventory for TES ⁹ species and rare or outstanding natural communities	Acres	1,600	9,527 sensitive plants	0 sensitive plants	0 sensitive plants	22.5 sensitive plants	3 sensitive plants	0 sensitive plants	sensitive plants (not available)	25.5
				Sensitive bird habitat inventoried during site specific project analysis area						Project specific analysis area
Monitor known rare or outstanding ecological, biological, or geological features, including TES occurrences	Sites	All	180 sites (all plants)	0	0	0	16 sites (plants); 7 ecological rare sites	1 site (plants)	1 site (plants); 3 ecological rare sites	27 sites (plants); 10 ecological rare sites
Prepare conservation plans	Sites	7	0	0	0	0	0	0	0	0

Activity or Practice	Unit of Measure	Estimated Amount (Decades 1 and 2) ¹	Total Amount Achieved 2006-2015	Amount Achieved 2019	Amount Achieved 2020	Amount Achieved 2021	Amount Achieved 2022	Amount Achieved 2023	Amount Achieved 2024	Total Amount Achieved 2016-2024
for each rare or outstanding area										
Establish RNAs ¹⁰	Sites	2	0	0	0	0	0	0	0	0
Protect known occurrences of TES species	Sites	All	All sites protected during project implementation	All sites protected during project implementation						
Protect, and where feasible, improve or restore habitat conditions for TES species	Sites	All	All sites protected; 14 sites improved for sensitive plants	All known sites protected						All known sites protected
Protect important habitat sites for TES bats	Roost and den trees	Adequate numbers of roost and den trees	All known roost and den trees protected during project implementation	All known roost and den trees protected during project implementation						
Update conservation assessments for RFSS ¹¹	Species	All	1	0	0	0	0	0	0	0
Fish Stocking	Ponds	6	30	Not tracked starting in 2019						n/a
Fish Surveys	Surveys	3	18	Not tracked starting in 2019						n/a
Heritage Resource Protection Acres Surveyed	Acres	250-750	800	Not available	Not available	0	0	103	4	907
Agreements w/County Law	Agreement	2	5	Not available	2	Not available				3

Activity or Practice	Unit of Measure	Estimated Amount (Decades 1 and 2) ¹	Total Amount Achieved 2006-2015	Amount Achieved 2019	Amount Achieved 2020	Amount Achieved 2021	Amount Achieved 2022	Amount Achieved 2023	Amount Achieved 2024	Total Amount Achieved 2016-2024
NF land signs placed and/or maintained	Signs	20-30	Not available	Not tracked starting in 2019						n/a

¹ These numbers represent the sum of annual activities in years 1 through 10 (2006 to 2015) and repeated for years 11-20 (2016 to 2025).

² There is no Forest Plan definition for Trail Improvement.

³ The Forest Plan definition for Rehabilitation (of Assets) is “Renovation or restoration of an existing fixed asset or any of its components in order to restore the functionality or life of the asset. Because there is no significant expansion or change of purpose for the fixed asset, the work primarily addresses deferred maintenance” (Forest Plan Glossary, p. 101). For this reason, this type of maintenance is incorporated into Trail Maintenance – total system starting in 2019.

⁴ The Forest Plan definition for Maintenance is “The act of keeping fixed assets in acceptable condition. It includes preventive maintenance, normal repairs, replacement of parts and structural components, and other activities needed to preserve a fixed asset, so that it continues to provide acceptable service and achieves its expected life” (Forest Plan Glossary, p. 92).

⁵ Consolidated all clearcut, shelterwood, shelterwood with reserves, and shelterwood removal harvest methods starting in 2019.

⁶ Consolidated all thinning and improvement cut harvest methods starting in 2019.

⁷ Consolidated all group selection and individual tree selection harvest methods starting in 2019.

⁸ Estimated acreage of silvicultural practices for Decade 2 (2016 to 2025) from Forest Plan Appendix D, Proposed and Probable Practices, Table D-4.

⁹ Threatened, endangered, and sensitive (Regional Forester Sensitive Species) species.

¹⁰ Research Natural Areas.

¹¹ Regional Forester Sensitive Species

Evaluation and Conclusions

Progress toward meeting outputs or services estimated by the Forest Plan from management activities during this monitoring period are mixed depending on the activity or practice monitored (Table 2-15). Discussion of how actual activities or practices implemented affect resource conditions and management ability to meet Forest Plan direction is found in many of the monitoring item question sections.

Table 2-15. Status of meeting estimated output and service for Decade 2 of Forest Plan implementation.

Activity or Practice	Status
Establish RNAs	Below estimates
Heritage resource protection	Exceeds estimates
Inventory for TES species	Meets estimates, but no longer track sensitive wildlife acres
Monitor known rare or outstanding resources	Below estimates
Pasture maintenance (mowing)	Exceeds estimates
Pasture maintenance (new fencing)	Below estimates
Pasture maintenance (reconstruct fencing)	Below estimates
Pasture maintenance (new stock ponds)	Exceeds estimates
Pasture maintenance (forage production)	Below estimates
Prepare conservation plans	Below estimates
Protect TES species	Meets estimates
Shrub opening maintenance	Exceeds estimates
Total even-aged intermediate harvest	Below estimates
Total even-aged regeneration harvest	Below estimates
Total timber cut	Below estimates
Total uneven-aged harvest	Below estimates
Trail maintenance	Above estimates
Update conservation assessments for RFSS	Below estimates

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Element 8: Soils

Monitoring Item: Soil Quality Standard Compliance

Management Question

Are the effects of each management system substantially and permanently impairing the productivity of the land?

Detailed Monitoring Question

To what extent are management activities impacting soil quality and productivity?

Measurement Indicators

Within the Forest Service Soil Disturbance Monitoring Protocol sampling and monitoring areas including select areas where timber harvest, prescribed fire, and other management activities have been implemented:

1. Amount of forest floor impacted
2. Amount of topsoil displacement
3. Severity of rutted, burned or compacted soil

4. Severity of platy/massive soil structures, or puddled soil

Monitor Driver

Forest Plan Goal 3 and associated Objectives

Reporting Frequency

Every 5 years (revised from annually starting fiscal year 2019); this report covers fiscal years 2019 to 2024 and includes monitoring data from 2017 to 2018

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report

Next Year Scheduled for Reporting

Fiscal years 2029 and 2030 biennial monitoring and evaluation report (anticipated to cover fiscal years 2025 to 2029)

Background

This monitoring question addresses required Element 8 from the 2012 planning rule (36 CFR 219.12(5)(viii)): *The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C))*. For context, U.S.C. 1604(g)(3)(C) is a reference to the section of the National Forest Management Act specifying guidelines for land management plans to achieve the goals which “insure research on and (based on continuous monitoring and assessment in the field) evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land”.

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 3 to “*maintain or restore the natural, ecological functions of the soil*” (Forest Plan, p. 12) by focusing on key ecosystem characteristics in the plan area related to soils and soil productivity.

Associated Objectives for Goal 3 are to minimize the adverse impacts on soils from management activities; and restore natural soil processes and functions on degraded soils.

The Forest Soil Disturbance Monitoring Protocol (FSDMP) outlines a framework for monitoring soil disturbances from forest management pre- and post-activity. This national protocol is intended to consistently assess, monitor, and communicate soil disturbances caused by land management activities, particularly those involving mechanized equipment like logging. It is part of an adaptive management framework aimed at maintaining or improving soil productivity and hydrologic function on NFS lands. The FSDMP offers a standardized way to define and quickly evaluate soil disturbance using a combination of scientifically informed risk ratings and visually observable soil-disturbance classes. These classes range from Class 0 - Undisturbed, Class 1 - Light Disturbance, Class 2 - Moderate Disturbance, and Class 3 - Severely Disturbed (Page-Dumroese et.al, 2009b), and include collecting soil attributes that characterize the state of the Forest Floor, Topsoil and Subsoil.

Current Regional Soil Quality Standards (R9 RO 2550-2012-1) discuss seven types of soil disturbance: 1) compaction, 2) displacement (mixing), 3) puddling/rutting, 4) burned, 5) erosion, 6) loss of ground cover, and 7) mass movement. Relevant laws applicable to the Forest Service’s responsibility to maintain long-term soil productivity on all lands it manages include the Organic Administration Act of 1897 (16 U.S.C. 473-475), the Bankhead-Jones Act of 1937, the Multiple-Use, Sustained-Yield Act of 1960 (P.L. 86-517, 74 Stat. 215; 16 U.S.C. 528-531), the National Environmental Policy Act (NEPA) of 1969 (16 U.S.C. 4321), and the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 (16 U.S.C.

1600-1614) (as amended by National Forest Management Act (NFMA) of 1976 (16 U.S.C. 472a) (USFS 2500-2010-1, 2010).

Detrimental disturbance is a separate determination from soil disturbance class and soil attributes generally considered not expected to be on the trajectory of recovery or the level of disturbance was not part of the management intent. Although areas classified as Class 3 are the most disturbed, they may or may not be detrimentally disturbed for some ecological systems. The Soil Disturbance Field Guide (Page-Dumroese et.al., 2009a and 2009b; Napper et.al, 2009) supports FSDMP implementation in the field and supports consistent data collection.

Monitoring Activities

Although this report monitoring period covers fiscal years 2019 to 2024, documented results for this question include monitoring conducted in 2018. A total of 12 pre-harvest monitoring sites were established during this monitoring period (Table 2-16). Data was not collected for post timber harvest, prescribed fire areas or other management activities.

The FSDMP provides formulas for determining the recommended number of soil pits (“holes”) required to achieve the desired level of statistical accuracy. In practice, completing this number is often infeasible when very large sample sizes are indicated. In 2024, the Standardization Data Collection Guidance recommended an upper limit of 80 holes per monitoring site. Prior to this guidance, upper limits varied across USDA Forest Service Region 9 forests from 40 to 120 holes. The “Holes Needed” column in Table 2-16 shows the shortfall between holes dug and the recommended number. A value of “0” indicates the site met the required number. Accuracy levels were not factored into the results presented here.

At each site, soil data were collected and summarized as percentages. Attributes measured included: disturbance class (0 to 3), detrimental soil disturbance (DSD), forest floor impacted, live plant cover, invasive plant presence, woody debris (<7 cm and >7 cm), bare soil, surface rock, topsoil displacement, erosion, mixed horizons, rutting depths, compaction depths, and structure (platy, massive, puddled). Sites were targeted for pre-monitoring based on potential soil impacts or other concerns.

Table 2-16. Soil disturbance monitoring sites where data was collected from fiscal years 2017 to 2024.

Timber Sale and Payment Unit	Pre or Post Harvest Monitoring	Fiscal Year Monitored	Holes Needed	Associated Project Name
A House Central	Pre	2021	0	Unknown
McBride	Pre	2021	0	Unknown
Burnt Butcher 3	Pre	2021	0	Finger Lakes Invasive Pest Strategy
Burnt Butcher 4	Pre	2018	0	Finger Lakes Invasive Pest Strategy
Burnt Butcher 5	Pre	2021	0	Finger Lakes Invasive Pest Strategy
Burnt Butcher 8	Pre	2021	0	Finger Lakes Invasive Pest Strategy
Burnt Butcher 10	Pre	2018	0	Finger Lakes Invasive Pest Strategy
Burnt Butcher 12	Pre	2018	78	Finger Lakes Invasive Pest Strategy
Burnt Butcher 13	Pre	2018	0	Finger Lakes Invasive Pest Strategy
Burnt Butcher 15	Pre	2018	0	Finger Lakes Invasive Pest Strategy
Burnt Butcher 16	Pre	2021	0	Finger Lakes Invasive Pest Strategy

Evaluation and Conclusions

Table 2-17 shows estimated percent area of pre-harvest sites monitored for disturbance class and detrimental soil disturbance (DSD). Across all sites, most of the area showed Class 1 (light disturbance). About one-quarter of the area was Class 0 (undisturbed), while Class 2 (moderate disturbance) averaged just 2.2 percent. No Class 3 areas were found. Pre-existing disturbance was widespread, likely due to historical land management. Overall DSD was low (6.3 percent average), suggesting that although disturbance is common, it is not at levels likely to reduce soil function.

Table 2-17. Estimated percent area of pre-harvest sites monitored for disturbance class and detrimental soil disturbance (DSD) for fiscal years 2017 to 2024.

Percent				
Class 0	Class 1	Class 2	Class 3	DSD
24	74	2.2	0	6.3

The attributes of the effects on forest floor attributes are provided in Table 2-18. There is 9 percent of the area of forest floor impacted in pre harvest monitoring sites. This means that about a tenth of the area was found to have such a type of impact to the organic horizon, litter and woody debris. There was a fair amount of live understory live plant cover with an average of 69.7 percent. These sites may have been

Table 2-18. Estimated percent area of pre-harvest sites monitored for forest floor attributes for fiscal years 2017 to 2024.

Forest Floor Attributes	Percent of Site Impacted
Forest Floor Impacted	9.00
Understory Live Plant Cover	69.70
Invasive Plants	7.33
Fine Woody <7cm	69.25
Coarse Woody >7cm	8.33
Bare Soil	5.67
Surface Rock	1.81

Table 2-19. Estimated percent area of pre-harvest sites monitored for surface soil attributes for fiscal years 2017 to 2024.

Surface Soil Attributes	Percent Of Site Impacted
Compaction (0-10cm in depth)	57.31
Compaction (0-30cm in depth)	1.29
Compaction (30+cm in depth)	0.00
Platy, Massive, Puddled (0-10cm in depth)	12.99
Platy, Massive, Puddled (10-30cm in depth)	0.00
Platy, Massive, Puddled (30+cm in depth)	0.00

depth. Platy, massive, puddled from 0-10cm in depth was at around 13 percent in area. Often compacted soils and platy, massive, puddled structures occur together. The high prevalence of near-surface compaction and altered soil structure suggests legacy effects from equipment use and/or grazing. It is interesting to note that these conditions have persisted decades after agricultural abandonment, indicating limited natural recovery. The silty loam textures at these sites may increase susceptibility to compaction.

more open, which allowed for greater amounts of light in to supplement the understory canopy. There were also a fair number of invasive plants and a large amount of fine woody debris found at these sites. Finally, there was some bare soil and surface rock at 5.67 and 1.81 percent, respectively. These values suggest some site disturbance with ground exposure.

Table 2-19 provides monitoring results for surface soil attributes. There was a very low amount of topsoil displacement, erosion, and rutting found at these sites but a high level of mixed top and subsoil. The widespread mixing of top and subsoil is reflecting a legacy of agricultural use (cropping, tree plantations, grazing) on FLNF. The overall surface soil otherwise seems to not be overly affected except for the mixing that had occurred.

Compaction from 0-10cm in depth was found to be very common composing over half the area. Compaction from 10-30cm in depth was much less at around 1 percent of the areas on average and no compaction was found to be 30+cm in

Monitoring results indicate timber harvest activities should continue to follow best management practices (BMPs), particularly avoiding equipment use on wet soils (NYSF 2018). Because of the high levels of legacy compaction, soil restoration options should be considered after timber harvesting is complete in attempts to restore soils back to their natural functions, improve soil productivity, and allow for greater plant and microbial diversity to thrive. Mechanical treatments such as ripping or subsoiling can effectively break up compacted layers, particularly when soils are dry enough to fracture rather than smear. These treatments are generally more effective in fine-textured soils than relying on natural recovery alone.

Biological approaches can also support recovery. Planting deep-rooted cover crops such as tillage radish or rye before tree establishment can help loosen compacted layers through root growth and decomposition. Retaining timber slash on the soil surface provides mulch that conserves moisture, enhances freeze–thaw action, and encourages natural soil loosening through root and microbial activity.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

3. Other Monitoring Questions

In addition to the monitoring questions selected to address the eight required elements listed in Table 2-1, other monitoring questions have been developed to assist in determining how well management activities are meeting Forest Plan direction. While none of these questions have been selected to address any of the required elements, Forest Service staff can use them to improve the Forest Plan or refine management activities pending budget and staffing capacity. The details for these other monitoring questions can be found in the 2025 Monitoring Guide including the Forest Plan component they address, associated measurement indicators, monitoring protocol and methodology, and reporting frequency.

Aquatic Ecosystems

Monitoring Item: Fish Habitat

Management Question

How well do Forest Plan components conserve or improve fisheries habitat?

Detailed Monitoring Question

To what extent are management activities conserving or improving fisheries habitat?

Measurement Indicators

1. Implementation and effectiveness monitoring for Best Management Practices (BMPs)
2. Aquatic habitat improved – miles of stream and acres of lakes and ponds (excluding fish stocking-related accomplishments)

Monitoring Driver

- Forest Plan Goal 2 and associated Fisheries Objective
- Forest Plan Goal 4 and associated Objectives
- Forest Plan Goal 5 and associated Objectives

Reporting Frequency

Biennially for measurement indicator 1; Annually for measurement indicator 2

Last Year Reported

Not applicable; new question starting fiscal year 2019

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 2 Fisheries Objective to “*maintain or enhance fish populations through habitat protection, enhancement, and restoration, and stocking programs*” (Forest Plan, p. 12), Goal 4 to “*maintain or restore aquatic, fisheries, riparian, and wetland habitats*”, and associated Objectives, and Goal 5 Objective to “*restore and enhance stream ecosystem processes...*” (Forest Plan, p. 13). It also helps address specific concerns related to management of fish habitat on NFS lands. Historically, fish habitat has been impacted by various land use and land cover changes. Some of those impacts are recovering slowly through natural processes, but some require or are expedited by active management.

Additionally, water quality is a key driver for the success of fish spawning and survival. Ensuring water quality is conserved helps ensure the persistence of fish populations.

Monitoring Activities

To help protect water quality, Forest Service staff incorporates water quality Best Management Practices (BMPs) into all project design and implementation (USDA Forest Service 2012a). The Forest Service developed a standardized monitoring protocol to track the degree to which BMPs are implemented as well as how effective they are in preventing degradation to water quality. Forest Service staff conduct BMP monitoring on a handful of randomly selected, representative, or targeted projects each year. The results provide a snapshot of how well water quality is protected from degradation by land management activities and permitted land uses. Table 3-1 shows the results of BMP monitoring activities during fiscal years 2019 to 2024.

Table 3-1. Best Management Practices monitoring results during fiscal years 2019 to 2024.

Fiscal Year Reporting Period	Composite Rating (Number of Sites)						
	Excellent	Good	Fair	Poor	Undetermined	No Plan	Missing Data
2019-2020				1			
2021-2022				2		1	
2023-2024	1						

Aquatic habitat restoration projects of various types are completed as staff and funding allow. These accomplishments are reported annually via the Watershed Improvement Tracking (WIT) database and include miles of stream habitat improved and acres of lake habitat improved. This database is queried to indicate the accomplishments reported by fiscal year (Table 3-2).

Table 3-2. Miles of stream habitat and acres of lake habitat improved during fiscal years 2019 to 2024.

Fiscal Year	Stream Habitat Improved (miles)	Lake Habitat Improved (acres)
2019	1.8	0
2020	0	1.02
2021	0.08	0
2022	0	0
2023	0	0
2024	0.6	0
Totals	2.48	1.02

Evaluation and Conclusions

BMP monitoring data indicate that project design can be improved to protect water quality and fisheries habitat; however, the majority of the “poor” composite ratings occurred at livestock ponds. While these sites can be important for providing wetland functions, including the conservation or improvement of water quality for downstream fisheries habitat, they are not intended to serve as fisheries habitat themselves. Although the rate of project implementation slowed during the monitoring period, annual accomplishment tracking shows that Forest Service staff continue to work on improving pond and stream habitat for wildlife dependent on these habitats. This decrease in project activity is likely a reflection of funding and staffing capacity which limits the amount of project development, analysis, and implementation.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Pond Habitat

Management Question

How well do Forest Plan components conserve or improve ecosystem function and water quality in ponds?

Detailed Monitoring Question

To what extent are management activities improving ecosystem function and water quality in ponds?

Measurement Indicators

1. Proportion of all ponds not currently requiring impoundment maintenance, dredging, or treatment of non-native invasive aquatic vegetation
2. Proportion of livestock ponds where livestock access to water (including pond outlets) is managed by fencing
3. Implementation and effectiveness monitoring for Best Management Practices (BMPs) at livestock ponds
4. Number of ponds maintained by dredging each year

Monitoring Driver

- Forest Plan Goal 2 and associated Fisheries Objective
- Forest Plan Goal 4 and associated Objectives
- Forest-wide Direction, Section 2.3.7 Range Management, Standard S-6, and Guidelines G-5 and G-6
- Forest-wide Direction, Section 2.3.9 Fisheries, Guideline G-5
- Grassland for Grazing Management Area, Range Management, Guidelines G-1 and G-6

Reporting Frequency

Biennially (changed from annually starting in fiscal year 2019; this report covers fiscal years 2019 to 2024)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 2 Fisheries Objective to “*maintain or enhance fish populations through habitat protection, enhancement, and restoration, and stocking programs*” (Forest Plan, p. 12), and Goal 4 to “*maintain or restore aquatic, fisheries, riparian, and wetland habitats*” and associated Objectives (Forest Plan, p. 13). Forest-wide and Grassland for Grazing Management Area Standards and Guidelines also call for specific management of ponds to maintain or improve their condition. The Forest Service maintains a number of constructed ponds on FLNF for recreational, wildlife, fisheries, and/ or livestock watering purposes. In all cases, management of sediment through dredging and maintenance of dams and flow control structures are required to maintain the safe function and ecological functions of these constructed

ponds. In the case of livestock ponds, appropriate livestock management is required to maintain healthy pond ecological function and conditions.

Monitoring Activities

Through regular management and assessment, FLNF Wildlife and Range Program staff maintain information about which managed ponds require some sort of management action to maintain safety and ecological function. The number of managed ponds is relatively static and provides the opportunity to assess the proportion of ponds needing active management to track how well Forest Service staff are keeping up with their management needs over time. There are 83 ponds located on FLNF. A list of known

Table 3-3. Ponds known to need maintenance during fiscal years 2019 to 2024.

Fiscal Years	Number of Ponds Identified for Maintenance
2019-2020	17
2021-2022	17
2023-2024	12

pond maintenance needs including impoundment/dam maintenance, dredging, or treatment of non-native invasive aquatic vegetation is provided to the Forest Hydrologist biennially (Table 3-3).

Forest-wide Range Management Guideline G-5 indicates that livestock ponds should be fenced to provide managed access to water either through hardened areas or offsite watering. Grassland for

Grazing Management Area (MA) Range Management Guideline G-1 indicates that *“all livestock ponds should be completely fenced to exclude livestock and protect water quality, provided a trough watering system, or a similar system is feasible”* (Forest Plan, p. 42). Pond outlets should be fenced as needed to protect water quality. The number of livestock ponds is relatively static and provides the opportunity to assess the proportion of ponds meeting these guidelines over time. FLNF Range Program staff provide a list of known pond maintenance needs to the Forest Hydrologist biennially. Table 3-4 shows pond maintenance status specific to adequate fencing to block livestock access during fiscal years 2019 to 2024.

Table 3-4. Ponds with adequate functional water access control fencing (out of 55 livestock ponds).

Fiscal Years	Number of Ponds with Adequate Fencing
2019-2024	At least 11 ponds; but not more than 19 (improvements to 8 ponds were completed between 2018 and 2024, but exact years were not readily available).
2024	19 ponds; an additional six ponds do not have water access control fencing, but monitoring indicates it is not required to maintain function and water quality.

Forest Service staff apply Best Management Practices (BMPs for Water Quality (USDA Forest Service 2012a) for all projects to help protect water quality. The Forest Service developed a standardized monitoring protocol to track the degree to which BMPs are implemented as well as how effective they are in preventing degradation to water quality. BMP monitoring is conducted on a handful of randomly selected livestock watering sites on a biennial basis. The results provide a snapshot of how well management activities are protecting water quality from degradation by livestock use (Table 3-5).

Table 3-5. Best Management Practices monitoring results for ponds during fiscal years 2019 to 2024.

Fiscal Year Reporting Period	Composite Rating (Number of Sites)						
	Excellent	Good	Fair	Poor	Undetermined	No Plan	Missing Data
2019-2020				1			
2021-2022				2			
2023-2024							

Grassland for Grazing MA Range Management Guideline G-6 indicates that “*reconstruction or dredging of livestock ponds should be based on the assumption that it is required every 10 years for unfenced ponds and every 30 years for fenced ponds*” (Forest Plan, p. 42). Tracking the number of ponds dredged each year helps identify how well Forest Service staff are keeping up with this maintenance need. FLNF Range Program staff provide a list of dredged ponds to the Forest Hydrologist biennially. One pond was dredged in the South Wilkens pasture during the 2019 to 2020 monitoring period. Three ponds were dredged with one each in the Campbell North, Predmore, and Horton pastures with the latter two dredged twice during the 2023 to 2024 monitoring period.

Evaluation and Conclusions

Monitoring indicates Forest Service staff have struggled to keep up with management and maintenance needs at all ponds across FLNF. While most ponds do not currently have a known need for dam maintenance, dredging, or non-native invasive plant treatments, there is a continued backlog of known issues that need attention on about 14 percent of ponds. This backlog of needs has been decreasing, however, which demonstrates improvement. The rate of addressing known issues seems to be outpacing the rate at which new issues are identified. BMP monitoring at livestock ponds indicates that the protection of wetland habitat and water quality at these sites is insufficient. All sites included in the monitoring results during fiscal years 2019 to 2024 were unfenced and are not indicative of those livestock ponds that do include livestock access control measures. Fortunately, Forest Service staff have continued to find opportunities to increase the number of livestock ponds that do include these control measures. While additional livestock ponds have been improved during the monitoring period, about 55 percent of livestock ponds may still need improvements. Pond dredging has continued intermittently at limited sites, likely at a rate insufficient to meet the Forest Plan’s suggested rate of 10 or 30 years. These deficiencies are largely attributed to staffing and funding limitations.

Where possible, Forest Service staff should consider identifying existing ponds that may not need to be maintained through artificial flow control structures (e.g., dams). Reducing the potential for dam failure reduces the risk to resources downstream, reduces the unplanned drainage of wetland features upstream, and reduces workload and costs related with dam maintenance. Where dams are deemed necessary, work on addressing the backlog of maintenance needs should continue. Forest Service staff should also continue identifying opportunities to increase the number of livestock ponds that include adequate livestock access control. Better livestock access control may reduce the frequency of needed dredging at these sites.

Recommended Changes (Monitoring Question or Forest Plan Components)

Although no changes are recommended to this monitoring question, consider adjusting current suggested rate of dredging range ponds (Grassland for Grazing MA, Range Management Guideline G-6) to reflect realistic staff and funding levels.

Monitoring Item: Range Impacts

Management Question

How well do Forest Plan components limit impacts from livestock on ecosystem function and water quality in streams where grazing is authorized?

Detailed Monitoring Question

To what extent are management activities mitigating impacts to streams from grazing livestock?

Measurement Indicators

Proportion of stream miles in or adjacent to Grassland for Grazing management areas that are protected from livestock impacts by fencing

Monitoring Driver

- Forest Plan Goal 2 and associated Objective
- Forest Plan Goal 4 and associated Objectives
- Forest-wide Direction, Section 2.3.2 Soil, Water, and Riparian Area Protection and Restoration, Standards S-1, S-2, and S-8, and Guidelines G-1 and G-10
- Grassland for Grazing Management Area, Soil, Water, and Riparian Area Protection and Restoration, Standard S- 1

Reporting Frequency

Biennially

Last Year Reported

Not applicable, new question starting fiscal year 2019

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 2 Fisheries Objective to “*maintain or enhance fish populations through habitat protection, enhancement, and restoration, and stocking programs*” (Forest Plan, p. 12), and Goal 4 to “*maintain or restore aquatic, fisheries, riparian, and wetland habitats*” and associated Objectives (Forest Plan, p. 13). Forest-wide and Grassland for Grazing Management Area Standards and Guidelines also call for specific management to protect resources from grazing related impacts. Uncontrolled grazing in riparian areas adjacent to streams, on stream banks, and in streams themselves can exceed the resistance and resilience of associated plant communities and lead to landform alteration and excessive erosion and deposition. Fencing is the primary tool within FLNF grazing permitted areas to ensure that livestock grazing on streams is limited. Fencing requires ongoing maintenance and if it fails, it can lead to unplanned livestock access to streams. Tracking the miles of stream that livestock can access, either intentionally or unintentionally, can indicate the degree to which livestock may be impacting water quality.

Monitoring Activities

FLNF Range Program staff provide a list of newly protected streams or fencing that was repaired to control livestock stream access to the Forest Hydrologist biennially. During the fiscal years 2019 to 2024 monitoring period there were 11.3 miles of 19.8 miles of National Hydrographic Dataset (NHD) mapped streams that are within permitted pastures and protected from livestock use by fencing. This leaves about 8.5 miles of NHD-mapped streams within pastures to remain accessible by livestock. No unauthorized access of adjacent streams outside of permitted pastures went unaddressed during this period.

Evaluation and Conclusions

Nearly 60 percent of NHD-mapped streams in permitted pastures are protected from direct impacts from livestock use. Some stream segments are completely outside of available livestock use areas. Other segments include controlled access locations for cattle, with protected areas up- and downstream. Still

other stream segments are completely accessible to livestock within the limits of the pasture. It is worth noting that the NHD-mapped streams are known to not be completely accurate. They miss some existing stream segments and are coarse approximations of the real alignment of stream channels on the ground. However, use of mapped stream lines in this evaluation can still provide a relatively good approximation of the proportion of stream miles that are subjected to livestock impacts.

Where livestock have direct access to streams, their use can impact stream function and water quality. When that use is constrained to focused access points, their impact can be within the ability of stream functions to be resistant or resilient to the impacts due to the functionality of the stream above and below the use area. Where livestock can access larger stream segments, their impacts are more likely to exceed the ability of the stream to maintain all of its functions.

Forest Service staff do not appear to be increasing the number of stream miles that are protected from livestock use. This may be limited by staffing and funding capacity. It may also be limited by grazing management needs and logistics that prevent the effective removal of acreage and associated forage from use by permitted livestock. On the other hand, management activities appear to be successfully maintaining pasture fencing to ensure measurable impacts to streams outside of pastures are not being unexpectedly impacted by this use. About 56 percent of stream miles on FLNF are outside of livestock pastures. Combined with streams within permitted pastures, about 81 percent of streams on FLNF are completely protected from the impact of livestock use. Forest Service staff should continue to focus on pasture fencing maintenance and identify opportunities to limit the impacts of livestock use to stream function within pastures.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Stream Function

Management Question

How well do Forest Plan components provide desirable aquatic organism passage and stream function conditions?

Detailed Monitoring Question

To what extent are management activities ensuring stream crossing structures allow desirable fish habitat and stream function conditions such as aquatic organism passage and passage of water and debris associated with high flows?

Measurement Indicators

Number of stream crossing structures improved per year to meet Aquatic Organism Passage design criteria (i.e., crossings mitigated to standard)

Monitoring Driver

- Forest Plan Goal 2 and Fisheries Objectives
- Forest Plan Goal 4 and associated Objectives
- Forest-wide Direction, Section 2.3.2 Soil, Water, and Riparian Area Protection and Restoration Standards S-5 and S-6
- Forest-wide Direction, Section 2.3.9 Fisheries Standard S-1

- Forest-wide Direction, Section 2.3.19 Transportation Analysis; Road Design and Construction Standards S-4 and S-5

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 2 Fisheries Objective to “*maintain or enhance fish populations through habitat protection, enhancement, and restoration, and stocking programs*” (Forest Plan, p. 12), and Goal 4 to “*maintain or restore aquatic, fisheries, riparian, and wetland habitats*” and associated Objectives (Forest Plan, p. 13). Forest-wide Standards and Guidelines also call for adequate aquatic passage associated with the transportation network. Aquatic organism passage (AOP) has been a particular management focus on FLNF for more than a decade. Poorly designed bridges and culverts that represent the historical standard for stream crossings based on idealized stream flow conditions are insufficient for maintaining functional stream channels. This has led to habitat fragmentation for aquatic species and accelerated erosion and deposition in stream habitat. The importance of improving stream crossings to provide AOP for fisheries habitat and stream functions is great enough that it merits a dedicated monitoring question to demonstrate the degree to which fish habitat and watershed function improvements are being made by completing these projects.

Monitoring Activities

AOP projects are completed on NFS lands and non-NFS lands via the Wyden authority as Forest Service staff and funding allow. These accomplishments are reported annually via the WIT database and include a count of projects completed. This database is queried to indicate the accomplishments reported by fiscal year (Table 3-6).

Table 3-6. Number of stream crossing structures improved to meet AOP design criteria during fiscal years 2019 to 2024.

Fiscal Year	Number of Improved Stream Crossings	Location
2019	1	North Fork of Breakneck Creek along Bishop Corners Road
2020	0	n/a
2021	0	n/a
2022	0	n/a
2023	0	n/a
2024	0	n/a
Total	1	

Evaluation and Conclusions

Only one stream crossing structures was improved to meet AOP design criteria during the monitoring period. Forest Service staff continue to make slow progress toward achieving desired crossing structure function across FLNF. Staff and funding limitations mean that AOP complexity and cost serve as barriers to how frequently these types of projects can be identified, analyzed, designed, funded, and implemented.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Fire

Monitoring Item: Hazardous Fuels

Management Question

Are fuel treatment activities reducing fuel loads?

Detailed Monitoring Question

To what extent have management activities reduced hazardous fuels?

Measurement Indicators

Number of KP6 and KP3 acres treated for hazardous fuels reduction

Monitoring Driver

- Forest Plan Goal 5 and associated Objectives
- Forest-wide Direction, Section 2.3.11 Fire Management Standards and Guidelines

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicator revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 5 and associated Objective to “*maintain or restore ecological processes and systems on the FLNF within desired ranges of variability...*” including for managing “*oak-pine natural communities on the FLNF to maintain their presence and continuity on the Forest, using natural as well as human-caused disturbance processes including fire use when necessary*”. An associated Goal 5 Objective also calls for the reduction of “*hazardous fuels where needed to reduce threats to private property, threatened and endangered species habitat, or risks to ecosystem components resulting from wind throw, blowdown, ice storm damage, or epidemic disease or insects*” (Forest Plan, p. 13).

Hazardous fuels reduction is a nationally recognized area of emphasis for the Forest Service and is prioritized in Fire and Fuels Program management activities. Wildland fires across the country have

highlighted the challenge associated with hazardous fuels and the risks that they can pose to not only forest lands, but adjoining lands well. Though wildland fire is not normally perceived as a common issue in the eastern United States, the fuels found on FLNF can certainly pose a risk to these values under specific conditions, such as times of dried/cured fuels, and extreme fire weather.

Prescribed fire, grazing mechanical treatments (mowing and mastication), and timber management are all valuable methods in reducing hazardous fuels in most fuel types found on FLNF. Hazardous fuels treatments are effective in reducing risk on NFS lands, communities, human improvements, and infrastructure associated with wildland fires. When treatments are conducted near forest boundaries, they can reduce the risk of fire crossing between lands of varying ownership and jurisdiction. Reducing hazardous fuels also increases firefighter safety by providing potential control locations in the event of a wildland fire.

Monitoring Activities

Hazardous fuels treatments are tracked and reviewed by utilizing the Forest Service Activities Tracking System (FACTS). Number of acres are documented annually and include activity used to accomplish the treatment, acres, funding sources, and additional relevant data. Table 3-7 shows treatment acres categorized by prescribed fire (pile and broadcast prescribed fire) and other treatment types collectively (mastication, grazing, timber management). The system also tracks data associated with primary hazardous fuels reduction activities (KP3) and secondary hazardous fuels reduction activities (KP6), though that data is not included here due to significant gaps in that data set.

Table 3-7. Hazardous fuels reduction treatments for fiscal years 2019 to 2024.

Fiscal Year	Treatment Type		
	Prescribed Fire	Other Treatment	Total Acres Treated
2019	474	1,506	1,980
2020	0	1,487	1,487
2021	384	1,817	2,201
2022	350	842	1,192
2023	428	2,789	3,217
2024	432	2,893	3,325
Total	2,068	11,334	13,402

Evaluation and Conclusions

Hazardous Fuels reduction efforts on FLNF are well aligned with Forest Plan Goal 5, Objectives, and associated Forest-wide Standards and Guidelines. Hazardous fuels reduction accomplishments consistently exceed annually targeted number of acres. Projects have focused primarily on forest grass and shrublands and are effective at reducing hazardous fuels in those fuel types. Planning efforts should be expanded to incorporate more treatments in the oak-hickory and oak-pine forest types. The patchwork ownership pattern of FLNF includes multiple boundary lines in all forest types. Depending on seasonal conditions (primarily spring and fall), risks to private land, infrastructure, ecosystems, and forest improvements all exist.

Fire behavior modeling under high-end conditions indicates potential for fast spreading, high intensity wildland fire when fuels conditions are dry and are coupled with fire conducive weather conditions. Existing program of work reduces these risks in the targeted treated fuel types, but expansion to other fuel types could greatly improve the overall risk. Considering all methods of hazardous fuels reduction would also create additional opportunities. Targeted hand treatments could be utilized in areas where broadcast prescribed fire and mechanical treatments are not currently suitable or desired. Incorporating multiple

treatments of varying types could also create a landscape where important follow-up treatments become more sustainable.

Recommended Changes (Monitoring Question or Forest Plan Components)

Although there are no recommended changes to this monitoring question at this time, future Forest Plan amendments or revisions should include more specificity to Goal 5 and Objectives, and Forest-wide Standards and Guidelines associated with reduction of hazardous fuels. Hazardous fuels should receive their own Forest Plan goal and should speak to the full spectrum of reduction tools available to resource managers. This includes identifying grazing, mechanical, hand, timber, and prescribed fire as effective activities for hazardous fuels reduction.

Monitoring Item: Prescribed Fire

Management Question

To what extent is prescribed fire benefitting resources?

Detailed Monitoring Question

Is prescribed fire restoring and/or maintaining desired vegetation composition and structure?

Measurement Indicators

1. Acres of desired habitat restored or maintained
2. Acres where fire is reintroduced into historically fire adapted landscapes

Monitoring Driver

- Forest Plan Goal 5 and associated Objectives
- Forest-wide Direction, Section 2.3.11 Fire Management, Standards and Guidelines

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 5 to “*maintain or restore ecological processes and systems on the FLNF within desired ranges of variability, including a variety of native vegetation and stream channel types, and their patterns and structural components*” (Forest Plan, p. 13). Forest Plan Goal 5 Objectives specifically name fire use as a tool to manage oak-pine ecosystems and reduce hazardous fuels. Prescribed fire also can work toward meeting other Forest Plan Goals, Objectives, and Desired Future Conditions including the reduction of hazardous fuels and associated threats to private lands, communities, human improvements, and infrastructure (see Hazardous Fuels monitoring item). Implementation of prescribed fire activities comply with Forest-wide Standards and Guidelines (Section 2.3.11) that directly address prescribed fire, though many other Standards and Guidelines have direct implications for how and where prescribed fire

is used on FLNF. All applicable Standards and Guidelines help guide management decisions and activities as they pertain to utilizing prescribed fire as a tool to accomplish resource management objectives.

Monitoring Activities

Prescribed fire data is collected annually utilizing the Forest Service Activities Tracking System (FACTS) by Forest Service Fire Management staff. This system documents the location, acres burned, and tools used to accomplish the annual prescribed fire program of work. Fire staff also collaborate with individual Forest Service resource specialists including range, wildlife/fisheries, ecology, botany, watershed, soils, and heritage to assess the benefits and potential negative impacts to each individual resource. Table 3-8 shows total acres burned on FLNF from fiscal years 2019 to 2024. Assessments are made through post prescribed fire field visits to randomly selected treatment units and through monitoring of the Monitoring

Table 3-8. Acres burned using prescribed fire for fiscal years 2019 to 2024.

Fiscal Year	Acres Treated with Prescribed Fire
2019	474
2020	0
2021	384
2022	350
2023	428
2024	432
Total	2,068

Trends in Burn Severity Database/Viewer. Watershed and soils specialists also utilize National Best Management Practices for Water Quality Management on NFS Lands (USDA Forest Service 2012a) for monitoring "Wildfire Management Activities," to assess prescribed fire effects to ensure management practices are protecting natural resources.

Evaluation and Conclusions

The FLNF prescribed fire program of work remains relatively consistent regarding the annual number of acres burned over the monitoring period. Fiscal year 2020 burning levels were impacted by Covid 19 pandemic

staffing constraints. Other constraints that can impact annual numbers and effects are fluctuating weather conditions, administrative agency-wide moratoriums on burning, and other factors occurring outside of the programs control.

Prescribed fire activities continue to accomplish Forest Plan Goals and Objectives, while remaining aligned with all applicable Forest-wide Standards and Guidelines. All resources specialists that attend monitoring trips and field visits are consistently positive in feedback provided regarding the prescribed fire effects. For example, wildlife habitat is maintained and improved at a level that is consistent with Forest Plan direction. Specialist monitoring of resources such as soils, watershed, and fisheries has noted minimal negative impact associated with prescribed fire. Much of this feedback is likely due to a combination of factors including a comprehensive planning process involving input from resource specialists, robust use of fire behavior modeling during prescription development, fire effects driven go/no-go decision making, and utilizing low to moderate fire behavior to accomplish prescribed fire objectives.

Additional planning consideration should include broadening the areas and resources where prescribed fire could be utilized to accomplish Forest Plan Goals and Objectives. These considerations should include non-native invasive plant management, fire adapted ecosystem restoration and maintenance, and additional wildlife habitat opening creation and maintenance. Additionally, based on Forest Plan Goals associated with management and restoration of oak-pine, oak-hickory, and aspen forest types it is recommended that future planning and implementation efforts be focused on expanding the use of prescribed fire in these areas.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Wildfire Occurrence

Management Question

To what frequency do wildfires occur?

Detailed Monitoring Questions

How many wildfires occurred on National Forest System (NFS) land?

Measurement Indicators

1. How many wildfires occurred on NFS land?
2. How many total acres?
3. How many human-caused wildfires?
4. How many wildfires in wildland urban interface (WUI)?
5. If human caused, what is the statistical cause?

Monitoring Driver

Forest-wide Direction, Section 2.3.11 Fire Management, Standards and Guidelines

Reporting Frequency

Every 5 years (changed from annually starting fiscal year 2019; this report covers fiscal years 2019 to 2024)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2029 and 2030 biennial monitoring and evaluation report (anticipated to cover fiscal years 2025 to 2029)

Background

Although there are no Forest Plan Goals or Objectives providing specific direction for wildland fire prevention or suppression on FLNF, it is inherent for Forest Service staff to incorporate strategic fire management into FLNF program of work to prevent resource and infrastructure impacts from wildland fire occurrence. Wildland fire can have negative impacts upon ecosystems, public and private land, as well as improvements and infrastructure on those lands. Suppression of wildland fire is important for resource and property protection, and public safety. Wildland fire occurrence data on FLNF is important to help identify trends, plan for future staffing needs, and to identify where Forest Service staff need to focus prevention/education efforts or hazardous fuels reduction work.

Monitoring Activities

Wildland fire data is collected during each incident and is collected in the InForm Database. This database collects information on wildland fire incidents for most local, state, county, and federal agencies across the country. Information includes fire weather during the incident, terrain and fuels, fire cause, values at risk, and jurisdiction. InForm began to be utilized for this data collection in 2020, and prior to that several other systems were used for collecting and compiling wildland fire occurrence data.

It should be noted that the following factors may cause gaps in data collected for this monitoring and evaluation report:

- Multiple systems used to collect data
- Not all agencies/departments use InForm for reporting wildland fires
- Not all partner agencies know of jurisdictional response associated with the Forest Service and may not report all fires
- Collected data may be missing elements (such as cause, jurisdiction, Wildland Urban Interface) based upon how the fire information is received and who enters the data
- Many municipal and county departments record responses in a different system that does not feed data into InForm (updates to this system are currently in development and will integrate with InForm in the future)

Data should be analyzed on 1-year, 5-year, and 10-year timeframes to identify trends and associated management needs. Only three fires were reported during fiscal years 2019 to 2024 (Table 3-9). All fires occurred in 2019 which were human caused by either campfire or debris burning. It is acknowledged there were likely additional fires that occurred that were not reported. The state of New York has only recently started using InForm and municipal departments in the area are usually first to respond. They may or may not report these fires to Forest Service or state staff, depending on the individuals that respond and their familiarity with fire data collection. Based on these factors it is assumed there were more fires than the data shows.

Table 3-9. Wildfire occurrence on FLNF for fiscal years 2019 to 2024.

Fiscal Year	Number of Wildfires	Acres
2019	3	0.3
2020	0	0
2021	0	0
2022	0	0
2023	0	0
2024	0	0
Total	3	0.3

Evaluation and Conclusions

Despite assumed gaps in data, overall trends and data collection provide a valuable picture of wildland fire occurrence on FLNF. This information is aligned with Forest Plan Goals, Objectives, and Forest-wide Standards and Guidelines. Efforts to improve the completeness and accuracy of this data are ongoing and will improve as reporting systems become integrated, data elements are better standardized and InForm remains the collection point for all wildland fire data.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Heritage

Monitoring Item: Heritage Resource Program Objectives

Management Question

How well do Forest Plan components provide protection and stewardship for significant heritage resources?

Detailed Monitoring Question

How many acres surveyed and how many sites protected during Forest project National Historic Preservation Act, Section 106 clearance?

Measurement Indicators

1. Number of sites monitored, updated or recorded
2. Number of acres surveyed

Monitoring Driver

- Forest Plan Goal 10 and associated Objectives
- Forest-wide Direction, Section 2.3.15 Tribal Relations, Standards and Guidelines
- Forest-wide Direction, Section 2.3.16 Heritage Resources, Standards and Guidelines

Reporting Frequency

Annually (revised from every 5 years starting fiscal year 2019)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 10 to “*provide protection and stewardship for significant heritage resources on the FLNF*” (Forest Plan, p. 14). Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to consider the effects on historic properties of projects they carry out, assist, fund, permit, license, or approve throughout the country. If a federal or federally-assisted project has the potential to affect historic properties, a Section 106 review will take place.

The historic preservation review process required by Section 106 is outlined in regulations (36 CFR (Code of Federal Regulations) Part 800, Protecting Historic Properties) issued by Advisory Council on Historic Preservation. The goal of the Section 106 review process is to seek ways to avoid, minimize, or mitigate any adverse effects to historic properties. To ascertain the effects for archaeological resources (sites) within a project, archaeologists survey project areas to locate, record, monitor and define boundaries for archaeological resources so that protective measures can be developed to mitigate adverse effects associated with project activities.

This process provides documentation for how Forest Plan components provide protection and stewardship for significant heritage resources to track compliance with the National Historic Preservation Act, Archaeological Resources Protection Act, Section 106.

Monitoring Activities

Table 3-10 shows heritage resource survey monitoring activities conducted during fiscal years 2019 to 2024.

Table 3-10. Heritage resource survey activities conducted on FLNF from fiscal years 2019 to 2024.

Fiscal Year	Acres Surveyed	Total Sites Visited/ Protected	New Sites	Sites Evaluated	Sites Monitored/ Updated
2019	Data not available	Data not available	Data not available	Data not available	Data not available
2020	Data not available	Data not available	Data not available	Data not available	Data not available
2021	0	1	0	0	1
2022	0	2	0	1	1
2023	103	7	2	0	5
2024	4	2	0	1	1
Total	107	12	2	2	8

Evaluation and Conclusions

Since 2021, compliance with Forest Plan Goals, Objectives, Forest-wide Standards and Guidelines, and Section 106 have been met for Federal undertakings on FLNF. Complete data for fiscal years 2019 and 2020 are not available.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Heritage Resource Site Protection**Management Question**

How well do Forest Plan components provide protection and stewardship for significant heritage resources?

Detailed Monitoring Question

How many projects were reviewed under National Historic Preservation Act, Section 106?

Measurement Indicators

1. Total number of projects reviewed under Section 106 compliance
2. Number of projects categorized by finding of effect

Monitoring Driver

- Forest Plan Goal 10 and associated Objectives
- Forest-wide Direction, Section 2.3.15 Tribal Relations, Standards and Guidelines
- Forest-wide Direction, Section 2.3.16 Heritage Resources, Standards and Guidelines

Reporting Frequency

Annually (revised from every 5 years starting fiscal year 2019)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 10 to “*provide protection and stewardship for significant heritage resources on the FLNF*” (Forest Plan, p. 14). Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to consider the effects on historic properties of projects they carry out, assist, fund, permit, license, or approve throughout the country. If a federal or federally assisted project has the potential to affect historic properties, a Section 106 review will take place.

The historic preservation review process required by Section 106 is outlined in regulations (36 CFR (Code of Federal Regulations) Part 800, Protecting Historic Properties) issued by Advisory Council on Historic Preservation. The goal of the Section 106 review process is to seek ways to avoid, minimize, or mitigate any adverse effects to historic properties.

Three types of finding of effect under Section 106 include:

1. No Historic Properties Affected - implementation of this project will have no effect as there are no historic properties located within the undertaking’s project area.
2. No Adverse Effect to Historic Properties - Historic properties are located within the project area, but protection measures will be used to protect, manage, or maintain historic properties in a manner that avoids adverse effects during implementation.
3. Adverse Effect to Historic Properties - Historic Properties will be adversely impacted by the implementation of this project. A Memorandum of Agreement is developed to mitigate the Adverse Effects.

This process provides documentation for how Forest Plan components provide protection and stewardship for significant heritage resources to track compliance with the National Historic Preservation Act, Archaeological Resources Protection Act, Section 106.

Monitoring Activities

Table 3-11 shows Section 106 compliance activities conducted during fiscal years 2019 to 2024.

Table 3-11. Projects reviewed for Section 106 compliance on FLNF from fiscal years 2019 to 2024.

Fiscal Year	Total # Projects Reviewed under Section 106	# of Projects with “No Historic Properties Affected”	# of Projects with “No Adverse Effect to Historic Properties”	# of Projects with “Adverse Effect to Historic Properties”
2019	3	Data not available	Data not available	Data not available
2020	3	Data not available	Data not available	Data not available
2021	4	2	2	0
2022	3	3	0	0
2023	11	9	2	0
2024	3	3	0	0
Total	27	17	4	0

Evaluation and Conclusions

Since 2021, compliance with Forest Plan Goals, Objectives, Forest-wide Standards and Guidelines, and Section 106 have been met for Federal undertakings on FLNF. Complete data for fiscal years 2019 and 2020 are not available.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Heritage Resource Standards and Guidelines

Management Question

How well do Forest Plan components provide protection and stewardship for significant heritage resources?

Detailed Monitoring Question

How many National Historic Preservation Act, Section 110 activities have been completed?

Measurement Indicators

Total number of Section 110 projects completed

Monitoring Driver

- Forest Plan Goal 10 and associated Objectives
- Forest-wide Direction, Section 2.3.15 Tribal Relations, Standards and Guidelines
- Forest-wide Direction, Section 2.3.16 Heritage Resources, Standards and Guidelines

Reporting Frequency

Annually (revised from every 5 years starting fiscal year 2019)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine how well management activities are meeting Forest Plan Goal 10 to “*provide protection and stewardship for significant heritage resources on the FLNF*” (Forest Plan, p. 14). Section 110 of the National Historic Preservation Act (NHPA) outlines the responsibilities of Federal agencies in preserving historic properties. It mandates that historic preservation must be integrated into the ongoing programs of all Federal agencies to ensure the protection of historic resources. This section establishes a framework for Federal agencies to identify, evaluate, and protect historic properties, ensuring that preservation efforts are a fundamental part of their operations. Section 110 also charges each Federal agency with affirmative responsibility for considering projects and programs that further the purposes of the NHPA, and it declares that the costs of preservation activities are eligible project costs in all undertakings conducted or assisted by a Federal agency. It is through Section 110 activities that the Forest Service evaluates its Heritage Programs for Heritage Program Managed to Standard under NHPA.

Monitoring Activities

Table 3-12 shows Section 110 compliance activities conducted during fiscal years 2019 to 2024.

Table 3-12. Projects reviewed for Section 110 compliance on FLNF from fiscal years 2019 to 2024.

Fiscal Year	# of Section 110 Projects	Project Specifics
2019	Data not available	Data not available
2020	Data not available	Data not available
2021	0	None
2022	2	1. Determination of Eligibility on Grazing Society Headquarters 2. Priority Heritage Asset monitoring of 1 site
2023	4	1. HistoriCorps Project: Restoration work at Queen's Castle 2. Volunteer hours on various projects (350 hours) 3. Completed Section 110 survey on FLNF of 100 acres 4. Priority Heritage Asset monitoring of 11 sites
2024	4	1. Determination of Eligibility of Burnt Hill communication tower 2. Section 110 survey on FLNF of 70 acres 3. Priority Heritage Asset monitoring of 1 site and 1 assemblage 4. FLNF Curation Collections Assessment
Total	10	

Evaluation and Conclusions

The FLNF Heritage Program completed 10 Section 110 activities in compliance with NHPA. Since 2021, the Forest Service met Heritage Program Managed to Standard. Section 110 data for fiscal years 2019 and 2020 are not available. Providing funding, partnership opportunities and considering projects/ programs that further the purposes of the NHPA for future Section 110 activities would strengthen the Heritage Program's ability to preserve cultural resources outside of Section 106 related projects.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Human Dimensions

Monitoring Item: Partnerships Maintenance and Enhancement

Management Question

To what extent are partnerships maintained and enhanced?

Detailed Monitoring Question

Are partnerships active and effective to help meet Forest Plan goals and objectives, and are Forest Service staff participating in partnership activities?

Measurement Indicators

1. Number of formal partnership agreements (inter-agency, Challenge Cost Share, Memorandums of Understanding)
2. Number of Forest Service staff participating in outside organizations in official capacity (representing Forest Service interest)
3. Evaluation (narrative) of how the partnership has been effective in helping the Forest Service meet Goals and Objectives
4. Number of people hours contributed by partnerships

Monitoring Driver

Forest Plan Goal 15 and associated Objectives

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 15 to “*maintain and enhance partnerships with communities and organizations*” and associated Objective to “*increase the effective use of partnerships to achieve Forest goals*” (Forest Plan, p. 16). Monitoring partnership contributions to management activities helps track progress toward meeting the desired conditions and objectives related to social and economic sustainability.

Monitoring Activities

Reporting contributions from partner agreements is a consistent and accurate method for measuring the extent and effectiveness of partner groups and organizations to assist in managing resources on NFS lands. Agreements with partners, such as challenge cost-share agreements and participating agreements, are recorded together for the Green Mountain and Finger Lakes National Forests (GMFL NFs) in the Natural Resource Management database, including partner cash, non-cash and in-kind contributions. Table 3-13 shows partner contributions for fiscal years 2019 to 2024. See the Partner Contributions monitoring item section for partner contributions specific to the Recreation program.

In addition to monitoring agreements, individual and group volunteer contributions for GMFL NFs management activities were recorded during this monitoring period (Table 3-14). It is recognized that this report does not account for all annual volunteer hour contributions, since volunteer hours are reported inconsistently and there is no accurate way to depict annual volunteer contributions. There were 28 partner agencies, towns, Tribes, non-government organizations, and academia that partnered with Forest Service staff to assist in management activities on FLNF during this monitoring period (USDA Forest Service 2024a). Like volunteer contributions, there is no consistent data collection effort to document and quantify the number of partners engaged in any given year since many partners may informally collaborate with the Forest Service outside of a signed agreement.

Table 3-13. Partner agreement contributions in New York and Vermont for fiscal years 2019 to 2024.

Fiscal Year	Dollars			
	Non-Federal Contributions	Other Federal Contributions	State Contributions	Total
2019	393,672.87	35,000.00	0.00	428,672.87
2020	191,113.21	50,000.00	0.00	241,113.21
2021	441,467.59	43,000.00	10,000.00	494,467.59
2022	1,036,619.90	0.00	24,884.68	1,061,504.58
2023	509,741.75	0.00	0.00	509,741.75
2024	207,224.75	0.00	0.00	207,224.75
Total	2,779,840.07	128,000.00	34,884.68	2,942,724.75

Table 3-14. Volunteer contributions in New York and Vermont for fiscal years 2019 to 2024.

Fiscal Year	Number of Volunteers	Total Hours Contributed	Equivalent Fund Contribution (dollars)	Percent of Full-Time Employee Contributed
2019	169	16,621	422,672.00	9.23
2020	9	3,815	103,768.00	2.12
2021	154	12,428	354,695.00	6.90
2022	148	11,939	357,573.00	6.63
2023	871	39,048	1,241,726.00	21.69
2024	975	43,733	1,390,733.00	24.29
Total	2,326	127,584	3,871,167.00	70.86

Evaluation and Conclusions

Forest Service staff have maintained, expanded and enhanced formal and informal partnerships during this monitoring period and continue to successfully meet management objectives through financial and other agreements. Partnership organizations have been integral for meeting important management objectives including trail maintenance, sensitive species inventory, and education outreach (see Teacher Development and Forest Stewardship monitoring item).

Engagement continues with many partners through regular e-mails, mailings, phone conversations and in person meetings. Partnerships continue to be active and valued, and many if not all Forest Service program areas communicate with partners on a frequent basis.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Payments to Towns

Management Question

To what extent have Forest programs supported regional and local economies?

Detailed Monitoring Question

How much funding was paid to towns through Payment in Lieu of Taxes (PILT) and Secure Rural Schools (SRS) payments?

Measurement Indicators

Amount of PILT and SRS payment to towns and/or counties

Monitoring Driver

Forest Plan Goal 14 and associated Objective

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 14 to “*support regional and local economies through resource use, production, and protection*”, and associated Objective to “*maintain communications with Forest communities with regard to Payment in Lieu of Taxes, 25 Percent Fund, and/or Secure Schools and Community Self-Determination Act* (Forest Plan, p. 16). Tracking payments to towns is a good measurement of contributions to economic sustainability of communities. It remains important to inform municipalities of federal programs that impact their tax base.

There are two types of federal payments reaching municipalities that have NFS lands: 1) Payments in Lieu of Taxes; and 2) Public Law 106-393, Secure Rural Schools and Community Self-Determination Act of 2001, 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.

Monitoring Activities

Annual payments in lieu of taxes to New York counties and associated entitlement acreage they are based on for fiscal years 2019 to 2024 are obtained from U.S. Department of the Interior, Payment in Lieu of Taxes Annual reports: <https://www.doi.gov/pilt/resources/annual-reports>.

Annual secure rural school payments by New York county for fiscal years 2019 to 2024 are obtained from USDA Forest Service, Secure Rural Schools - Payments reports: <https://www.fs.usda.gov/working-with-us/secure-rural-schools/payments>.

Evaluation and Conclusions

See Appendix A for specific federal payment information associated with FLNF. All counties and municipal governments have access to specific payment amounts as soon as they are released.

Payments in lieu of taxes associated with FLNF were provided to two counties (Schuyler and Seneca counties). Total annual payments steadily increased during the monitoring period from \$26,754 in fiscal year 2019 to \$36,674 in fiscal year 2024.

Secure rural school payments associated with FLNF were provided to the same two counties that received PILT payments (Schuyler and Seneca counties). Total annual payments during the monitoring period ranged from \$16,354.84 in fiscal year 2020 to \$20,245.07 in fiscal year 2023.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Teacher Development and Forest Stewardship

Management Question

To what extent have Forest programs provided a diverse range of information and education opportunities?

Detailed Monitoring Question

Was educator development or support in forest stewardship offered?

Measurement Indicators

Number of programs offered

Monitoring Driver

Forest Plan Goal 12 and associated Objective

Reporting Frequency

Annually (revised from every 5 years starting fiscal year 2019)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if Forest Service staff are meeting Forest Plan Goal 12 to “*provide a diverse range of information and education opportunities that will enhance the understanding of the FLNF*”, and associated Objective to “*include teacher development in stewardship of living systems in the educational outreach program*” (Forest Plan, p. 15). The question has been worded to include non-traditional teachers, such as librarians, homeschoolers, and rotating education specialists. It also includes “support” activities such as classroom visits or learning materials often sought by busy educators.

Monitoring Activities

Monitoring is focused on capturing the occurrence of developed, repeatable program offerings because miscellaneous topics or individual classroom visits can be easily missed. Many requests made from organizations are not easily captured due to under reporting by Forest Service staff. Developed programs are designed so that any Forest Service staff member can present the content to fill a request in the course of everyday duties. It’s common for staff to forget to document each request in detail. At the same time, some groups request specific content that only a subject matter expert can deliver; such one-off opportunities can also be difficult to track. However, District staff commonly report that certain programs were requested or delivered during the year, making total programs offered more reliable than total number of classroom visits.

Table 3-15 lists education programs offered during fiscal years 2019 to 2024. Forest Service staff provided or supported 22 education programs hosted in traditional classrooms, libraries, on the National Forest, at summer camps, and at partner facilities. An effort is made to track the details of delivered programs, but the quantity of learning spaces, educators, or students may not be exact or known.

Table 3-15. Education programs offered by Forest Service staff during fiscal years 2019 to 2024.

Fiscal Year	Education Programs Offered
2019	Forest Ecology: Forest Service staff provided a presentation focused on the ecology and history of the Finger Lakes National Forest at a local elementary school and at a partner State Park. Fire Prevention: Upon request, Forest Service staff provided an educational conversation about wildfire prevention, as well as a visit from Smokey Bear.

Fiscal Year	Education Programs Offered
	3. Skins & Skulls: Upon request, Forest Service staff provided an educational display and conversation about wildlife found on FLNF. 4. Trees Across New York: Forest Service staff visit schools across the state for one week in April to teach students about trees and their National Forests, and to plant a tree at their school.
2020	1. Careers in Land Management: Forest Service staff provided presentation materials about land management and spoke with students about Forest Service careers. Most programs were postponed or cancelled in 2020 due to the Covid 19 pandemic.
2021	1. Careers in Land Management: Forest Service staff provided presentation materials about land management and spoke with students about Forest Service careers. Most programs remained postponed or cancelled in 2021 due to the Covid 19 pandemic.
2022	1. Careers in Land Management: Forest Service staff provided presentation materials about land management and spoke with students about Forest Service careers.
2023	1. Careers in Land Management: Forest Service staff provided presentation materials about land management and spoke with students about Forest Service careers. 2. Every Kid Outdoors Field Trip: Forest Service staff met visiting students on the forest to talk about wildlife, Leave No Trace, and campfire safety. 3. Fire Prevention: Upon request, Forest Service staff provided an educational conversation about wildfire prevention, as well as a visit from Smokey Bear. 4. Pollinator Pathways: Forest Service staff provided a presentation and educational materials about pollinators and creating your own pollinator gardens at local community hubs. 5. Trees Across New York: Forest Service staff visit schools across the state for one week in April to teach students about trees and their National Forests, and to plant a tree at their school. 6. Truck Day (Wildland Firefighting): Forest Service staff join other local agencies in a visit to a local school with a Forest Service ATV and wildland firefighting gear to talk about firefighting and the tools of the trade.
2024	1. Bat Talk: Hosted by Friends of the Chemung River, Forest Service staff provided a presentation about bats and bat habitat. 2. Birding: Forest Service staff provided an educational activity for beginner birders to students and counselors at a local summer camp. 3. Careers in Land Management: Forest Service staff provided presentation materials about land management and spoke with students about Forest Service careers. 4. Fire in our Northeastern Forests: Visiting local libraries, Forest Service staff played games and presented materials about how the Forest Service uses prescribed fire to manage the landscape. 5. Fire Prevention: Upon request, Forest Service staff provided an educational conversation about wildfire prevention, as well as a visit from Smokey Bear. 6. Skins & Skulls: Upon request, Forest Service staff provided an educational display and conversation about wildlife found on FLNF. 7. Trees Across New York: Forest Service staff visit schools across the state for one week in April to teach students about trees and their National Forests, and to plant a tree at their school. 8. Truck Day (Wildland Firefighting): Forest Service staff join other local agencies in a visit to a local school with a Forest Service ATV and wildland firefighting gear to talk about firefighting and the tools of the trade. 9. Weekly Speaker Series: Hosted by a neighboring business, Forest Service staff provided educational content and conversation with community members about forest management topics including grazing, timber harvesting, and prescribed fire.

Evaluation and Conclusions

The Forest is meeting the intent of Forest Plan Goal 12 consistently during this monitoring period. However, there is a noticeable need to embrace flexibility in providing education opportunities and a desire for more accessible, deliverable content. Rural school districts are changing, and non-traditional education avenues are more prevalent every year. To continue to provide educator development, Forest Service staff need to meet educators where they are in a changing environment.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Invasive Species Population

Monitoring Item: Non-native Invasive Species

Management Question

How well do Forest Plan components prevent and control the spread of non-native invasive plants?

Detailed Monitoring Question

To what extent are non-native invasive species impacting other Forest resources?

Measurement Indicators

Extent of infestations in a) vicinity of Regional Forester Sensitive Species populations, b) wildlife openings and/or c) Ecological Special Areas/Research Natural Areas/Candidate Research Natural Areas:

1. Percentage of sites infested, within a), b) and c)
2. Acres and/or sites infested, within a), b) and c)
3. Acres and/or sites treated, within a), b) and c)
4. Control effectiveness upon completion of treatment

Monitoring Driver

- Forest Plan Goal 2 and associated Objectives
- Forest-wide Direction, Section 2.3.10 Forest Health and Disturbance Processes, Pests, Diseases; Non-Native Invasive Species, Standards and Guidelines

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 2 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*”, and associated Objective to “*minimize adverse effects of non-native invasive species on National Forest resources*” (Forest Plan, pp. 10 and 12). Forest-wide Standards and Guidelines, Section 2.3.10 Forest Health and Disturbance Processes, Pests, Diseases; Non-Native Invasive Species incorporate information on the status and threat of NNIP infestations as part of project development and prevent and control their spread using an integrated pest management approach (Forest Plan; pp. 28 and 29).

Some of the undesirable effects caused by non-native invasive plants (NNIP) include loss of biological diversity; loss of natural wildlife habitat, including habitat used by threatened, endangered and sensitive species; changes in water or fire regimes; degradation of soil structure; health and safety concerns; and decreased quality of recreational experiences. Of immediate concern is the potential replacement of native vegetation with solid stands of NNIP that could possibly lead to local extirpation of native plant species, as well as the reduction of natural ecological community diversity across FLNF. Existing NNIP infestations are affecting various resources and their continued spread or introduction of new infestations can be accelerated by ground disturbing management activities.

Monitoring Activities

The impact of non-native invasive plants (NNIP) on FLNF has been monitored by surveying the extent of infestations in areas prioritized to protect, or in areas most likely to be sources of seeds or plant propagules that could be dispersed to areas to be protected. It also includes monitoring any treatments. All data was gathered using the USDA Forest Service Natural Resources Information System (NRIS) protocol, to be entered into the NRM (Natural Resources Manager) corporate database. All sites monitored provide baseline information that can be used during ongoing implementation of the Forest-wide Invasive Plant Control Project approved in 2008, and revised/approved in 2021 (USDA Forest Service 2008a and 2021). Extensive botanical inventory for both NNIP and rare plants were conducted on FLNF prior to this monitoring period. Additional surveys occurred in fiscal year 2021 on 22.51 acres located near Sassafrass Trail and East of Potomac Road.

NNIP are found geographically throughout FLNF. They mostly occur on roadsides and along trails, in pastures, grasslands, and shrublands, and within recreation areas. The forested, undisturbed areas in the central and interior part of FLNF have the fewest NNIP, although scattered individuals and/or small populations do occur there as well. Almost all roadsides have NNIP as do most trails, although there are large stretches of the Interloken Trail that are NNIP-free. In general, the trails that travel through forested areas have fewer NNIP compared to trails that travel through more open areas. NNIP are found throughout pastures, grasslands, shrublands, and in many wooded areas that have been disturbed in the past. In these areas, the highest density of NNIP occurs at the edges. All recreation sites have NNIP, as recreation sites mostly occur at trailheads or near roadsides.

Monitoring during fiscal years 2019 to 2024 focused on three specific resource areas that could be especially negatively impacted by NNIP: 1) Regional Forester Sensitive Species (RFSS) plant populations, 2) open areas managed for wildlife including within the Grassland for Wildlife Management Area (MA), and 3) areas especially important for ecology and research including Ecological Special Areas (ESAs) and candidate Research Natural Areas (cRNAs).

Table 3-16 lists the percent of the resource areas infested, the number of sites/acres infested, the acres treated, and the treatment effectiveness by resource area. Most rare plant populations (78 percent) have NNIP present within 100 feet of the population boundary. There are 124 sites infested. All eleven Grassland for Wildlife Management Area (MA) sites have NNIP infestations. This is not surprising, as they all border roadsides and they have been disturbed in the past, allowing NNIP to spread into the interior. There are 671 Grassland for Wildlife MA acres infested out of a total of 679 acres. For the ESAs and cRNAs, a very small percentage (8 percent acres) have NNIP infestations. This is likely due to their locations (many are in the interior of forested acres) and their lack of past disturbances.

Table 3-16. Botanical resource areas and the effect of NNIP on each (known percentage infested, known infestation extent, treatment size, and treatment effectiveness).

Resource Area	Percentage of Resource Area Sites Infested	Acres and/or Sites Infested	Acres and/or Sites Treated	Treatment Effectiveness ³
Rare plant populations ¹	78% of sites	124 sites	2 sites	To be determined
Wildlife Openings	100% of sites	671 acres	30 acres	To be determined
ESAs, RNAs and cRNAs ²	8% of acres	86 acres	1.52 acres	To be determined

¹ For rare plant populations, the number of sites that are infested or treated as opposed to the number of acres infested are reported, because rare plant populations take up a relatively small area on the landscape and there are many of them.

² For Grassland for Wildlife MAs, ESAs, and cRNAs, the acres infested and treated are reported, because they are much larger and there are fewer of them.

³ Treatment effectiveness can be subjective as well as difficult to gauge in the short-term. Soon after treatment, it may appear that all plants are gone or dead, only to find the following year that some have survived or resprouted from the seed bank. The “treatment effectiveness” portion of the database is meant to be recorded after 30 days; while there are reasons that timeframe exists, it is more accurate to look at long-term effectiveness, over multiple years’ worth of treatments. Long-term effectiveness data is beyond the scope of this report.

In all locations, the most abundant and widespread species included Multiflora rose (*Rosa multiflora*), Honeysuckle (*Lonicera spp.*), and Common buckthorn (*Rhamnus cathartica*). In the Grassland for Wildlife MA and around many rare plant populations, Canada and Bull thistles (*Cirsium spp.*) were also prevalent. Also common were Autumn olive (*Elaeagnus umbellata*) and Knapweed (*Centaurea spp.*). Uncommon species included purple loosestrife (*Lythrum salicaria*), Norway maple (*Acer platanoides*) and European swallow-wort (*Cynanchum rossicum*).

Treatments of many NNIP infestations occurred on a total of approximately 480.3 acres during fiscal years 2019 to 2024 (Table 3-17). Non-native invasive plant treatments focused on controlling source populations, which are the ultimate cause of the negative impacts on forest resource areas, and on roads and trails, which allow NNIP to spread into new areas. Most treatments took place along trails, roadsides, and in areas planned for management. NNIP were treated to protect rare plant populations of American bittersweet (*Celastrus scandens*), Canada lily (*Lilium canadense*), and Broad beechfern (*Phegopteris hexagonoptera*). The Grassland for Wildlife MA acres treated was Ahouse Central. The ecologically important areas treated were Mill Creek ESA and the roadside along Sawmill Creek Ravine cRNA.

Table 3-17. NNIP treatments implemented on FLNF during fiscal years 2019 to 2024.

Fiscal Year	NNIP Treatments
2019	95.3 acres treated - Backbone trail, pastures, and places around the rare plant Broad Beechfern
2020	246 acres treated - Pastures, and forest-wide for the Finger Lakes Invasive Pest Strategy project
2021	96.4 acres treated - Ravine Trail, Breakneck Creek, and a cooperative project pulling aquatic invasive water chestnut at Gravel Pit
2022	25.8 acres treated - A cooperative project pulling aquatic invasive water chestnut at Gravel Pit
2023	None
2024	16.8 acres treated - Breakneck Creek
Total	480.3 acres treated

Evaluation and Conclusions

Monitoring protocols were efficient and easy to use. By parsing out NNIP population extents and acres treated for each resource area (rare plant sites, grasslands for wildlife, and ESAs, and cRNAs), NNIP effects associated with each botanical forest resource could be better quantified. While monitoring (botanical inventories/surveys) indicated the extent of NNIP infestations, Forest Service staff do not currently have a means of quantifying the effect of NNIP on other resources. Monitoring protocols allow assessing the short-term effectiveness of the treatments.

Broadcast herbicide in grasslands is generally effective at reducing knapweeds and thistles, and most effective when a grassland is sprayed two to three times over a period of a few years. Foliar spot-spraying the same species using a different herbicide in wet areas (required, since the herbicide broadcast sprayed in uplands is not legal to apply in wet areas) is less effective and allows these habitats to continue to be a source for reintroducing these species to the rest of the grassland. Foliar spot-spraying woody species is generally effective though needs more than one treatment. The same method used on garlic mustard is minimally effective, most likely due to the extensive seed bank. Cutting woody NNIP is only temporarily effective at knocking back these shrubs and needs to be followed by foliar spot spray of regrowth. Hand-pulling water chestnut is labor intensive but generally effective; it has to be repeated to get all the nut-like fruits that can disseminate seeds. Monitoring shows it is never enough to treat infestations just once, and sometimes even two times is not adequate. The reasons for this vary; in some cases, the treatment method is simply not 100 percent effective, and in other cases, the method might be effective, but there is an abundant NNIP seed source in the soil. It is also very difficult to prevent new infestations that can arrive at a site by several means, including wind, rain, wild and domestic animals, and human activity of all kinds.

Management activities monitored comply with Forest Plan Goal 2 by having rare plant and non-invasive plant inventories completed at rare plant sites in shrublands, grasslands, and along streams. Knowing what NNIP are present, along with what rare plants occur there that need protection, allows the effective development of treatment plans. Management activities also comply with Forest-wide Standards and Guidelines, Pests, Diseases, and Non-Native Invasive Species Standard S-1 by implementing mitigation measures developed during the Finger Lakes Invasive Pest Strategy project analysis (USDA Forest Service 2017).

Despite NNIP control challenges, monitoring guide measures, indicators, and methodology appear to be providing useful information, although they only assess the extent of infestations and effectiveness of treatments, not the impact on other resources. Impact on other resources may be best assessed qualitatively by specialists who manage other resources. For example, a silviculturist may recognize reduced tree seedling regeneration in a forest heavily infested with garlic mustard, and a wildlife biologist may notice decreased habitat quality in a maintained opening infested with multiflora rose.

Recommended Changes (Monitoring Question or Forest Plan Components)

Although there are no recommended changes to this monitoring question, after more than a decade of implementing NNIP treatments since the 2008 Forest-wide Invasive Plant Control Project was completed, monitoring results indicate Forest-wide Standards and Guidelines for NNIP seem more idealistic than realistic to achieve.

The following recommendations should be considered to improve Forest-wide NNIP Guidelines (Forest Plan, p. 28) for more effective NNIP management direction:

- G-1 emphasizes use of basic prevention measures, but is not clear on what these are, does not provide guidance on how to use them, or explain their value. This guideline would be more helpful if it referred to the 2012 Best Management Practices (BMP) for the Eastern Region

(USDA Forest Service 2012b) available online at <https://www.fs.usda.gov/sites/nfs/files/legacy-media/r09/NNIS%20BMP%20-R9.pdf> and recommended implementing the BMP most appropriate for the specific activities undertaken. It is also recommended that training be developed for all field-going staff, and that the Forest Leadership Team develop and communicate expectations regarding prevention measures. In addition, it is recommended that each FLNF unit (Ranger District and Forest Headquarters) have the ability to clean machinery in the field, including between sites. In the meantime, basic prevention measures are included as design features or mitigation measures specific to each proposed project.

- G-2 directs Forest Service staff to attempt to determine the source of infestation before treatment begins. While that is solid advice (its goal is to prevent immediate reinfestation of a site after it is treated), it is often not possible. It is recommended that the wording be changed to *“To increase the likelihood of treatment success, if the source of an infestation can be identified, attempt to address it prior to treating the infestation”*.
- G-2 encourages restoration of native communities where feasible, but does not define what that is, or how to go about developing restoration plans. It is recommended that the wording be changed to *“Include restoration, rehabilitation, or revegetation, as defined by Forest Service Manual 2070”*.
- G-3 suggests prioritization of treatment actions, but that prioritization does not align with what is feasible on the ground. Realistically, the choice of treatments is based on the sources of funding available, the availability of staff to identify and carry out priorities, and the need to focus on response to proposed ground-disturbing projects. It is recommended the first two bullets remain the same (prevention and early detection rapid response) and that the remaining four bullets be combined into one that encompasses containing and controlling established infestations.
- G-5 encourages use of weed-free forage, but there is no system in place for enforcing this. Since the primary people who would bring forage onto NFS land are the Hector Grazing Association permittees, it is recommended that a clear policy be established and enforced, with penalties for non-compliance.

Lands

Monitoring Item: Land Ownership Adjustment

Management Question

Has Forest land ownership been adjusted to meet future needs and improve management effectiveness?

Detailed Monitoring Question

To what extent has the Forest's land base been adjusted through purchase, exchange, transfer, interchange, boundary adjustment and donation?

Measurement Indicators

Amount of acres adjusted

Monitoring Driver

- Forest Plan Goal 13 and associated Objectives
- Forest-wide Direction, Section 2.3.18 Land Ownership Adjustments, Guidelines

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2018 and 2019 biennial monitoring and evaluation report

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to assess whether adjustment to land ownership patterns within the National Forest System align with Forest Plan Goal 13 to “*meet anticipated future needs and opportunities on public lands and improve management effectiveness of the National Forest through adjustment of land ownership*” (Forest Plan, p. 15). Forest-wide Land Ownership Adjustments Guideline G-1 states that lands that become available for purchase by willing sellers should meet a list of priorities including the consolidation of “*public ownership to facilitate natural resource restoration and conservation, improve management effectiveness, and provide large contiguous areas for multiple-use opportunities*” (Forest Plan, p. 35).

Land ownership adjustment involves acquiring and disposing of land through methods like exchanges and purchases, with the overall goal of enhancing land management and achieving various public benefits.

Adjustment benefits may include:

- **Consolidating land ownership:** By exchanging or acquiring lands, the Forest Service aims to create a more consolidated land base, leading to better public use and efficient management.
- **Protecting critical resource areas:** The program focuses on acquiring land that contains critical resources, such as habitat for threatened species or important cultural sites.
- **Improving public access and recreation:** Land acquisitions can enhance legal public access to National Forest System lands by acquiring rights-of-way for roads and trails, and by providing increased public recreation opportunities.
- **Supporting forest and watershed restoration:** In some cases, land adjustments contribute to projects aimed at restoring degraded lands by reducing hazardous fuels, improving wildlife habitat, and fostering watershed health.
- **Protecting environmentally important areas:** The Forest Legacy Program, a related initiative, aims to conserve privately owned forest lands that are threatened by conversion to non-forest uses, maintaining various public benefits like clean water, wildlife habitat, and forest products.

Monitoring Activities

Conservation partners, state and local colleagues, and interested citizens have provided assistance in identifying lands from willing sellers that would benefit the National Forest System. Land adjustment activities are recorded in the Landownership Adjustment Data System (LADS 4.0), including the acquisition of parcels, the donation of parcels to the federal government, the exchange of land, and the conveyance of land (USDA Forest Service, 2025d). The LADS 4.0 system recorded 36.08 acres of land acquired during fiscal years 2019 to 2024 (Table 3-18).

Table 3-18. FLNF land adjustments for fiscal years 2019 to 2024.

Fiscal Year	Type of Case	Town	Acres	Management Area	Notable Features
2019	Purchase	Hector	10.7	Future Old Forest	Provides buffer to the Interloken Trail; and emphasizes succession to old forest conditions
2022	Purchase	Hector	25.38	Northern Hardwood	Increased biodiversity and habitat; provides future high-quality sawtimber; and increased public access to NFS lands
Total Acres Purchased			36.08		

Evaluation and Conclusions

The major partner offering assistance for land acquisition during this monitoring period was the Finger Lakes Land Trust, facilitating the purchase of 36.08 acres. Features of the two acquisitions include:

- The 10.7-acre parcel is surrounded by NFS land and provides a buffer to the popular Interloken Trail, which abuts the west side of the property. The parcel was acquired to emphasize natural succession of plant communities to old forest conditions.
- The 25.38-acre parcel was acquired to increase the size of the existing northern hardwood forest, increasing biodiversity and habitat and providing a future source of high-quality sawtimber. The property has road frontage on two sides, providing additional access to the National Forest's northern hardwoods, grasslands, and recreational opportunities.

The information and collaboration gained from partners and the willingness of local participation continues to highlight the importance of partnerships and community involvement in the land adjustment program. Forest Service staff should continue to work with partners, state entities and communities to identify, evaluate and subsequently acquire properties and secure rights of ways to accomplish land adjustment goals.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Special Uses - Lands

Management Question

How well do Forest Plan components ensure special use permits are properly administered?

Detailed Monitoring Question

Are special use permit authorizations administered to standard?

Measurement Indicators

Percentage of special use permit authorizations administered to standard

Monitoring Driver

- Forest Plan Goal 1 and associated Objectives
- Forest-wide Direction, Section 2.3.20 Special Uses, Standards and Guidelines

Reporting Frequency

Annually (revised from every 5 years starting fiscal year 2019)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 1 to “*provide for a wide range of uses and activities in an ecologically, socially, and economically sustainable way*” (Forest Plan, p. 10). Forest-wide Special Uses Standard S-1 provides direction for special use permits to be “*administered to standards described in Forest Service Handbooks and Manuals, as well as other internal management direction*” (Forest Plan, p. 37). Special use permits are a type of Forest Service authorization that may allow short- or long-term uses of NFS lands that are otherwise not permitted to the general public. The purpose of placing these uses under authorization is to include terms and conditions that allow the Forest Service to manage land uses, protect natural resources from overuse or damage, and protect public health and safety.

This monitoring question will provide information to help managers assess whether FLNF special use authorizations are administered in a way that will meet the public need, protect the environment according to Forest Plan direction and applicable project specific design features and mitigation measures, and meet legal obligations. Monitoring the number and types of special use authorizations issued also helps track contributions to economic sustainability of communities, and in providing renewable energy.

Monitoring Activities

Data for special use permits is consolidated for the Green Mountain (Vermont) and Finger Lakes (New York) National Forests (GMFL NFs) and is found in the Forest Service Special Uses Database System (SUDS). Special use authorizations are evaluated annually as to whether they are “to standard” based on six criteria, five of which apply to lands authorizations:

1. Is the authorization document current?
2. Are the rental fees documented?
3. Has a bill been issued or is the rent fully waived?
4. Is there documentation of current and adequate insurance?
5. Have inspections been performed and documented according to schedule, and has there been action taken for non-compliance?

This information is collected by the Forest Service special use permit administrator and entered into the Special Uses Database by the end of every fiscal year. Table 3-19 shows total special use permit authorizations for fiscal years 2019 to 2024, and whether they were administered to standard.

Table 3-19. Special use permit authorizations monitored for fiscal years 2019 to 2024 (GMFL NFs combined).

Fiscal Year	Administered to Standard	Not Administered to Standard	Total Authorizations	Percent Authorizations to Standard
2019	127	5	132	96.2
2020	121	0	121	100.0
2021	105	11	116	90.5
2022	106	8	114	93.0
2023	82	29	111	73.9
2024	104	7	111	93.7

Evaluation and Conclusions

A transition in Lands Special Uses staff occurred in 2016, at which time steady progress has been made to address a backlog of permit administration needs. As a result, 81.1 percent of authorizations were managed to standard in 2017 and by 2020, 100 percent of authorizations were managed to standard. Following 2020, Lands Special Uses staff levels fluctuated with periods of no staff in any given year, preventing the program from maintaining 100 percent of authorizations to standard.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Program Management

Monitoring Item: Project Implementation

Management Question

How well are project activities moving resources toward desired future conditions?

Detailed Monitoring Questions

- Are project activities improving desired future conditions?
- Are Forest Plan Standards and Guidelines, and project specific design criteria and mitigation measures effective at achieving desired results?

Measurement Indicators

- List of projects with completed NEPA decisions
- Recommended changes from project implementation monitoring

Monitoring Driver

- Forest Plan Goal 1 and associated Objectives
- Forest Plan Forest-wide and Management Area Standards and Guidelines
- Management Area direction (management area major emphasis and desired future conditions)

Reporting Frequency

Annually

Last Year Reported

Not applicable; new question starting fiscal year 2019 (variation of Desired Future Conditions and Standards and Guidelines - Implementation and Effectiveness monitoring item questions from fiscal years 2017 and 2018 biennial monitoring and evaluation report)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if Forest Service staff are meeting Forest Plan Goal 1 to “*provide for a wide range of uses and activities in an ecologically, socially, and economically sustainable way*” (Forest Plan, p. 10), and if project implementation is moving existing resource

conditions toward the major emphasis and desired future conditions provided for each Management Area. The purpose of Forest-wide Standards and Guidelines (S&Gs) which apply to all NFS lands, and S&Gs that are specific to Management Areas is to achieve Forest Plan goals and objectives and minimize or negate the effects of a management action or land use. Additional design features and/or mitigation measures are also developed for site specific projects during the environmental analysis process to further protect resources or lessen potential impacts.

The Forest Plan provides a framework and context that guides day-to-day resource management operations on FLNF. It is a strategic, programmatic document and does not make any project level decisions. Forest Plan goals, objectives, and desired future conditions provide the basis for site specific project development, analysis and implementation. Compliance with the National Environmental Policy Act (NEPA) involves the environmental analysis process for a specific proposal, proper documentation, and public disclosure of effects in an environmental assessment, environmental impact statement, or categorical exclusion before a decision is made to implement the project.

Monitoring Activities

The total number of FLNF projects approved during fiscal years 2019 to 2024 to implement the Forest Plan is provided in Table 3-20 by the level of analysis required by the National Environmental Policy Act (NEPA). The list of projects approved for each fiscal year is provided in Table 3-21. A total of 33 projects were approved by NEPA decisions during the monitoring period. Most projects were completed with Categorical Exclusions with 27 Decision Memos or Letter to the Files (84 percent of total projects approved or reviewed). A total of four projects were reviewed considering new information or changed circumstances to determine if their effects were within the range originally disclosed in their respective NEPA decisions. In all cases, additional analyses or new decisions were not needed, and are documented in respective project Supplemental Information Reports. Two Environmental Assessments with Decision Notices were approved in fiscal year 2021: FLNF Invasive Plant Control and FLNF Grassland Enhancement projects.

Table 3-20. Number of projects approved for implementation during fiscal years 2019 to 2024.

National Environmental Policy Act – Level of Analysis	Fiscal Year						Total
	2019	2020	2021	2022	2023	2024	
Record of Decision (EIS – Environmental Impact Statement)	0	0	0	0	0	0	0
Decision Notice (EA – Environmental Assessment)	0	0	2	0	0	0	2
Decision Memo (CE – Categorical Exclusion)	5	3	1	4	3	5	21
Letter To the File (CE – Categorical Exclusion)	0	0	2	1	2	1	6
Supplemental Information Report	1	0	1	0	2	0	4
Total Projects Approved	6	3	6	5	7	6	33

Table 3-21. List of FLNF projects approved for implementation during fiscal years 2019 to 2024.

Project Name	NEPA Level ¹	Project Description
Fiscal Year 2019		
Allotment Management Plan Update	DM	Update range allotment management plans to issue 10-year grazing permit to Hector Grazing Association.
Caywood Hemlock Wooly Adelgid Suppression & Prevention	SIR	Review of new information to provide for continuation of previous 2013 decision which seeks to extend the treatment types to control hemlock wooly adelgid authorized in that decision over the same project area using the same treatment methods.

Project Name	NEPA Level ¹	Project Description
Grassland Pollinator Habitat Enhancement	DM	Enhance wildlife and pollinator habitat by planting desirable species on 1,954 acres.
Hector Half-Hundred Permit Reissue	DM	Reissuance of a special use permit for 10 years to allow 2 horse riding events per year on trails designated for horse use.
NYSEG Master Special Use Permit Reissue	DM	Reissuance of a special use permit to NYSEG for all existing facilities on 5.02 acres of aerial power line and appurtenances such as guy line anchor points. All facilities are along roads. Vegetation management by means of chemical application is not authorized.
Wetland Creation 2019	DM	Re-create wetlands where agricultural modifications have been made to drain wet land for agriculture, to provide habitat for native reptiles, amphibians, wildlife and native vegetation, and hold water on the landscape longer, slowing rates of runoff and reducing flooding.
Fiscal Year 2020		
Finger Lakes Runners Club Recreation Event Permit Reissuance	DM	Reissuance of a Recreation Event special use permit for a term of five years authorizing an annual long-distance footrace.
Perry Apiary Reauthorization	DM	Reissuance of a special use permit to William Perry to place beehives on NFS lands.
Pioneer Trek Non-Commercial Group Use Permit Reissuance	DM	Reissuance of a special use permit for a term of five years, authorizing three annual Pioneer Youth Treks in which up to 90 people with wheeled hand carts re-enact the migration of early members of their church on a pre-approved route.
Fiscal Year 2021		
Finger Lakes Invasive Plant Strategy SIR	SIR	Review of new information/changed circumstances to consider summer harvest opportunities for the 2017 Finger Lakes Invasive Plant Strategy EA/DN.
Grassland Enhancement Project	EA	Establish 150 acres per year up to 450 total acres of native warm-season grasses to provide habitat for grassland birds and pollinators. Treat sites with prescribed burning, herbicide application, mowing, tilling, plowing or a combination.
Invasive Plant Control	EA	Update and replace the 2008 Invasive Plant Control EA/DN to treat non-native invasive plants across FLNF.
Painted Bar Stables O&G Permit Reauthorization	LTF	Reissuance of a special use permit to operate guided horseback tours and camping.
Springer Spaniel Field Trials Permit Authorization	LTF	Issuance of a Recreation Event special use permit to authorize conducting a field trial competition for hunting dogs.
Trail Improvements	DM	New trail construction, trail upgrades, interpretive signs, and parking sites at three locations on FLNF (Dugue Grassland, Potomac Pond, and Sassafras Pond).
Fiscal Year 2022		
D & K Ranch Outfitter & Guide Permit Reauthorization	LTF	Reissuance of a special use permit to use trails for guided horse use.
Finger Lakes Pond Stocking	DM	Stock four ponds (Ballard, Teeter, Foster, and Potomac) with a mix of fish species and place large woody debris along shorelines for cover.
North Stevens Pasture Culvert Repair	DM	Replacement of a culvert to address resource damage during high water events.
Soft Mast Release	DM	Release fruit trees from competing vegetation.
Water Control Structure Replacements	DM	Replacement of eight water control structures at ponds throughout FLNF.

Project Name	NEPA Level ¹	Project Description
Fiscal Year 2023		
Blueberry Patch Restoration	DM	Restore blueberries near Blueberry Patch Campground area.
Burnt Hill Rides Association Recreation Event Authorization	LTF	Reissuance of a special use permit to authorize a horseback riding event.
Central New York Orienteering Recreation Event Authorization	LTF	Issuance of a special use permit to authorize 150 participant orienteering event over a weekend.
Dunham Trail Shelter Vista Restoration	DM	Restore a vista near Dunham Trail Shelter.
Invasive Plant Control Early Detection Rapid Response (EDRR)	SIR	Review of new information specific to the 2021 Invasive Plant Control EA/DN specific to application of early detection rapid response to control invasive plants.
Northern Long-Eared Bat Biological (NLEB) Opinion	SIR	Review of US Fish and Wildlife Service FWS NLEB biological opinion reflecting ongoing projects with likely to adversely affect (LAA) determinations.
Satterly Hill and Smith West Field Tilling	DM	Smooth and till 31 acres on two fields to make the maintenance of desired vegetation more efficient.
Fiscal Year 2024		
Backbone Trail Bridge Replacement	DM	Replace existing bridge along Backbone Trail.
Burnt Hill Tower Replacement	DM	Remove and replace communications tower.
Butcher Hill Hedgerow Removal	DM	Remove hedgerows from the Butcher Hill pasture.
Dirty Hector 2024 Recreation Event Authorization	LTF	Issuance of a special use permit to authorize a 150-participant gravel bike race.
Foster Pond Parking Area Expansion	DM	Expand existing parking area near Foster Pond.
Potomac Pond Shrubland Drainage Restoration	DM	Restoration of riparian habitats by reducing anthropogenic features and incising drainage to increase residence time of water on soil.

¹ EA = Environmental Assessment; DM = Categorical Exclusion (Decision Memo); Categorical Exclusion (Letter to the File); SIR = Supplemental Information Report.

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 determine whether Forest Plan S&Gs, and project specific design features and mitigation measures have been correctly applied and whether they have protected resources as intended. Although this level of monitoring is completed by resource specialists as they visit project sites throughout each fiscal year, they also visit sites as a formal monitoring team on scheduled dates to discuss the interdisciplinary approach to assess implementation effectiveness. Table 3-22 lists the formal site-specific project monitoring field visits conducted by the FLNF monitoring team during this monitoring period.

Table 3-22. Monitoring field visits conducted during fiscal years 2019 to 2024.

Fiscal Year	Location	Dates
2019	FLNF, Hector Ranger District	September 18 and 19, 2019
2023	FLNF, Hector Ranger District	October 18, 2022

Each project site visited was evaluated by the monitoring team 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 resource concerns identified from monitoring this project?

Evaluation and Conclusions

All projects analyzed and approved during fiscal years 2019 to 2024 were designed and found to be consistent with Forest Plan direction including goals, objectives, and Forest-wide and Management Area S&Gs, and collectively, have moved existing conditions toward desired future conditions across FLNF. Most projects analyzed include special use permit authorizations, recreation infrastructure enhancement, and terrestrial and wetland habitat restoration projects approved at the Categorical Exclusion level of NEPA.

Two projects analyzed as environmental assessments and approved with Decision Notices (FLNF Invasive Plant Control Project and FLNF Grassland Enhancement Project) include specific resource management activities. These projects are anticipated to be implemented over a 10-to-15-year period following their decisions to move their respective project area landscapes toward desired resource conditions. Project activity highlights include:

- Invasive Plant Control Project
 - Use of a variety of treatment options for the control of existing non-native invasive plants (NNIP) and the implementation of the Early Detection Rapid Response of newly discovered NNIP across FLNF. The purpose of the project is to minimize adverse effects to forest resources NNIP species, help maintain habitats to produce sustainable populations of native and desirable non-native plants and animals, and provide for sustainable use of grasslands for grazing.

- Grassland Enhancement Project
 - Establish native warm season grasses and forbs on up to 450 acres using activities such as burning, mowing, herbicide application (glyphosate product) and no-till drill seeding equipment. The purpose of the project is to restore native warm season grasses and forbs for the benefit of grassland-obligate bird species and pollinators.

This report includes the results from the monitoring team field reviews conducted in fiscal years 2019 and 2023. Except for limited circumstances highlighted in Table 3-23, all projects monitored during the field visits were found to meet intended management objectives, and Forest Plan S&Gs, and project design features and mitigation measures were effectively implemented to achieve their desired level of protection to resources.

Table 3-23. Results from monitoring project sites for fiscal year 2019.

Fiscal Year	Monitoring Results
2019	• Burned Ahouse West unit as part of the 2018 Finger Lakes National Forest Openings Maintenance Decision Memo (C155/S101) completed in Summer 2019 ○ Clarify the definition for “heavy machinery” for future project mitigation measures. For example, mowing equipment is not considered heavy machinery. ○ Clarify cleaning requirements for equipment for future project mitigation measures. • Wetland creation within A-House West grassland as part of the 2014 Finger Lakes National Forest Wetlands Creation and Restoration Project completed in 2017 ○ Locate future wetland creation proposals along the edge of Grassland for Wildlife Management Area grasslands. This makes managing the grasslands easier compared to when wetlands are placed in their interior.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Range

Monitoring Item: Animal Unit Months

Management Question

How well do Forest Plan components provide for the sustainable use of grasslands for grazing?

Detailed Monitoring Question

Are management activities maintaining forage production sufficient to support approximately 10,000 Animal Unit Months (AUMs) annually?

Measurement Indicators

Animal Unit Months

Monitoring Driver

- Goal 7 and associated Objectives
- Grassland for Grazing Management Area direction

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 7 to “*provide for the sustainable use of grasslands for grazing on the FLNF*” and associated Objective to “*maintain forage production sufficient to support approximately 10,000 Animal Unit Months annually*” (Forest Plan, p. 13). The emphasis of the Grassland for Grazing Management Area (MA) is “*to provide grasslands for domestic livestock grazing*” (Forest Plan, p. 41). In other words, is there enough grass to graze this number of cattle on FLNF pastures?

There are 5,174 acres of open grasslands in the Grasslands for Grazing MA spread across 39 individual pastures. Grassland management through grazing on FLNF serves several important roles including sustaining locally rare habitat types that grassland bird and pollinator species depend on, maintaining iconic open vistas and recreation sites, and supporting the local agricultural economies. The AUM measurement indicator is the amount of feed required by an animal unit (AU) for one month. The AU is a production measurement based on one mature (1,000 pound) cow having an average daily forage consumption of 26 pounds of dry matter. Animal Unit Months are based on the number of rangeland acres grazed with livestock and account for the need to conserve sufficient ungrazed vegetation for grassland-dependent wildlife species, notably songbirds, by limiting the amount of forage utilized by cattle to 60 percent of the total forage in the pasture (Forest Plan Final Environmental Impact Statement, p. 3-234). The metric of up to 10,000 AUM’s grazed per season is directly tied to forage production per acre. By measuring the amount of forage produced per acre on pastures compared to cow calf pair required forage intake needs, it can be determined whether enough forage is produced to support the desired AUM stocking rates.

Cattle and livestock grazing on FLNF started more than 80 years ago to demonstrate sustainable and productive uses of the land. Grazing of cattle has occurred on FLNF since formation of the Hector Cooperative Grazing Association (HGA) in 1943 prior to the creation of the National Forest. Since then, HGA has been issued a grazing agreement for 10-year terms to implement sustainable grassland management strategies. The agreement requires that range management activities adhere to the terms and conditions outlined in the Allotment Management Plan (AMP). The current AMP was approved in 2019 which updated the AMP completed in 2009 (USDA Forest Service 2009 and 2019).

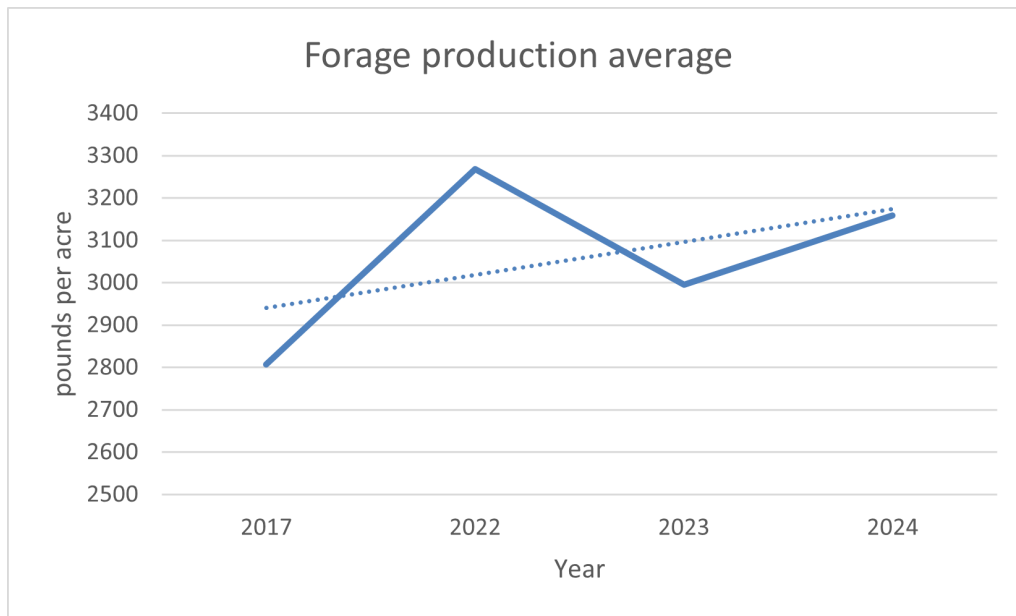
Monitoring Activities

Forest Service staff complete forage production plots using Natural Resource Conservation Service (NRCS) methodology. The sampling scheme divides all 39 pastures into six forage productivity classes. Samples are taken from one pasture of each representative soil type within each class. Sampling is completed by installing an exclusion cage prior to grazing allowing the plot to grow for a full season. Vegetation from each plot is then cut, dried and weighed. The amount of forage collected from each plot is converted from pounds per square foot to pounds per acre. This data is important to guide decision making on how many cattle can be grazed per acre on permitted pastures. Data was collected from plots in fiscal year 2017, but due to staffing and funding shortages no data was collected during fiscal years 2018 to 2021. The plots were reestablished in 2022, and data was collected since then through fiscal year 2024.

Evaluation and Conclusions

Figure 3-1 shows forage produced per acre on FLNF pastures. Growing conditions precludes the ability to extrapolate direct correlations of management activities to an increase of forage production, however the trend does show that forage production has remained on an upward trajectory. A cow calf pair requires approximately 2,200 pounds of forage per acre to meet nutritional needs. FLNF pastures are producing sufficient forage to support approximately 10,000 AUM's during the monitoring period.

Figure 3-1. *Average forage production (pounds per acre) on FLNF pastures during fiscal years 2017 to 2024.*



Forage plots may not be needed yearly to ensure that forage production is sufficient due to the variability or growing conditions. However, plots should be conducted to provide the most samples possible, providing a quality average trend. Pasture condition scoresheets used to track botanical and soil health should remain during plot surveys as they are important monitoring indicators of overall grassland health.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Range Improvements

Management Question

How well do Forest Plan components provide for the sustainable use of grasslands for grazing?

Detailed Monitoring Question

Are management activities providing functioning range improvements (watering facilities, fence, corral) to support approximately 10,000 Animal Unit Months (AUMs) annually?

Measurement Indicators

1. Number and condition of functioning systems and those in need of maintenance or construction
2. Miles of fence maintained to standard

3. Number and condition of corrals maintained to standard

Monitoring Driver

- Goal 7 and associated Objectives
- Grassland for Grazing Management Area direction

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 7 to “*provide for the sustainable use of grasslands for grazing on the FLNF*” and associated Objective to “*maintain forage production sufficient to support approximately 10,000 Animal Unit Months annually*” (Forest Plan, p. 13). The emphasis of the Grassland for Grazing Management Area (MA) is “*to provide grasslands for domestic livestock grazing*” (Forest Plan, p. 41).

There are 5,174 acres of open grasslands in the Grasslands for Grazing MA spread across 39 individual pastures. The primary mechanism to implement grazing on the FLNF is through a formal grazing agreement with the Hector Cooperative Grazing Association (HGA). The agreement requires that range management activities adhere to the terms and conditions outlined in the Allotment Management Plan (AMP). The current AMP was approved in 2019 which updated the AMP completed in 2009 (USDA Forest Service 2009 and 2019). The AMP prescribes seasons of use, cattle stocking rates, water improvement and protection measures, as well as range infrastructure (such as ponds, water troughs, fencing, and corrals) to be built or maintained. Basic animal husbandry and safety of both livestock and the public drive the need to maintain range management infrastructure to support the sustainable use of grasslands for grazing on FLNF.

Monitoring Activities

Monitoring these efforts relies on a partnership with the HGA. Forest Service tracks HGA work through the annual program of work, a document that tracks the allowable and actual rangeland improvements completed through the grazing permit and is authorized yearly by the Forest Supervisor. Table 3-24 shows both the work completed by HGA and third-party contractors.

Table 3-24. Range infrastructure activity completed within FLNF pastures during fiscal years 2019 to 2024.

Activity or Practice	Unit of Measure	Fiscal Year					
		2019	2020	2021	2022	2023	2024
Existing fence reconstruction	Miles	0.91	2.75	3.25	2.56	3.82	2.5
New fencing constructed	Feet	518	1,228	600	500	0	648
New stock pond ¹	Ponds	0	0	1	0	1	2
Corral replacement	Units	0	1	0	2	3	2

¹ Includes ponds that were dredged or otherwise restored to their original capacity. No new ponds were created during the monitoring period.

Fence construction and replacement

Table 3-24 shows the miles of existing perimeter fences that have been replaced and feet of new fence construction during fiscal years 2019 to 2024. The new construction consists of fences that had not previously existed and is targeted to protect riparian areas and water sources. This is tracked in linear feet due to it being a smaller value per year than perimeter fencing.

New stock ponds

Most pastures have more than one pond. Stock pond activity has been limited to dredging existing ponds or other work to restore them to their original capacities.

Range corral replacement

Range corrals used to load and unload cattle into pasture are a facility that is used exclusively by HGA. As such, maintaining these in a functional state is an HGA responsibility. The lifespan of a corral can be 30+ years depending on its construction material. Corral replacement increased starting fiscal year 2022 after relatively low replacement activity during fiscal years 2019 to 2021.

Evaluation and Conclusions

Forest Service staff continue to meet the direction of maintaining perimeter fencing per Forest Plan direction and New York State livestock laws. New funding sources have increased the amount of fence construction implemented during the monitoring period which has protected more riparian areas from grazing.

Pasture ponds are maintaining their function with several having been upgraded with watering troughs, hardened access or riparian fencing. All these improvements help to increase the period of time between dredging needs. Healthier ponds improve storm water retention, which is increasingly important with longer drier summers and heavier single event rainfall.

Although corrals are aging across the permitted grazing area, HGA has increased the number of corral replacements in the last several years. When and where possible corrals are being shared for multiple pastures. This reduces the total number that must be maintained. Corrals are also being constructed out of metal panels instead of wooden boards. The panels increase the lifespan of corrals as well as the safety of the cattle and ranchers during turnout and roundup. Maintenance and construction of these corrals should remain HGA's responsibility.

It remains crucial to continue pursuing funds to replace perimeter fences and construct new riparian fences using both the partnership with HGA as well as contracting fence work. The focus should remain on those sections of fence that are having negative effects on the habitat around them (see the Range Impacts monitoring item response). The possible use of virtual fences may provide a more cost-effective means of accomplishing the same results and should be considered. Forest Service staff should remain diligent in continuing to pursue opportunities to protect and restore the function of existing pasture ponds. Opportunities to combine and reduce the infrastructure should also be taken to reduce the burden of deferred maintenance when possible.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Recreation

Monitoring Item: Partner Contributions

Management Question

To what extent are partners contributing to management of recreation facilities and trail systems?

Detailed Monitoring Question

What is the trend in partner contributions towards the improvement, maintenance and operation of the Forest Recreation Sites and Trails System?

Measurement Indicators

Trend in total cash, non-cash and in-kind contributions from partner agreements

Monitoring Driver

- Forest Plan Goal 11 and associated Objectives
- Forest Plan Goal 15 and associated Objectives

Reporting Frequency

Annually (revised from every 5 years beginning 2019)

Last Year Reported

Not applicable; new question starting fiscal year 2019

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to assess the trend in partner contributions in alignment with multiple Forest Plan Goals and Objectives. An Objective associated with Goal 11 is to “*increase the effective use of partnerships in the improvement, maintenance, and operation of the Forest recreation facilities and trails system*” (Forest Plan, p. 15). Goal 15 directs management to “*maintain and enhance partnerships*”, and an associated Objective is to “*increase the effective use of partnerships to achieve Forest goals*” (Forest Plan, p. 16).

Partnerships are crucial for the Forest Service as the agency amplifies the capacity to manage national forests effectively by leveraging resources, expertise, and diverse perspectives. These collaborations enhance on-the-ground work, improve public engagement, and facilitate the achievement of shared conservation goals.

Monitoring Activities

Agreements with partners, such as challenge cost-share agreements and participating agreements, are recorded in the Natural Resource Management database, including partner cash, non-cash and in-kind contributions (Table 3-25). Reporting contributions from partner agreements is a consistent, accurate method for reporting contributions; however, it is recognized that this does not account for all annual volunteer hour contributions. Volunteer hours are reported inconsistently and there is no accurate way to depict annual volunteer contributions at this time for FLNF. Similarly, there is no consistent data

Table 3-25. Partner agreement contributions from fiscal years 2019 to 2024.

Fiscal Year	Non-Federal Contributions (dollars)
2019	129,489.13
2020	0.00
2021	43,122.49
2022	152,061.29
2023	21,686.74
2024	16,377.60
Total	362,737.25

collection effort to document and quantify the number of partners engaged in any given year; many partners may informally collaborate with Forest Service staff outside of a signed agreement.

Evaluation and Conclusions

Over the six-year period of 2019 to 2024, partners contributed over \$362 thousand dollars to National Forest System management (Table 3-25) (USDA Forest Service 2025c). This amount has fluctuated over the monitoring period with declining contributions over the past two

years. Partner contributions recorded in agreement data often reflect the ability of the Forest Service to fund an agreement, wherein the partner is required to make a substantial match, typically a minimum of 20 percent. When the Forest Service secures substantial “supplemental” funding, such as from the Great Lakes Restoration Initiative or Great American Outdoors Act, there is a greater ability to add funding into a challenge cost-share agreement and secure and record partner matching contributions. Therefore, reduced partner contributions, such as evidenced in 2020, 2023 and 2024, may be the result of limited funding secured by the Forest Service to initiate an agreement.

A Volunteer and Partnership Coordinator is needed to expand partner engagement, management, and reporting. If a coordinator were hired, the ability to collect and report additional data points, such as annual volunteer hour contributions, would provide a broader picture of partner and volunteer contributions on the national forest.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Trail Maintenance

Management Question

Is the quality of the Forest Service trail system being improved through operation and maintenance?

Detailed Monitoring Question

How many miles of trail are maintained annually and how many trail miles are meeting standard?

Measurement Indicators

1. Miles of trail maintained
2. Miles of trail maintained to standard
3. Trends in percent of total trail miles maintained
4. Net change in designated system trail mileage

Monitoring Driver

Forest Plan Goal 11 and associated Objectives

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (measurement indicators revised starting in 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to assess the quality of National Forest System trails in alignment with Forest Plan Goal 11 Objectives to: 1) “*increase the number of miles of trails that are operated and maintained to full standard*”; and 2) “*reduce the total deferred maintenance on the FLNF trail system*” (Forest Plan, p. 15). Maintaining trails on federal land is crucial for environmental protection, public access, and economic benefits. Well-maintained trails minimize environmental damage, enhance recreational experiences, and support local economies while also providing opportunities for education, fitness, and connecting with nature. Analyzing the total miles of trail, miles of trails maintained, and trails maintained to standard provides insight about Forest Service capacity, with support from partners, to maintain the FLNF trail network and prevent a persistent backlog in maintenance.

Monitoring Activities

Each year, trail managers, volunteers, and partners work hard to manage and maintain National Forest System trails. Forest Service trail managers are required to collect and enter annual trail maintenance accomplishments in a consistent way on each forest and record these accomplishments in the Natural Resource Manager (NRM) database. Table 3-26 shows trail accomplishments reported in NRM from fiscal years 2019 to 2024 (USDA Forest Service, 2025a); however, no data was reported for fiscal years 2019 and 2020 due to limited recreation staff capacity. For one trail mile to be claimed as “maintained,” at least one maintenance task must be performed during the fiscal year, such as removing one log or repairing a puncheon. For one mile to be claimed as “meeting standard,” the segment must: 1) meet all critical National Quality Standards; 2) meet at least 80 percent of the remaining [National Quality Standards](#); and 3) have little to no deferred maintenance (USDA Forest Service 2008b). There are 16 National Quality Standards for Trails embedded within five key measures: 1) health and cleanliness, 2) safety and security, 3) condition of facilities, 4) responsiveness, and 5) resource setting. Of the 16 standards, the 3 identified as critical include:

1. Effects from trail use do not conflict with environmental laws (such as the Endangered Species Act, National Historic Preservation Act, and Clean Water Act).
2. Hazards do not exist on or along the trail.
3. When a trail is signed as accessible, it meets current agency policy and accessibility guidelines.

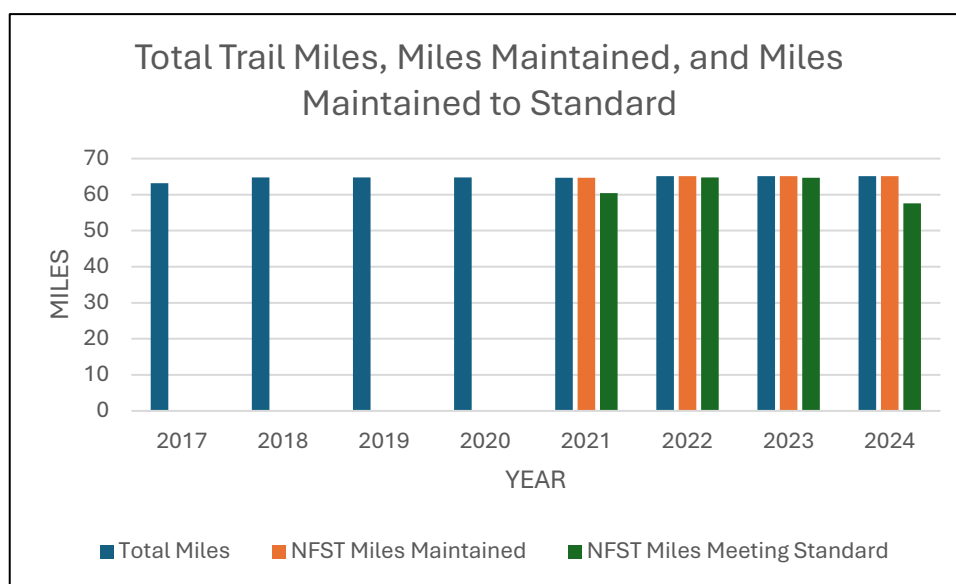
Table 3-26. FLNF trail accomplishment reporting.

Fiscal Year	Total FLNF National Forest Trail System (NFST) Miles	NFST Miles Maintained	% NFST Miles Maintained	NFST Miles Meeting Standard	% NFST Miles Meeting Standard
2019	64.8	No Data	No Data	No Data	No Data
2020	64.8	No Data	No Data	No Data	No Data
2021	64.7	64.7	100	60.4	93
2022	65.1	65.1	100	64.8	100
2023	65.1	65.1	100	64.7	99
2024	65.1	65.1	100	57.6	89

Evaluation and Conclusions

Trail maintenance occurred on 100 percent of the FLNF trail network in reported years (fiscal years 2021 to 2024). A large percentage of those trails, ranging from 89 to 100 percent over the four years reported, were maintained to standard (Figure 3-2). In comparison, 52 percent of all trails in the U.S. Forest Service Eastern Region (Region 9) met standard in 2024, which was a 30 percent increase regionally over the five-year average from 2020-2024 (USDA Forest Service 2024b).

Figure 3-2. *Total National Forest System Trails on the FLNF maintained and maintained to standard from fiscal years 2019 to 2024 (fiscal years 2017 and 2018 are included for context).*



Forest Service staff should prioritize maintenance based on safety hazards, potential environmental damage, and resource limitations if capacity for trail maintenance decreases. This will help mitigate the most severe consequences of under-maintained trails. New trails should be designed and built with sustainability in mind, reducing future maintenance burdens. This includes utilizing techniques that promote drainage, minimize erosion, and select durable materials.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Soils

Monitoring Item: Grassland Soil Productivity, Condition, and Quality

Management Question

How well do Forest Plan components maintain or restore the natural, ecological functions of the soil?

Detailed Monitoring Question

Are the effects from management activities resulting in significant changes to soil productivity?

Measurement Indicators

Within sample pastures measure:

1. Plant composition (desirable forage plants, legumes, plant vigor)
2. Grazing severity
3. Soil cover
4. Soil compaction
5. Soil erosion
6. Soil pH

Monitoring Driver

Forest Plan Goal 3 and associated Objectives

Reporting Frequency

Every 3 years (this report covers fiscal years 2019 to 2024); revised from annually starting fiscal year 2019

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2027 and 2028 biennial monitoring and evaluation report (anticipated to cover fiscal years 2025 to 2027)

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 3 to “*maintain or restore the natural, ecological functions of the soil*” and associated Objective to “*minimize the adverse impacts on soils from management activities*” (Forest Plan, p. 12). Forest-wide Range Management Guideline G-4 states “*a minimum soil pH of 6.0 should be maintained through periodic applications of lime*” (Forest Plan, p. 24). This monitoring question will help determine if management activities are adversely impacting grazed soils and if pasture soils are maintained at the desired pH level. Monitoring results are useful for deciding when to move livestock or planning management actions. It can also assist in identifying which improvements are most likely to benefit the pasture soil conditions.

The USDA NRCS Pasture Condition Score Sheet (PCSS) was followed to measure the following: percent desirable plants, plant cover, plant diversity plant residue, plant vigor, percent legume, uniformity of use, livestock concentration areas, soil compaction and erosion, plant vigor measures. Ratings are done on a 1-5 scale, with the lowest condition at 1 and the best condition at 5. Each indicator can be evaluated separately and inform targeted improvements. Changes in management can be made to target the lower-scoring fields or indicators to help bring the pastures to a higher condition over time.

PCSS data provides a standardized, field-based approach to understand the condition of the pastures. It contains both soil and vegetation attributes that reflect how management practices are influencing soil productivity. Collecting PCSS data consistently over time across pastures allows Forest Service staff to detect early signs of soil degradation or areas that are improving.

The USDA NRCS Soil Quality test kit protocol was also used to measure additional soil indicators such as soil pH, infiltration, bulk density, electrical conductivity (EC), soil slacking and provides guidance for measuring soil physical observations and estimations such as soil structure/ root patterns, estimate top-

soil depth, penetration resistance, and soil texture within the soil profile. The minimum soil pH level is specifically stated in the Forest Plan and these other soil properties collected are important to the physical environment for plant growth. Higher infiltration rates reduce runoff and increase water storage potential, a higher bulk density can restrict root growth, biological activity, and the movement of water and air in the soil, EC indicates the presence of excess salts which can reduce plant growth and water quality, soil pH relates to nutrient availability and plant growth, soil slaking is related to erosion.

Within the soil pasture where monitoring is planned, thirteen pastures are to have data collected every three years. The pastures on the sampling rotation include Fox, Peterson, South Velie, Ballard, A-House East, Pierson, Hawes, Burdick, Cronk, Mielty, Aman East, Robinson, and South Wilkens. Other pastures may have data collected and can be added to the analysis when available.

Monitoring Activities

Table 3-27 shows where data was collected during fiscal years 2019 to 2024. Data collected within the pasture condition score sheet includes a 1 to 5 scale rating on the condition of the Percent Desirable Plants, Plant Cover, Plant Diversity, Plant Residue, Plant Vigor, Percent Legume, Uniformity of Use, Livestock Concentration Areas, Soil Compaction, and Erosion. Soil test kit data includes: Texture, Infiltration Class, Bulk Density, EC, pH, Estimated Soil NO₃-N (ppm), Average Soil Slake Rating, Soil Structure Index, and Top Soil Depth.

Table 3-27. Pasture data collection sites for fiscal years 2019 to 2024.

Fiscal Year	Pasture Collection Sites
2019	No data available
2020	No data available
2021	Ballard, Peterson, South Velie, and Fox
2022	Burdick, Hawes, Peirson, and A-House East
2023	Amen East, Cronk, Mielty, Robinson, and South Wilkins
2024	Ballard, Campbell, Cronk, Peterson, Fox, and South Velie

Evaluation and Conclusions

Pasture Condition Scores

Table 3-28 shows monitoring results for Pasture Condition Scores for each pasture and overall averages across indicators. The overall pasture condition score is 4 out of a possible 5 across all the monitored pastures. A score of 4 means the pastures are in good condition and current management activities are well-suited to preserving soil health for productive and sustainable pastures.

Table 3-28. Pasture Condition Scores for fiscal years 2019 to 2024.

Indicator	Fiscal Year													Average for all Sites
	2022	2022	2022	2022	2023	2023	2023	2024	2024	2024	2024	2024	2023	
	Pasture													
	Burdick	Hawes	Pierson	A House East	South Wilkins	Robinson	Amen East	South Velie	Ballard	Fox	Peterson	Cronk	Mielt	
Overall Score	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Percent Desirable Plants	4.8	4.3	4.3	4.0	3.9	3.4	3.5	4.2	3.8	4.2	3.7	4.2	3.9	4.0
Plant Cover	4.5	4.5	4.5	4.0	3.2	3.0	3.0	3.8	2.6	3.8	2.7	4.0	3.9	3.7
Plant Diversity	4.8	4.3	4.2	4.0	4.6	4.4	5.0	4.2	3.6	3.8	3.0	4.7	5.0	4.3

Indicator	Fiscal Year													Average for all Sites
	2022	2022	2022	2022	2023	2023	2023	2024	2024	2024	2024	2024	2023	
	Pasture													
	Burdick	Hawes	Pierson	A House East	South Wilkins	Robinson	Amen East	South Velie	Ballard	Fox	Peterson	Cronk	Mielty	
Plant Residue	2.0	2.9	2.9	3.3	1.5	1.7	2.9	2.8	2.2	2.8	2.5	3.7	2.3	2.6
Plant Vigor	4.8	5.0	5.0	5.0	4.8	4.7	5.0	4.3	4.2	4.0	3.7	4.7	5.0	4.6
Percent Legume	3.2	3.0	3.0	3.7	3.0	2.9	3.8	4.2	3.0	3.4	3.0	3.7	4.1	3.4
Uniformity of Use	2.5	4.2	4.2	3.7	3.8	3.7	3.4	3.5	3.6	4.2	3.0	3.2	4.0	3.6
Livestock Concentration Areas	5.0	4.8	4.8	4.3	5.0	5.0	5.0	5.0	4.8	3.8	4.2	5.0	5.0	4.8
Soil Compaction	5.0	4.8	4.8	4.8	3.4	3.0	4.0	5.0	4.8	4.0	3.8	5.0	4.0	4.3
Erosion	5.0	5.0	5.0	4.8	3.7	5.0	5.0	4.8	5.0	3.6	4.5	4.8	5.0	4.7

The lowest overall indicator was Plant Residue at 2.6. Residue is dead plant material in varying states of decay. It is important for slowing evaporation, maintaining soil temperatures, providing a carbon and nutrient source for soil life, reducing erosion, and helping with infiltration. The percentage of ideal cover is not exact, but in most cases, a minimum of 60 percent is recommended, although excessive amounts can reduce new plant growth and tie up nitrogen.

Ways to improve plant residue include avoiding overgrazing, rotational grazing, weed control, and adding legumes. The scores were good for desirable plants, livestock concentration areas, and soil compaction, while the score for percent legumes was, on average, 3.4. Adding more legumes could be applied to enhance forage quality and production, which can add more to the plant residue pool.

Table 3-29 shows Pasture Condition Scores for sites with repeat visits across different monitoring years.

Table 3-29. Pasture Condition Scores for sites with repeat visits for fiscal years 2019 to 2024 (fiscal year 2018 included for context).

Indicator	Fiscal Year													Average Changes for all Sites
	2018 ¹	2021	2024	2018	2021	2024	2018	2021	2024	2021	2024	2023	2024	
	Pasture													
	Ballard	Ballard	Ballard	Fox	Fox	Fox	Peterson	Peterson	Peterson	South Velie	South Velie	Cronk	Cronk	
Overall Score	4	3	4	4	4	4	3	3	4	4	4	4	4	0.2
Percent Desirable Plants	3.5	3.3	3.8	3.8	3.8	4.2	3.4	3.0	3.7	3.7	4.2	3.1	4.2	0.5
Plant cover	3.8	3.0	2.6	3.5	3.5	3.8	3.4	3.0	2.7	3.2	3.8	2.4	4.0	0.1
Plant Diversity	4.0	3.0	3.6	3.3	3.3	3.8	3.4	2.8	3.0	3.0	4.2	4.3	4.7	0.3
Plant Residue	3.0	3.0	2.2	3.3	3.5	2.8	2.6	4.0	2.5	3.0	2.8	2.5	3.7	-0.1
Plant Vigor	3.5	3.0	4.2	3.0	3.8	4.0	3.0	3.2	3.7	4.0	4.3	5.0	4.7	0.5
Percent Legume	2.0	3.0	3.0	1.3	3.3	3.4	1.6	2.8	3.0	3.5	4.2	2.5	3.7	1.3
Uniformity of Use	4.0	3.5	3.6	3.5	3.0	4.2	3.4	3.8	3.0	4.0	3.5	3.3	3.2	-0.1

Indicator	Fiscal Year													Average Changes for all Sites
	2018 ¹	2021	2024	2018	2021	2024	2018	2021	2024	2021	2024	2023	2024	
	Pasture													
	Ballard	Ballard	Ballard	Fox	Fox	Fox	Peterson	Peterson	Peterson	South Velie	South Velie	Cronk	Cronk	
Livestock Concentration Areas	3.0	3.8	4.8	4.5	3.0	3.8	4.6	4.0	4.2	3.5	5.0	5.0	5.0	0.4
Soil compaction	n/a	4.0	4.8	n/a	4.0	4.0	n/a	3.6	3.8	4.0	5.0	3.8	5.0	0.7
Erosion	4.5	3.8	5.0	4.3	4.0	3.6	4.8	4.0	4.5	4.0	4.8	5.0	4.8	0.0

¹ Soil Compaction Scores were not taken in 2018, so the overall score was determined using the remaining nine indicators instead of the standard ten.

Overall, the Pasture Condition Scores have remained around 4 for pastures Fox, South Villie, and Cronk across each year. Ballard dipped in 2021 but went back to a score of 4 in 2024, and Peterson went from a score of 3 in 2018 and 2021 up to 4 in 2024. This data suggests the pastures have been managed well overall, and areas that had lower pasture conditions have improved.

All the sites have lower percent legume indicator ratings but are also increasing over time. The plant residue scores decreased across the sites except for Cronk. Fox had a worse erosion score, going from 5 to 4. On average, all the sites have improved over the years since monitoring began. Legume cover increased the greatest amount over the years but still has room for improvement. Plant cover and plant residue had a slight decrease in average across the years.

Soil Quality Test Kit Results

Table 3-30 shows Soil Test Kit results for pastures with baseline and return sampling collected. Table 3-31 shows baseline Soil Test Kit results for pastures with no repeat monitoring.

Table 3-30. Soil Test Kit results for pastures for fiscal years 2019 to 2024 (fiscal year 2018 included for context).

Fiscal Year	Pasture Name	Texture	Infiltration Class	Bulk Density (g/cm ³)	EC (dS/m)	pH	Estimated Soil NO ₃ -N (ppm)	Average Soil Slake Rating	Soil Structure Index	Top Soil Depth (cm)
2018	Fox	Silt Loam	Moderately Rapid	1.17	0.03	6.1	0-5	6.0	75.0	12.0
2018	Ballard	Silty Clay Loam	Moderate	1.34	0.04	5.8	0-5	6.0	45.8	4.0
2018	Peterson	Silt Loam	Moderate	1.29	0.05	6.3	5-10	6.0	75.0	10.0
2018	South Velie	Silt Loam	NA	0.98	0.10	6.2	0-5	5.5	58.0	<1
2021	Fox	Sandy Clay Loam	NA	NA	0.26	6.3	n/a	6.0	n/a	16.5
2021	Ballard	Sandy Loam	Moderately Slow	NA	0.11	NA	n/a	NA	n/a	19.0
2021	Peterson	Sandy Clay Loam	Moderate	NA	0.10	6.0	n/a	5.8	n/a	25.4
2021	South Velie	Sandy Loam	Moderate	NA	0.20	7.2	n/a	5.9	n/a	15.2

Table 3-31. Baseline Soil Test Kit results for pastures with no repeat monitoring for fiscal years 2019 to 2024.

Fiscal Year ¹	Pasture Name	Texture	Infiltration Class	Bulk Density (g/cm ³)	EC (dS/m)	pH	Estimated Soil NO ₃ -N (ppm)	Average Soil Slake Rating	Soil Structure Index	Top Soil Depth (cm)
2019	A House Center	Silt Loam	Very Rabid	1.07	0.80	7.5	n/a	6.0	33.0	23.0
2019	A House East	Silt Loam	Moderately Rapid	1.39	0.30	7.0	n/a	6.0	21.0	n/a
2020	Aman East	Sandy Clay Loam	Moderately Rapid	1.14	0.10	5.4	n/a	6.0	83.0	12.7
2020	Cronk	Fine Sandy Loam	Moderately Rapid	0.86	0.80	5.4	n/a	5.8	38.0	10.6
2019	Hawes	Silt Loam	Moderate	0.96	0.10	6.0	n/a	6.0	71.0	8.0
2019	Mcbride	Silt Clay Loam	Rapid	1.06	0.05	6.0	n/a	5.9	25.0	3.0
2020	Mielty	Sandy Loam	Moderately Rapid	1.26	0.40	6.0	n/a	5.4	75.0	6.4
2019	Pierson	Silt Loam	Moderate	1.36	0.20	5.5	n/a	6.0	71.0	n/a
2020	Robinson	Sandy Loam	Moderately rapid	1.40	0.50	5.7	n/a	6.0	42.0	3.5
2019	Satterly Hill SE	Silt Loam	Very Rapid	1.01	0.06	6.0	n/a	6.0	38.0	0.5
2020	South Wilkens	Fine Sandy Loam	Rapid	1.21	0.40	5.3	n/a	6.0	63.0	6.0

¹ Data not collected in fiscal years 2017, 2022, 2023, and 2024.

Baseline soil quality assessments were collected in 15 pastures in fiscal years 2018 and 2024. Soil texture is generally fixed for a given soil- that is, not impacted by management activities. Knowing the soil texture helps to determine optimal levels for bulk density and soil structure index. There are some differences in the textures of the pastures between the baseline and the return sampling visit in Table 3-30. This can be due to differences in the field where these results were taken, and could influence the other results, such as infiltration and bulk density. Therefore, some of the changes in results from one year to another could partly be due to natural variability in the landscape and different sampling locations in the field.

Bulk density samples were not taken during the revisit years, but the baseline bulk densities that were taken for the first years are at adequate levels from a soil health standpoint. Silt loams, silty clay loam, sandy clay loams, and sandy loam ideally should be under 1.40 grams/cm³. Root growth may be affected in silt loams and silt clay loams at a bulk density of 1.60 g/cm³, and can have root growth restricted if they were to get above >1.75 g/cm³.

The Peterson pasture had a bulk density of 1.29 g/cm³ measured in 2018. A silt loam soil texture would ideally have a bulk density below 1.30-1.40 g/cm³. This pasture does not show signs of high bulk density yet, but it should be checked that there is not increasing compaction with time. Ballard pasture has a bulk density of 1.34 g/cm³. With a sand clay loam texture, the ideal level should be <1.40g/cm³, so it is within ideal levels for its texture.

The infiltration rates were generally moderate across all the fields. Ballard pasture changed from moderate to moderately slow on the return sampling year. The sandy loam texture found on the second visit should have had faster infiltration. The decreased infiltration rate could have been due to some increased compaction, but there was no bulk density taken that year to compare with. Across these pastures, pH varies around 5.8 to 6.3. This is a normal pH for grass pastures in New York. Optimal pH for most crops is between 5.5 to 7.0, with the ideal level for many pasture plants being around 6.2. In these sites, the NO₃-N levels were often not taken, but Peterson pasture had a level of 5-10ppm in 2018, which indicates a low to moderate concentration of nitrogen available for plants, while pastures Fox and South Velie both have 0-5ppm which indicates very low levels. These fields may benefit from increased fertilization or more nitrogen-fixing plants. Increasing the pH in the lower pH pastures may help to retain more legumes the next round of seeding, but pH levels should be checked again before any amendments are made, as the levels could have changed since the 2018 to 2021 monitoring period.

The biggest difference between the baseline year and the return year is the increased depth of the topsoil across all these pastures. The increased A-horizon indicates more organic matter being retained in the soil, which is a sign of increased soil health, possibly from improved management practices.

Excess salts affect plant growth by direct toxicities, disrupting the ionic balance in the plant, interfering with nutrient uptake, and reducing the availability of water by lowering the osmotic potential. All the sites had low ECs and would fall into the salinity class of non-saline, which is acceptable for crop growth. Ideal soil pH can vary depending on what type of plants are intended to grow. The northeast has naturally more acidic soils from leaching by rainfall, although there can be areas with higher pH due to limestone bedrock that can be found within the Finger Lakes Region. Management practices such as liming, or the addition of ammonium fertilizers like manure, can also alter pH levels.

Forest-wide Range Management Guideline G-4 states a minimum soil pH of 6.0 should be maintained within pastures with periodic applications of lime. Several sites, including Amen East, Ballard, Cronk, Pierson, Robinson, and South Wilkens pastures, were found to have pH levels lower than 6. Revisiting these sites for pH measurements should be conducted to determine potential changes and to verify the amount of lime needed to help raise pastures to acceptable levels.

A-House Center and Satterly Hill SE are managed grasslands for wildlife and not rangeland, so they do not need to follow the 6.0 pH guideline. A-House Center had a higher pH of 7.5. Appleton soil series is mapped within this grassland, which is a soil derived from calcareous loamy till, so this higher pH could be due to the parent material or management history.

The highest bulk densities were found in A-House Center 1.39g/cm³ (silt loam) and Robinson 1.40 g/cm³ (sandy loam). A-House Center does not have cow grazing but does get mowed. Grazing and mowing can both potentially increase the soil's bulk density over time, especially if done when the ground is wet. These sites are almost above the ideal <1.40g/cm³ bulk densities for these textures but are still below the bulk density levels that affect root growth.

Based on monitoring results during this monitoring period, Forest Service staff should consider the following management activities:

1. Continue current management to maintain the conditions of pastures.
2. Lime fields that are still not above pH of 6.0 after retesting.
3. Seed more nitrogen-fixing plants into pastures to increase nutrient levels in forage and increase plant residue. This can be done through seed mixes and continuing to not overgraze, using grazing rotation, and controlling for invasive plants.

4. Continue using Pasture Condition Scoring across pastures and collecting soil pH every three years. Resume taking other Soil Quality Test Kit results when there is available funding and staff.
5. Consider adding areas within the Grassland for Wildlife Management Area into the monitoring rotation to measure if mowing could be causing any compaction and/or erosion issues over time.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Terrestrial Ecology

Monitoring Item: Ecological Type Mapping and Representation

Management Question

How well do Forest Plan components maintain or restore ecological processes and systems within desired ranges of variability?

Detailed Monitoring Question

What proportion are ecological types on FLNF represented within the ecological reference area network?

Measurement Indicators

Proportion of each ecological type on FLNF that occurs within the reference area network

Monitoring Driver

Forest Plan Goal 5 and associated Objectives

Reporting Frequency

Every 10 years (changed from every 5 years starting fiscal year 2019); this report covers fiscal years 2013 to 2023

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2033 and 2034 biennial monitoring and evaluation report (anticipated to cover fiscal years 2024 to 2033)

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 5 to “*maintain or restore ecological processes and systems on the FLNF within desired ranges of variability...*”, with an Objective to “*manage at least five percent of each ecological type present on the FLNF for old-growth characteristics*” (Forest Plan, p. 13). Managing a 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 FLNF can be supported.

Ecological types are defined in the FLNF Forest Plan EIS (FP EIS) in two ways:

- 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.

The FP EIS ensures that old growth characteristics are maintained or allowed to develop via passive management on FLNF by representing these ecological types 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*” (FLNF FP EIS p. 3-204). Areas that are or will provide these conditions for the FLNF and comprise the Reference Area Network (RAN) include the following:

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

Representation of ecosystems within areas that are protected from extractive uses helps to protect the full range of variation associated with ecosystems on FLNF. This monitoring question tracks how well Forest Plan Goal 5 and associated Objectives are being met in light of ongoing active and passive management activities.

Monitoring Activities

Representation of ecological types in the RAN appears relatively stable and continues to be above the five percent threshold defined by the Forest Plan. There have been just over 36 acres of land acquisition since the last monitoring period, and only 83 acres total since the Forest Plan revision in 2006 representing only 0.5 of FLNF. No new ecological types have been added to the list identified in the FP EIS, and no areas have been removed from the RAN.

Evaluation and Conclusions

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, as described in the FP EIS (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 FLNF. As noted in the Rare or Outstanding Natural Areas monitoring item response, non-native invasive plants (NNIP) are a concern in several special areas, particularly in areas adjacent to pastures. It is 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. The abundance and distribution of species is expected to change with time due to changes in temperature and patterns of precipitation. It is 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 there are baseline conditions that can be monitored and compared to where management activities outside the RAN occur 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 and changes in composition and structure can be detected. Old forest areas of interest should continue to be investigated and stand histories reconstructed so disturbance histories can be 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 (e.g. insects, diseases, NNIP, 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.

Continued work toward a revised ecological classification (Terrestrial Ecological Unit Inventory, TEUI) would increase the precision and relevance of monitoring calculations. Continued work to inventory old forest occurrences on FLNF along with analysis of which ecological types are represented within existing old forest will further strengthen the ability to quantify the range of ecological variation represented within the RAN.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Terrestrial Wildlife Habitat

Monitoring Item: Grassland Habitat

Management Question

How well do Forest Plan components contribute toward restoration and maintenance of habitat for native and desirable non-native species?

Detailed Monitoring Questions

1. What are the conditions of grasslands and pastures?
2. What are the grassland bird use patterns of grazed and non-grazed grasslands?

Measurement Indicators

1. Vegetation database queries
2. Long-term site inspection and vegetative measures of grassland and pasture condition
3. Breeding bird surveys

Monitoring Driver

Forest Plan Goal 2 and associated Objectives

Reporting Frequency

Biennially (revised from every 5 years starting fiscal year 2029)

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 2 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*” and associated Objective to “*maintain acres of grassland and shrubland habitat at levels higher than ecological tendencies to support species that prefer these habitats*” (Forest Plan, p. 10). A major emphasis for Grassland for the Grazing Management Area (MA) is for grassland pastures to “provide habitat for wildlife species....” in addition to providing for domestic livestock grazing (Forest Plan, p. 41). A major emphasis for Grassland for the Wildlife MA is for grasslands to “*provide cover and nesting habitat for a wide variety of game and non-game wildlife species that are dependent on grassland habitats during all, or part of, their life cycle*” (Forest Plan, p. 44). This monitoring question will help determine how well management activities are providing grassland habitat to support various wildlife species across FLNF.

Monitoring Activities

Grazed and ungrazed land conditions have not been measured during this monitoring period. Pasture condition scores have been collected (see the Grassland Soil Productivity, Condition, and Quality monitoring item section), but they cannot be readily converted from a forage production to usability by grassland birds. Annual grassland bird surveys can be used to evaluate use patterns of both sensitive species and certain recorded common species. Tables 3-32 and 3-33 shows monitoring results for both sensitive and selected common species on grazed and ungrazed lands, respectively for fiscal years 2019 to 2024. Survey acreages of grazed versus ungrazed lands can vary widely. For example, in fiscal year 2022 there were 1,326.5 acres of grazing lands and 254 acres of ungrazed lands surveyed. Data was not collected for vesper sparrows during this monitoring period.

Table 3-32. Monitoring results for sensitive and selected common species on grazed lands.

Fiscal Year	Number of Individual Birds Counted by Species								
	GRSP	HESP	NOHA	UPSA	CCSP	VESP	SASP	BOBO	EAME
2019	0	1	0	0	4	-	195	278	28
2020	0	0	1	0	0	-	194	291	25
2021	0	0	0	0	0	-	174	286	26
2022	0	0	1	0	2	-	344	354	26
2023	0	0	0	0	0	-	245	207	31
2024	0	0	2	0	3	-	397	315	72
Totals	2	1	5	0	10	-	1,549	1,731	208

Table 3-33. Monitoring results for sensitive and selected common species on ungrazed lands.

Fiscal Year	Number of Individual Birds Counted by Species								
	GRSP	HESP	NOHA	UPSA	CCSP	VESP	SASP	BOBO	EAME
2019	0	0	0	0	1	-	42	81	4
2020	0	0	1	0	2	-	5	48	3
2021	1	0	0	0	0	-	0	36	1
2022	0	0	0	0	1	-	3	50	3
2023	0	0	0	0	0	-	7	38	3
2024	0	0	0	0	0	-	2	46	2
Totals	3	0	5	0	6	-	59	299	16

Species Key: GRSP = grasshopper sparrow; HESP = Henslow’s sparrow; NOHA = northern harrier; UPSA = upland sandpiper; CCSP = clay-colored sparrow; VESP = vesper sparrow; SASP = savannah sparrow; BOBO = bobolink; and EAME = eastern meadowlark.

Evaluation and Conclusions

Monitoring data suggests that savannah sparrows use grasslands for grazing at a higher proportion than grasslands for wildlife. This could be because of several factors such as size and space requirements, density of vegetation, and composition of vegetation. The data also suggests that sensitive species use grasslands for wildlife at higher proportions than grasslands for grazing. Similarly, this could be for a variety of reasons stated for savannah sparrows. It also could be because the surveys completed may yield lower incidence rates of rare species simply because of their rarity across the landscape. Grassland birds are utilizing both grazed and ungrazed grasslands for their life processes on FLNF. The number of individuals counted are reasonable for the local area based on habitat quantity and quality, source populations, and overall populations for these species in New York.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Terrestrial Wildlife Population

Monitoring Item: Threatened, Endangered, and Sensitive Bats

Management Question

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

Detailed Monitoring Question

Are threatened, endangered, and sensitive bat species continuing to persist on the landscape?

Measurement Indicators

Species presence/no detection, location, and/or number of individuals at North American Bat Monitoring Program (NABat) and pre-project monitoring sites

Monitoring Driver

- Forest Plan Goal 2 and associated Objectives
- Forest-wide Rare and Unique Biological Features - Threatened, Endangered, Proposed, and Sensitive Species; Rare and Exemplary Natural Communities Standards and Guidelines

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (revised monitoring question and measurement indicator starting in 2019)

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to determine if bat species listed as RFSS or listed as threatened or endangered per the Endangered Species Act (ESA) are protected and enhanced to ensure management

activities are meeting Forest Plan Goal 2 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*” (Forest Plan, p. 10). Forest-wide Threatened, Endangered, Proposed, and Sensitive Species Standard S-2 specifically states “*all project sites must be investigated for the presence of federally listed endangered, threatened, or proposed species, Regional Forester’s Sensitive Species, and/or habitat for these species prior to beginning any authorized ground-disturbing activity at the site*” (Forest Plan, p. 26).

It is important to track federally listed and sensitive bat species population viability and ensure their habitat is not adversely impacted because of Forest Service management activities. Table 3-34 lists the three bat species occurring on FLNF that are federally listed as threatened, endangered, or proposed for listing, and two bat species included on the RFSS list. The RFSS list was updated in 2017 and again in June 2024. This report considers RFSS listed in 2017 since most of the monitoring period was complete when the 2024 list was available. Note tri-colored bat was considered a RFSS until it was proposed to list as endangered in September 2022. These bat species are also included in Appendix B, Tables B-1 and B-2. All projects must comply with Endangered Species Act (ESA) consultation requirements prior to implementation to ensure protection for federally listed bats. Additionally, all site-specific project analyses include a biological evaluation per Forest Service Manual 2670.32 to ensure sensitive species viability and to preclude trends toward endangerment that would result in the need for federal listing. While it is generally difficult to collect annual population data for bats due to a variety of factors such as timing of activity, weather, staffing, and funding, consistent annual efforts have been made to gather information on bat distribution on FLNF.

Table 3-34. Bat species occurring on FLNF federally listed or proposed for listing per the Endangered Species Act (ESA), or included on the RFSS list.

Scientific Name	Common Name	Designation
<i>Myotis leibii</i>	Eastern small-footed myotis	RFSS
<i>Myotis lucifugus</i>	Little brown myotis	RFSS
<i>Myotis septentrionalis</i>	Northern long-eared bat	ESA threatened
<i>Myotis sodalis</i>	Indiana bat	ESA endangered
<i>Perimyotis subflavus</i>	Tri-colored bat ¹	ESA proposed endangered and RFSS

¹ The U.S. Fish and Wildlife Service proposed to list the tricolored bat as endangered on September 13, 2022.

Monitoring Activities

Over the years various bat monitoring efforts have been completed. In 2018, the Eastern region of the Forest Service (Region 9) committed to using the NABat (North American Bat) protocol. This protocol lays a 10km x 10km grid over all of North America including FLNF. Within the grid cell there are four stationary recorders placed for four nights. During the placement of the stationary recorders two driving routes are completed through the grid cell collecting mobile bat recordings across the entirety of the unit. The calls are then analyzed, and species-specific information is realized.

Table 3-35 shows the presence/absence of the species likely found on FLNF from this monitoring effort. From fiscal years 2018 to 2022 one route (with accompanying stationary recorders) was completed annually (Grid number 88331), and in fiscal years 2023 and 2024 two routes (with accompanying stationary recorders) were completed annually (Grid numbers 62640 and 88331). Added Grid number 62640 had a recorder stop working and could not collect all data. No tri-colored bats have been recorded on FLNF since the NABat protocol was initiated in 2018.

Table 3-35. Presence of bat species recorded at stationary sites for fiscal years 2018 to 2024.

Species	Fiscal Year								
	Grid #62640		Grid #88331						
	2023	2024	2018	2019	2020	2021	2022	2023	2024
EPFU	x	x	x	x	x	x	x	x	x
LABO	x	x	x	x	x	x	x	x	x
LACI		x	x	x	x	x	x	x	x
LANO		x	x	x	x	x	x	x	x
MYLE		x				x	x	x	x
MYLU		x			x		x		x
MYSE			x		x	x		x	
MYSO									x

Note: x = presence; no x = undetected.

Species Key: EPFU = big brown bat (*Eptesicus fuscus*); LABO = eastern red bat (*Lasiurus borealis*); LACI = hoary bat (*Lasiurus cinereus*); LANO = silver-haired bat (*Lasionycteris noctivagant*); MYLE = eastern small-footed bat (*Myotis leibii*); MYLU = little brown bat (*Myotis lucifugus*); MYSE = northern long-eared bat (*Myotis septentrionalis*); and MYSO = Indiana bat (*Myotis sodalist*).

Evaluation and Conclusions

Data collected shows a yearly variability in the species recorded during the monitoring period. There are multiple factors that can impact the quantity and quality of calls recorded. Factors such as weather, moon phase, stationary recorder set up, and experience of the surveyor can contribute to the status of the recordings. The data indicates bats are continuing to persist on the landscape on FLNF. Forest Service staff should continue this monitoring effort to create a larger dataset to better evaluate change over time specific to FLNF as well as contribute to the greater NABat dataset which includes the population of all North American bat species.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Vegetation

Monitoring Item: Forest-wide Habitat Composition

Management Question

To what extent are management activities maintaining and restoring quality, amount, and distributions of habitats to desired levels?

Detailed Monitoring Question

To what extent are management activities and natural processes moving forest composition and age classes toward Forest Plan objectives (Tables 2.2-1 and 2.2-2)?

Measurement Indicators

1. Number of acres and proportion in each type and of each age class
2. Number of acres of treatments associated with habitat objectives, including:
 - To enhance softwood component or convert to mixedwood or softwood habitat
 - To maintain, enhance, or restore oak habitat
 - To maintain, enhance, or create aspen habitat

- To maintain, enhance, or create permanent or temporary upland opening habitat
- To maintain, enhance, or create old-growth characteristics

Monitoring Driver

Forest Plan Goal 2 and Objectives

Reporting Frequency

Every 5 years (changed from annually starting fiscal year 2019); this report covers fiscal years 2019 to 2023

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2027 and 2028 biennial monitoring and evaluation report (anticipated to cover fiscal years 2024 to 2028)

Background

One of the primary means to meet Forest Plan Goal 2 “*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*” is to implement management activities that address forest-wide habitat composition and structure objectives. The intent of this monitoring question is to help determine if management activities are meeting Goal 2 and associated Objectives including desired composition of mixed hardwoods (northern hardwoods and oak), native softwoods, hickory, aspen, shrublands, grasslands, and late-successional and old forest habitats (Forest Plan, pp. 10 and 11).

Table 3-36 replicates Table 2.2-1 in the Forest Plan which provides composition objectives that represent long-term ecological tendencies of the FLNF landscape (Forest Plan, p. 11). Additionally, Forest Plan, Table 2.2-3 provides the desired amounts and distribution of various age classes for different forest types

Table 3-36. Habitat type composition objectives for all FLNF lands (Forest Plan, Table 2.2-1).

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

using standard and extended rotation ages designed to increase acres of late-successional and old forest habitats (Forest Plan, p. 12). Late-successional and old forest habitats are further discussed in the Forest Structure monitoring item section.

There are wide gaps between existing and forest composition objectives across FLNF. This monitoring question can help track the extent to which management activities are making progress toward those objectives.

Monitoring Activities

Timber harvesting activities and other silvicultural treatments are tracked using the Forest Service Activity Tracking System (FACTS). FACTS manages information about activities related to fire/fuels, silviculture, special funding, range vegetation improvement, and invasive species used by all levels of the Forest Service. Field Sample Vegetation data is also tracked in the FSVeg system, which is updated to reflect treatments once completed.

These systems can provide reports summarizing the number of acres and proportion of harvest acres treated with uneven-aged management (selection, groups, irregular shelterwood); the number of acres treated explicitly to enhance early successional characteristics (clearcutting, patch cutting, shelterwood); then number of acres treated explicitly to enhance late successional characteristics; and the number of acres treated with various methods (thinning, improvement) to explicitly enhance the health, longevity, and/or structural diversity of forested stands at the stand and landscape scales. This data can be used to monitor the progress made toward desired forest composition, age class, and structure objectives. There is some inherent error associated with the entry of this data and consistency of activity classification; however, the data is sufficient for tracking overall trends.

Evaluation and Conclusions

Composition objectives provided by Forest Plan, Table 2.2-1 represent long-term ecological tendencies associated with the unique cultural and ecological characteristics of FLNF. In areas dominated by forests, objectives support the natural transition of forested ecosystems toward a species composition that is more suited to the natural tendencies of the sites. A small proportion of these lands are to be managed for aspen, an uncommon but important habitat type. Grassland and shrublands objectives are at levels higher than would be expected under natural disturbance regimes to provide important habitat for a variety of animal and plant species.

Most of FLNF had been cleared at least once by the end of the nineteenth century, and much of it was also farmed through the early twentieth century. To restore degraded agricultural lands, the U.S. Soil Conservation Service planted many old fields with a variety of conifer species that appeared suited to site conditions. Most of these softwood species were not native to the region and some have not turned out to be well suited, however these plantations have had value in restoring forest soils. Forest Plan objectives include conversion of many of these plantations to native plant communities.

Since 2006, one timber sale (Cotton Mill) has been implemented on FLNF that contributed toward meeting Forest Plan composition objectives. Some non-commercial aspen management has also been implemented. Table 3-37 shows a summary of the treatments since 2006 that have contributed toward moving habitat composition toward Forest Plan objectives (Table 3-36). There have been no additional vegetation treatments implemented since Cotton Mill harvest units were completed in 2010.

Table 3-37. Acres treated to move habitat composition toward Forest Plan objectives (Table 2.2-1, p. 11).

Habitat Objective	Acres Treated 2006-2018	Acres Treated 2019-2023	Total Acres Treated
Maintain and create aspen-paper birch habitat	36	0	36
Enhance and restore oak habitat	54	0	54
Convert non-native softwood plantations to native habitats	11	0	11

Forest Service staff have not implemented a landscape-scale project on FLNF since the Forest Plan was revised in 2006. Management activities have been limited to maintenance of existing habitats, like grasslands and shrublands. There has been some aspen management but at levels below what would be needed to perpetuate this species over the long-term. Grasslands are maintained on a 3-year schedule by various treatments including mowing, prescribed fire and grazing. Existing shrublands have not been treated during this monitoring period and will need attention soon to maintain their desired conditions (e.g., 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, with an emphasis on oak, contributing to the objectives of removing non-native plantations and enhancing oak habitat.

Conifer plantations are declining due to poor site suitability, high density, and other insects and pathogens. Some of these plantations have begun to naturally transition from non-native to native trees. Non-native invasive plants (NNIPs) continue to occur in abundance on FLNF, and as overstories in plantations decline due to tree mortality or harvesting, increased light on the forest floor will increase the risk of NNIP spreading, preventing the establishment of native plant communities. Control of NNIP before they spread is important for conversion of these plantations to native forest habitat.

For oak and aspen, management levels to promote these habits are not sufficient to keep pace with the aging and decline of stands of these species. Aspen dominated stands are still represented at the forest-wide level within the desired range for composition objectives. Some small patch cuts have been implemented to regenerate existing aspen stands and create new ones. 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. 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 the trees species growing below oak overstories tend to be northern hardwood species, particularly beech affected by beech bark disease, along with maple and birch species. Oak trees are relatively long-lived and many of these stands will retain oak in the overstory for decades, however shade tolerant northern hardwood understories will continue to develop and maintaining oak on these sites will become increasingly difficult and impractical. At the current rate of management, it is likely that most of existing oak stands will be replaced by a mix of northern hardwoods and invasive species over time and the proportion of the forest component dominated by oak will slowly decrease. Potential habitat for oak species is projected to increase under various climate change scenarios, however forest stand dynamics and succession is expected to play a larger role in determining future forest types. Oak stands with well-developed northern hardwood understories are already on a trajectory toward those species in the absence of continued disturbance or management.

In January 2017, the Finger Lakes Invasive Pest Strategy was approved and authorized approximately 800 acres of vegetation management (USDA Forest Service 2017). This project includes treatments to create and enhance aspen and oak/hickory habitat as well as conversion of plantations to native forest. No treatments have been implemented to date, but approximately 200 acres of treatment has been included in an agreement with the National Wild Turkey Federation (NWTf). These treatments are expected to be completed in 2025.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

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

Management Question

To what extent are management activities providing sustainable supply of forest products?

Detailed Monitoring Question

How do actual outputs compare to those projected in Appendix D, Proposed and Probable Practices, specifically related to timber offered and sold?

Measurement Indicators

1. Acres of even-aged regeneration harvest annually and total for the decade
2. Acres of even-aged intermediate harvest annually and total for the decade
3. Acres of uneven aged harvest annually and total for the decade
4. Million board feet (MMBF) volume of sawtimber and non-sawtimber products offered and sold annually and total for the decade

Monitoring Driver

- Forest Plan Goal 8 and associated Objectives
- Forest Plan Appendix D, Proposed and Probable Practices, Tables D-2, D-3, and D-4

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 8 to “*provide for a sustainable supply of forest products*” (Forest Plan, p. 14). This question also tracks how well management activities are meeting estimated acreage of silvicultural practices (Forest Plan Appendix D, Table D-4, Estimated Management Practices). Monitoring timber harvest related outputs helps assess contributions of management toward meeting social, cultural, and economic attributes of Forest Plan desired conditions, and ensures timber harvest levels do not exceed the Allowable Sale Quantity (Forest Plan, Appendix D, Table D-2).

Monitoring Activities

Forest Activity Tracking System (FACTS) and Timber Sale Accounting (TSA) reports were used to monitor the annual amount of timber offered and sold along with the type of timber harvesting practices used to implement the Forest Plan.

Evaluation and Conclusions

The Forest Plan average annual Allowable Sale Quantity (ASQ) is the maximum amount of timber volume that may be offered and sold during Decade 2 (2016 to 2025), expressed on an annual basis. The annual average ASQ for FLNF is 258 thousand board feet (MBF). The annual amount of timber sold may exceed 258 MBF as long as the decadal ASQ (2.58 million board feet) is not exceeded.

The Forest Service entered into a Stewardship Agreement with the National Wild Turkey Federation (NWTf) in 2018 to complete timber harvest and associated reforestation work authorized by the Finger Lakes Invasive Pest Strategy project (USDA Forest Service 2017). The Stewardship Agreement was modified in modified in 2021 to include 3.6 million board feet (MMBF) or 5,819 hundred cubic feet (CCF) of sawtimber and pulpwood. While this volume far exceeds the average annual ASQ, it still falls short of the total ASQ of 5.16 MMBF for Decade 1 (2006 to 2015) and Decade 2 (2016 to 2025) combined. Only one other timber sale has been sold and operated since 2006 (Cotton Mill timber sale). That sale included approximately 510 MBF of timber volume on 65 acres, which is approximately 25

percent of the estimated output for the first ten years of Forest Plan implementation. In total, approximately 4.1 MMBF of timber was sold on FLNF since 2006, which is 79 percent of the total ASQ for Decades 1 and 2 combined.

Although a significant percentage of the ASQ was included in the NWTf Stewardship Agreement, harvest treatments are not expected to occur until fiscal year 2025. Even once this Stewardship Agreement is implemented, the number of acres harvested will fall well short of estimates in Appendix D of the Forest Plan with total harvest for Decades 1 and 2 combined expected to be approximately 315 acres.

Table 3-38 shows Forest Plan estimated annual management practices acres for Decade 2 (2016 to 2025) and reflects that no harvest was implemented on FLNF in fiscal years 2015 to 2024. Forest Plan estimated annual management practices acres are different for Decade 2 of Forest Plan implementation (2016 to 2025). For context, Table 3-39 displays the total actual acres harvested during Decade 1 of Forest Plan implementation (2006 to 2015).

Table 3-38. Actual acres for fiscal years 2019 to 2024 and 2015 to 2024 compared to Decade 2 Forest Plan estimated management practices (2016 to 2025).

Estimates of Management Practices	Planned Annual Acres in Decade 2 ¹	Acres Harvested Fiscal Years 2019 to 2024	Acres Harvested Fiscal Years 2015 to 2024	Percent of Planned Annual Acres
Even-aged Regeneration Harvest ²	250	0	0	0
Even-aged Intermediate Harvest	133	0	0	0
Uneven-aged Harvest	513	0	0	0
Total Harvest	896	0	0	0

¹ 10-year annual average of Decade 2 (2016-2025) acres from Forest Plan, Appendix D, Table D-4.

² Includes clearcut, shelterwood and shelterwood removal harvest methods.

Table 3-39. Actual acres for fiscal years 2006 to 2015 compared to Decade 1 Forest Plan estimated management practices (2006 to 2015).

Estimates of Management Practices	Planned Annual Acres in Decade 1 ¹	Total Acres Harvested 2006-2015	Percent of Planned Annual Acres
Even-aged Regeneration Harvest ²	156	11	<1
Even-aged Intermediate Harvest	352	54	15.3
Uneven-aged Harvest	360	0	0
Total Harvest	868	65	<1

¹ 10-year annual average of Decade 1 (2006-2015) acres from Forest Plan, Appendix D, Table D-4.

² The only even-aged regeneration harvest treatment implemented from 2006 to 2015 is clearcut.

The amount of timber sold and harvested each year remains well below the levels allowed in the Forest Plan. The amount of timber volume sold is close to 79 percent of planned volume for Decades 1 and 2 combined, but acres harvested each year remain well below the levels stated in the Forest Plan. This discrepancy is partly due to planned timber harvest intended to convert non-native softwood plantations to native species. These plantations are densely stocked with trees and yield a high volume of timber per acre. Thus, while volume sold is at approximately 79 percent of planned levels, treatment acres are only expected to be about 17 percent of planned levels for the first two decades of Forest Plan implementation.

Continued low harvest levels inhibit management ability to meet other objectives such as those related to desired forest type age class and composition, or contributions to the local and regional timber-based economy.

Recommended Changes (Monitoring Question or Forest Plan Components)

Although no changes are recommended to this monitoring question, consideration should be given to reassessing the amount of acres identified as suitable lands for timber production and increasing the decadal ASQ for Decade 3 of Forest Plan implementation (2026 to 2035). Current annual and decadal ASQ amounts will inhibit management activities to meet desired forest type age class and composition objectives, and maintain a healthy and productive forest.

Monitoring Item: Rare or Outstanding Natural Areas

Management Question

How well do Forest Plan components protect rare or outstanding biological, ecological, or geological areas?

Detailed Monitoring Question

To what extent are rare and outstanding biological, ecological, or geological features being protected, maintained, enhanced, or threatened?

Measurement Indicators

1. Number of rare or outstanding natural area sites monitored
2. Number of outstanding natural area sites for which condition was documented

Monitoring Driver

Forest Plan Goal 6 and associated Objectives

Reporting Frequency

Every 5 years (changed from annually starting fiscal year 2019); this report covers fiscal years 2019 to 2024

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report (monitoring question and measurement indicators revised starting fiscal year 2019)

Next Year Scheduled for Reporting

Fiscal years 2029 and 2030 biennial monitoring and evaluation report (anticipated to cover fiscal years 2025 to 2029)

Background

The intent of this monitoring question is to help determine if management activities are meeting Forest Plan Goal 6 to “*protect rare or outstanding biological, ecological, or geological areas on the FLNF*” and the associated Objective to “*maintain or enhance areas with rare or outstanding biological, ecological, or geological features*” (Forest Plan, p. 13). Ecologically rare or outstanding areas on FLNF have been identified and assigned to one of the following protective designations:

- Ecological Special Area (ESA): 7 sites (The Gorge, Potomac Creek Woods, Blueberry Patch, The Ravine, Potomac Ravine, Townsend Road Oak Woods, and Mill Creek Ravine)
- Candidate Research Natural Area (cRNA): 2 sites (Hector Oak Woods and Sawmill Creek Ravine)

- Recreation and Education Special Area (RESA): 1 site (Caywood Point)

Consistent visits by Forest Service staff and partners help to ensure that the integrity of these sites is maintained or enhanced. Threats such as user created trails, trash, non-native invasive plant (NNIP) invasions, or natural community departures would be noted relatively early into their occurrence so that law enforcement or management action may be considered to minimize damage to these sites.

Monitoring Activities

Table 3-40 shows 10 site visits and the results of monitoring activities during fiscal years 2019 to 2024. At each site, Forest Service staff document monitoring results in field notes addressing the condition and quality of the site and/or rare plant populations. In general, because these sites have been inventoried and evaluated in the past, notes highlight distinctive features, new information that had not previously been collected (for instance, GPS coordinates of special features), and changes in disturbance levels or conditions of the surrounding landscape. A key position vacancy and combining of roles contributed to reduced capacity to monitor these areas during the start of this monitoring period resulting in data only available for fiscal years 2022 and 2024.

Table 3-40. Ecologically rare or outstanding areas monitored during fiscal years 2019 to 2024.

Fiscal Year	Sites Visited/Monitored
2022	• 7 sites visited/monitored and for which condition was documented ○ The Ravine, Townsend Oak Woods, Blueberry Patch, The Gorge ESAs ○ Sawmill Creek Ravine, Hector Oak Woods cRNAs ○ Caywood Point RESA NNIP was noted as a substantial threat at all sites. Some sites still show the most invasion at the edges of these more protected areas. Ash mortality was observed at all sites where ash occurs due to emerald ash borer infestations. Substantial (estimated 90 percent) hemlock mortality was observed at The Ravine and The Gorge ESAs due to spongy moth defoliation following drought years.
2024	• 3 sites visited/monitored and for which condition was documented ○ The Ravine, The Gorge, and Potomac Creek Wood ESAs The Ravine and The Gorge ESAs were revisited to observe continued hemlock mortality from spongy moth invasions. Potomac Creek Woods ESA was visited to evaluate user-created mountain bike trails. Forest Service Ecologist recommended that the mountain bike trail be rehabilitated in the ESA to return to a natural state. NNIP was noted on this site and is a substantial threat, particularly on site edges.

Evaluation and Conclusions

The Forest Service Ecologist position was vacant at the start of this monitoring period so site visits to rare and outstanding natural areas lapsed. In some cases, monitoring may have been conducted by Hector Ranger District staff but visit documentation was not recorded.

Monitoring protocols continue to be effective and 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. Coordinating among individual monitors could also be improved to avoid duplication and leverage the capacity of program areas and organizations to conduct monitoring more strategically based on complementary skills.

Results from this monitoring period suggest that impacts to the integrity of ecologically significant sites and features are most often associated with NNIP invasions, invasive insect infestations, and recreational uses. Mapping and treatment of NNIP in ESA and cRNA sites has been funded and implementation planned for 2026 to 2028. A stronger relationship between Forest Service recreation, law enforcement, and ecology staff is important to effectively mitigate some of the recreational impacts that are occurring. Mountain bike trails are being added to the official system in appropriate locations outside of these protected areas to satisfy user need.

The Forest Service ecology program should strive to monitor all 10 sites with significant ecological features within each 7-to-10-year monitoring period. Monitoring will be prioritized on sites that are or may be affected by management activities, need management to maintain or enhance their condition, or are suffering from unauthorized uses such as illegal trails and cutting.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

Monitoring Item: Stocking Level

Management Question

Are harvested lands adequately restocked according to National Forest Management Act requirements?

Monitoring Question

Are lands adequately restocked within five years of a regeneration harvest or site preparation activities?

Measurement Indicators

Acres with percent stocked to minimal standards

Monitoring Driver

The National Forest Management Act at 16 USC 1604(g)(3)(E)(ii)

Reporting Frequency

Annually

Last Year Reported

Fiscal years 2017 and 2018 biennial monitoring and evaluation report

Next Year Scheduled for Reporting

Fiscal years 2025 and 2026 biennial monitoring and evaluation report

Background

The National Forest Management Act requires suitable timberlands are adequately restocked within five years following harvest. The intent of this monitoring question is to help determine if management activities comply with this requirement. Monitoring protocols and procedures are well established and are consistent with Forest Service Handbook (Forest Service Handbook 2409.17, Silvicultural Practices). 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.

Monitoring Activities

No stands were surveyed for first, third or five-year stocking surveys during fiscal years 2019 to 2024 since the only regeneration harvest completed since Forest Plan revision (11 acres harvested in 2010) was certified fully stocked in fiscal year 2013.

Evaluation and Conclusions

Not applicable.

Recommended Changes (Monitoring Question or Forest Plan Components)

None.

4. List of Preparers

Table 4-1 provides the Forest Service monitoring team that collected, evaluated, or compiled data for the *Finger Lakes National Forest Fiscal Years 2019 to 2024 Monitoring and Evaluation Report*:

Table 4-1. Preparers of the fiscal Years 2019 to 2024 monitoring and evaluation report.

Name	Position or Resource Responsibility
Jay Strand	Monitoring Team Leader/Forest Planner
Karen Bucher	Archaeologist and Heritage Resource Specialist
Marybeth Hanley	Botanist
Melissa Green	Botanist
Stephanie Erlandson	Botanist
Suzanne Gifford	Ecologist
Brian Austin	Engineer
Ryan Hughes	Fire Management Officer
Jeremy Mears	Fisheries Biologist
Cassie Spires	Lands Specialist
Ethan Ready	Public Affairs Officer
Briana Shepherd	Public Affairs Specialist
Matt Lark	Range
Holly Knox	Recreation Program Manager/Public Services Staff Officer
Jeffrey Tilley	Silviculturist
Kaitlyn Mroczka	Soil Scientist
Jennifer Edmonds	Special Uses Coordinator
John Mccann	Watershed Program Manager
Greg Flood	Wildlife Biologist

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Appendix A: Payments to Towns

There are two types of federal payments reaching municipalities that have National Forest System (NFS) lands: 1) Payments in Lieu of Taxes (PILT); and 2) Public Law 106-393, Secure Rural Schools and Community Self-Determination Act of 2001, 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.

Payments in Lieu of Taxes

Generally, federal lands may not be taxed by state or local governments unless they are authorized to do so by Congress. Since local governments are often financed by property or sales taxes, the inability to tax the property values or products derived from the federal lands may significantly affect local tax bases. Instead of authorizing taxation, Congress created various payment programs designed to make up for lost tax revenue.

Under current federal law, local governments are compensated through various programs for losses to their tax bases due to the presence of most federally owned land. The most widely applicable program, while run by the Bureau of Land Management, applies to many types of federally owned land, and is called "Payments in Lieu of Taxes" or PILT.

Table A-1 shows PILT payments and entitlement acres for Schuyler and Seneca counties in fiscal years 2019 to 2024. These are the only counties with land within the National Forest Proclamation boundary. The level of PILT payments is calculated under a complex formula which considers figures such as acres of eligible lands, population, and previous year payments from other federal agencies. The PILT, made in or around October, is indexed by the inflation rate and set by federal law.

Table A-1. New York Payments in Lieu of Taxes (PILT) and acreage for fiscal years 2019 to 2024.

County ¹	PILT Payment Amount by Fiscal Year (dollars)						2024 Entitlement Acres ²
	2019	2020	2021	2022	2023	2024	
Schuyler	18,907	19,609	20,504	22,141	22,522	24,994	11,023
Seneca	7,847	8,709	9,198	10,258	10,347	11,680	5,276
Total	26,754	28,318	29,702	32,399	32,869	36,674	16,299

Source: <https://www.doi.gov/pilt/resources/annual-reports>

¹ Only Schuyler and Seneca Counties are within the National Forest Proclamation boundary; other New York counties still receive PILT payments based on the presence of other federal lands within their boundaries.

² Entitlement acres are those lands that were not tax exempt (such as owned by state or local government) prior to when the land was conveyed to the United States.

Secure Schools Act

Table A-2 provides the payments to New York by county in fiscal years 2019 to 2024. The Secure Rural Schools (SRS) and Community Self-Determination Act of 2001 (Secure Schools Act) was reauthorized for four years in 2008.

This law was promulgated by Congress to restore stability and predictability to the annual payments made to states and counties containing NFS lands for the benefit of schools and roads. Prior to the passage of the Secure Schools Act, these payments were based upon income generated by the USDA Forest Service, typically through timber sales. As this timber sale-related income fluctuated and generally waned, communities that relied on the annual payments for the support of their schools suffered from a lack of funding stability and predictability to the detriment of their educational systems. The Secure Schools Act severs the tie between rural school funding and timber sale income to offer rural school systems continual, level funding.

Table A-2. Secure Rural Schools payments by New York county for fiscal years 2019 to 2024.

County ¹	Payment Amount by Fiscal Year (dollars)					
	2019	2020	2021	2022	2023	2024
Schuyler	11,044.62	10,791.93	12,184.73	12,637.52	13,535.50	13,432.19
Seneca	5,937.03	5,562.91	6,264.88	6,350.14	6,709.57	6,577.61
Total	16,981.65	16,354.84	18,449.61	18,987.66	20,245.07	20,009.8

Source: <https://www.fs.usda.gov/working-with-us/secure-rural-schools/payments>¹ Only Schuyler and Seneca Counties are within the National Forest Proclamation boundary.

Appendix B: Threatened, Endangered and Sensitive Species (Fauna and Flora)

Table B-1 lists federally listed threatened and endangered wildlife species specific to the Finger Lakes National Forest per the Endangered Species Act during the fiscal years 2019 to 2024 monitoring period. Table B-2 lists the Finger Lakes National Forest 2017 Regional Forester Sensitive Species (fauna and flora). RFSS added or removed in the updated 2024 list are noted. Table B-3 provides the monitoring results and recommended actions for plant species (flora) included on the RFSS list for fiscal years 2019 to 2024.

Table B-1. Wildlife species listed as threatened or endangered under the Endangered Species Act with current or historic occurrence in New York and on National Forest System lands.

Scientific Name	Common Name	ESA Status	Status on FLNF
<i>Canis lupus</i>	Gray wolf	Endangered	Historic only
<i>Lynx canadensis</i>	Canada lynx	Threatened	Historic only
<i>Myotis septentrionalis</i>	Northern long-eared bat	Threatened	Current
<i>Myotis sodalis</i>	Indiana bat	Endangered	Last recorded in 2010
<i>Perimyotis subflavus</i>	Tri-colored bat ¹	ESA proposed endangered	Current

¹ The U.S. Fish and Wildlife Service proposed to list the tricolored bat as endangered on September 13, 2022.

Table B-2. Fauna and flora species listed on the Regional Forester Sensitive Species List specific to Finger Lakes National Forest (scientific name in *italics*, followed by common name).

MAMMALS			
<i>Lasiurus borealis</i> ¹	Eastern Red Bat	<i>Botrychium oneidense</i>	Bluntlobe Grapefern
<i>Myotis leibii</i>	Eastern Small-footed Myotis	<i>Cardamine douglassii</i> ¹	Purple Cress
<i>Myotis lucifugus</i>	Little Brown Myotis	<i>Carex frankii</i>	Frank's Sedge
<i>Perimyotis subflavus</i> ²	Tri-colored Bat	<i>Crataegus intricata</i> (syn = <i>C. boyntonii</i>)	A Hawthorn
BIRDS		<i>Cryptogramma stelleri</i>	Fragile Rockbrake
<i>Accipiter atricapillus</i> ¹	American Goshawk	<i>Gentiana clausa</i>	Bottle Gentian
<i>Accipiter gentilis</i> ²	Northern Goshawk	<i>Juglans cinerea</i>	Butternut
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	<i>Lilium canadense</i>	Canada Lily
<i>Asio flammeus</i>	Short-eared Owl	<i>Morus rubra</i>	Red Mulberry
<i>Bartramia longicauda</i>	Upland Sandpiper	<i>Patis racemosa</i> ¹	Blackseed ricegrass
<i>Centronyx henslowii</i>	Henslow's Sparrow	<i>Phegopteris hexagonoptera</i>	Broad Beechfern
<i>Circus cyaneus</i>	Northern Harrier	<i>Piptatherum racemosum</i> ²	Black-fruit Mountain-ricegrass
<i>Poecetes gramineus</i>	Vesper Sparrow	<i>Prenanthes crepidinea</i> ¹	Nodding Rattlesnake-root
<i>Spizella pallida</i>	Clay-colored Sparrow	<i>Quercus muehlenbergii</i>	Chinquapin Oak
INVERTEBRATES - INSECTS		<i>Shepherdia canadensis</i>	Russet Buffaloberry
<i>Anax longipes</i>	Comet Darner	<i>Sisyrinchium mucronatum</i>	Michaux's Blue-eyed-grass
<i>Cordulegaster obliqua</i>	Arrowhead Spiketail	<i>Solidago squarrosa</i>	Squarrose Goldenrod
<i>Danaus plexippus</i>	Monarch	<i>Solidago ulmifolia</i>	Elmleaf Goldenrod
<i>Pieris virginianensis</i>	West Virginia White	<i>Symphoricarpos albus</i>	Snowberry
PLANTS		<i>Veronicastrum virginicum</i>	Culver's-root
<i>Agastache nepetoides</i>	Yellow Giant-hyssop		
<i>Agrimonia rostellat</i>	Woodland Agrimony		
<i>Allium cernuum</i>	Nodding Onion		
<i>Arabis drummondii</i> ¹	Drummond's Rockcress		
<i>Asclepias tuberosa</i>	Butterfly Milkweed		
<i>Baptisia tinctoria</i>	Yellow Wild Indigo		
<i>Boechera stricta</i> ²	Drummond's Rockcress		

¹ Added in 2024

² Removed in 2024

Table B-3. Monitoring results for plant species (flora) included on the Regional Forester Sensitive Species list specific to the Finger Lakes National Forest for fiscal years 2019 to 2024.

Species (number of populations in parenthesis)	Monitoring Results by Fiscal Year						Trend	Recommended Action
	2019	2020	2021	2022	2023	2024		
<i>Agastache nepetoides</i> Yellow giant hyssop ¹ (1)	NM ²	NM	NM	Population has quadrupled in size since 2014	NM	NM	Increasing	Monitor 2027
<i>Agrimony rostellata</i> Woodland agrimony ¹ (1)	NM	NM	NM	Stable; NNIP found nearby	NM	NM	Stable	Monitor 2027
<i>Allium cernuum</i> Nodding onion ¹ (1)	NM	NM	NM	Stable; appears to increase in some areas and decrease in others	NM	NM	Stable	Monitor 2027
<i>Arabis drummondii</i> (= <i>Boechnera stricta</i>) Drummond rockcress ¹ (1)	NM	NM	NM	Only about 10 percent of the population remains since 2015; reason unclear	NM	NM	Decreasing	Monitor 2027
<i>Asclepias tuberosa</i> Butterfly weed ¹ (1)	NM	NM	NM	1 new population found	NM	NM	Increasing	Monitor 2027
<i>Baptisia tinctoria</i> Yellow wild-indigo (1)	NM	NM	NM	NM	NM	NM	Unable to assess	Search entire site; if found, mark with GPS
<i>Botrychium oneidense</i> Blunt-lobed grape fern (2)	NM	NM	NM	NM	NM	NM	Unable to assess	Monitor 2025
<i>Cardamine douglasii</i> Purple Cress (1)	-	-	-	Newly found population	NM	NM	Uncertain	Monitor 2027
<i>Carex frankii</i> Frank's sedge (2)	NM	NM	NM	NM	NM	NM	Unable to assess	Monitor 2025
<i>Crataegus boyntonii</i> (= <i>C. intricata</i>) Copenhagen hawthorn (1)	NM	NM	NM	NM	NM	NM	Unable to assess	Monitor 2025; control NNIP and
<i>Cryptogramma stelleri</i> Steller's cliffbrake ¹ (1)	NM	NM	NM	Very few plants found; not sure if this is a true population decline; plants surveyed in August, and plants typically senesce in late summer	NM	NM	Unable to assess	Monitor 2027

Species (number of populations in parenthesis)	Monitoring Results by Fiscal Year						Trend	Recommended Action
	2019	2020	2021	2022	2023	2024		
<i>Gentiana clausa</i> Bottle gentian (6)	NM	NM	NM	NM	NM	1 population monitored	Stable	Monitor 2025
<i>Juglans cinerea</i> Butternut ¹ (Many)	NM	NM	NM	1 population monitored at Caywood Point; some loss of individuals due to disease but population persists and recruitment continues	NM	NM	Uncertain	Monitor individual sites as time permits
<i>Lilium canadense</i> Canada lily (4)	NM	NM	NM	NM	NM	NM	Unable to assess	Monitor 2025; search for lost populations as time permits
<i>Morus rubra</i> Red mulberry ¹ (1)	NM	NM	NM	Population unchanged since 2014; NNIP a threat	NM	NM	Stable	Monitor 2027
<i>Oryzopsis racemosa</i> (=<i>Piptatherum racemosum</i>) Black-fruited rice grass ¹ (1)	NM	NM	NM	Increasing; NNIP a threat	NM	NM	Increasing	Monitor 2027
<i>Phegopteris hexagonoptera</i> Broad beech fern (3)	NM	NM	NM	NM	1 population (C35S7) monitored	NM	Stable	Monitor 2028
<i>Prenanthes crepidinea</i> (=<i>Nabalus crepidineus</i>) <i>Nodding Rattlesnake-root</i> (1)	-	-	-	Newly found population	NM	NM	Unable to assess	Monitor 2027
<i>Quercus muehlenbergia</i> Chinquapin oak ¹ (2)	NM	NM	NM	Stable; 1 population monitored at Caywood Point	NM	NM	Stable	Monitor 2027
<i>Shepherdia canadensis</i> Canada buffalo berry ¹ (1)	NM	NM	NM	Decreasing, possibly due to erosion or climate	NM	NM	Decreasing	Monitor 2027
<i>Sisyrinchium mucronatum</i> Sharp-tipped blue-eyed grass (2)	NM	NM	NM	NM	NM	NM	Unable to assess	Monitor 2025
<i>Solidago squarrosa</i> Stout goldenrod ¹ (1)	NM	NM	NM	Increasing	NM	NM	Increasing	Monitor 2027

Species (number of populations in parenthesis)	Monitoring Results by Fiscal Year						Trend	Recommended Action
	2019	2020	2021	2022	2023	2024		
<i>Solidago ulmifolia</i> Elm-leaved goldenrod ¹ (1)	NM	NM	NM	Population more than doubled in size since 2015; NNIP are a threat	NM	NM	Increasing	Monitor 2027
<i>Symphoricarpos albus</i> Common snowberry ¹ (1)	NM	NM	NM	Decreasing, possibly due to erosion or climate	NM	NM	Decreasing	Monitor 2027
<i>Veronicastrum virginicum</i> Culver's Root (1)	NM	NM	NM	NM	NM	NM	Unable to assess	Monitor 2025

¹ These species occur at Caywood Point, where NNIP control also occurred in 2015 to 2016.

² Not monitored.