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Biennial Monitoring Evaluation Report (BMER)
for the Idaho Panhandle National Forests

Forest Service   Idaho Panhandle National Forests   April 2022

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Contents

Summary of Findings and Results

Table 1. Summary of findings for all Plan Monitoring Items

MONITORING QUESTION	YEAR UPDATED	PLAN IMPLEMENTATION STATUS[1]	RECOMMENDATION[2]	MANAGEMENT *If a change may be warranted, where may the change be needed?* [3]
VEGETATION				
MON-VEG-01: To what extent are management activities and natural disturbance processes trending toward desired conditions for vegetation composition, structure, and pattern, increasing resistance and resiliency to disturbance factors including climate change? This includes vegetation dominance type and size, old growth, down wood, snags, fire-killed forest, and insect and disease infested forest.	2020	(E) YES	**Plan Monitoring Recommendation:** • For the MON-VEG-01 question, consider changing from eight indicators to one indicator for this question. • Drop monitoring indicator 2 (acres burned) as is already included as part of Indicator 1. • Drop or reword indicator 6 (acres of old growth treated) as answering this question alone does not get to the monitoring question. Need to know what are the effects of these treatments? • Include **FW-DC-VEG-11** and the restocking Plan Components **FW-DC-TBR-02**, **FW-DC-TBR-03**, **FW-STD-TBR-03** as indicators. **Implementation and Outcome Progress Recommendations:** • Update the **Standards/Steps for Data Collection**, **Analysis Methods**, and **How Evaluated** for all indicators in the Monitoring Guide. • Change wording (Monitoring Guide, p. 13) where it reads "Every 5 years"; the FIA program re-measures plots on a 10-year cycle. • Update wording (Monitoring Guide, p. 13) as it references "… acres burned via unplanned ignitions (wildfires)" in Performance Indicator 3 – Acres of forest by dominance type and size class compared to the desired condition. Method doesn't match indicator. • Update (Monitoring Guide, p. 16) to read "Number of snags per acre." • Replace with Bush and Reyes 2020 as this is the most current reference and methodology for this indicator (Monitoring Guide, p. 16). • Finalize Draft IPNF/KNF OG Inventory & Monitoring Plan, RPOG letter/Appendix, OG & timber suitability form and forest process. • Consider using CDW Almanac FACTS Reports for data back to 2006 to show trends; investigate the User View reports in the FACTS NRM Dashboard for comparison or additional information.	Monitoring Guide and program management
MON-VEG-02: Have management activities met Plan objectives and trended towards desired conditions for invasive terrestrial plant species?	2020	(E) YES	Change indicator MON-VEG-02-02 from "Number of sites of new non-native invasive plant species and number of acres treated" to "Number of sites of new non-native invasive plants treated.	Monitoring Guide
FIRE				

MONITORING QUESTION	YEAR UPDATED	PLAN IMPLEMENTATION STATUS[1]	RECOMMENDATION[2]	MANAGEMENT *If a change may be warranted, where may the change be needed?* [3]
MON-FIRE-01: To what extent are management activities moving hazardous fuels towards desired conditions?	2020	(E) YES	Add additional indicator and data source to better evaluate effectiveness of fuel treatments when impacted by wildland fire. **Indicator**: Acres of fuel treatment units that have had an interaction with wildland fire. **Data source**: Fuels Treatment Effectiveness Monitoring (FTEM). • Additionally, it is recommended to remove plan component FW-DC-SES-04 from the monitoring guide because it's too general to assist with adaptive management	Monitoring Guide
MON-FIRE-02: To what extent is unplanned fire used to trend vegetation towards desired conditions?	2020	(D) NO	• Consider managing fires for strategies other than full suppression within the WFDSS decision, especially those within management areas where fire is the primary tool for vegetation management. • Consider Fires with a Contain, Confine, and point protection strategies as candidates to be managed for multiple objectives.	Program management
WATERSHED AND AQUATIC HABITAT				
MON-WTR-01: Are soil, water quality, and riparian and aquatic habitats protected and moving towards desired conditions?	2020	(C) Uncertain	**Management Activities:** • Provide clear site-specific documentation regarding the RHCA widths to be applied at each unit and periodic training and oversight to ensure consistent implementation of prescribed RHCAs in harvest units. • Create a prioritized list of near-stream roads that require a focus on improving their conditions. • Review current NEPA documentation to ensure that it allows for safe and effective treatment of noxious weeds. **Monitoring Program:** • Collect BMP data with a more diverse group and line officer representation to provide better insight. • Consistently use and store monitoring forms. • Larger sample sizes (more monitoring) within the established process (or an updated process) would ensure that the results represent the actual outcome of implemented projects.	Management activities and Monitoring Program
MON-WTR-02: To what extent are management activities moving watersheds towards desired conditions?	2020	(C) Uncertain	• Use more BMP-like reviews (WTR-01) to provide a closer look at project-scale benefit. • Use the PIBO data and their annual reports at the Forest scale to monitor changes. Use a cumulative approach of other monitoring items to answer this question: MON-VEG-01 and MON-FOC-01-02. • Consider a cumulative approach of other monitoring items to answer this question: MON-VEG-01, MON-FOC-01-02 et al.	Monitoring program
MON-AQH-01: To what extent is the Forest meeting Forest Plan objectives and trending towards	2020	(E) YES.	The Forest has met the objective outlined by **FW-OBJ-AQH-03**, but the monitoring plan does not track accomplishment of the objective encompassed by	Monitoring program

MONITORING QUESTION	YEAR UPDATED	PLAN IMPLEMENTATION STATUS[1]	RECOMMENDATION[2]	MANAGEMENT *If a change may be warranted, where may the change be needed?* [3]
desired condition to reconnect fragmented stream habitat to increase population resilience to disturbance including climate change?			**FW-OBJ-AQH-01**. An addition to the monitoring plan is recommended to account for **FW-OBJ-AQH-01**. Miles improved is tracked in gPAS, and can be reported every 2 years in the MER	
SOILS				
MON-SOIL-01: To what extent has coarse woody debris been retained for long-term soil productivity and other ecosystem functions?	2020	(D) NO	**Management-** Additional training w/ implementation on sufficient CWD amounts. **Monitoring Program-** Adjustments in monitoring protocol, including increase in sample sizes and preharvest CWD sampling.	Monitoring program
MON-SOIL-02: To what extent have design features prevented irreversible damage to soil conditions?	2020	(B) Uncertain	- Increase the sample size of units surveyed to adequately represent the variety of treatment methods. - Increase calibration between surveyors to create more consistency - A larger dataset is needed to better inform both project analysis and design features for post-fire salvage harvests. - Monitor treatments units at different phases of implementation. - Record monitoring data in a geodatabase so DSD data may be evaluated according to site characteristics and soil types.	Soils monitoring protocols
FEDERALLY LISTED SPECIES				
MON-FLS-01: To what extent is forest management contributing to the conservation of federally listed species and moving toward habitat objectives?	2020	MON-FLS-01-01: (E) YES	Consider adding secure habitat as the metric for BORZ under FW-STD-WL-02 to be consistent with the 2020 ITS for the Forest Plan.	Monitoring Program
	2020	MON-FLS-01-02: For performance indicator 1: (E) YES For performance indicator 2: (C) Uncertain	Performance indicator 2: Remove this indicator from the monitoring plan, since new research is not showing compaction is an issue for lynx.	Monitoring Program
	2020	MON-FLS-01-03: (C) Uncertain	Change the analysis method contained in the Forest Plan Monitoring Guide (reporting bull trout redd count data) to a method using PIBO data that summarizes habitat conditions such as sediments, large wood in streams, and pool characteristics.	Monitoring Guide
FOCAL SPECIES				
MON-FOC-01: Are habitat trends for the landbird assemblage and	2020	MON-FOC-01-01: (C) Uncertain	- See Evaluation of Results for Monitoring Item Fire-02. - Change Monitoring question to "Are management actions achieving vegetation composition and structure desired conditions?"	Monitoring Guide and Program management

MONITORING QUESTION	YEAR UPDATED	PLAN IMPLEMENTATION STATUS[1]	RECOMMENDATION[2]	MANAGEMENT *If a change may be warranted, where may the change be needed?* [3]
macroinvertebrate assemblage consistent with the objectives?			• Add the Density of selected landbirds to the current indicators. (See Table 95 and Figure 36 taken from Latif et al. 2019) • Consider reexamining which focal species adequately represent desired habitat conditions per the recommendations from Latif et al. 2019. • Consider managing fires for strategies other than full suppression within the WFDSS decision, especially those within management areas where fire is the primary tool for vegetation management. • Consider Fires with a Contain, Confine, and point protection strategies as candidates to be managed for multiple objectives. • Prioritize accomplishment data entry into WIT.	
	2020	MON-FOC-01-02: (E) YES	• Recommended to funding the macroinvertebrate sampling including funding the collection and analysis of samples done under the PIBO program. •	Monitoring Plan
WILDLIFE				
MON-WL-01: Have management activities met Plan objectives and maintained or improved habitat to achieve desired terrestrial habitat conditions?	2020	(E) YES	• Recommend a modification to the monitoring item for FW-OBJ-FIRE-02 to include unplanned ignitions, which would include fires that might also have suppression activities associated with them. Not just fires that list resource benefits in WFDSS (see Findings for Monitoring Item Fire-02). • Incorporate any changes identified for MON-VEG-01 and MON-FIRE-02.	Monitoring Program
MON-WL-02: Are habitat trends for elk consistent with the objectives?	2020	(D) NO	• Consider changing the monitoring question to say, "Are habitat trends for elk moving towards objectives?" • Recommend pulling together IDFG to discuss road designation and if roads can be seasonally closed on the MVUM and signed or if roads have to be gated to qualify as seasonally closed. • Add plan components FW-DC-WL-17 to the list of plan components this monitoring question would address. • Add indicators: Add FACTs activity codes, as additional indicators, that would reduce cover and remove a stand from a generally timbered stand condition to help inform progress towards plan component FW-DC-WL-17. and show both a reduction and growth from vegetation projects. Current measurement of elk security is tied to roads and generally timbered stands and does not look at foraging or other cover needs that make up elk habitat and are treated with vegetation projects.	Monitoring Guide
HUMAN USES AND DESIGNATIONS OF THE FOREST				
MON-AR-01: Have appropriate management actions been taken on recreation sites where opportunities have been identified, use is at or	2020	(E) YES	• Modify monitoring indicator **MON-AR-01-02** to include PAOT days. • Remove **MON-AR-01-05** as it is not a meaningful indicator of change to recreation opportunities.	Monitoring Guide

MONITORING QUESTION	YEAR UPDATED	PLAN IMPLEMENTATION STATUS[1]	RECOMMENDATION[2]	MANAGEMENT *If a change may be warranted, where may the change be needed?* [3]
near capacity, or where there are resource concerns?				
MON-AR-02: Have management activities trended towards desired conditions for a minimum transportation system that provides recreation opportunities, safe and efficient public and agency access, and are environmentally compatible?	2020	(E) YES - (miles of road decommissioned, and miles of road open seasonally and yearlong) and (D) NO - (miles of road being maintained, and miles of road being stored)	• Recommend increased funding of maintenance activities, increase personnel resources, and increase focus on maintenance and access during transportation planning to make progress toward the forest plan desired condition for miles of road being maintained, and miles of road being stored. • To ensure data is kept current, ensure that adequate personnel are available to track and complete the database work as project decisions that affect the road data occur. • It is recommended to increase funding of maintenance activities. Increase personnel resources, both for completing the work on the ground and contracts for the work. • To ensure data is tracked and entered as required, assure there are adequate personnel to understand and complete the database work at each district. If the district does not have the capacity, the data should be forwarded to someone that can do the entry before fiscal end-of-year deadlines.	Program Management
MON-AR-03: To what extent are motorized and non-motorized winter and summer trail recreation opportunities available for a variety of users?	2020	(E) YES.	N/A	
MON-AR-04: What are the trends in visitation forestwide, and are visitors satisfied with the facilities, access, services, and perception of their safety?	2020	(E) YES and (D) NO	Add a proposed indicator to be identified as **MON-AR-04-03** to the Forest's monitoring plan for the purpose of measuring overall user satisfaction.	Monitoring Guide
WILDERNESS				
MON-WLDN-01: Have management activities met Plan objectives and trended towards management area desired conditions for designated wilderness?	2020	(D) NO	Increase workforce capacity.	Program management
CULTURAL RESOURCES				
MON-CR-01: To what extent is the Forest meeting Forest Plan objectives and trending towards desired condition to identify, evaluate, and nominate cultural resources for listing on the National Register of Historic Places?	2020	(E) YES	N/A	

MONITORING QUESTION	YEAR UPDATED	PLAN IMPLEMENTATION STATUS[1]	RECOMMENDATION[2]	MANAGEMENT *If a change may be warranted, where may the change be needed?* [3]
MON-CR-02: To what extent are historic properties interpreted and public education provided to move towards desired conditions?	2020	(E) YES	N/A	
AMERICAN INDIAN RIGHTS AND INTERESTS				
MON-AI-01: To what extent has the Forest progressed toward establishing Tribal agreements for the access and acquisition of forest products for traditional cultural uses?	2020	(E) YES	Relationships between IPNF and federally recognized tribes would benefit from a coordinated effort to identify the needs and interests of each tribe, and to jointly develop a strategy for the tribe and IPNF to work together in support of those goals	Management activities
MON-AI-02: How much has coordination between the IPNF and consulting Tribes increased?	2020	(E) YES.	Relationships between IPNF and federally recognized tribes would benefit from a coordinated effort to identify the needs and interests of each tribe, and to jointly develop a strategy for the tribe and IPNF to work together in support of those goals.	Management activities
TIMBER				
MON-TBR-01: To what extent is the Forest meeting Forest Plan objectives and trending towards desired conditions to provide a mix of timber products in response to market demands?	2020	(E) YES	N/A	
MON-TBR-02: To what extent is the Forest meeting NFMA requirements and desired conditions on size of harvest openings?	2020	(E) YES	**Plan Monitoring Recommendation:** • Replace FW-DC-VEG-05 with FW-DC-VEG-11 **Implementation and Outcome Progress Recommendations:** • Recommend updating the Plan Component (Also 1982 Rule requirement [219.12(k)(5)(iii)]) to 2012 Planning Rule update (219.11(d)(4(i-iii)). • Reword the monitoring question (pg. 96 of the guide): "To what extent is the Forest meeting NFMA requirements and Forest Plan desired conditions on size of harvest openings?" • Reword the indicator MON-TBR-02-01 (pg. 96 of the guide) to include "two-aged" in addition to "even-aged timber harvest openings" to be consistent with the R1 supplement to Forest Service Manual direction 2470. • Reword the Description on pages 96-97 of the monitoring guide from "catastrophes" to "natural catastrophic conditions" to be consistent with law, regulation, and policy language. • In the monitoring guide on page 97 in Standards/Steps for Data Collection, recommend deleting references to FACTS, as data is not always entered or	Monitoring Guide

MONITORING QUESTION	YEAR UPDATED	PLAN IMPLEMENTATION STATUS[1]	RECOMMENDATION[2]	MANAGEMENT *If a change may be warranted, where may the change be needed?* [3]
			updated correctly or on time. Additionally, recommend changing "for" to "requesting" and "approval" to "authorization" in "The document for requesting Regional Forester approval authorization to exceed 40-acre limit contains reasons." • In the monitoring guide on page 97 in Standards/Steps for Data Collection, update and designate a consistent filing location and/or process for the RO authorization letters and forest request letters/packages. • In the monitoring guide on page 97, recommend changing the Responsibility from the Forest NEPA Coordinator to the Forest Silviculturist. • Update the Monitoring Guide (pg. 97) to include "Authority: NFMA, 2012 planning regulations, and Forest Plan." • In the monitoring guide on page 97, recommend changing "timber sales" to "projects" and "unit/units" to "openings" in How Evaluated. • Include number of openings and total opening acres in the letter itself requesting to exceed the maximum opening size limits, not just the attached tables or stand data. This makes for more efficient filing for future monitoring analysis.	
MON-TBR-03: To what extent are regeneration units restocked to trend towards vegetation desired conditions?	2020	(E) YES	**Implementation and Outcome Progress Recommendations:** • Prioritize timely FACTS data entry in relevant employee's program of work, support formal and on-the-job training for qualified personnel, as well as training and implementation of consistent and accurate field data collection. • List the R1 Regeneration Timeframe Report as Data Source in the IPNF Monitoring Guide analysis methods section. • Consider using the Reforestation Indices Reports for the planting aspect of restocking to compare data and results with the Timeframe reports and begin identifying reasons why units are not stocked for the Results section • Note in the IPNF Monitoring Guide 7) Authority, restocking post-regeneration harvest restocking is required by the National Forest Management Act and the Forest Service Manual and Handbook.	Program management and Monitoring Guide
MINERALS				
MON-MIN-01: Are reclamation activities improving ecological and human health conditions?	2020	(E) Yes	NO change warranted	
SOCIAL AND ECONOMIC SYSTEMS				
MON-SOC-01: To what extent is forest management contributing towards desired conditions for a stable and functioning local economy?	2020	(E) Yes	NO change warranted	

MONITORING QUESTION	YEAR UPDATED	PLAN IMPLEMENTATION STATUS[1]	RECOMMENDATION[2]	MANAGEMENT *If a change may be warranted, where may the change be needed?* [3]
MON-SOC-02: Is the cost of implementing the Forest Plan consistent with that predicted in the FEIS?	2020	(E) Yes	NO change warranted	

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired

[2] Based on the evaluation of monitoring results, may changes be warranted? See body of the report for more details regarding any specific recommendations or opportunities for change.

[3] If a change may be warranted, where may the change be needed? [forest plan or management activities or plan monitoring program or forest assessment] See body of the report for more details regarding any specific recommendations or opportunities for change.

Introduction

Policy and Regulations

Monitoring and evaluation requirements have been established through the National Forest Management Act (NFMA) at 36 CFR 219. Additional direction is provided by the Forest Service in Chapter 30 – Monitoring – of the Land Management Handbook (FSH 1909.12).

The Idaho Panhandle National Forests Plan Monitoring Program (PMP) was updated in August 2016 for consistency with the 2012 planning regulations [36 CFR 219.12 (c)(1)]. The Idaho Panhandle National Forests Land Management Plan was administratively changed to include the updated plan monitoring program. For a copy of the current monitoring program go to this underline web link: https://www.fs.usda.gov/main/ipnf/landmanagement/planning. Monitoring questions and indicators were selected to inform the management of resources on the plan area and not every plan component was determined necessary to track [36 CFR 219.12(a)(2)].

The monitoring evaluation implementation guide (monitoring guide) is part of the overall plan monitoring program and provides more specific direction for implementing the more strategic plan monitoring program and details monitoring methods, protocols, and roles and responsibilities. The Monitoring Guide is not part of the plan decision and is subject to change as new science and methods emerge. The Idaho Panhandle National Forests monitoring guide is available at: https://www.fs.usda.gov/main/ipnf/landmanagement/planning.

Providing timely, accurate monitoring information to the responsible official and the public is a key requirement of the plan monitoring program. This report is the vehicle for disseminating this information.

In the context of forest management there are three main monitoring goals:

- Are we implementing the Land Management Plan properly? Are we making progress towards our management targets and project guidelines? (implementation monitoring)

- Are we achieving our Forest Plan management goals and desired outcomes? (effectiveness monitoring)

- Does our hypothesis testing indicate we may need to change the Forest Plan? (validation monitoring)

Purpose of the Monitoring Evaluation Report (MER)

The Biennial Monitoring Evaluation Report (MER) is designed to evaluate the three above monitoring goals for the purposes of providing this information to help the responsible official determine a course of action based on the recommended management adjustments of this MER. This report considers information related to forest plan components to evaluate if recommended changes needed in forest plan direction, such as plan components or other plan content that guide management of resources in the plan area (e.g., forest plan, management activities, monitoring program or forest assessment). The full 2015 - 2020 biennial monitoring report for the Idaho Panhandle National Forests is available at https://www.fs.usda.gov/main/ipnf/landmanagement/planning.

The biennial monitoring evaluation report is not a decision document—it evaluates monitoring questions and indicators presented in the Plan Monitoring Program chapter of the forest plan, in relation to management actions carried out in the plan area.

Monitoring and evaluation are continuous learning tools that form the backbone of adaptive management. This is our first written report of this evaluation since the Idaho Panhandle National Forests Forest Plan was finalized in 2015.

Implementation monitoring is important for tracking progress and accomplishments. However, it is effectiveness and validation monitoring that drive and support the adaptive management process. Effectiveness monitoring evaluates condition and trend relative to desired conditions. Validation monitoring tests hypotheses and provides information that might necessitate changes to desired conditions in the plan (e.g. is what we think the desired state should be really accurate?).

This report identifies indicators that could be influenced by climate change. For additional information on the influence of climate change as it relates to monitoring, see: https://www.fs.usda.gov/treesearch/pubs/55974.

Objectives

To achieve the goals and purposes outlined above, this monitoring and evaluation report includes the following objectives (*as guided by Forest Service Handbook 1909.12_34*):

- Document implementation of the plan monitoring program, including changed conditions or status of key characteristics used to assess accomplishments and progress toward achievement of the selected Land Management Plan components.

- Evaluate relevant assumptions, changed conditions, management effectiveness, and progress towards achieving the selected desired conditions, objectives, and goals described in the Forest Plan

- Assess the status of previous recommended options for change based on previous monitoring and evaluation reports.

- Document any scheduled monitoring actions that have not been completed and the reasons and rationale why it has not.

- Present any new information not outlined in the current plan monitoring program that is relevant to the evaluation of the selected monitoring questions.

- Incorporate broader scale monitoring information from the Regional Broader Scale Monitoring Strategy that is relevant to the understanding of the selected monitoring question.

- Present recommended change opportunities to the responsible official.

Monitoring Evaluation and Adaptive Findings

The following section presents the most current information (data and evaluations) for all monitoring questions contained within the Idaho Panhandle National Forests Forest Plan. Each monitoring item includes 1) a summary of the monitoring question, its indicator(s), and the plan components the monitoring question is assessing; 2) monitoring results and discussion; and 3) evaluation of the results to determine an adaptive management finding on whether recommended management changes are warranted or not.

Monitoring Item – VEG-01 – Desired Vegetation Conditions

Table 2. Monitoring Item Summary – VEG-01

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data Collection Interval	Data Source / Partner	Point of Contact
MON-VEG-01: To what extent are management activities and natural disturbance processes trending toward desired conditions for vegetation composition, structure, and pattern, increasing resistance and resiliency to disturbance factors including climate change? This includes vegetation dominance type and size, old growth, down wood, snags, fire-killed forest, and insect- and disease-infested forest.	GOAL-VEG-01, FW-DC-VEG-01, FW-DC-VEG-02, FW-DC-VEG-03, FW-DC-VEG-05, FW-DC-VEG-07, FW-DC-VEG-08, FW-OBJ-VEG-01, FW-STD-VEG-01, FW-GDL-VEG-01, FW-GDL-VEG-03, FW-GDL-VEG-04, FW-GDL-VEG-05, FW-GLD-VEG-06, FW-DC-WL-13, FW-DC-WL-14	**MON-VEG-01-01:** Acres treated to meet FW-OBJ-VEG-01 (Y)	Annual / Class A	FACTS via NRM CDW Dashboard >> FACTS >> Reports; R1 Fuels BSMS SharePoint data: FP_FUELS_ALL_12_09_2020_2016to2020 via IPNF Forest Fire Planner; IPNF Forest Wildlife Program Manager, and IPNF Range/Weeds Specialist	Forest Silviculturist
		MON-VEG-01-02: Acres burned (Y)	Annual / Class A	R1 Fuels BSMS SharePoint data: FP_FUELS_ALL_12_09_2020_2016to2020 via IPNF Forest Fire Planner; IPNF Forest Wildlife Program Manager	
		MON-VEG-01-03: Acres of forest by dominance type and size class compared to the desired condition (Y)	Every 5 Years / Class A	Regional office data compilation of FIA and FSVeg Spatial databases from the IPNF_Specific_Reports_Hyb_15 and KIPZ_LUT_BPS_Dom_Grp in R1 BSMS Forested Vegetation Hybrid Reports	
		MON-VEG-01-04: Acres meeting the old growth definition (see glossary) as determined by the FIA program (U)	Every 5 Years / Class A	Regional office data compilation of FIA and FSVeg Spatial databases from the IPNF_Specific_Reports_Hyb_15 in R1 BSMS Forested Vegetation Hybrid Reports	
		MON-VEG-01-05: Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures (U)	Annual / Class A	ArcMap NRM Geospatial Interface via Citrix GIS ArcGIS NRM; forest data imported from the R1 FSVeg Spatial database	
		MON-VEG-01-06: Acres of old growth treated (U)	Annual / Class A	FACTS database and project decisions	
		MON-VEG-01-07: Snags per acre forest-wide (Y)	Every 5 Years / Class A	Estimates of Snag and Live-Tree Densities for North Idaho Forests in the Northern Region based on FIA Hybrid 2011 Analysis Dataset (Bush & Reyes, 2020) in R1 BSMS Report for Forested Vegetation	
		MON-VEG-01-08: Number of acres influenced by insects and disease (Y)	Every 5 Years / Class A	Regional office data compilation of FIA and FSVeg Spatial databases from the FHP_Output_Tables and FHP_Attributes_BSMS_2020 table in R1 BSMS Forested Vegetation Hybrid Reports	

*Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 3. Monitoring Item VEG-01 - Monitoring Collection Summary

For Monitoring Item VEG-01:	Year
Data was last collected or compiled in:	2021
Next scheduled data collection/compilation:	**2023** (MON-VEG-01-01, MON-VEG-01-02, MON-VEG-01-05, MON-VEG-01-06) / **2027** (MON-VEG-01-03, MON-VEG-01-04, MON-VEG-01-07, MON-VEG-01-08)
Last MER evaluation for this monitoring item:	2021
Next scheduled MER evaluation of this monitoring item:	**2023** (MON-VEG-01-01, MON-VEG-01-02, MON-VEG-01-05, MON-VEG-01-06) / **2027** (MON-VEG-01-03, MON-VEG-01-04, MON-VEG-01-07, MON-VEG-01-08)
For FIA Monitoring Attributes:	**Year**
Data was last collected or compiled in:	Collected up to 2015, compiled in 2021
Next scheduled data collection/compilation:	Collected up to 2020, compile in 2023
Last MER evaluation for this monitoring item:	2021
Next scheduled MER evaluation of this monitoring item:	2023/2027

Referenced Forest Plan Components:

Multiple indicators were used to address the question: to what extent management activities and natural disturbance processes are trending toward desired conditions for vegetation composition, structure, and pattern, increasing resistance and resiliency to disturbance factors, including climate change? The nature of the question is multi-faceted, including vegetation dominance type and size class, old growth, down wood, snags, fire-killed forest, and insect and disease infestations [Idaho Panhandle National Forests - Planning (usda.gov) (Monitoring Guide), p. 10].

Forest ecologists and other scientists are increasingly noting "resistance" and "resilience" are important concepts related to sustainability, biodiversity, and climate change. Resistance is the capacity of ecosystems to tolerate disturbances without exhibiting significant change in structure and composition, while resilience is the ability of a system to recover from disturbance if the disturbance exceeds the capacity of the system to resist changing. To improve adaptation of forest vegetation to likely effects of climate change, they suggest promoting resistance and resiliency to disturbance, both natural and anthropogenic. These actions would address current management needs, allow an approach incorporating climate into management and planning, and potentially reduce the future interactions of those disturbance stressors with climate change [Forest Plan FEIS (FEIS), p. 90].

The historic range of variability (HRV) focuses on forest composition (dominance type or species composition), structure (successional stage, size class, and density), and landscape pattern (fragmentation and function). This approach is designed to provide insights into how ecosystems have changed, as well as how they may change in the future. The HRV is the baseline for comparison with current conditions to assess the degree of past change and movement towards desired conditions. These results are consistent with conditions created through adaptive management activities to improve forest resistance and resilience. Ranges for subsequent vegetation desired condition are in the forest plan. Because it will take many decades to achieve these desired ranges, the desired condition for vegetation is to move towards these ranges (FEIS, pp. 50-51).

Current forest conditions on the IPNF are quite different from the range of historical conditions regarding composition, structure, landscape pattern, and ecological processes. Consequently, the forests are predisposed to new levels and types of stress agents and disturbances. Combined with the possible effects of climate change, current conditions are not desirable. The resiliency and resistance of forests to stress agents and disturbances is largely a function of the composition, structure (including density), and landscape pattern of forest conditions and how those elements interact (FEIS, p. 110).

Table 4. IPNF Monitoring Guide Indicators for MON-VEG-01 (pp. 10-11)

INDICATOR	DESCRIPTION	CORRESPONDING FOREST PLAN COMPONENT
MON-VEG-01-01: Acres treated towards achieving **FW-OBJ-VEG-01**	The number of acres that are treated on the Forest towards achieving **FW-OBJ-VEG-01** is a strong indication of how much active management is occurring to help trend the vegetation towards the desired conditions that are articulated for forest vegetation within the Forest Plan (**GOAL-VEG-01** and **FW-DC-VEG-01 through 05**).	**FW-OBJ-VEG-01** [Forest Plan (FP), p. 18]. Forest Resilience – Over the life of the Plan, the outcome per decade is: - Increased relative representation of early seral, shade-intolerant, drought- and fire-tolerant, insect/disease resistant species dominance types (e.g., ponderosa pine, white pine, western larch, whitebark pine, and hardwoods) on approximately 85,000 to 90,000 acres (these acres are also included in those listed in the following bullet). - Treatment of approximately 250,000 acres to maintain and/or improve forest resilience, natural diversity, and productivity and to reduce negative impacts of non-native organisms. Treatments may include timber harvest, planting, thinning, management of fire (including planned and unplanned ignitions), mechanical fuel treatments, revegetation with native species, blister rust pruning, integrated tree improvement activities, non-native invasive plant treatments, and other integrated pest management activities including forest health protection suppression and prevention activities.
		GOAL-VEG-01 (FP, p. 11). Plant communities are trending toward the desired conditions for composition, structure, patterns, and processes. The ecological integrity of the communities is high, and they exhibit resistance and resiliency to natural and man-caused disturbances and stressors, including climate change.
		FW-DC-VEG-01 (FP, p. 11). The composition of the forest is within the desired ranges for the dominance groups on page 12 of the forest plan. More of the forest is dominated by western white pine, ponderosa pine, western larch, and whitebark pine. Conversely, less of the forest is dominated by grand fir, western hemlock, western redcedar, Douglas-fir, lodgepole pine, and subalpine fir. More hardwood trees occur in the forest such as quaking aspen, black cottonwood, and paper birch.
		FW-DC-VEG-02 (FP, p. 11). The structure of the forest is within the desired ranges for the size classes on page 12 of the forest plan. More of the forest is dominated by stands occurring in the seedling/sapling size class and less of the forest is dominated by stands that occur in the small and medium size classes.
		FW-DC-VEG-03 (FP, p. 13). The amount of old growth increases at the forest-wide scale. At the finer scale of the biophysical setting, old growth amounts increase for the Warm/Dry and Warm/Moist settings while staying close to the current level for the Subalpine setting. Relative to other tree species, there is a greater increase in old growth stands that contain substantial amounts (i.e., 30% or more of the total species composition) of one or more of the following tree species: ponderosa pine, western larch, western white pine, and whitebark pine. Old growth stands are more resistant and resilient to disturbances and stressors such as wildfires, droughts, insects and disease, and potential climate change effects. The size of old growth stands (or patches of multiple contiguous old growth stands) increase, and they are well-distributed across the five Geographic Areas on the Forest.
		FW-DC-VEG-04 (FP, p. 13). Tree densities and the number of canopy layers within stands are generally decreased.
		FW-DC-VEG-05 (FP, p. 13). The pattern of forest conditions across the landscapes consists of a range of patch sizes that have a diversity of successional stages, densities, and compositions. Formerly extensive, homogenous patches of forests that are dominated by species and size classes that are very susceptible to disturbance agents have been diversified. Generally, there is an increase in the size of forest patches that are dominated by trees in the seedling/sapling size class, as well as in the large size class. There is a decrease in the size of the patches that are dominated by trees in the small and medium size classes.

INDICATOR	DESCRIPTION	CORRESPONDING FOREST PLAN COMPONENT
MON-VEG-01-02: Acres burned	The number of acres that are burned on the Forest (both planned and unplanned) is an indicator of whether or not our desired condition (**FW-DC-FIRE-03**) is being met to have wildland fire play an increased role in helping to trend the vegetation conditions towards the desired conditions while serving important ecosystem functions.	**FW-DC-FIRE-03** (FP, p. 22). The use of wildland fire (both planned and unplanned ignitions) increases in many areas across the Forest. Fire plays an increased role in helping to trend the vegetation towards the desired conditions while serving other important ecosystem functions. However, when necessary to protect life, property and key resources, many wildfires are still suppressed.
MON-VEG-01-03: Acres of forest by dominance type and size class compared to the desired condition	The number of acres of forest vegetation by dominance type and size class relative to the desired conditions that are expressed in the Forest Plan is directly related to the monitoring question. This indicator will demonstrate to what extent management activities and natural processes are trending the forest vegetation towards desired species composition measured by dominance types (**FW-DC-VEG-01**) and structure as measured by size class (**FW-DC-VEG-02**) of the forest vegetation.	**FW-DC-VEG-01** (FP, p. 11). The composition of the forest is within the desired ranges for the dominance groups on page 12 of the forest plan. More of the forest is dominated by western white pine, ponderosa pine, western larch, and whitebark pine. Conversely, less of the forest is dominated by grand fir, western hemlock, western redcedar, Douglas-fir, lodgepole pine, and subalpine fir. More hardwood trees occur in the forest such as quaking aspen, black cottonwood, and paper birch.
		FW-DC-VEG-02 (FP, p. 12). The structure of the forest is within the desired ranges for the size classes on page 12 of the forest plan. More of the forest is dominated by stands occurring in the seedling/sapling size class and less of the forest is dominated by stands that occur in the small and medium size classes.
MON-VEG-01-04: Acres meeting the old growth definition (see glossary of the forest plan) as determined by the FIA program	FIA data provides a statistically valid sample for forest-wide estimates of old growth as described **in FW-DC-VEG-03**.	**FW-DC-VEG-03** (FP, p. 13). The amount of old growth increases at the forest-wide scale. At the finer scale of the biophysical setting, old growth amounts increase for the Warm/Dry and Warm/Moist settings while staying close to the current level for the Subalpine setting. Relative to other tree species, there is a greater increase in old growth stands that contain substantial amounts (i.e., 30% or more of the total species composition) of one or more of the following tree species: ponderosa pine, western larch, western white pine, and whitebark pine. Old growth stands are more resistant and resilient to disturbances and stressors such as wildfires, droughts, insects and disease, and potential climate change effects. The size of old growth stands (or patches of multiple contiguous old growth stands) increase, and they are well-distributed across the five Geographic Areas on the Forest.
MON-VEG-01-05: Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures	Forest data is used for this stand-level inventory and mapping procedure, showing the spatial location of old growth stands and allows for identification and tracking of recruitment potential old growth; maintained primarily at the project level.	**FW-DC-VEG-03** (FP, p. 13). The amount of old growth increases at the forest-wide scale. At the finer scale of the biophysical setting, old growth amounts increase for the Warm/Dry and Warm/Moist settings while staying close to the current level for the Subalpine setting. Relative to other tree species, there is a greater increase in old growth stands that contain substantial amounts (i.e., 30% or more of the total species composition) of one or more of the following tree species: ponderosa pine, western larch, western white pine, and whitebark pine. Old growth stands are more resistant and resilient to disturbances and stressors such as wildfires, droughts, insects and disease, and potential climate change effects. The size of old growth stands (or patches of multiple contiguous old growth stands) increase, and they are well-distributed across the five Geographic Areas on the Forest.

INDICATOR	DESCRIPTION	CORRESPONDING FOREST PLAN COMPONENT
MON-VEG-01-06: Acres of old growth treated	**FW-DC-VEG-03** includes the desired condition that old growth stands become more resistant and resilient towards disturbances and stressors such as wildfires, droughts, insects and disease, and potential climate change effects. Some examples of treatments that may be used in old growth stands for the purpose of trending stands towards the desired conditions are included in the Forest Plan FEIS.	**FW-DC-VEG-03** (FP, p. 13). The amount of old growth increases at the forest-wide scale. At the finer scale of the biophysical setting, old growth amounts increase for the Warm/Dry and Warm/Moist settings while staying close to the current level for the Subalpine setting. Relative to other tree species, there is a greater increase in old growth stands that contain substantial amounts (i.e., 30% or more of the total species composition) of one or more of the following tree species: ponderosa pine, western larch, western white pine, and whitebark pine. Old growth stands are more resistant and resilient to disturbances and stressors such as wildfires, droughts, insects and disease, and potential climate change effects. The size of old growth stands (or patches of multiple contiguous old growth stands) increase, and they are well-distributed across the five Geographic Areas on the Forest.
MON-VEG-01-07: Snags per acre forest-wide	The number and size of snags on the Forest is directly related to how well the Forest is moving towards **FW-DC-VEG-07** and **FW-DC-WL-13**.	**FW-DC-VEG-07** (FP, p. 13). Snags occur throughout the forest in an uneven pattern, provide a diversity of habitats for wildlife species, and contribute to the sustainability of snag dependent species. Snag numbers, sizes, and species vary by biophysical setting and dominance group. Page 13 of the forest plan displays the desired range of snag densities. Over time, the number of large-diameter snags (20 inches in DBH or greater) increases in all biophysical settings.
		FW-DC-WL-13 (FP, p. 30). Trees and snags greater than 20 inches DBH are available throughout the Forest. Wildlife species associated with the warm/dry biophysical setting find large-diameter ponderosa pine, Douglas-fir, and other species of snags for nesting.
MON-VEG-01-08: Number of acres influenced by insects and disease	As indicated by the forest-wide plan component **FW-DC-VEG-06**, the desire is root disease fungi and certain forest insects have less of an impact in killing trees in the future. This indicator measures and tracks how management activities and natural disturbances affect the prevalence of key forest insects and diseases.	**FW-DC-VEG-06** (FP, p. 13). Root disease fungi, such as Armillaria and Phellinus, are killing fewer trees as the composition of the forest trends toward less susceptible tree species such as western larch, ponderosa pine, and western white pine. Forest insects, such as Douglas-fir bark beetle, mountain and western pine beetles, fir engraver beetle, and the western spruce budworm, are generally causing less tree mortality. Impacts from the non-native fungus that causes the white pine blister rust disease are reduced as the abundance of rust-resistant western white pine and whitebark pine increases.

Results and Discussion

Methods

See **Appendix A.** MON-VEG-01

Results

Data

INDICATOR 1 – MON-VEG-01-01: Acres treated to meet FW-OBJ-VEG-01

Table 5. Acres Treated by Year Towards Meeting FW-OBJ-VEG-01 – Forest Resilience (2015-2020)

FW-OBJ-VEG-01: Forest Resilience Treatments	2015	2015	2016	2016	2017	2017	2018	2018	2019	2019	2020	2020
Activities	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience
Regeneration & Interm Harv		1,693		2,226		4,921		4,983		2,869		2,081
Planting	1,223	1,223	1,359	1,359	1,627	1,627	1,977	1,977	2,921	2,921	2,460	2,460
Site Prep Nat Regen		84		87		0		4		239		15
Nat Reg w/o SP		4		171		35		724		128		85
PCT		2,394		2,098		973		1,554		2,086		752
Release & Weeding		47		101		116		66		132		35
Pruning	2,062	2,062	1.386	1,386	1,234	1,234	1,335	1,335	1.442	1,442	683	683
Broadcast Burn		Not analyzed		1,207		2,100		2,361		3,624		2,292
Fire Use		Not analyzed		12,565		288		67		233		0
Machine Pile Burn		Not analyzed		132		280		418		336		541
Nat Unplan Igtn		50,951		2,324		5,046		17,169		137		110
Biomass Removal		Not analyzed		138		1,000		3,388		3,338		3,487
Crushing Fuels		Not analyzed		0		0		0		40		0
Lop & Scatter		Not analyzed		110		580		1,324		1,665		28

FW-OBJ-VEG-01: Forest Resilience Treatments	2015	2015	2016	2016	2017	2017	2018	2018	2019	2019	2020	2020
Activities	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience	Acres increasing early seral representation	Acres maintaining /improving forest resilience
Machine Pile		Not analyzed		410		206		687		258		462
Fuels Thinning		Not analyzed		2,870		2,080		4,918		3,568		2,407
Fire Mgmt. Other		Not analyzed		0		0		0		561		561
Native Sp Seeding	0	0	0	0	0	0	0	0	0	0	0	0
Intgrt Tree Improv	1,172	1,223	1,086	1,359	1,550	1,627	1,726	1,977	2,815	2,921	2,401	2,460
Invsv Treat & Resto		Not analyzed		1,808		1,810		2,280		2,169		2,118
Totals	4,457	59,681	3,831	28,787	4,411	22,890	5,038	43,678	7,178	26,581	5,544	19,825

Table 6. Total Acres Treated Towards Meeting FW-OBJ-VEG-01 – Forest Resilience (2015-2020)

FW-OBJ-VEG-01: Forest Resilience	Totals (2015-2020)	
Treatments/Activities	Acres Increasing Early Seral Representation	Acres Maintaining Improving Forest Resilience
Timber Harvest – Regeneration & Intermediate Harvest		19,216
Reforestation – Planting	11,567	11,576
Reforestation – Site Preparation for Natural Regeneration		429
Reforestation – Natural Regeneration without Site Preparation		1,147
Stand Improvement – Precommercial Thinning		9,857
Stand Improvement – Release and Weeding		497
Stand Improvement – White Pine Blister Rust Pruning	8,142	8,142
Fire Management – Planned Ignitions; Broadcast Burn		11,584
Fire Management – Planned Ignitions; Fire Use		13,184
Fire Management – Planned Ignitions; Machine Pile Burn		1,707
Fire Management – Natural, Unplanned Ignitions		24,786
Fire Management – Mechanical Fuel Treatments; Biomass Removal		11,351
Fire Management – Mechanical Fuel Treatments; Crushing		40
Fire Management – Mechanical Fuel Treatments; Lop & Scatter		3,707
Fire Management – Mechanical Fuel Treatments; Machine Pile		2,023
Fire Management – Mechanical Fuel Treatments; Fuels Thinning		15,843
Fire Management – Other		1,122
Re-Vegetation with Native Species – Seeding		0
Integrated Tree Improvement Activities – Seed Sources	10,750	11,567
Non-Native Invasive Plant Treatment – Sites Treated & Restored		10,185
Totals	30,459	148,097

All planting acres are included in both metrics (Acres Increasing Early Seral Representation and Acres Maintaining/Improving Forest Resilience) as most seedlings planted are early seral species. Precommercial thinning (PCT) acres are not included in the total for "Acres Maintaining/Improving Forest Resilience" as they are also counted as part of the "Mechanical Fuel Treatments - Fuels Thinning" acres. White pine blister rust pruning is included in both metrics since most this work occurs in white pine stands, an early seral species. Integrated Tree Improvement Activities include selective breeding, seed orchard work, select trees, Seed Production Areas (SPA), seed zones, and other vegetative material collections. These activities were filtered by seral species (ponderosa pine, western white pine, western larch, and whitebark pine) and include hardwoods, noted in the Forest Plan as desirable along with seral species. Seral and hardwood species are included in first metric; all species are included in second metric.
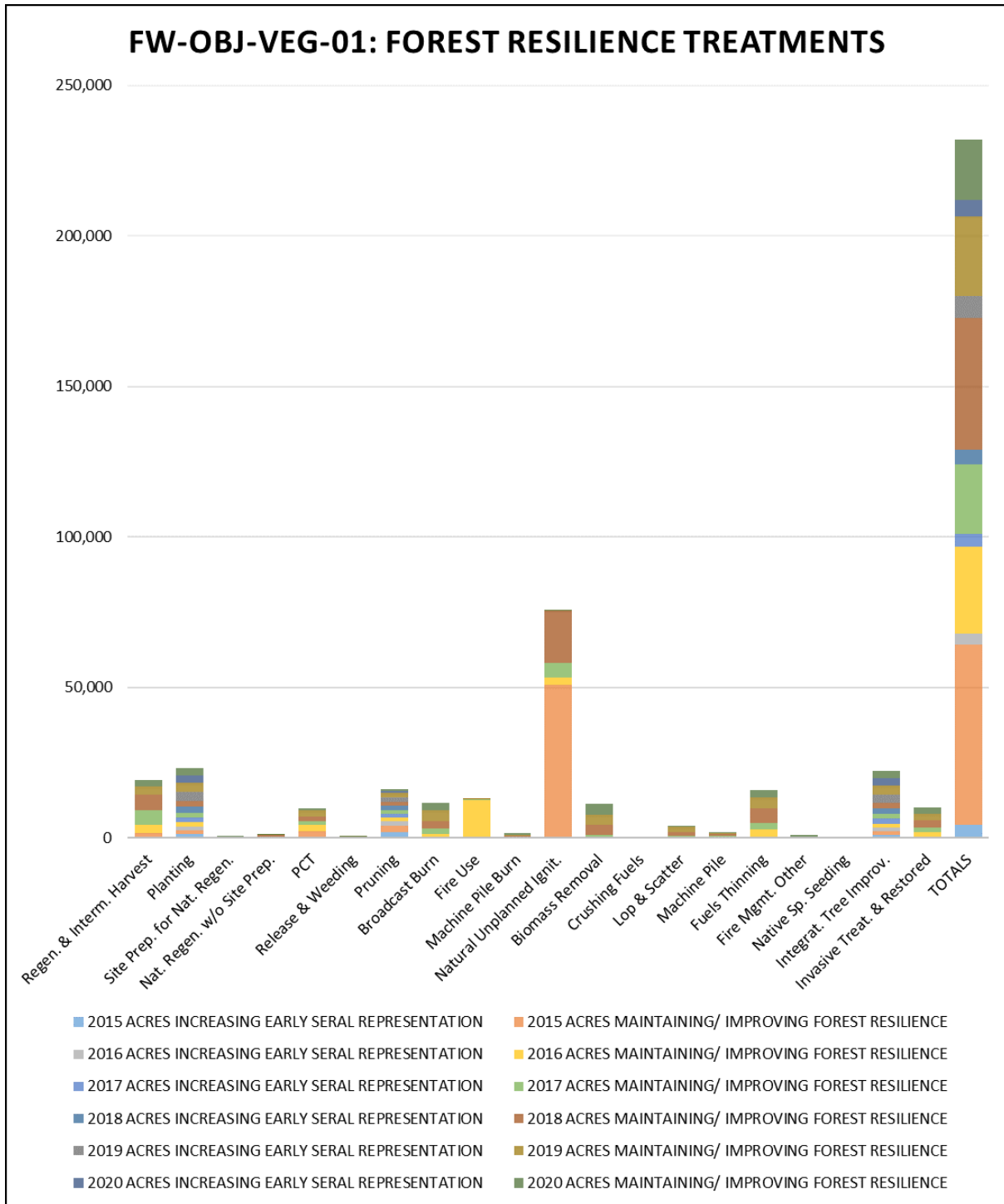
Figure 1. Total vegetation treatment acreage by activity type (2015-2020)
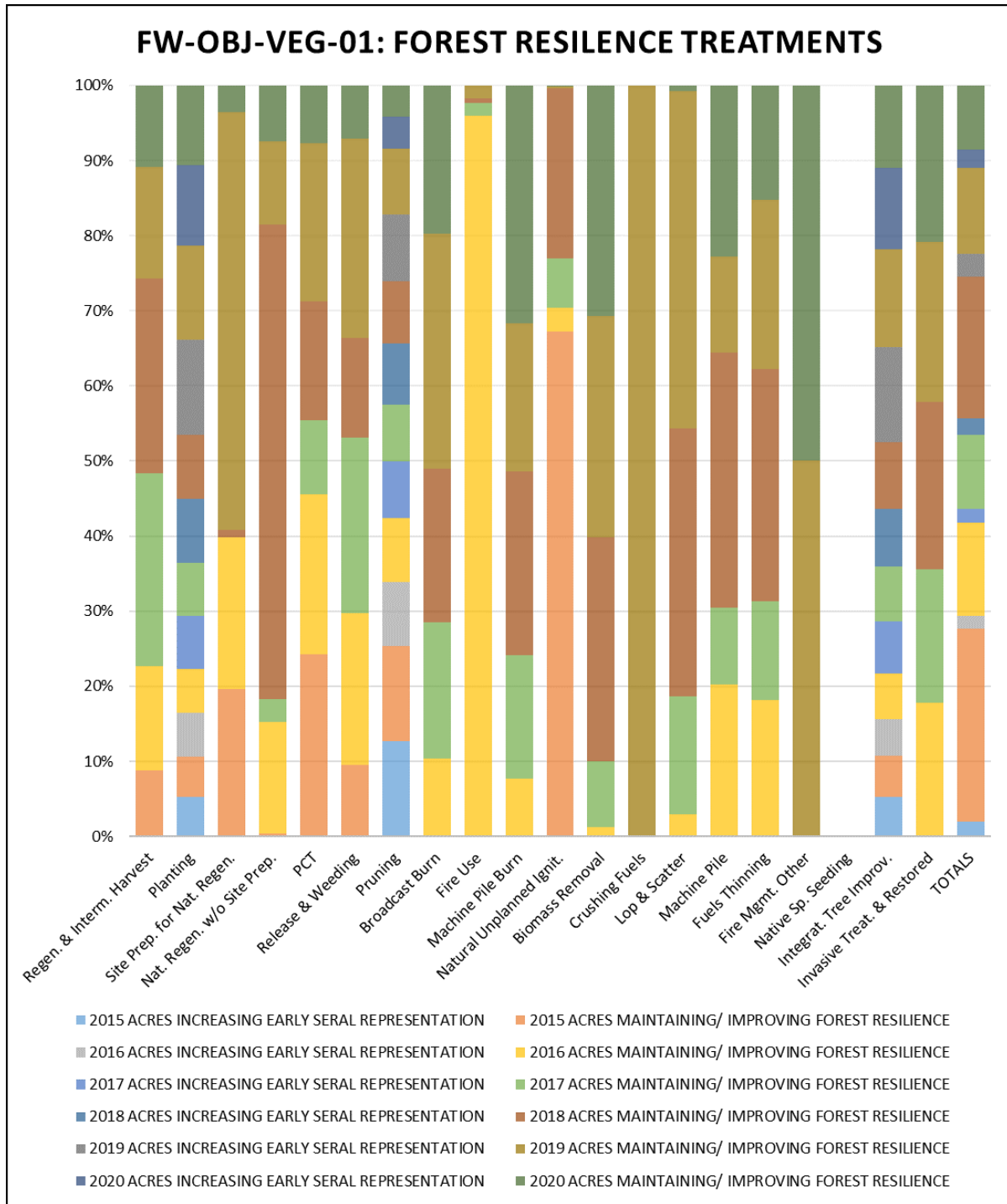
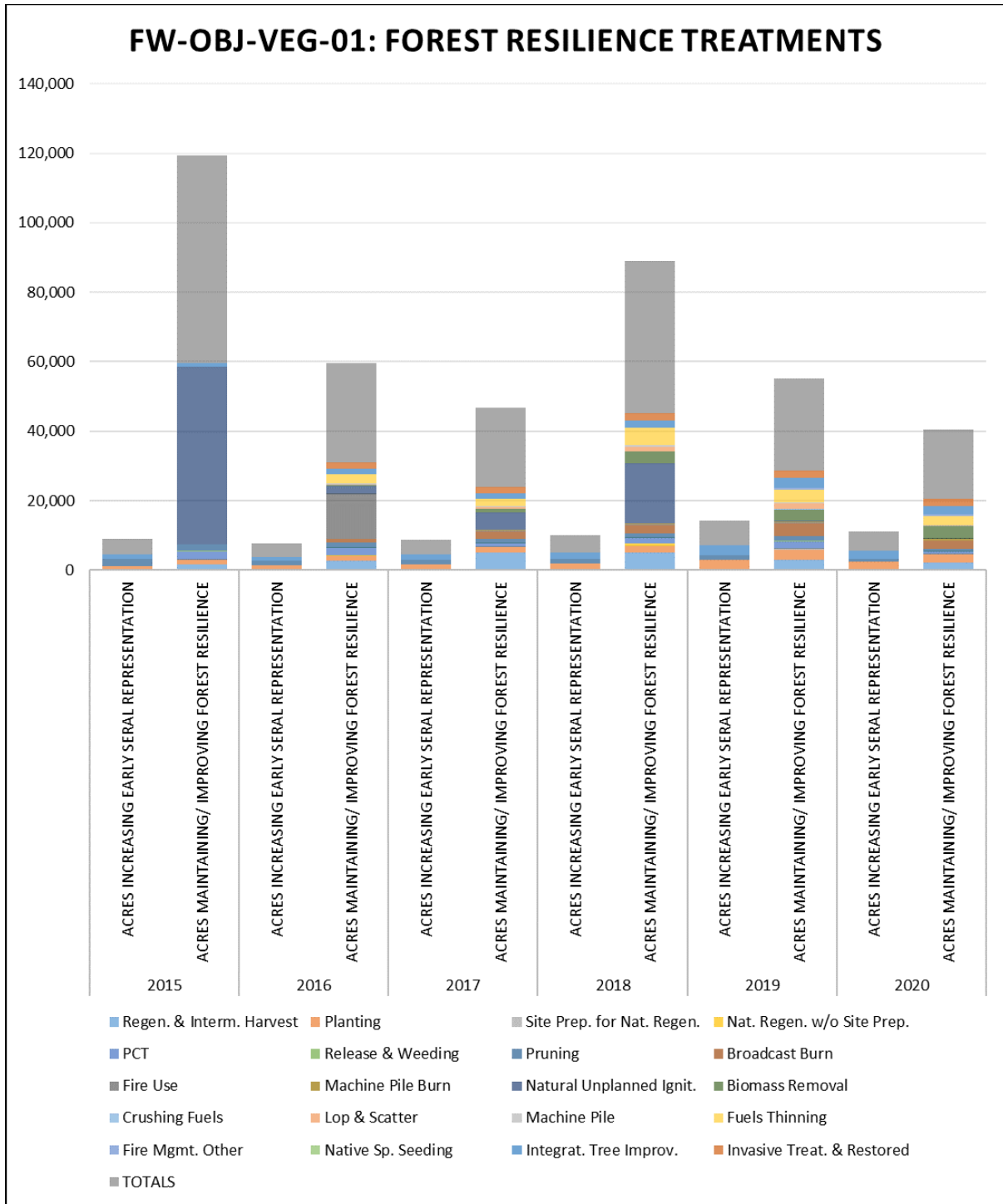**Figure 2. Total vegetation treatment percentage by activity type (2015-2020)**

Figure 3. Total vegetation treatment acreage by FW-OBJ-VEG-01 metric per year by activity type (2015-2020)
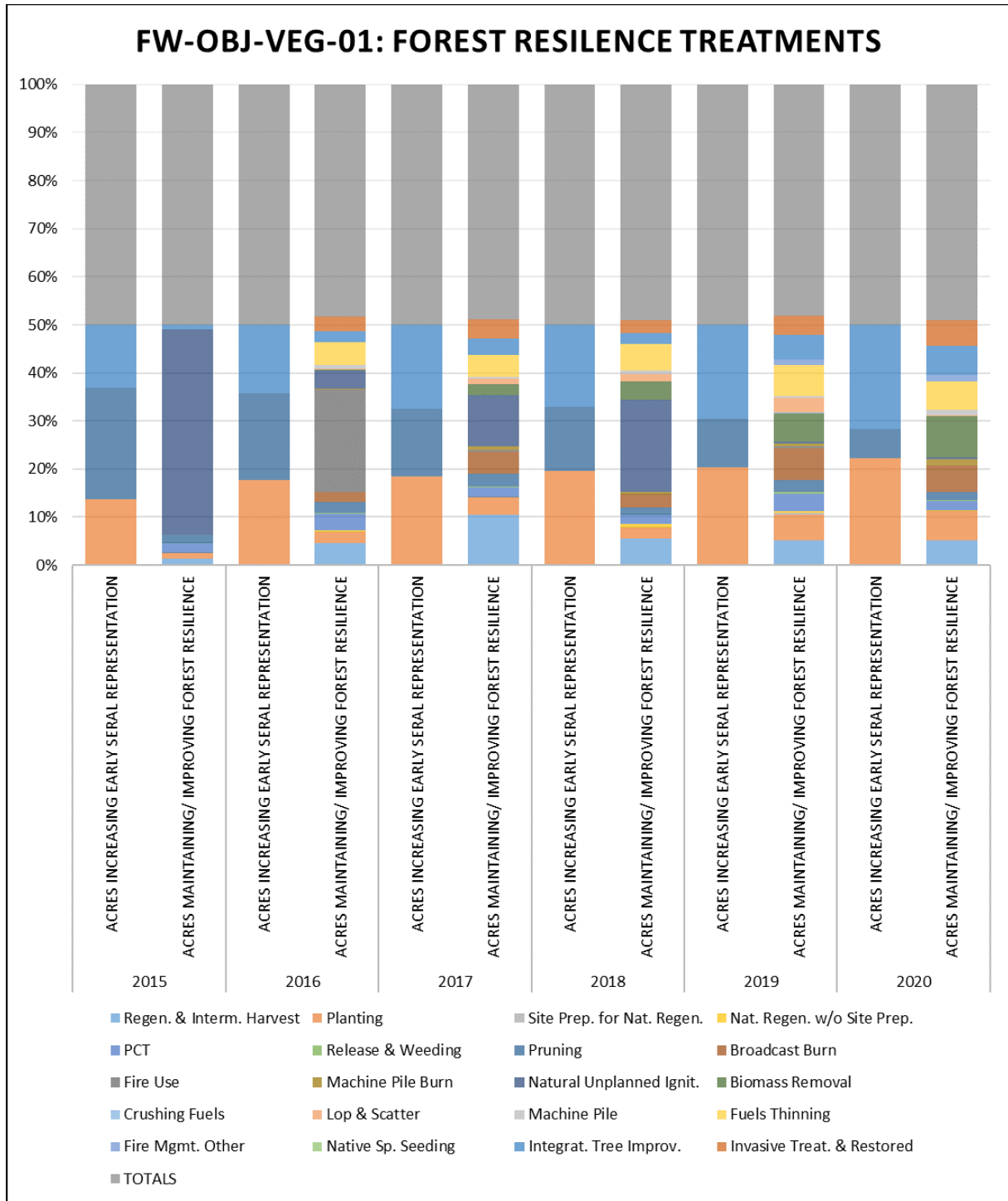
Figure 4. Total vegetation treatment percentage by FW-OBJ-VEG-01 metric per year by activity type (2015-2020)

Table 7. Monitoring Indicator Status Summary – FW-OBJ-VEG-01, Forest Resilience; Acres Treated Towards Increasing Early Seral Representation

<u>Over the life of the Plan, the outcome per decade is:</u> Increased relative representation of early seral, shade-intolerant, drought- and fire-tolerant, insect/disease resistant species dominance types (e.g., ponderosa pine, white pine, western larch, whitebark pine, and hardwoods) on approximately 85,000 to 90,000 acres **(acres also included in the totals for following Table 8)**		Recent Trend (Years 1-6 of 10; 60% of decade) Towards Target (85,000-90,000 acres)	Recent Trend (Years 1-6 of 10; 60% of decade) Away from Target
Current Status	Within Target	**+ + 30,459*** **acres** (34-36%)	**+ -**
	Outside Target	**- +**	**- -**

* Likely higher; other activities directly impact this metric, but logistical constraints did not allow for analysis to split out additional treatments definitively increasing seral species' representation

Table 8. Monitoring Indicator Status Summary – FW-OBJ-VEG-01, Forest Resilience; Acres Treated Towards Maintaining or Improving Forest Resilience

<u>Over the life of the Plan, the outcome per decade is:</u> Treatment of approximately 250,000 acres to maintain and/or improve forest resilience, natural diversity, and productivity and to reduce negative impacts of non-native organisms. Treatments may include timber harvest, planting, thinning, management of fire (including planned and unplanned ignitions), mechanical fuel treatments, revegetation with native species, blister rust pruning, integrated tree improvement activities, non-native invasive plant treatments, and other integrated pest management activities including forest health protection suppression and prevention activities **(preceding Table 7 acres also included in the totals)**		Recent Trend (years 1-6 of 10, 60 percent of decade) Towards Target (250,000 acres)	Recent Trend (years 1-6 of 10, 60 percent of decade) Away from Target
Current Status	Within Target	**+ + 148,097 acres** (59%)	**+ -**
	Outside Target	**- +**	**- -**

Overall, confidence in the quantity and quality of the data collected is high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking. We continually strive for accurate and timely data entry, but the large amount of data entered annually and recent turnover in key positions are known sources of data entry issues. This does not affect the overall status or trend.

INDICATOR 2 – MON-VEG-01-02: Acres burned

Table 9. Fire Management Treatments (2015-2020)

Treatments/Activities	2015	2016	2017	2018	2019	2020	Subtotal	Totals
Planned Ignitions; Broadcast Burn	Not analyzed	1,207	2,100	2,361	3,624	2,292		11,584
Planned Ignitions; Fire Use	Not analyzed	12,656	228	67	233	0		13,184
Planned Ignitions; Machine Pile Burn	Not analyzed	132	280	418	336	541		1,707
Planned Ignitions Total	Not analyzed	13,995	2,608	2,846	4,193	2,833	26,475	
Natural, Unplanned Ignitions	50,951	2,324	5,046	17,179	137	110		75,737
Mechanical Fuel Treatments; Biomass Removal	Not analyzed	138	1,000	3,388	3,338	3,487		11,351
Fire Management – Mechanical Fuel Treatments; Crushing	Not analyzed	0	0	0	40	0		40
Fire Management – Mechanical Fuel Treatments; Lop & Scatter	Not analyzed	110	580	1,324	1,665	28		3,707
Fire Management – Mechanical Fuel Treatments; Machine Pile	Not analyzed	410	206	687	258	462		2,023
Fire Management – Mechanical Fuel Treatments; Fuels Thinning	Not analyzed	2,870	2,080	4,918	3,568	2,407		15,843
Mechanical Fuel Treatments Totals		3,528	3,866	10,317	8,869	6,384	32,964	
Fire Management-Other	Not analyzed	0	0	0	561	561		1,122
Totals	50,951	19,847	11,520	30,332	13,760	9,888		136,298
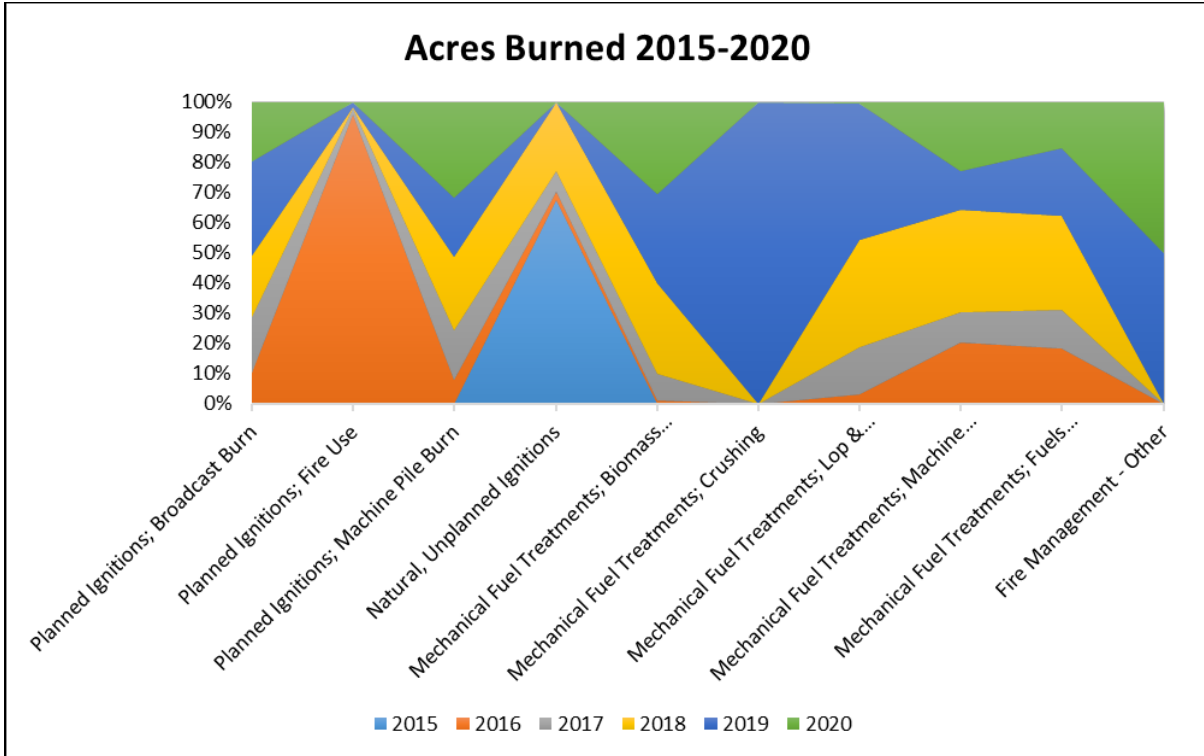
Figure 5. Acres Burned by Year (2015-2020)
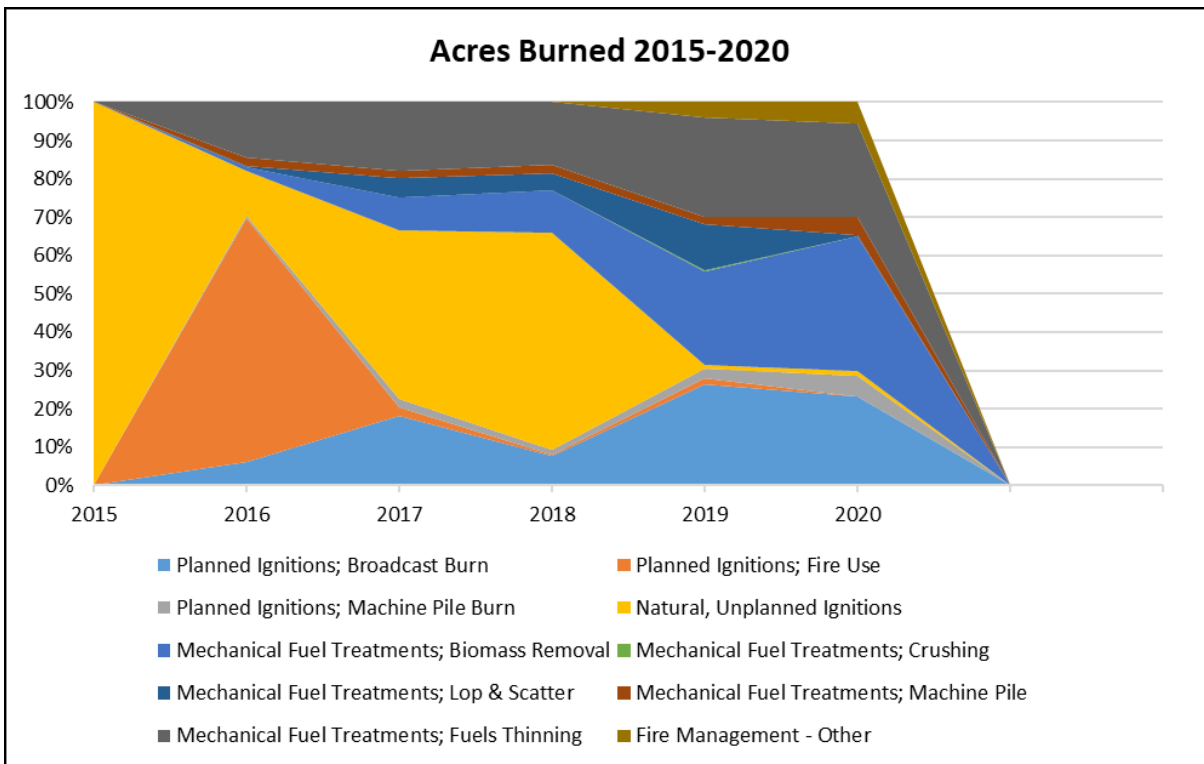
Figure 6. Acres Burned by Treatment Type (2015-2020)

Overall, confidence in the quantity and quality of the data collected is high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking. We continually strive for accurate and timely data entry, but the large amount of data entered annually and recent turnover in key positions are known sources of data entry issues. This does not affect the overall status or trend.

There is no summary trend table, as there are no numeric targets for this indicator or corresponding quantitative desired condition (FW-DC-FIRE-03; FP, p. 22).

INDICATOR 3 – MON-VEG-01-03: *Acres of forest by dominance type and size class compared to the desired condition.*

Table 10. Desired Species and 2015 Baseline for Composition and Size Class Compared to 2020 Current Condition.

MON-VEG-01-03	Baseline 2015 Composition Percent	Desired Composition Percent Range	Current 2020 Composition Percent Mean	Current 2020 Composition Percent Range	Baseline 2015 Size Class Percent	Desired Size Class Percent Range	Current 2020 Size Class Percent Mean	Current 2020 Size Class Percent Range
ALL FORESTED IPNF ACRES (FP, pg. 12)								
Dominance Group								
Ponderosa Pine	2%	5-10%	1%	1%	1-2%			
Douglas-fir	24%	12-25%	20%	20%	19-20%			
Lodgepole Pine	11%	3-6%	10%	10%	8-11%			
Western Larch	5%	10-21%	5%	5%	4-11%			
Grand Fir/Cedar/Western Hemlock Mix	34%	6-12%	37%	37%	32-42%			
White Pine	2%	20-39%	3%	3%	1-3%			
Subalpine Fir/Engelmann Spruce/Whitebark Pine/Mountain Hemlock Mix	24%	10-20%	23%	23%	21-24%			
Size Class								
Seedling/Sapling (0-5" DBH)						8%	14-29%	5-9%
Small (5-10" DBH)						24%	9-17%	26-28%
Medium (10-15" DBH)						34%	13-26%	31-37%
Large (>15" DBH)						35%	31-61%	31-34%
IPNF WARM/DRY BIOPHYSICAL SETTING (FP, pgs. 14-15)								
Dominance Group								
Ponderosa Pine	9%	32-64%	7%	3-11%				
Douglas-fir	68%	26-52%	75%	66-86%				
Lodgepole Pine	15%	3-7%	15%	10-17%				
Western Larch	8%	5-11%	4%	1-6%				
Size Class								
Seedling/Sapling (0-5" DBH)					7%	14-28%	9%	5-13%

MON-VEG-01-03	Baseline 2015 Composition Percent	Desired Composition Percent Range	Current 2020 Composition Percent Mean	Current 2020 Composition Percent Range	Baseline 2015 Size Class Percent	Desired Size Class Percent Range	Current 2020 Size Class Percent Mean	Current 2020 Size Class Percent Range
Small (5-10" DBH)					27%	9-19%	26%	25-28%
Medium (10-15" DBH)					29%	10-20%	27%	24-31%
Large (>15" DBH)					37%	33-65%	38%	37-39%
IPNF WARM/MOIST BIOPHYSICAL SETTING (FP, pg. 16)								
Dominance Group								
Douglas-fir	31%	14-28%	20%	18-21%				
Western Larch	8%	13-25%	7%	5-8%				
Grand Fir/Cedar/Western Hemlock Mix	58%	10-20%	70%	66-74%				
White Pine	3%	30-60%	4%	2-5%				
Size Class								
Seedling/Sapling (0-5" DBH)					9%	15-29%	7%	5-9%
Small (5-10" DBH)					19%	8-16%	23%	23-24%
Medium (10-15" DBH)					32%	13-27%	36%	34-39%
Large (>15" DBH)					41%	31-61%	34%	33-35%
IPNF SUBALPINE BIOPHYSICAL SETTING (FP, pg. 17)								
Dominance Group								
Lodgepole Pine	22%	11-23%	22%	19-24%				
Western Larch	3%	8-16%	5%	3-6%				
White Pine	2%	7-13%	2%	1-4%				
Spruce/Fir Mix	76%	41-81%	71%	67-78%				
Size Class								
Seedling/Sapling (0-5" DBH)					8%	14-28%	8%	5-10%
Small (5-10" DBH)					31%	10-20%	34%	32-36%
Medium (10-15" DBH)					37%	13-27%	32%	30-35%
Large (>15" DBH)					25%	29-59%	26%	24-28%
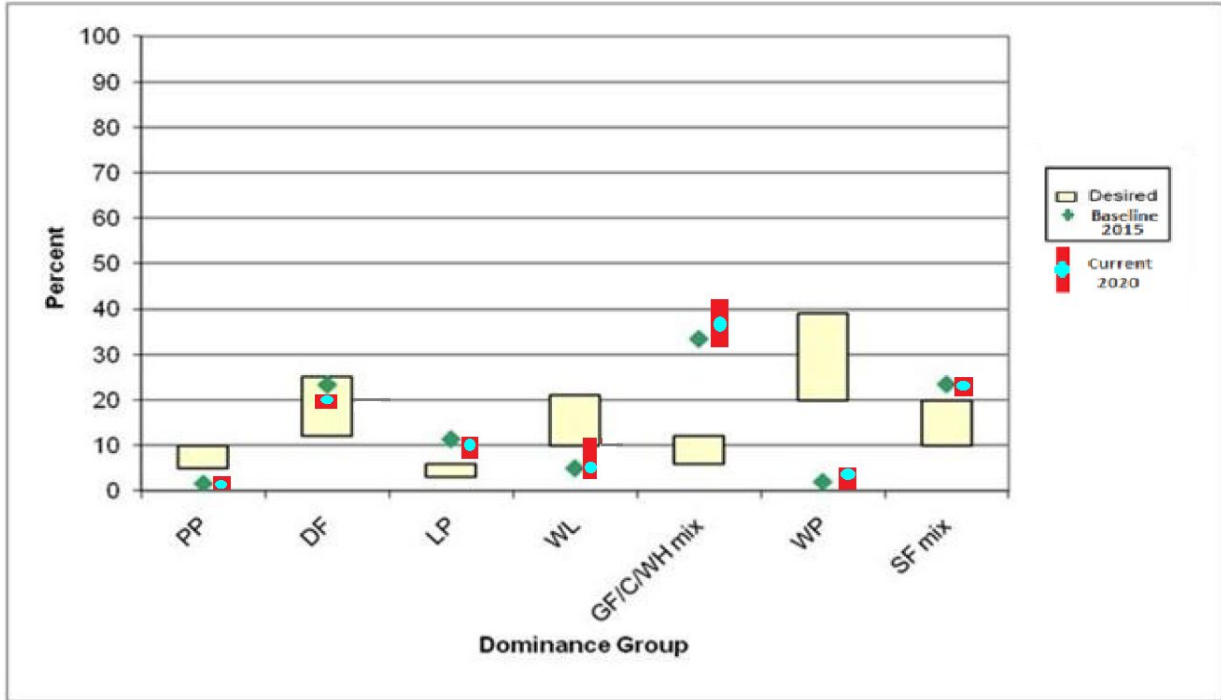
Figure 7. Desired, 2015 Baseline, and 2020 Current All Forested IPNF Acres Dominance Group (approximately 4 percent is composed of non-forested vegetation, such as rock and water)

Table 11. Dominance Group Percent – All Forested IPNF Acres

MON-VEG-01-03 Dominance Group Percent – All IPNF Forested Acres		Recent Trend Towards Desired Condition	Recent Trend Away from Desired Condition
Current Status – Ponderosa Pine	Within Target	+ +	+ -
	Outside Target	- +	- - 1-2%
Current Status – Douglas-fir	Within Target	+ + 19-20%	+ -
	Outside Target	- +	- -
Current Status – Lodgepole Pine	Within Target	+ +	+ -
	Outside Target	- + 8-11%	- -
Current Status – Western Larch	Within Target	+ +	+ -
	Outside Target	- + 4-11%	- -
Current Status – Grand Fir/ Cedar/Western Hemlock mix	Within Target	+ +	+ -
	Outside Target	- +	- - 32-42%
Current Status – White Pine	Within Target	+ +	+ -
	Outside Target	- + 1-3%	- -
Current Status – Spruce/Fir Mix	Within Target	+ +	+ -
	Outside Target	- + 21-24%	- -
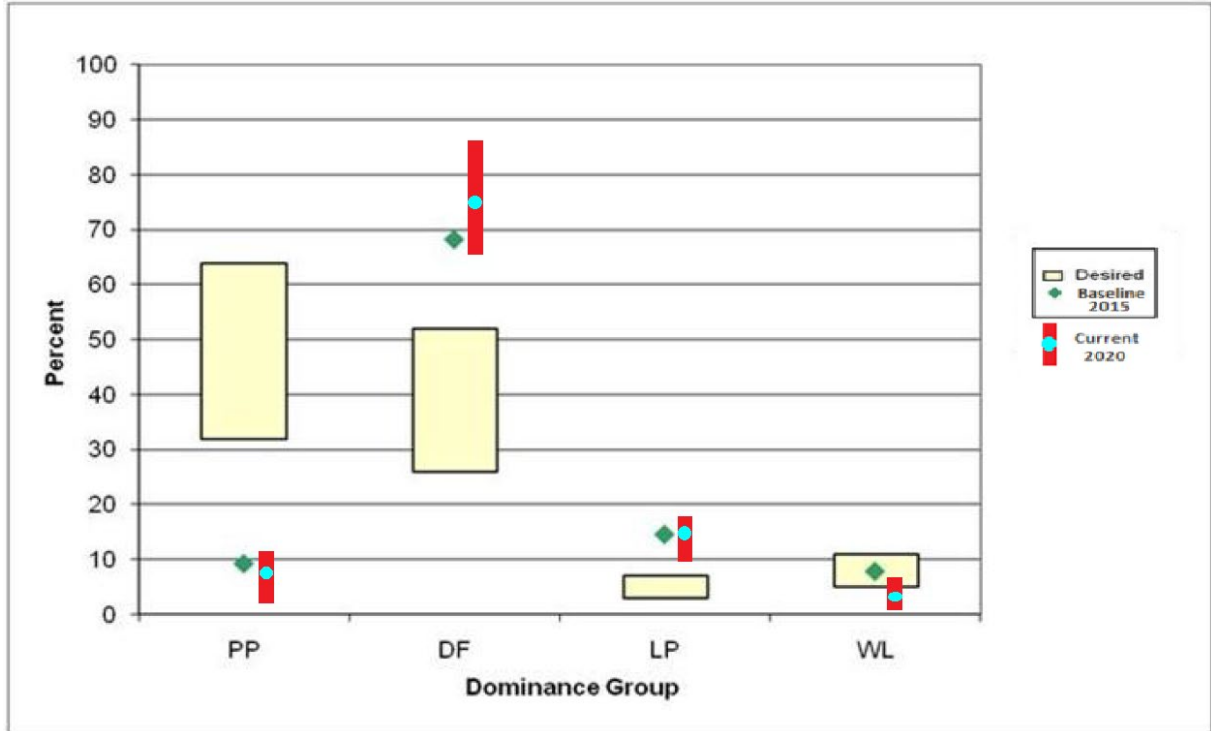
Figure 8. Desired, 2015 Baseline, and 2020 Current Dominance Groups – Warm/Dry Biophysical Setting

Table 12. Dominance Group Percent – Warm/Dry Biophysical Setting

MON-VEG-01-03 Dominance Group Percent – Warm/Dry Biophysical Setting		Recent Trend Towards Desired Condition	Recent Trend Away from Desired Condition
Current Status –Ponderosa Pine	Within Target	**+ +**	**+ -**
	Outside Target	**- +**	**- - 3-11%**
Current Status – Douglas-fir	Within Target	**+ +**	**+ -**
	Outside Target	**- +**	**- - 66-86%**
Current Status – Lodgepole Pine	Within Target	**+ +**	**+ -**
	Outside Target	**- + 10-17%**	**- -**
Current Status – Western Larch	Within Target	**+ +**	**+ -**
	Outside Target	**- +**	**- - 1-6%**
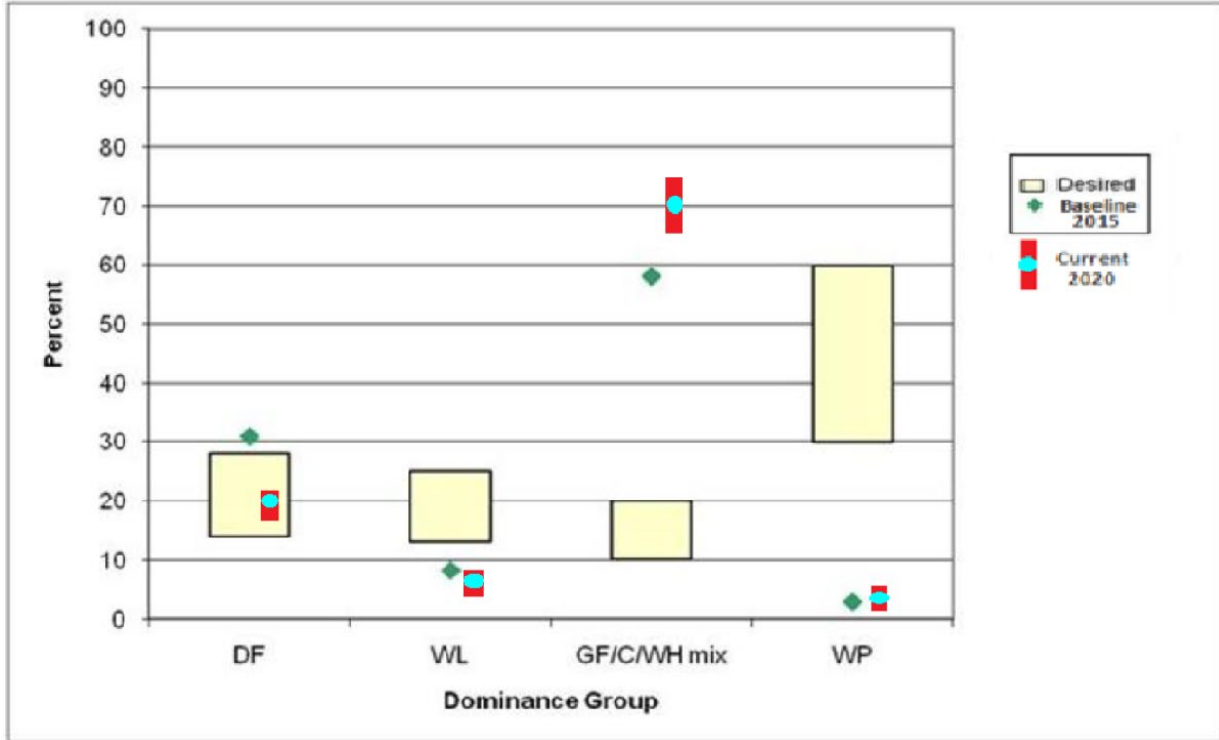
Figure 9. Desired, 2015 Baseline, and 2020 Dominance Groups – Warm/Moist Biophysical Setting

Table 13. Dominance Group Percent – Warm/Moist Biophysical Setting

MON-VEG-01-03 Dominance Group Percent – Warm/Moist Biophysical Setting		Recent Trend Towards Desired Condition	Recent Trend Away from Desired Condition
Current Status – Douglas-fir*	Within Target	**+ + 18-21%**	**+ -**
	Outside Target	**- +**	**- -**
Current Status – Western Larch	Within Target	**+ +**	**+ -**
	Outside Target	**- +**	**- - 5-8%**
Current Status – Grand Fir/ Cedar/Western Hemlock mix	Within Target	**+ +**	**+ -**
	Outside Target	**- +**	**- - 66-74%**
Current Status – White Pine	Within Target	**+ +**	**+ -**
	Outside Target	**- + 2-5%**	**- -**
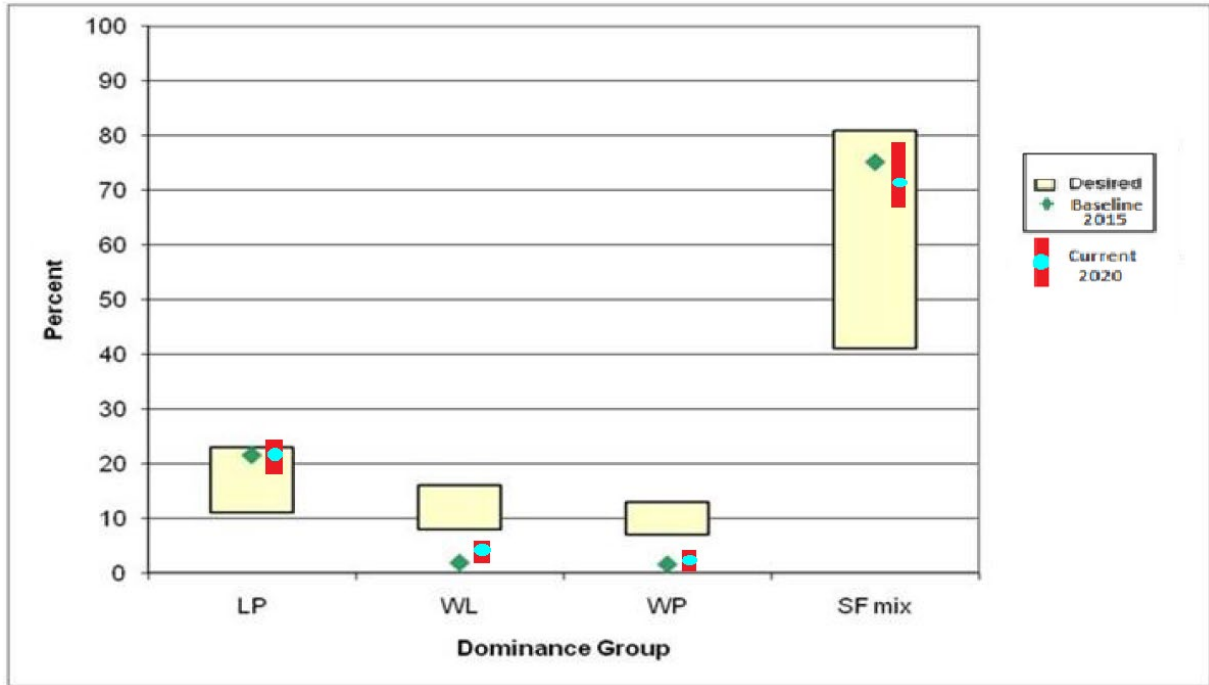
Figure 10. Desired, 2015 Baseline, and 2020 Dominance Groups – Subalpine Biophysical Setting

Table 14. Dominance Group Percent – Subalpine Biophysical Setting

MON-VEG-01-03 Dominance Group Percent – Subalpine Biophysical Setting		Recent Trend Towards Desired Condition	Recent Trend Away from Desired Condition
Current Status – Lodgepole Pine	Within Target	**+ +**	**+ - 19-24%**
	Outside Target	**- +**	**- -**
Current Status – Western Larch	Within Target	**+ +**	**+ -**
	Outside Target	**- + 3-6%**	**- -**
Current Status – White Pine	Within Target	**+ +**	**+ -**
	Outside Target	**- + 1-4%**	**- -**
Current Status – Spruce/Fir Mix	Within Target	**+ + 67-78%**	**+ -**
	Outside Target	**- +**	**- -**
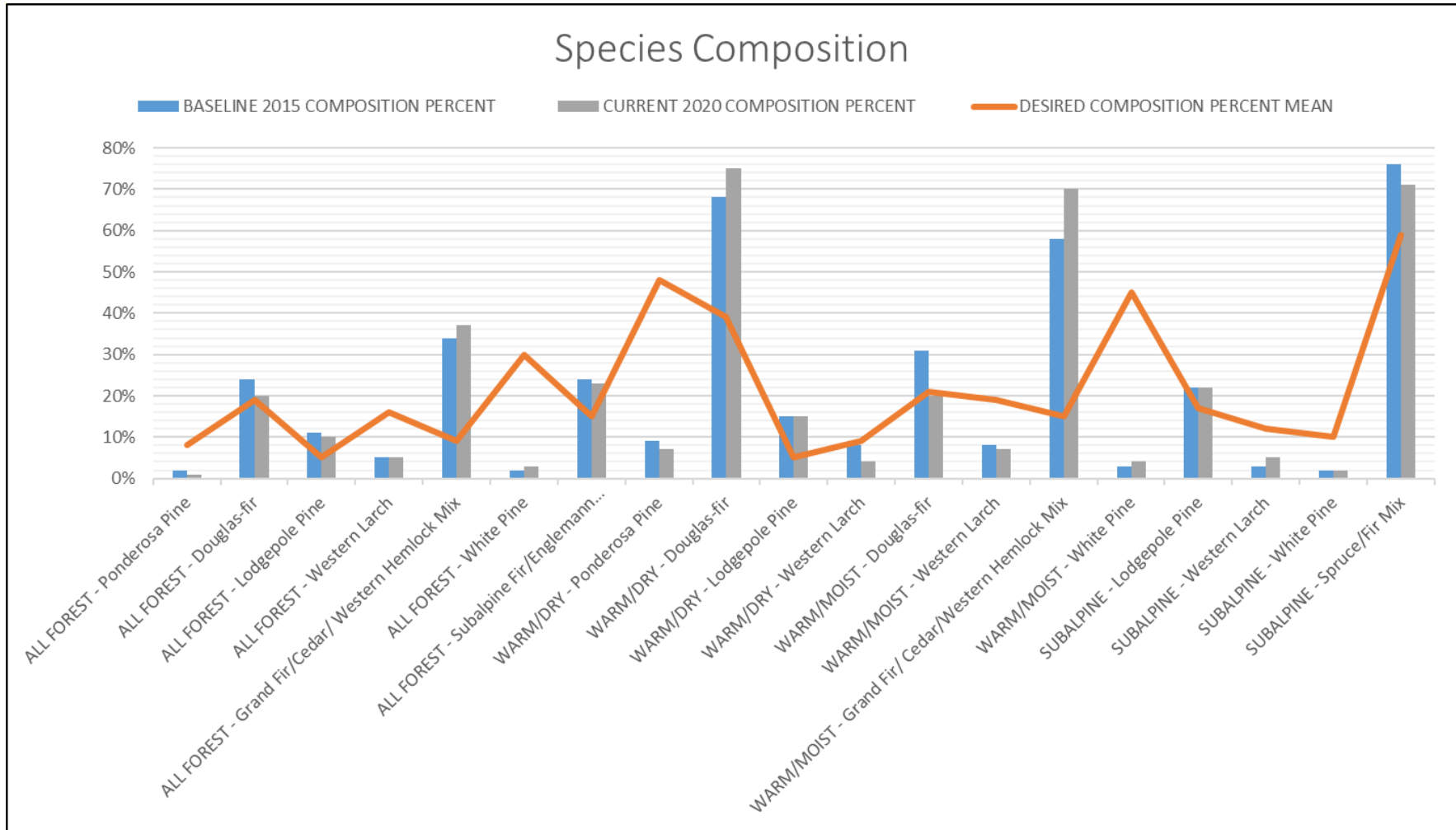
Figure 11. Dominance Group Percent Average/Mean – 2015 Baseline, 2020 Current, and Desired Composition

For all forested IPNF acres, there has not been much change in dominance groups (composition) from 2015 to 2020:
- Ponderosa Pine is moving slightly away from the desired condition
- Douglas-fir is within the desired condition range and moving towards that mean
- Lodgepole Pine is moving slightly towards the desired condition
- Western Larch is the same, moving very slightly towards the desired condition
- Grand Fir/Cedar/Western Hemlock Mix is still outside desired condition and moving away from that range
- Western White Pine is moving slightly towards the desired condition
- Spruce/Fir mix is the same, moving slightly towards the desired condition range.

For the Warm/Dry Biophysical Setting dominance group:
- Ponderosa Pine is moving slightly away from the desired condition
- Douglas-fir is moving away from the desired condition
- Lodgepole Pine is the same, moving slightly towards the desired condition
- Western Larch has moved mostly outside the desired condition.

For the Warm/Moist Biophysical Setting dominance group:
- Douglas-fir has moved within the middle of the desired condition range
- Western Larch is moving slightly away from the desired condition,
- Grand Fir/Cedar/Western Hemlock Mix is still outside desired condition and moving away from that range
- White Pine is moving slightly towards the desired condition.

For the Subalpine Biophysical Setting dominance group:
- Lodgepole Pine is mostly within the desired condition
- Western Larch is moving slightly towards the desired condition
- White Pine is moving slightly towards the desired condition
- Spruce/Fir Mix is still within the desired condition, moving towards the mean of the range.

Overall, confidence in the quantity and quality of the data collected is high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking.
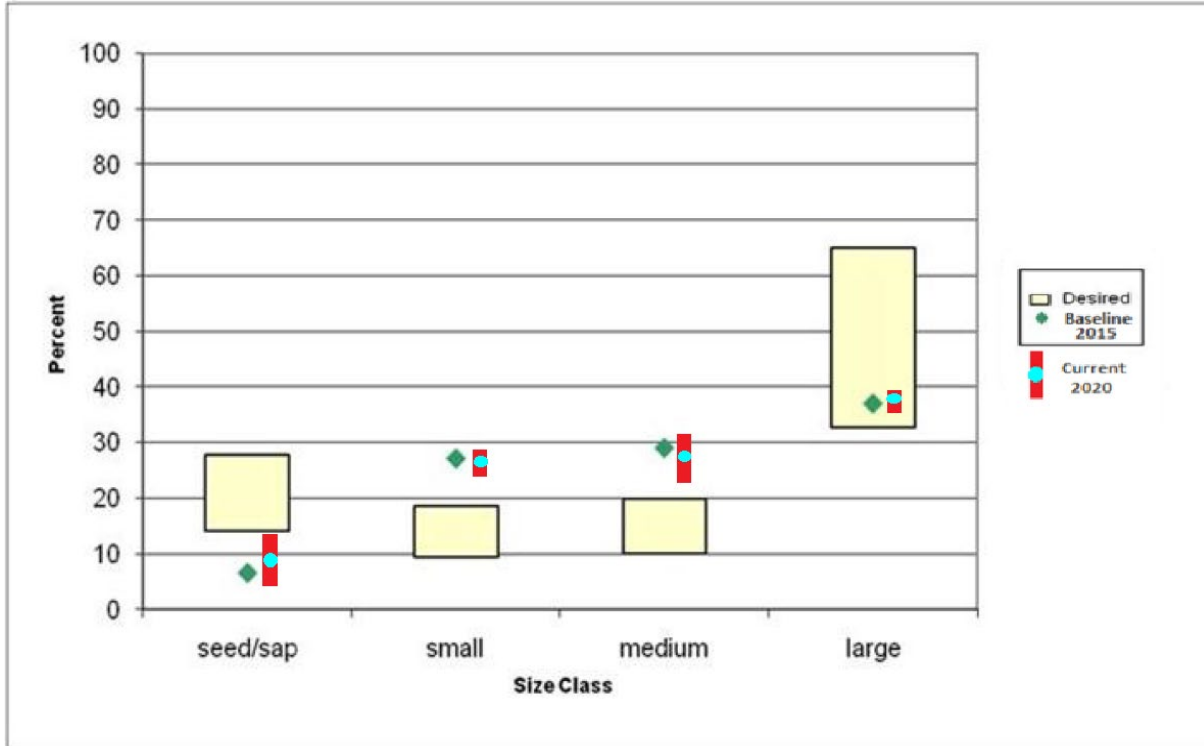
Figure 12. Desired, 2015 Baseline, and 2020 Current All Forested IPNF Acres Size Class

Table 15. Size Class Percent – All Forested IPNF Acres

MON-VEG-01-03 Size Class Percent – All Forested IPNF Acres		Recent Trend Towards Desired Condition	Recent Trend Away from Desired Condition
Current Status – Seedling/Sapling (0-5" DBH)	Within Target	+ +	+ -
	Outside Target	- + 5-9%	- -
Current Status – Small (5-10" DBH)	Within Target	+ +	+ -
	Outside Target	- +	- - 26-28%
Current Status – Medium (10-15" DBH)	Within Target	+ +	+ -
	Outside Target	- + 31-37%	- -
Current Status – Large (>15" DBH)	Within Target	+ +	+ - 31-34%
	Outside Target	- +	- -
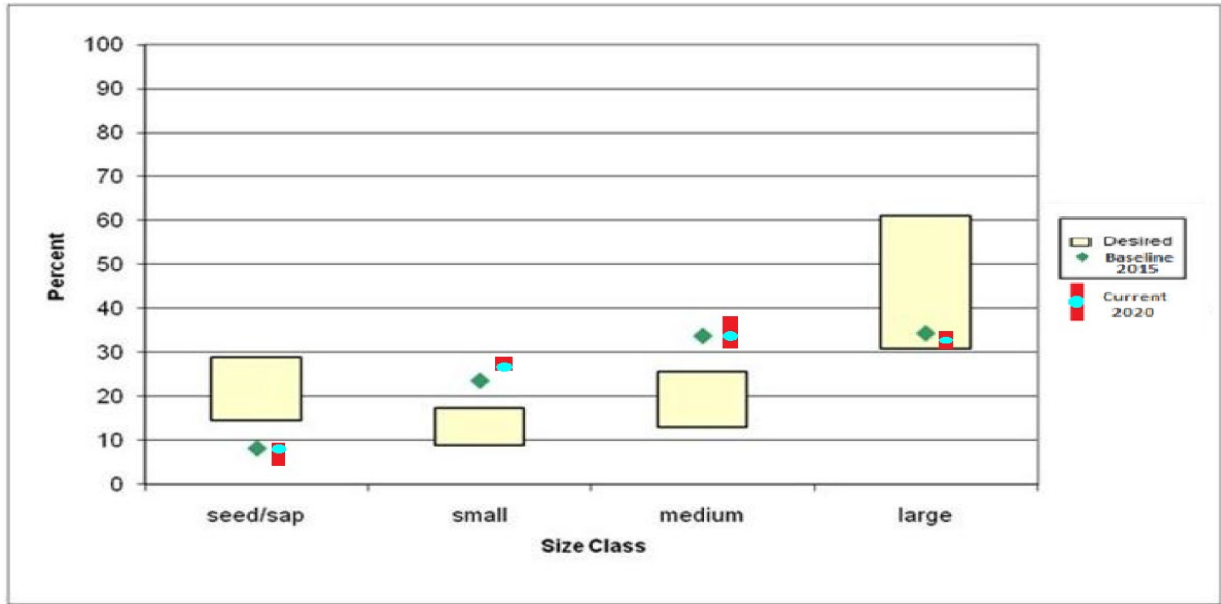
Figure 13. Desired, 2015 Baseline, and 2020 Current Warm/Dry Size Class

Table 16. Size Class Percent – Warm/Dry Biophysical Setting

MON-VEG-01-03 Size Class Percent – Warm/Dry Biophysical Setting		Recent Trend Towards Desired Condition	Recent Trend Away from Desired Condition
Current Status – Seedling/Sapling (0-5" DBH)	Within Target	+ +	+ -
	Outside Target	- + 5-13%	- -
Current Status – Small (5-10" DBH)	Within Target	+ +	+ -
	Outside Target	- + 25-28%	- -
Current Status – Medium (10-15" DBH)	Within Target	+ +	+ -
	Outside Target	- + 24-31%	- -
Current Status – Large (>15" DBH)	Within Target	+ + 37-39%	+ -
	Outside Target	- +	- -
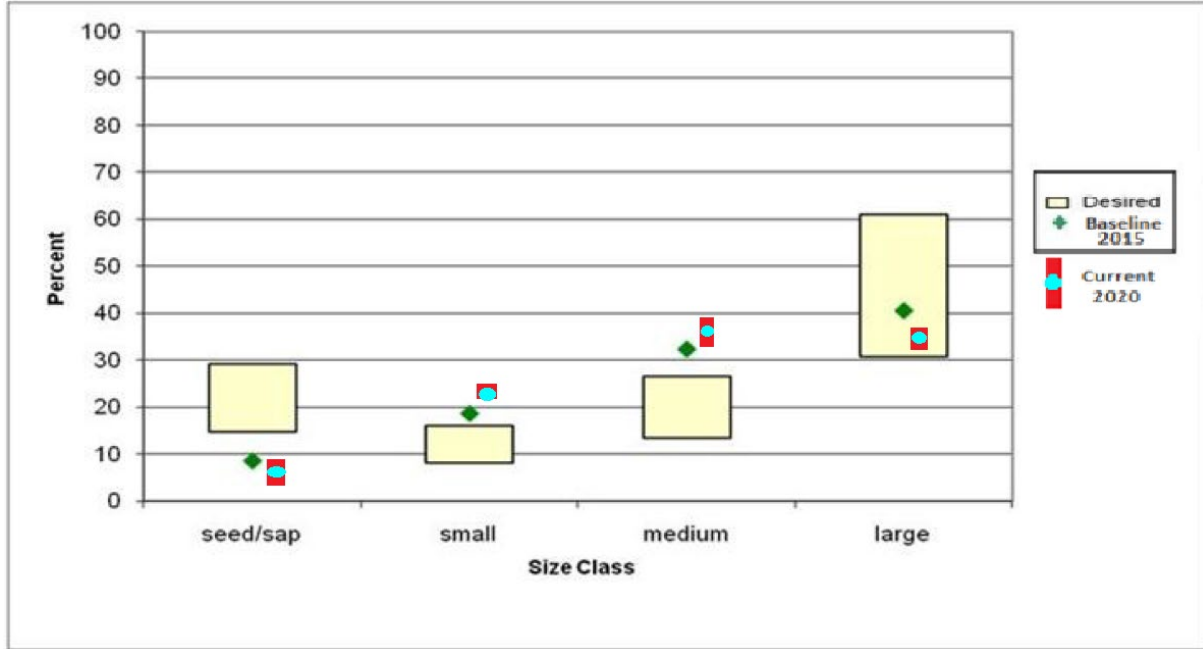
Figure 14. Desired, 2015 Baseline, and 2020 Current Warm/Moist Size Class

Table 17. Size Class Percent – Warm/Moist Biophysical Setting

MON-VEG-01-03 Size Class Percent – Warm/Moist Biophysical Setting		Recent Trend Towards Desired Condition	Recent Trend Away from Desired Condition
Current Status – Seedling/Sapling (0-5" DBH)	Within Target	+ +	+ -
	Outside Target	- +	- - 5-9%
Current Status – Small (5-10" DBH)	Within Target	+ +	+ -
	Outside Target	- +	- - 23-24%
Current Status – Medium (10-15" DBH)	Within Target	+ +	+ -
	Outside Target	- +	- - 34-39%
Current Status – Large (>15" DBH)	Within Target	+ +	+ - 33-35%
	Outside Target	- +	- -
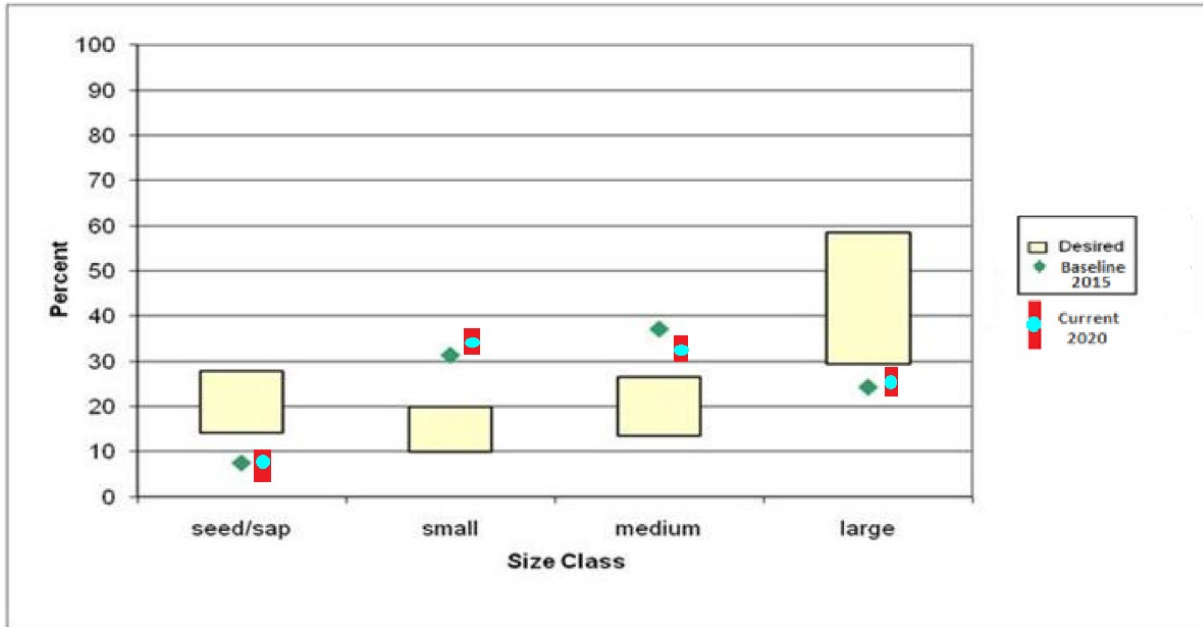
Figure 15. Desired, 2015 Baseline, and 2020 Current Subalpine Size Class

Table 18. Size Class Percent – Subalpine Biophysical Setting

MON-VEG-01-03 Size Class Percent – Subalpine Biophysical Setting		Recent Trend Towards Desired Condition	Recent Trend Away from Desired Condition
Current Status – Seedling/Sapling (0-5" DBH)	Within Target	**+ +**	**+ -**
	Outside Target	**- + 5-10%**	**- -**
Current Status – Small (5-10" DBH)	Within Target	**+ +**	**+ -**
	Outside Target	**- +**	**- - 32-36%**
Current Status – Medium (10-15" DBH)	Within Target	**+ +**	**+ -**
	Outside Target	**- + 30-35%**	**- -**
Current Status – Large (>15" DBH)	Within Target	**+ +**	**+ -**
	Outside Target	**- +24-28%**	**- -**

Figure 16. Size Class Percent Average/Mean – 2015 Baseline, 2020 Current, and Desired Size Class

For all forested IPNF acres size classes, there has not been much change in any class from 2015-2020:
- Seedling/Sapling (0-5" DBH) is the same, moving slightly towards the desired condition
- Small (5-10" DBH) is moving slightly away from the desired condition
- Medium (10-15" DBH) is the same, moving slightly towards the desired condition
- Large (>15" DBH) is still within the desired condition but moving closer to the low end of the range.

For the Warm/Dry Biophysical Setting size classes:
- Seedling/Sapling (0-5" DBH) is moving slightly towards the desired condition
- Small (5-10" DBH) is the same, moving slightly towards the desired condition
- Medium (10-15" DBH) is moving slightly towards the desired condition
- Large (>15" DBH) is still within the desired condition, moving slightly towards the high end.

For the Warm/Moist Biophysical Setting size classes:
- Seedling/Sapling (0-5" DBH) is moving slightly away from the desired condition
- Small (5-10" DBH) is moving away from the desired condition
- Medium (10-15" DBH) is moving away from the desired condition
- Large (>15" DBH) is still within the desired condition but moving closer to the low end of the range.

For the Subalpine Biophysical Setting size classes:
- Seedling/Sapling (0-5" DBH) is the same, moving slightly towards the desired condition
- Small (5-10" DBH) is moving away from the desired condition
- Medium (10-15" DBH) is moving towards the desired condition
- Large (>15" DBH) is moving slightly towards the desired condition.

Overall, confidence in the quantity and quality of the data collected is high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking.

INDICATOR 4 – MON-VEG-01-04: Acres meeting the old growth definition as determined by the FIA program

The old growth dataset for the 2015 Forest Plan Revision was collected, compiled, and analyzed in 2013.

Table 19. Baseline, Estimated Current, and Desired Forest Old Growth Acres by Geographic Area

Geographic Area (GA)	2013 Old Growth Acres	2020 Old Growth Acres	90% Confidence Interval - Lower Bound (2020)	90% Confidence Interval - Upper Bound (2020)	2023 Desired Old Growth Acres
Forest-wide	289,386	285,683	199,414	373,403	344,393
St. Joe GA	86,977	78,489	41,381	86,014	106,547
Coeur d'Alene GA	75,605	76,819	49,998	104,452	80,694
Pend Oreille GA	30,572	28,329	20,483	57,370	32,444
Lower Kootenai GA	62,118	63,237	13,771	43,430	87,455
Priest GA	46,188	37,571	51,558	106,335	52,043
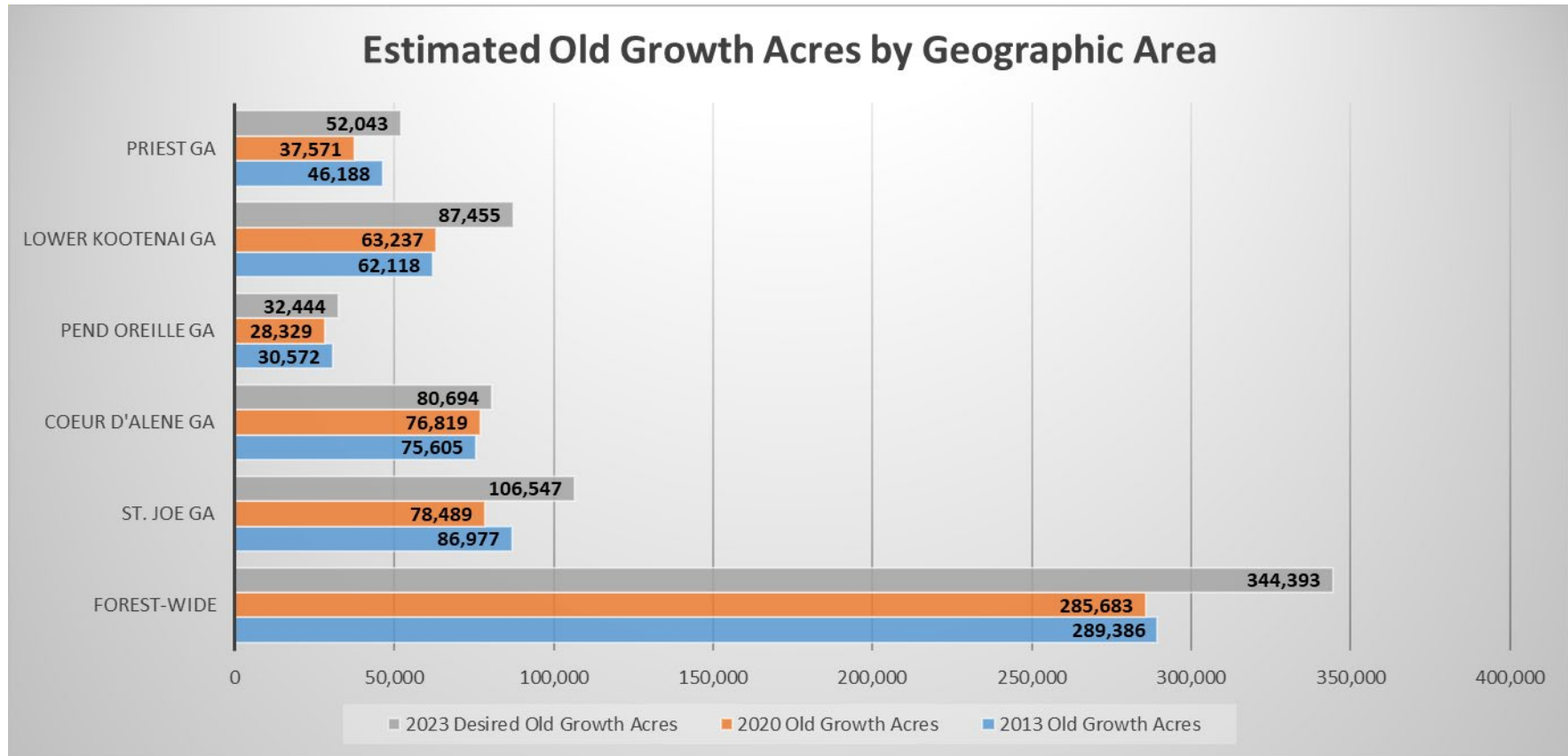
Figure 17. Baseline, Estimated Current, and Desired Forest Old Growth Acres by Geographic Area

Table 20. Old Growth Trend by Geographic Area Acres – 2013 to 2020

MON-VEG-01-04: Acres meeting the old growth definition as determined by the FIA program		Recent Trend (2013 to 2020) Towards 2023 Desired Condition	Recent Trend (2013 to 2020) Away From Desired Condition
Current Status – Forest-wide	Within Target	+ +	+ -
	Outside Target	- +	- - 3,703 acres
Current Status –St. Joe GA	Within Target	+ +	+ -
	Outside Target	- +	- - 8,488 acres
Current Status – Coeur d'Alene GA	Within Target	+ +	+ -
	Outside Target	- + 1,214 acres	- -
Current Status – Pend Oreille GA	Within Target	+ +	+ -
	Outside Target	- +	- - 2,243 acres
Current Status – Lower Kootenai GA	Within Target	+ +	+ -
	Outside Target	- + 1,119 acres	- -
Current Status – Priest GA	Within Target	+ +	+ -
	Outside Target	- +	- - 8,617 acres

Table 21. Baseline, Estimated Current, and Desired Old Growth as a Percent of Geographic Area

GEOGRAPHIC AREA	2013 Old Growth Percent	2020 Old Growth Percent	90% Confidence Interval - Lower Bound (2020)	90% Confidence Interval - Upper Bound (2020)	2023 Desired Old Growth Percent
Forest-wide	12.1%	11.9%	8.3%	15.6%	14.4%
St. Joe GA	12.0%	10.8%	7.2%	14.8%	14.7%
Coeur d'Alene GA	10.4%	10.5%	6.9%	14.5%	11.1%
Pend Oreille GA	9.8%	9.0%	4.5%	14.2%	10.4%
Lower Kootenai GA	15.2%	15.7%	10.4%	21.5%	21.4%
Priest GA	14.2%	12.1%	6.5%	18.2%	16.0%
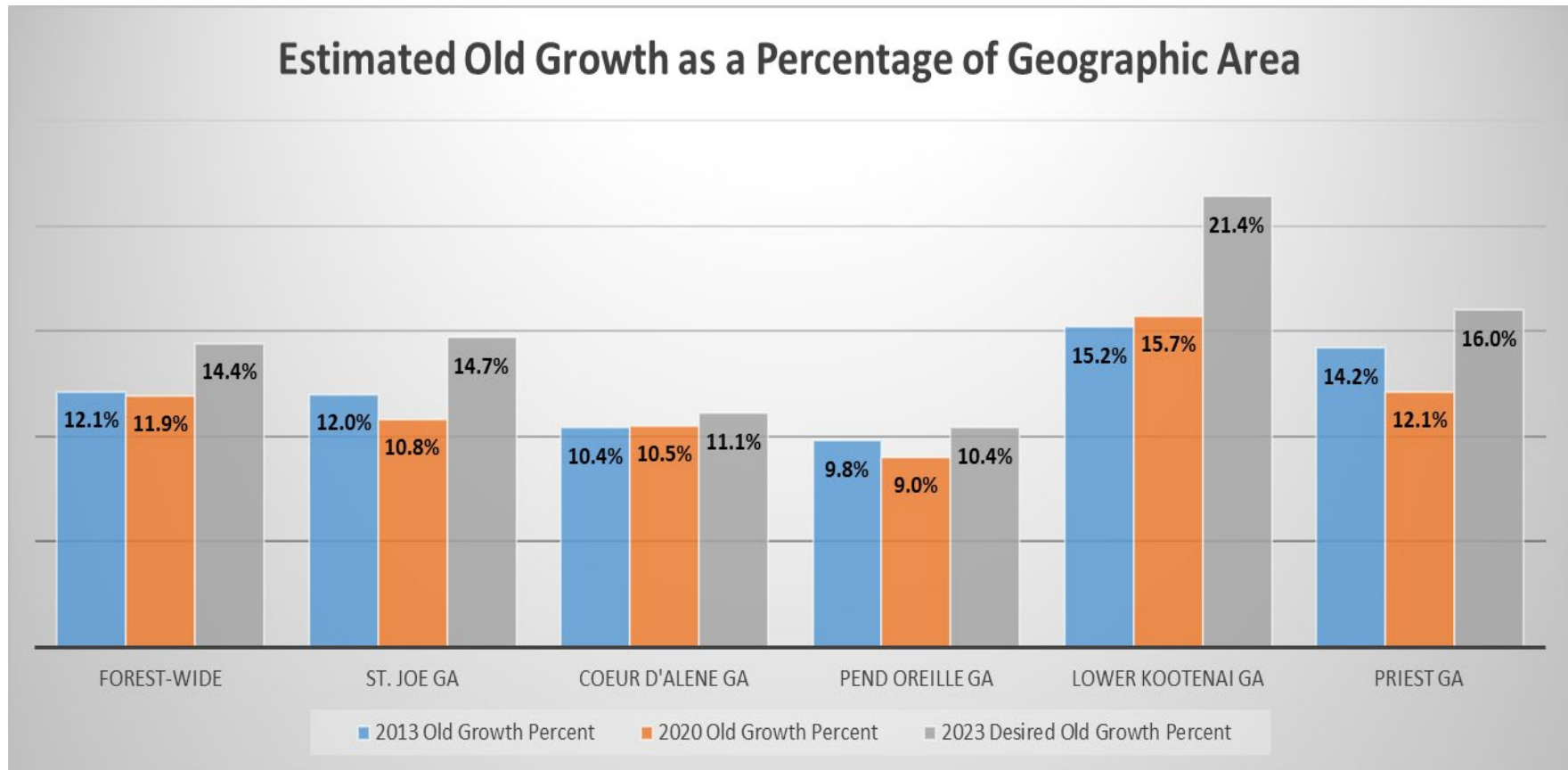
Figure 18. Baseline, Estimated Current, and Desired Old Growth as a Percent of Geographic Area

Table 22. Old Growth Trend by Percent of Geographic Area – 2013 to 2020

MON-VEG-01-04: Percentage of acres meeting the old growth definition as determined by the FIA program		Recent Trend (2013 to 2020) Towards 2023 Desired Condition	Away from Desired Condition
Current Status Forest-wide	Within Target	+ +	+ -
	Outside Target	- +	- - 0.2%
Current Status – St. Joe GA	Within Target	+ +	+ -
	Outside Target	- +	- - 1.2%
Current Status – Coeur d'Alene GA	Within Target	+ +	+ -
	Outside Target	- + 0.1%	- -
Current Status – Pend Oreille GA	Within Target	+ +	+ -
	Outside Target	- +	- - 0.8%
Current Status – Lower Kootenai GA	Within Target	+ +	+ -
	Outside Target	- + 0.5%	- -
Current Status – Priest GA	Within Target	+ +	+ -
	Outside Target	- +	- - 2.1%

Overall, confidence in the quantity and quality of the data collected is high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking. FIA does not map, designate, or quantify recruitment potential old growth.

INDICATOR 5 – MON-VEG-01-05: Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures

Table 23. Current Old Growth Type and Acres (2021)

OLD GROWTH TYPE	ACRES
Retained Existing OG	273,789
Recruitment Potential OG (RPOG)	61,457
Additional Existing OG	175
Retained Contributing OG	93
TOTAL OLD GROWTH ACRES	**335,514**
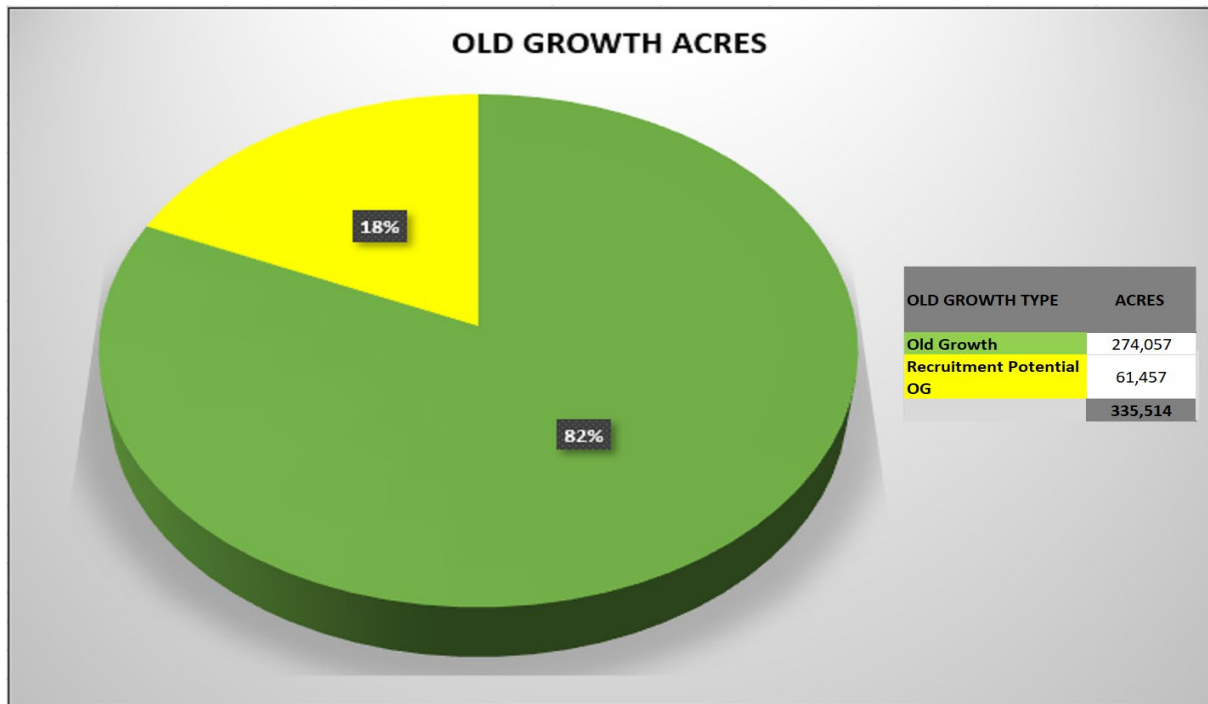
Figure 19. Old Growth Type Percentage and Acres – "Old Growth" includes retained existing old growth, additional existing old growth, and retained contributing old growth

Because a similar dataset from 2015 does not exist, there is nothing to which these old growth types and corresponding acres can be compared, nor trends. Thus, this is the baseline old growth level using forest stand inventory and mapping procedures.

Overall, confidence in the quantity and quality of the data collected is high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking. We continue to strive for timely data entry, but the large amount of data entered annually and recent turnover in key positions occasionally hinder these efforts. This is a very small percentage and does not affect the general status or data trends. The forest has been in the process of updating the "2015 Forest Plan Old Growth Inventory and Monitoring DRAFT". This plan has been delayed due to the federal government shutdown and furlough in 2019, and the on-going COVID-19 pandemic. When finished, it will facilitate an improved process for accurate old growth and recruitment potential old growth data collection and timely entry into the FSVeg database and FSVeg Spatial and ArcGIS layers.
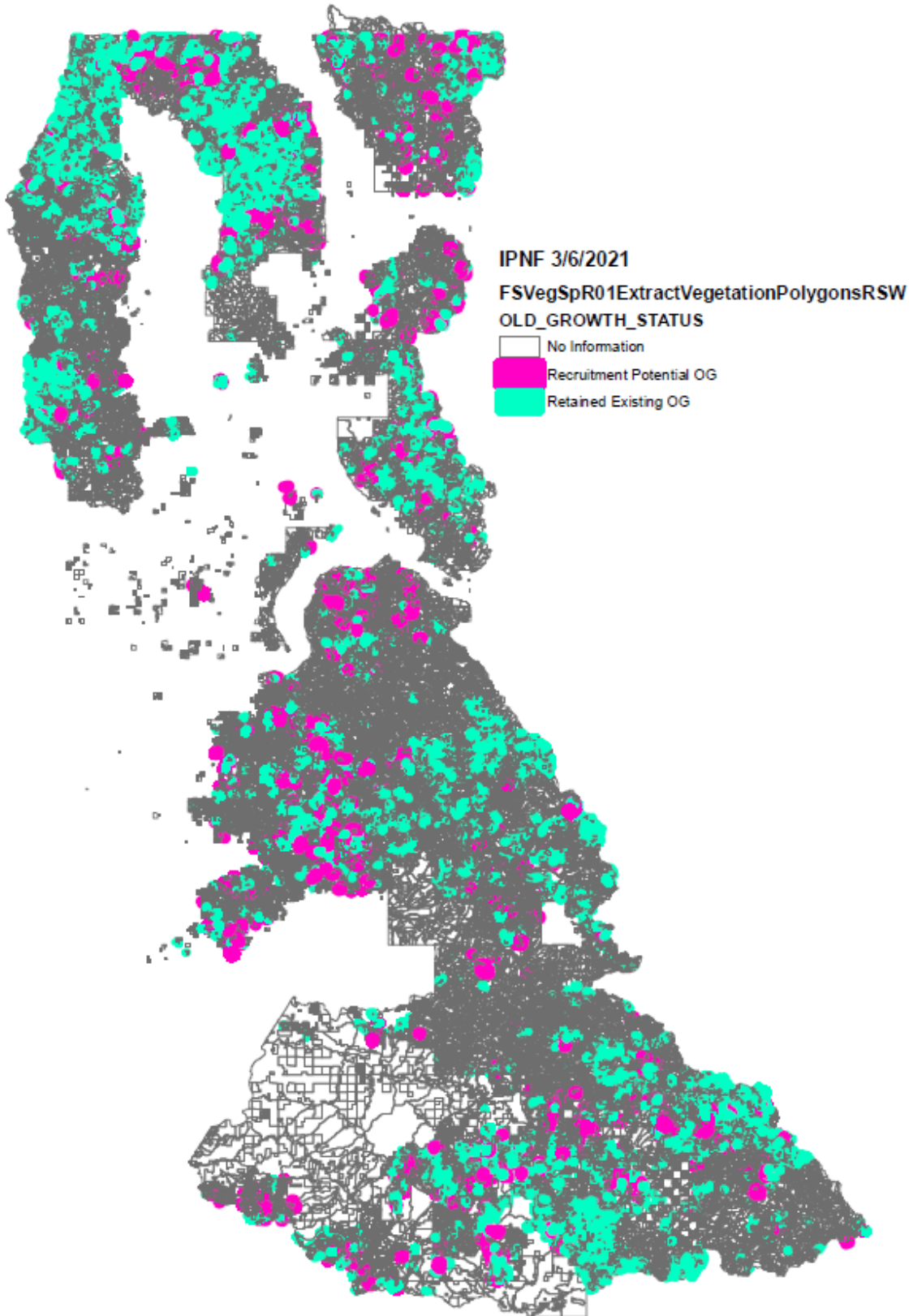
Figure 20. Old Growth and Recruitment Potential Old Growth on the Forest (enhanced to show *approximate* locations at this scale – not to be used for specific stand location or purposes other than general spatial distribution and amount information)

INDICATOR 6 – MON-VEG-01-06: *Acres of old growth treated*

A manageable dataset was not available for this analysis, as it entails a FACTS activity query on 5,655 discrete old growth stand records. No known treatments in old growth stands have been implemented under the 2015 Forest Plan.

There is no target for this indicator, beyond following the Forest Plan Standard and Guideline for treatments in old growth (Forest Plan, p. 19):

- **FW-STD-VEG-01.** Within old growth stands, timber harvest or other vegetation management activities shall not be authorized if the activities would likely modify the characteristics of the stand to the extent that the stand would no longer meet the definition of old growth (Forest Plan, p. 19).
- **FW-GDL-VEG-01.** Timber harvest or other vegetation management activities may be authorized in old growth stands if the activities are designed to increase the resistance and resiliency of the stand to disturbances or stressors, and if the activities are not likely to modify stand characteristics to the extent that the stand would no longer meet the definition of old growth (see the glossary for the definitions of resistance and resilience).

INDICATOR 7 – MON-VEG-01-07: *Snags per acre forest-wide*

Table 24. Desired and Current Snag Density Ranges by Diameter Class

Dominance group	Biophysical setting	Desired range of snags per acre >10" dbh	Current range of snags per acre >10" dbh	Desired range of snags per acre >15" dbh	Current range of snags per acre >15" dbh	Desired range of snags per acre >20" dbh	Current range of snags per acre >20" dbh
All except Lodgepole Pine	Warm/Dry	4.1 – 13.2	9.2 – 13.0	0.5 – 6.4	3.8 – 5.9	0.4 – 2.2	1.5 – 2.7
	Warm/Moist	8.6 – 15.9	13.6 – 16.7	2.9 – 6.3	5.5 – 7.2	1.3 – 3.0	2.3 – 3.3
	Subalpine	7.2 – 14.0	15.9 – 20.5	2.2 – 5.3	4.3 – 6.3	0.6 – 2.3	1.2 – 2.2
Lodgepole Pine	ALL	1.8 – 13.7	10.9 – 17.4	0.3 – 4.4	1.3 – 2.9	0.1 – 0.7	0.2 – 1.0

Table 25. Snag Density Ranges Per Acre by Biophysical Setting and Diameter Class

MON-VEG-01-07: Snags per acre forest-wide		Recent Trend Towards Desired Condition	Recent Trent Away from Desired Condition
Current Status – WARM/DRY >10" DBH	Within Target	++ 9.2 – 13.0	+ -
	Outside Target	- +	- -
Current Status – WARM/MOIST >10" DBH	Within Target	++ 13.6 – 16.7	+ -
	Outside Target	- +	- -
Current Status – SUBALPINE >10" DBH	Within Target	++	+ -
	Outside Target	- + 15.9 – 20.5	- -
Current Status – ALL LODGEPOLE PINE >10" DBH	Within Target	++ 10.9 – 17.4	+ -
	Outside Target	- +	- -
Current Status – WARM/DRY >15" DBH	Within Target	++ 3.8 – 5.9	+ -
	Outside Target	- +	- -
Current Status – WARM/MOIST >15" DBH	Within Target	++ 5.5 – 7.2	+ -
	Outside Target	- +	- -
Current Status – SUBALPINE >15" DBH	Within Target	++ 4.3 – 6.3	+ -
	Outside Target	- +	- -
Current Status - ALL LODGEPOLE PINE >15" DBH	Within Target	++ 1.3 – 2.9	+ -
	Outside Target	- +	- -
Current Status – WARM/DRY >20" DBH	Within Target	++ 1.5 – 2.7	+ -
	Outside Target	- +	- -
Current Status – WARM/MOIST >20" DBH	Within Target	++ 2.3 – 3.3	+ -
	Outside Target	- +	- -
Current Status – SUBALPINE >20" DBH	Within Target	++ 1.2 – 2.2	+ -
	Outside Target	- +	- -
Current Status – ALL LODGEPOLE PINE >20" DBH	Within Target	++ 0.2 – 1.0	+ -
	Outside Target	- +	- -

Overall, confidence in the quantity and quality of the data collected is high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking.

INDICATOR 8 – MON-VEG-01-08: Number of acres influenced by insects and disease

Table 26. Combined Beetle Hazard Rating – 2020 Estimated Acres Affected

Combined Beetle Hazard Rating	2020 Estimated Acres	90% CI – Lower Bound	90% CI – Upper Bound
Low	386,119	334,143	444,861
Moderate	462,444	399,596	519,664
High	139,182	107,769	176,722
M or H Combined – Stand-changing Impacts	601,627	531,963	668,119
Totals	987,745	841,508	1,141,247
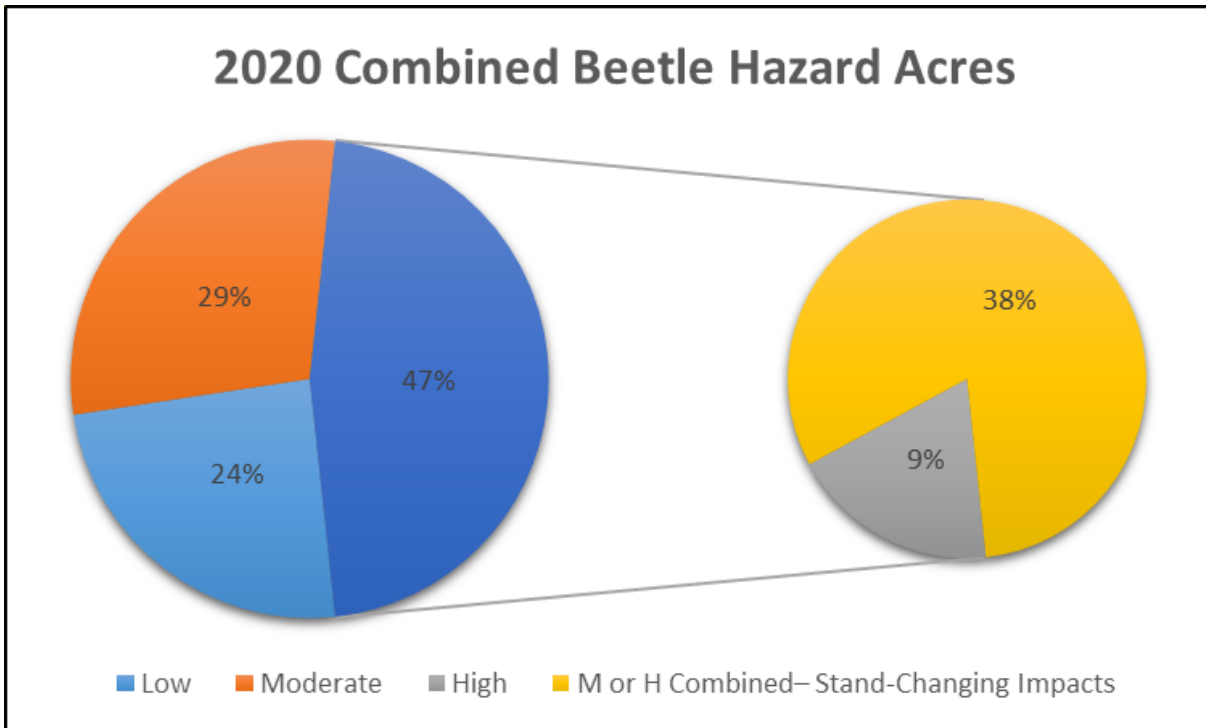
Figure 21. Combined Beetle Hazard Rating by Percentage

Table 27. Root Disease Severity Class Rating – 2020 Estimated Acres Affected

Root Disease Severity Class Rating	2020 Estimated Acres	90% CI – Lower Bound	90% CI – Upper Bound
Low	1,302,161	1,219,439	1,387,239
Moderate/High – Stand-changing Impacts	520,864	449,594	587,623
Totals	1,823,025	1,669,033	1,974,862
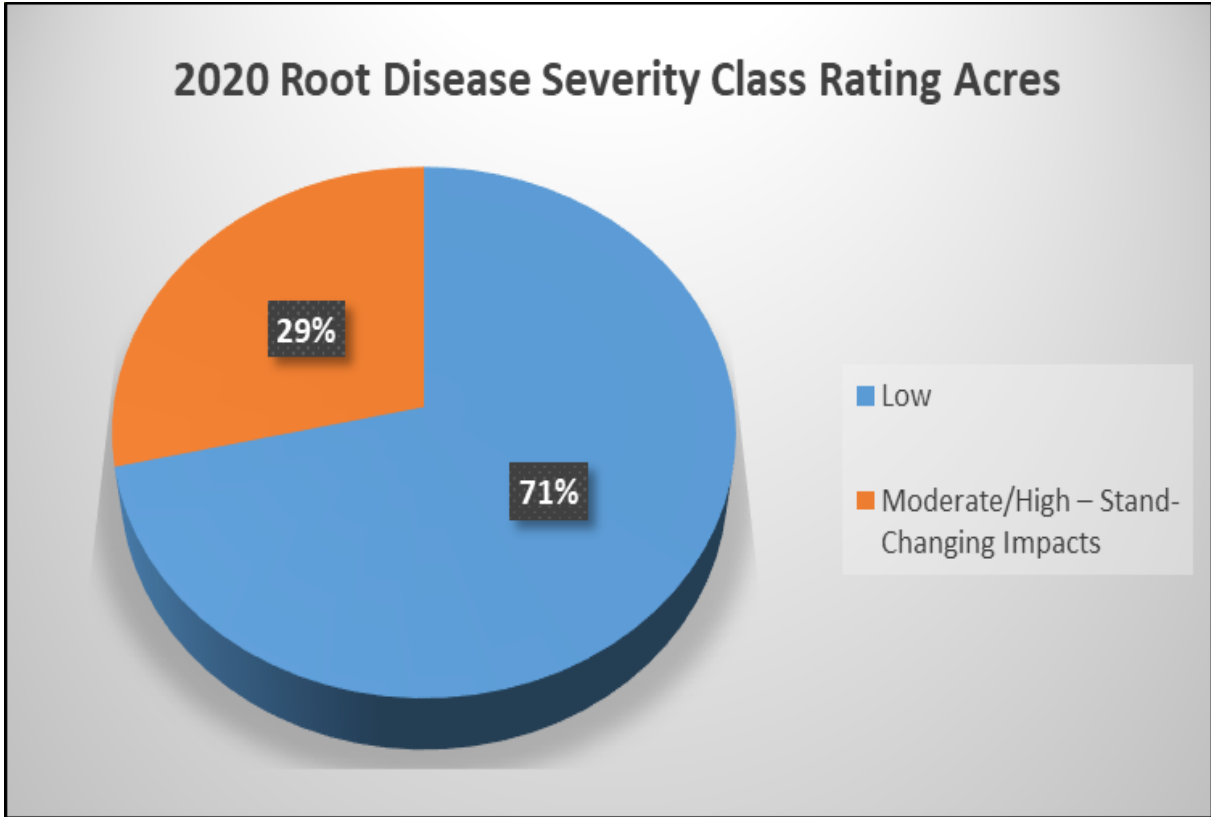
Figure 22. Root Disease Severity Class Rating by Percentage

Table 28. Beetle Hazard and Root Disease Severity Class Rating – 2020 Estimated Acres Affected

Combined Beetle Hazard and Root Disease Severity Impacts	2020 Estimated Acres	90% CI – Lower Bound	90% CI – Upper Bound
Low	1,688,280	1,553,582	1,832,100
Moderate/High – Stand-changing Impacts	1,122,491	981,557	1,255,742
Totals	2,810,771	2,535,139	3,087,842

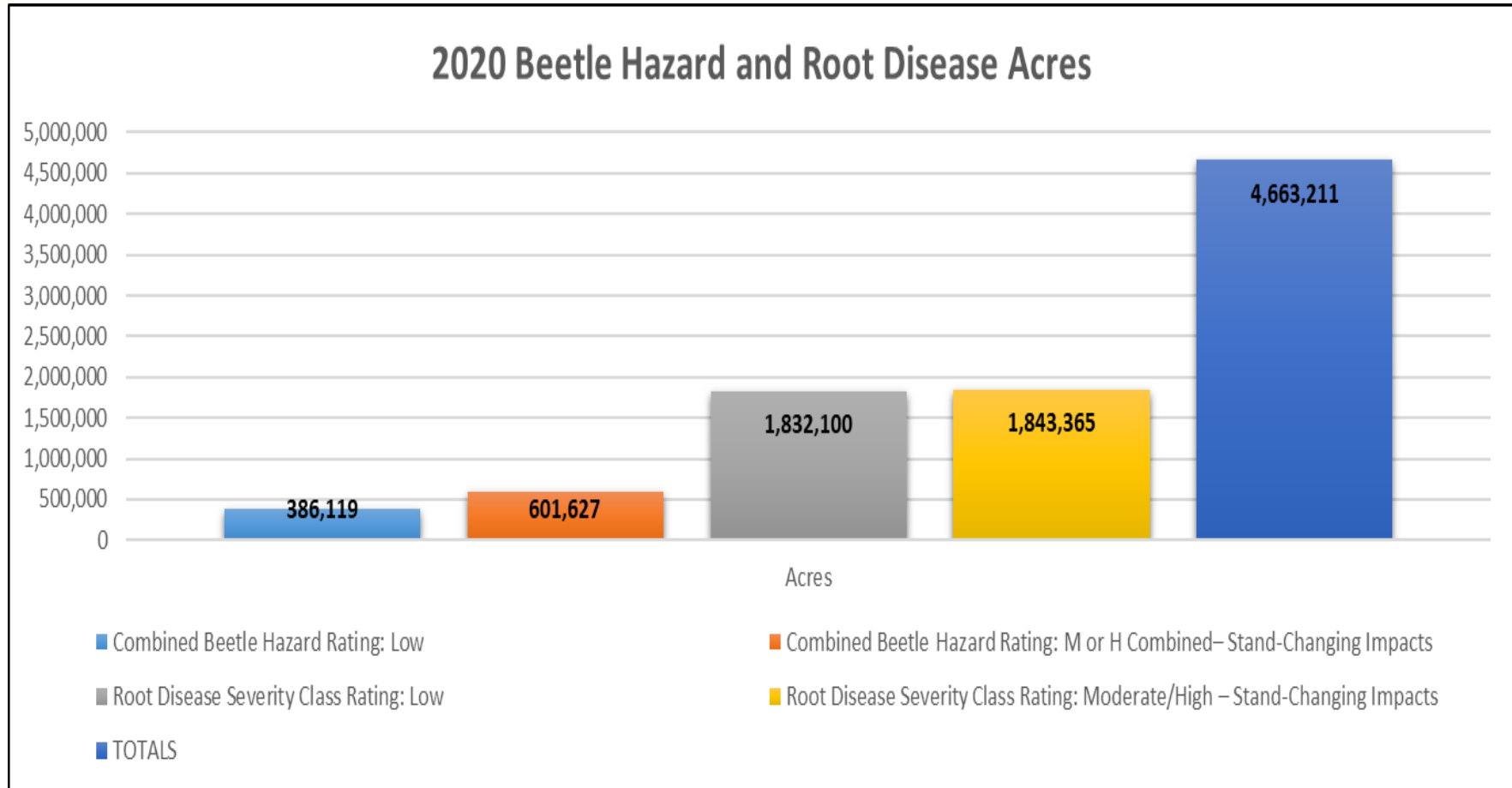**Figure 23. Combined Beetle Hazard and Root Disease Severity Class Rating Acres Affected**

There can be both beetle hazard and root disease severity impacts on the same acre – each type of insect or disease impact doesn't necessarily impact separate acres.

Because a similar dataset from 2015 does not exist, there is nothing to which the corresponding acres impacted by insects and disease can be compared. Thus, this is the baseline level for forest acres influenced by insects and disease using the R1 Broad PVT groups.

Discussion

This is the first report for MON-VEG-01, and thus establishes the reporting baseline for this monitoring question and indicators.

The monitoring question for this report is: to what extent are management activities and natural disturbance processes trending toward desired conditions for vegetation composition, structure, and pattern, increasing resistance and resiliency to disturbance factors, including climate change?

- **Indicator 1 – MON-VEG-01-01**: Acres treated to meet FW-OBJ-VEG-01 (data collected since 2015)
    - The trend is towards the target of 85,000-90,000 acres of increased relative representation of early seral species by 30,459 acres (34-36 percent of target). While it's likely not all activities meeting this target were captured in this analysis, the current percentage is about half of what would be expected in year 6 of 10, which is approximately 60 percent. The pace of increasing relative representation of early seral species needs to more than double over the next 4 years to make progress towards this target.
    - The trend is towards the target of 250,000 acres to maintain and/or improve forest resilience with treating about 148,097 acres (59 percent of target). This is the expected treatment percentage of nearly 60 percent of the target acres treated in year 6 of 10. Continuing the same types and amounts of treatments in the next 4 years should achieve this target goal of outcome per decade.

- **Indicator 2 – MON-VEG-01-02**: Acres burned (comprehensive data collection since 2016)
    - Data is too variable to show a definitive trend, mainly due to the unexpected nature of acres burned by wildfires in any given year. Planned ignitions and mechanical fuel treatments have generally been increasing (with variability from year to year) since 2016. There is no target for this indicator.

- **Indicator 3 – MON-VEG-01-03**: Acres of forest by dominance type and size class compared to the desired condition (data collected since 2015)
    - The clearest trends are:
        - Generally, dominance groups (composition) and size classes are moving slightly towards desired conditions forest-wide
        - In the Warm/Dry biophysical setting, dominance groups are moving slightly away from desired conditions, and size classes are moving slightly towards desired conditions
        - In the Warm/Moist biophysical setting, dominance groups are mixed; size classes are moving away from desired conditions
        - In the Subalpine biophysical setting, dominance groups are within or moving towards desired conditions and size classes are generally moving towards desired conditions.

- **Indicator 4 – MON-VEG-01-04**: Acres meeting the old growth definition as determined by the FIA program (data collected since 2013)

- o For the Coeur d'Alene and Lower Kootenai, old growth has increased slightly from 2013 to 2020. Forest-wide, and for Geographic Areas St. Joe, Pend Oreille, and Priest, the amount of old growth has decreased marginally. The large fire season in 2015 occurred between the 2013 and 2020 data analyses which likely caused a decrease in old growth at the forest-wide scale due to wildfire-caused mortality. Other natural disturbances have also likely factored to decreased old growth, such as root diseases and insect mortality, ongoing drought, and wind events.

- **Indicator 5 – MON-VEG-01-05**: Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures (data collected since 2020)
    - o As this is the baseline condition for the 2015 Forest Plan Monitoring, there are not yet conclusions, interpretations, or data trends for discussion of this indicator.

- **Indicator 6 – MON-VEG-01-06**: Acres of old growth treated (data collected since 2015)
    - o No known treatments in old growth stands have been implemented under the 2015 Forest Plan; thus, there is no trend and this analysis and report establishes the baseline for this indicator.

- **Indicator 7– MON-VEG-01-07**: Snags per acre forest-wide (data collected since 2004)
    - o All estimates of snag density ranges per acre for all dominance groups, biophysical settings, and diameter classes are within or above the high end of desired ranges defined in the Forest Plan.

- **Indicator 8– MON-VEG-01-08**: Number of acres influenced by insects and disease (data collected since/in 2020)
    - o As this is the baseline condition for the 2015 Forest Plan Monitoring, there are not yet conclusions, interpretations, or data trends for discussion of this indicator.

The Northern Region Restoration and Resiliency Reports are hosted on the Northern Region internet site. Restoration and developing resilient vegetation through vegetation treatments each year is an overall goal of the outcomes of treatments we invest in and accomplish each year in the Northern Region and on the Idaho Panhandle National Forests.

A set of requirements were established to determine if a treatment outcome was projected to be resilient. These requirements in the R1 Restoration and Resiliency Guide list detailed criteria for resilience at the treatment unit level. These criteria involve composition, structure and to some degree, pattern, of vegetation treatments that trend forests to a more resilient desired condition as described in the Forest Plan Desired Conditions. They often involve establishing or maintaining early seral, shade-intolerant tree species such as ponderosa pine, western larch, western white pine, whitebark pine, and hardwoods.

In addition, appropriate forest density treatments are summarized as a characteristic of resilience, as are patch sizes. Vegetation treatments other than associated with trees are also assessed for their resilience outcomes. All these outcomes are anticipated to be resilient under current climate conditions and are hypothesized to be so in the future awe well, considering projected mid- to late century future climate. In essence, these treatments are considered adaptation options being implemented under an adaptive management context.

The Northern Region and the Rocky Mountain Research Station have a partnership through which an Adaptive Management Research Framework was developed, enabling research and monitoring to happen in a consistent and deliberative way. This report will help inform opportunities for investments occurring under that framework.

Other plan components not listed in the monitoring plan related to MON-VEG-01 were included in the Monitoring Item Summary table at the beginning of this monitoring element, but not listed in the Monitoring Guide as directly relating to an indicator for direct analysis in this report:

- **FW-DC-VEG-08** (Forest Plan, p. 13)**.** Down wood occurs throughout the forest in various amounts, sizes, species, and stages of decay. The larger down wood (i.e., coarse woody debris) provides habitat for wildlife species and other organisms, as well as serving important functions for soil productivity.

- **FW-STD-VEG-01** (Forest Plan, p. 19)**.** Within old growth stands, timber harvest or other vegetation management activities shall not be authorized if the activities would likely modify the characteristics of the stand to the extent that the stand would no longer meet the definition of old growth (see glossary for old growth definition).

- **FW-GDL-VEG-01** (Forest Plan, p. 19)**.** Timber harvest or other vegetation management activities may be authorized in old growth stands if the activities are designed to increase the resistance and resiliency of the stand to disturbances or stressors, and if the activities are not likely to modify stand characteristics to the extent that the stand would no longer meet the definition of old growth (see the glossary for the definitions of resistance and resilience).

- **FW-GDL-VEG-03** (Forest Plan, pp. 19-20)**.** Vegetation management activities should retain the amounts of coarse woody debris (including logs) that are displayed in table 3. A variety of species, sizes, and decay stages should be retained. Exceptions may occur in areas where a site-specific analysis indicates that leaving the quantities listed in the table would create an unacceptable fire hazard to private property, people, or sensitive natural or historical resources. In addition, exceptions may occur where the minimum quantities listed in the table are not available for retention.

- **FW-GDL-VEG-04** (Forest Plan, p. 20)**.** Vegetation management activities should retain snags greater than 20 inches DBH and at least the minimum number of snags and live trees (for future snags) that are displayed in table 4. Where snag numbers do not exist to meet the recommended ranges, the difference would be made up with live replacement trees. Exceptions occur for issues such as human safety and instances where the minimum numbers are not present prior to the management activities.

- **FW-GDL-VEG-05** (Forest Plan, p. 21)**.** Where vegetation management activities occur and snags (or live trees for future snags) are retained, the following direction should be followed:
  o Group snags where possible,
  o Retain snags far enough away from roads or other areas open to public access to reduce the potential for removal (generally more than 150 feet),
  o Emphasize retention of the largest snags and live trees as well as those species that tend to be the most persistent, such as ponderosa pine, larch, and cedar,
  o Favor snags or live trees with existing cavities or evidence of use by woodpeckers or other wildlife.

- **FW-GDL-VEG-06** (Forest Plan, p. 21)**.** During vegetation management activities (e.g., timber harvest), and in the event that retained snags (or live trees being retained for future snags) fall over or are felled (for safety concerns), they should be left on site to provide coarse woody debris.

- **FW-DC-WL-14** (Forest Plan, p. 30)**.** Down wood, especially down logs, are available throughout the Forest for terrestrial mollusks, reptiles, amphibians, small mammals, and other species whose habitat requirements includes this component.

Evaluation of Results for Adaptive Management Finding

Table 29. Summary of findings for Plan Monitoring Item VEG-01

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	**(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired based on indicators within or trending towards desired conditions or objectives overall, where data is available for comparison.
<u>**RECOMMENDATION**</u> *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
<u>**MANAGEMENT FRAMEWORK**</u> *If a change may be warranted, where may the change be needed?*[2]	**1. Plan Monitoring Recommendation:** • Consider **changing to one indicator for this question**: the results of the annual <u>Northern Region Restoration and Resiliency Reports</u>. Restoration and developing resilient vegetation through vegetation treatments each year is an overall goal of the outcomes of treatments that we invest in and accomplish each year. A set of requirements were established to determine if a treatment outcome was projected to be resilient. The requirements in the <u>R1 Restoration and Resiliency Guide</u> list detailed criteria for resilience at the treatment unit level and involve composition, structure, and pattern of vegetation treatments that trend forests to a more resilient desired condition as contained in <u>Forest Plan</u> Desired Conditions. They often involve establishing or maintaining early seral, shade-intolerant vegetation. Appropriate forest density treatments are summarized as a characteristic of resilience, as are characteristic patch sizes. Vegetation treatments other than associated with trees are also assessed for their resilience outcomes. All these outcomes are anticipated to be resilient under current and future climate and changes. These treatments are considered adaptation options that are being implemented under an adaptive management context. • **Forest Plan Rationale and Explanation** (Monitoring Guide, pp. 10-11): For the 8 Indicators listed, there were 7 corresponding FP DC included in the FP component list (GOAL-VEG-01, FW-DC-VEG-01, FW-DC-VEG-02, FW-DC-VEG-03, FW-DC-VEG-05, FW-DC-VEG-07, FW-DC-WL-13). The Indicators also list 2 Components not included in the list (FW-DC-VEG-06 and FW-DC-FIRE-03). There were an additional 8 components in the list not referenced in the Indicators in the Monitoring Guide (FW-DC-VEG-08, FW-STD-VEG-01, FW-GDL-VEG-01, FW-GDL-VEG-03, FW-GDL-VEG-04, FW-GDL-VEG-05, FW-GDL-VEG-06, FW-DC-WL-14). Direct report analysis will not occur for these last 8 components; listed as "Other forest plan components not listed in the monitoring plan related to MON-VEG-01" in the Discussion section; recommend removing them if they're not listed as rationale for the indicators to address the monitoring question. • Recommend dropping Indicator 2 – Acres burned. Already included as part of Indicator 1. • Recommend dropping or rewording Indicator 6 – Acres of old growth treated. This indicator does not get to the monitoring question, even in context of the other 7 indicators; the question is if old growth remains old growth after treatments in the stand(s). • Recommend including FW-DC-VEG-11 (quantifiable, numeric standards for pattern, composition, etc.), and the restocking Plan Components FW-DC-TBR-02, FW-DC-TBR-03, FW-STD-TBR-03. Reforestation is an important part of the Forest Plan desired conditions, and resistance and resiliency to climate change and other disturbance. As these components have been analyzed in other reports, it would be relatively easy to use them as indicators for this.

	FINDINGS
	2. Implementation and Outcome Progress Recommendations:
	• Update the **Standards/Steps for Data Collection**, **Analysis Methods**, and **How Evaluated** for all indicators in the Monitoring Guide (pgs. 13-17) based on the Data Sources/Partners in the MON-VEG-01 report, especially when RO data is provided for consistent methodology, analysis, and protocols across the region.
	• Based on feedback from RO staff, reword **Performance Indicator 3. a) Description** (Monitoring Guide, p. 13) to: "Acres of forest by KIPZ Dominance Type Groups and size classes as shown in the forest plan. Dominance type groups describe the tree species composition within a stand. The existing dominant tree species or species groups are aggregated for the forest by KIPZ Biophysical Setting. Size class defines the average diameter (DBH) of trees within a stand and are grouped into four categories or ranges of diameters: seedling/sapling (0 - 4.6 inches DBH), small (5.0 - 9.0 inches DBH), medium (10.0 - 14.9 inches DBH), and large (15.0+ inches DBH). Size class is also aggregated for the forest by biophysical setting."; **h) Analysis Method** to: "Derive estimates using R1 FIA Summary Database and Estimator form: Acres by KIPZ Dominance Type Groups by Forest, Acres by Size Class by Forest, Acres by KIPZ Dominance Type Groups by KIPZ Biophysical Setting by Forest, Acres by KIPZ Biophysical Setting by Size Class by Forest."; and Performance Indicator 3 under **How Evaluated** (Monitoring Guide p. 18): "The acre estimates and 90% confidence intervals of forested vegetation by KIPZ Dominance Type Groups and size class will be derived and compared to the desired amounts and the trends noted. The desire is that over time, the acres within each dominance type group and the acres within each size class will trend towards the desired conditions articulated in the Plan. As was done in the Plan, the information should be displayed in two ways; for the Forest as a whole, and for each of the biophysical settings."
	• Similarly, reword **Performance Indicator 4** (Monitoring Guide, p. 13) to: "Acres meeting Green et al. old growth minimum criteria based on FIA plots on the IPNF" to reflect correct methods**; d) Data Storage** is FSVeg Spatial, not FSVeg databases; and **h) Analysis Methods** to: "Derive estimates using R1 FIA Summary Database and Estimator form: Acres of Old Growth by Forest, Acres of Old Growth by GA by Forest." Update the associated description as written in **Table 1** of the monitoring guide (p. 3).
	• For **Performance Indicator 5**, **c) Standards/Steps for Data Collection** (Monitoring Guide pp. 14-15) update to incorporate the Forest Old Growth Monitoring Protocol (currently draft) to track old growth at the project level, ensuring old growth is being restored, maintained, and recruited as needed since a stand-delineated forest-wide layer of old growth cannot be maintained over time**; d) Data Storage** is FSVeg Spatial, not FSVeg databases; **h) Analysis Methods** (p. 15) – update to incorporate the use of FSVeg Spatial.
	• Update **Performance Indicator 6 c) Standards/Steps for Data Collection** (Monitoring Guide, pg. 15) to clarify the Special Use codes are in FSVeg Spatial, not FSVeg; **d) Data Storage** is FSVeg Spatial, not FSVeg.
	• For **Performance Indicator 7,** rewrite **a) Description** (Monitoring Guide, p. 16) to: "Snags per acre forest-wide. This indicator will utilize FIA plot data and identify the number of snags per acre in two size classes (i.e., >15" and >20" DBH) that occur on the Forest, by Snag Analysis Groups.; **b) Unit of Measure** update to read "Number of snags *per acre*"; **h) Analysis** Methods: "Regionally provided Snag and Large-tree Assessments will provide snag quantities by diameter classes and Snag Analysis Groups. Those numbers would be compared to the numbers at the beginning of the Forest Plan implementation period to determine trends"; **k) References** replacing with Bush and Reyes 2020 as the most current reference and

	FINDINGS
	methodology for this indicator; it incorporates the current references listed.
	• Change **Performance Indicator 8** (Monitoring Guide, pp. 3, 16-17) to estimates of acres by hazard rating as ADS surveys are not comprehensive across a forest; update **H) Analysis Methods** to: "Regionally provided Forest Health Protection attribute data for key insect and diseases estimate insect hazard and root disease severity class ratings by acres. Those numbers will be used to track trends over time to determine if impacts from those agents are generally going down as desired.'
	• Recommend the Forest and Silviculture program incorporate the 2015 Forest Plan and finalize: Draft IPNF/KNF OG Inventory & Monitoring Plan, Draft recruitment potential old growth letter and appendix, Old growth and timber suitability form and Forest process for designating and tracking project/stand-level old growth and RPOG.
	• For future analyses, recommend consider using CDW Almanac FACTS Reports for data back to 2006 to show trends; investigate the User View reports in the FACTS NRM Dashboard for comparison or additional information.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item – VEG-02 – Invasive Plants

Table 30. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-VEG-02: Have management activities met Plan Objectives and trended towards desired conditions for noxious weeds**?**	FW-OBJ-VEG-02 FW-DC-VEG-10	**MON-VEG-02-01:** Acres of non-native invasive plants treated (N) **MON-VEG-02-02:** Number of sites of new non-native invasive plant species and number of acres treated (N)	Annual	NRM/FACTS/TESP-IS database and Forest Plan	Invasive plant program manager

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 31. Monitoring Item Veg-02 - Monitoring Collection Summary

For monitoring item Veg-02:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	2018
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

The 2015 Forest Plan has set Forest Wide Plan Objectives (FS-OBJ-VEG-02) and Desired Conditions (FW-DC-VEG-10) related to the management of non-native invasive plants that speak specifically to the monitoring question.

FW-OBJ-VEG-02. Non-native Invasive Plant Species–Over the life of the Plan, the outcome per decade is:

- All sites that are discovered with newly invading non-native invasive species are treated.
- The treatment of approximately 15,000 to 30,000 acres to reduce non-native invasive plant density, infestation size, and/or occurrence (these areas are also included in FW-OBJ-VEG-01).

FW-DC-VEG-10. Newly invading, non-native invasive plant species are treated, and populations are contained or eradicated. The weed program on the Forest uses integrated pest management approaches, including prevention and control measures that limit introduction, intensification, and spread due to management activities. Agreements with cooperative weed management areas assist in control efforts across jurisdictional boundaries.

Results and Discussion

Methods

Data Recording Protocols and Requirements for Invasive Species Survey, Inventory and Treatment Records are available upon request.

IPNF non-native invasive plant species inventory, treatment, and monitoring data is recorded daily by licensed applicators employed or contracted by the USFS.

Data entry

Invasive inventory, treatment, and monitoring data is entered into the Natural Resource Manager (NRM) / Forest Activity Tracking System (FACTS) database via the Threatened and Endangered Species & Invasive Species (TESP-IS)/Arc Map tool by trained staff

- From fiscal year 2017 to 2019, a weed/range program funded GIS specialist entered invasive inventory, treatment, and monitoring data (in timely manner throughout the season) for all three Zones of the Forest.
- In 2020 data entry was delegated to the Weeds/Range program and assistance was also requested from our district GIS staff. The Forest's invasive species management data entry was subsequently delayed and not fully entered in the TESP-IS database prior to the end of fiscal 2020.

Data analysis

- The fiscal 2016 through 2020 invasive species management data was analyzed via reports pulled from the NRM/FACTS database by the Forest Rangeland Management specialist with assistance from the Region 1 invasive program lead, Region 1 GIS specialist, and Forest GIS specialists.
- The Forest's program cannot currently tally treatment-acres by species as requested by the performance indicator MON-VEG-02-02. The Forest is actively working with the Regional office and National NRM staff to develop a protocol.

Results

Data

Table 32. Total acres of Treatment and Acres Restored

Fiscal Year	Acres Treated	Acres Restored
2016	2,127.0	1,808.0
2017	1,967.7	1,810.3
2018	2,780.5	2,280.0
2019	2,522.2	2,169.3
2020	2,521.2	2,117.8
Total	**11,918.6**	**10,185.4**

* Acres Treated: The treated portion, measured in acres, of an area infested by a single invasive species.

**Acres restored: An area treated against invasive species has been 'restored' when the targeted invasive species defined in the project plan was controlled or eradicated directly as a result of the treatment activity. Acres Restored are the acres completed multiplied by the average control. Acres restored does not get calculated unless the acres monitored are at least 50% of acres treated.

Table 33. Number of treatment sites/New invader sites treated

Fiscal Year	Treatment Site	*New Invader sites treated
2016	383	19
2017	381	38
2018	787	49
2019	812	48
2020	790	16
Total	**3,153**	**170**

*The identification, inventory, and subsequent treatment of new invasive species on the 2.5 million-acres of the Forest is limited by, funding, the weed crew, hired contractors, and knowledgeable employees.

Table 34. New invaders treated and average percent control** (not all treatment sites were monitored)

New invader common name (TAXA code*)	2016	2017	2018	2019	2020
Common burdock (ARMI2)	95	0	0	0	0
Rush Skeletonweed (CHJU)	90	95	90	90	90
Scotch broom (CYSC4)	0	0	0	85	95
Blueweed (ECVU)	81.6	90	81.6	90	90
Leafy spurge (EUES)	0	0	85	0	0
Bohemian Knotweed (POBO10)	0	0	65	75	0
Japanese Knotweed (POCU6)	0	95	0	0	0
Spotted Cat's Ear (HYRA3)	0	0	0	0	95
Tansy ragwort (SEJA)	85	95	0	95	0
Purple loosestrife (LYSA2)	0	0	95	0	0
Scotch Thistle (ONAC)	0	95	0	0	0
Hare's foot clover (TRAR4)	0	0	0	0	0
Average control per species**	87.9	94	83.32	87	92.5
Average control of new invaders*					88.9

*All TAXA codes can be found at: http://plants.usda.gov.

**The percent of the targeted invasive species population (infestation) that was controlled by the treatment activity.

Discussion

The Idaho Panhandle National Forest's invasive plant program has implemented management activities and objectives set forth in the Forest plan to make progress towards desired conditions for noxious weeds.

From fiscal years 2016 through 2020, IPNF/USFS weed/range crews, Weed Management Area cooperators, Youth Conservation Corps members, released bio-control agents, and Good Neighbor Authority contractors collectively treated 11,918 acres of non-native invasive plant species (Table 32). These acres also include the treatment of all inventoried newly invading non-native species (Table 33), thus trending toward or achieving the invasive plant Forest plan components FW-OBJ-VEG-02 and FW-DC-VEG 10.

Within these five years, 3,153 sites have been treated in which 170 sites were treated for the containment or eradication of newly non-native invasive plant species. Fifty percent of all treatment sites for widespread and new invaders were monitored for efficacy of treatment (Table 34). An average of 88.9 percent control of all new invaders treated was also measured during this timeframe.

Regarding the MON-VEG-02-02 indicator; *Number of sites of new non-native invasive plant species and number of acres treated,* the Forest's current data protocol does not separate individual treatment acres by species. Therefore, showing the number of new invaders treated by acre is currently not possible. NRM staff are developing a TESP-IS query.

In 2020 the IPNF invasive plant data entry was delayed and not completed due to a lack of funding for positions to support this effort. A database manager or additional funding to retain TESP_IS trained staff would address these insufficiencies.

Prior to 2018, contracted weed treatments, as required by IPNF timber sales, had not been properly recorded into the NRM/FACTS database. Since 2018 an effort has been made to capture and enter timber sale weed treatment data into the appropriate database. The acres of non-native invasive species treated via timber sale projects prior to 2018 have not been effectively documented for this report.

Evaluation of Results for Adaptive Management Finding

Table 35. Summary of findings for Plan Monitoring Item VEG-02

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	**(E) YES** - Our efficacy monitoring indicates that treatments are 88.9% effective on known populations of new invaders
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	YES
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?*[2]	Recommend changing indicator MON-VEG-02-02 from "Number of sites of new non-native invasive plant species and number of acres treated" to "Number of sites of new non-native invasive plants treated." The Forest's current data protocol does not separate individual treatment acres by species. Therefore, showing the number of new invaders treated by acre is currently not possible.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item FIRE-01 – Hazardous Fuels

Table 36. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-FIRE-01: To what extent are management activities moving hazardous fuels towards desired conditions?	FW-DC-FIRE-02 FW-OBJ-FIRE-01 FW-DC-SES-04 GA-DC-FIRE-CDA-01 GA-DC-FIRE-LK-01 GA-DC-FIRE-PO-01 GA-DC-FIRE-PR-01 GA-DC-FIRE-SJ-01	**MON-FIRE-01-01:** • Acres of hazardous fuel treatments within the WUI (N) • Acres of hazardous fuel treatments in areas outside of the WUI (N)	Annual	FACTS	Forest Fuels Planner

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 37. Monitoring Item FIRE-01 - Monitoring Collection Summary

For monitoring item FIRE-01:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	N/A
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-FIRE-02. Hazardous fuels are reduced within the WUI and other areas where values are at risk. Fire behavior characteristics and fuel conditions exist in these areas that allow for safe and effective fire management. Fire behavior is characterized by low-intensity surface fires with limited crown fire potential. Forest conditions, and the pattern of conditions across the landscape, exist in these areas such that the risk is low for epidemic levels of bark beetles, high levels of root disease, and large scale, stand replacement wildfires.

FW-OBJ-FIRE-01. The outcome is the treatment of fuels on approximately 6,000 to 16,000 acres annually on NFS lands, primarily through planned ignitions, mechanical vegetation treatments (these acres are also included in FW-OBJ-VEG-01), and unplanned ignitions. NFS lands within the WUI are the highest priority for fuel treatment activities.

FW-DC-SES-04. To the extent possible, the Forest contributes to the protection of communities and individuals from wildfire within the limits of firefighter safety and budgets

GA-DC-FIRE-CDA-01. Fire hazard is reduced adjacent to communities and structures in the Silver Valley, in the vicinity of the North Fork of the Coeur d'Alene River, around Hayden and Coeur d'Alene Lakes, and in other inhabited rural areas adjacent to NFS land within the GA.

GA-DC-FIRE-LK-01. Threats of wildfire are reduced for the following specific areas: communities of Bonners Ferry, Moyie Springs, Naples, Eastport, Porthill, Copeland, and Moravia; the Kootenai Tribal community; outlying communities and structures, and Highway 2, Highway 95, and Highway 200 corridors.

GA-DC-FIRE-PO-01. Forest health is improved, and hazardous fuels are reduced in the wildland urban interface. Potential fire intensity and severity decrease in the forested lands near the communities of Sandpoint, Hope, Sagle, Ponderay, and the rural residences around Lake Pend Oreille. Fire-adapted ecosystems beyond the wildland urban interface trend toward resilience to natural disturbance regimes.

GA-DC-FIRE-PR-01. Decrease potential fire intensity and severity in the forested lands near the communities of Lamb Creek and Nordman, outlying communities and infrastructure, and the Highway 57 primary evacuation corridor. Trend the fire-adapted ecosystems beyond the wildland urban interface to be resilient to natural disturbance regimes.

GA-DC-FIRE-SJ-01. Fire hazard is reduced within the defensible space for rural communities in the St. Joe GA. Hazardous fuels are reduced in the lower St. Maries River zone within the WUI, as will evacuation corridors along the St. Joe River and Gold Pass. Management of natural, unplanned ignitions to make progress towards resource objectives is utilized to sustain ecosystems and promote landscape resiliency within the St. Joe GA, where and when appropriate.

Hazardous fuel treatments help ensure that the Forest achieve the desired conditions of providing for firefighter and public safety in all fire management activities (FW-DC-FIRE-01 and FW-DC-SES-04) and reducing hazardous fuels (FW-DC-FIRE-03). By reducing hazardous fuels in areas with values at risk, the fire behavior can be modified to increase the likelihood of low intensity surface fires and limit crown fire initiation and spread. This helps provide a safer fire environment for both firefighters and the public. It also reduces negative natural resource impacts. This indicator is meant to provide a measure in which to evaluate progress towards these desired conditions. The Forest Objective (FW-OBJ-FIRE-01) is to annually treat 6,000 to 16,000 acres.

Results and Discussion

Methods

Acres of hazardous fuel treatments, including mechanical vegetation treatments and planned and unplanned ignitions are broken down by inside or outside the WUI. This indicator does not include activity fuel treatment. Acres of accomplishment are recorded annually in the FACTS database, utilizing standard database protocols. The FACTS database is queried for activities of hazardous fuel treatment.

Results

Data

Table 38. Acres of Hazardous Fuels Treatment (Forest-wide)

	2015	2016	2017	2018	2019	2020
FUELS-NON-WUI	11,798.2	12,876.4	3,686.0	3,878.3	6,698.9	5,868
FUELS-WUI	5,159.0	4,324.0	1,570.0	9,299.9	6,931.6	3,910
FUELS-ALL	16,957.2	17,200.4	5,256.0	13,178.2	13,630.5	9,778

Discussion

The treatment acres over the reporting period are well within the objective of the Forest Plan. Acres treated through harvest and prescribed fire are increasing, though external challenges such as the availability of burn windows can still have significant effects on accomplishments.

Evaluation of Results for Adaptive Management Finding

Table 39. Summary of findings for Plan Monitoring Item FIRE-01

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] **Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?**	**YES** - Fuel treatments are trending towards the desired conditions through prescribed fire, fuels reductions projects in the WUI and natural ignition wildland fires managed for resource objectives.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Add additional indicator and data source to better evaluate effectiveness of fuel treatments when impacted by wildland fire. **Indicator**: Acres of fuel treatment units that have had an interaction with wildland fire. **Data source**: Fuels Treatment Effectiveness Monitoring (FTEM). Additionally, it is recommended to remove plan component FW-DC-SES-04 from the monitoring guide because it's too general to assist with adaptive management.
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?* [2]	Monitoring Program and Monitoring Guide

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item FIRE-02 – Unplanned Fire

Table 40. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-FIRE-02: To what extent is unplanned fire used to trend vegetation towards desired conditions?	FW-DC-FIRE-03 FW-OBJ-FIRE-02	MON-FIRE-02-01: Number of natural, unplanned fire ignitions managed for the maintenance and/or restoration of fire-adapted ecosystems, and the number of natural, unplanned ignitions managed with the primary goal of suppression (Y)	Annual	NFMAS	Forest Fuels Planner

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 41. Monitoring Item FIRE-02 - Monitoring Collection Summary

For monitoring item Fire-02:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	N/A
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-FIRE-03. The use of wildland fire (both planned and unplanned ignitions) increases in many areas across the Forest. Fire plays an increased role in helping to trend the vegetation towards the desired conditions while serving other important ecosystem functions. However, when necessary to protect life, property and key resources, many wildfires are still suppressed.

FW-OBJ-FIRE-02. Over the life of the Plan, manage natural, unplanned ignitions to meet resource objectives on at least 10 percent of the ignitions.

As indicated in FW-DC-FIRE-03 (pages 21 and 22 of Forest Plan), the desire is to increase the use of wildland fire across the Forest in recognition that it is needed to help trend the vegetation towards the desired conditions and serving other important ecosystem functions. While still suppressing undesirable wildfires, other fires will be allowed to play their natural role in ecosystem function and maintenance.

Results and Discussion

Methods

FAMWEB Data Warehouse: Historical fire data

Fire Family Plus: Import data from FAMWEB and exporting data as shapefile

Arc GIS: Importing shapefile from FAMWEB, deleting all fires non-natural ignition fires.

Results

Data

Table 42. Number of unplanned ignitions and acres for fiscal years 2015 to 2019

	2015 Fires	2016 Fires	2017 Fires	2018 Fires	2019 Fires
Total number of natural unplanned ignitions	161	24	45	63	44
Total acres of natural unplanned ignitions	50,951	2,324	5,046	17,169	137
Total number of natural unplanned ignitions managed for resource objectives	0	0	0	0	1
Total acres of natural unplanned ignitions managed for resource objectives	0	0	0	0	110
Total number of natural unplanned ignitions managed with the primary goal of suppression	161	24	45	63	44
Total acres of natural unplanned ignitions managed with the primary goal of suppression	20,951	2,324	5,046	17,169	27
Percent of natural unplanned ignitions managed for resource objectives	0	0	0	0	2

Discussion

Currently the Forest is not moving towards the objective of managing natural, unplanned ignitions to meet resource objectives on at least 10 percent of the ignitions. This is because of a number of factors, including seasonality, environmental conditions, national/regional preparedness levels, resource availability and values at risk, which are the driving factors when deciding whether to allow fire play its natural role on the landscape for resource benefit.

Also, there are forest plan management areas that do not allow the use of unplanned ignitions or the use of unplanned natural ignitions is very limited for the purposes of meeting resource objectives, further constraining achievement of the objective. These management areas include:

MA3 - Botanical, Geological, and Scenic Areas

- o MA3-GDL-FIRE-01. The use of natural, unplanned ignitions are generally not allowed in these areas unless the values and unique characteristics for which the area was designated can be maintained or enhanced by the use of fire, and the risk of harm from an unplanned ignition is small.
- o MA3-GDL-FIRE-02. Planned ignitions may be used to meet resource objectives if the values and unique characteristics for which the area was designated can be maintained, enhanced or protected by the use of fire, and the risk of harm to those values is small.

MA4a Research Natural Areas

- o MA4a-GDL-FIRE-01. Planned ignitions or the use of natural, unplanned ignitions may only occur as identified in the RNA Establishment Record or approved RNA management plan.

MA4b Experimental Forests

- o MA4b-STD-FIRE-01. Natural, unplanned ignitions are suppressed.

MA7 Primary Recreation Areas

- o MA7-GDL-FIRE-01. Planned, as well as natural, unplanned ignitions may be used to meet resource objectives. However, due to the values that could be put at risk, the use of unplanned ignitions is rare.

Forest plan management areas that allow the use of unplanned natural ignitions include:

- MA1a Wilderness, 1b Recommended Wilderness,
- MA1c Wilderness Study Area,
- MA1e Primitive Land,
- MA2a Wild Scenic River,
- MA2b Eligible Wild Scenic River,
- MA5 Backcountry.
- MA6 General Forest. There is no clear direction on the use of unplanned natural ignitions in this management area. Areas within MA6 where natural unplanned ignitions can be managed are very limited due to the presence of timber production grounds, recreation sites, infrastructure, small parcels of scattered lands, and the wildland urban interface.

Evaluation of Results for Adaptive Management Finding

Table 43. Summary of findings for Plan Monitoring Item FIRE-02

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] Do monitoring results demonstrate intended progress (i.e. maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	**(D) NO** - Currently not making sufficient progress toward achievement of forest plan objective FW-OBJ-FIRE-02, for managing 10% of all-natural unplanned ignitions for or the maintenance and/or restoration of fire-adapted ecosystems. In addition, Data entry is not consistent. FACTS database data reporting is not consistent, entered wrong, or not entered. FACTS code for unplanned natural ignitions changed in FY 2017 from 1117 to 1119 for wildfires that burn through approved NEPA projects. Data was still be entered as 1117 for wildland fires that burned through approved NEPA projects.
RECOMMENDATION Based on the evaluation of monitoring results, may changes be warranted?	Federal policy changed in 2009 allowing Fire managers to manage fires for multiple objectives on the same fire, simultaneously managing for resource benefit on one flank of the fire while suppressing another flank that threatens homes, infrastructure, and other values. Recommended actions: • Consider managing fires for strategies other than full suppression within the WFDSS decision, especially those within management areas where fire is the primary tool for vegetation management. • Consider Fires with a Contain, Confine, and point protection strategies as candidates to be managed for multiple objectives. **FACTS**: Unplanned Natural ignitions that burn through approved NEPA covered projects need to be entered as FACTS code 1119, non-covered NEPA areas need to be tracked and coded as 1117. It is recommended that we start tracking FACTS code 1117 to improve accuracy of future monitoring reports.
MANAGEMENT FRAMEWORK If a change may be warranted, where may the change be needed? [2]	Management activities and Monitoring Program and Monitoring Guide

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item WTR-01 – Best Management Practices

Table 44. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
Are soil, water quality, and riparian and aquatic habitats protected and moving towards desired conditions?	FW-DC-WTR-02, FW-DC-WTR-04, FW-GDL-WTR-01, FW-DC-RIP-03, FW-DC-AQH-01	**MON-WTR-01-01:** Number of Best Management Practices (BMPs) evaluations, and number of BMPs planned, with an identification of BMPs that were not implemented correctly or not effective (N)	Annually	National BMP Database, State of Idaho, Rocky Mountain Research Station	Forest Aquatics Program Manager

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 45. Monitoring Item MON-WTR-01 - Monitoring Collection Summary

For monitoring item MON-WTR-01:	Year
Data last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	This is the first MER
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-WTR-02. All management activities will emphasize protection of water quality in order to meet applicable state water quality standards and fully support beneficial uses. Surface and groundwater flows support beneficial uses and meet the ecological needs of aquatic species and maintain the physical integrity of their habitats.

FW-DC-WTR-04. Lands that contribute to municipal watersheds and public water systems (source water protection areas) are in a condition that contributes to consistent delivery of clean water.

FW-GDL-WTR-01. Ground-disturbing activities in subwatersheds with Category 5 water bodies, on Idaho's §303(d) list of impaired waters, should not cause a decline in water quality or further impair beneficial uses. A short-term or incidental departure from state water quality standards may occur where there is no long-term threat or impairment to the beneficial uses of water and when the state concurs. Category 5 water bodies are waters where an approved TMDL is not available.

FW-DC-RIP-03. Water quality provides stable and productive riparian and aquatic ecosystems. Streams and lakes are free of chemical contaminants and do not contain excess nutrients. Sedimentation rates are within natural geologic and landscape conditions, supporting salmonid spawning and rearing and cold-water biota requirements.

FW-DC-AQH-01. Water bodies, riparian vegetation, and adjacent uplands provide habitats that support self-sustaining native and desirable non-native aquatic communities, which include fish, amphibians, invertebrates, plants, and other aquatic-associated species. Aquatic habitats are diverse, with channel, lacustrine, and wetland characteristics and water quality reflective of the climate, geology, and natural vegetation of the area. Water quality supports native amphibians and diverse

invertebrate communities. Streams, lakes, and rivers provide habitats that contribute toward recovery of threatened and endangered fish species and address the habitat needs of all native aquatic species.

Monitoring implementation of Best Management Practices (BMPs) and evaluating their effectiveness validates whether we meet the Clean Water Act and State water quality laws and regulations. The IPNF uses BMPs to move soil and aquatic resource conditions towards desired conditions. The BMP reviews identify whether BMPs are effective, and the review provides a mechanism for adopting a new BMP or modifying an existing BMP. Guidance for addressing this monitoring question is in the Monitoring Guide for the 2015 Forest Plan (USFS 2016).

Results and Discussion

Methods

For this monitoring question we document the number of reviews conducted each year, the number of BMPs implemented, and whether the BMPs were effective. We display the ineffective BMPs as a fraction of the number applied. We document whether ineffective BMPs need changing or recommend changing practices to meet BMPs.

Most commonly, interdisciplinary teams conduct field reviews using the National BMP Review Forms tailored to the specific type of activity (i.e., Ground-based Skidding and Harvesting). These reviews include use of project level NEPA documentation of design features, or Soil and Water Conservation Practices in projects' NEPA planning folder. Reviews focus on BMPs most applicable to the project. The objective requires one review from each zone, each year. A zone may not have a project to review each year, and in that case a project on another zone can be used to supplement the effort (IPNF 2016).

This review includes audits by sources other than the IPNF. Monitoring reviews include the state of Idaho's 2016 BMP audit team at the Lower Priest Project, three individuals from the Rocky Mountain Research Station (RMRS) at the Pyramid and Red Solo Timber sales in November 2016, and in 2020 the state of Idaho sent their BMP audit team to the Jasper II timber sale area. The RMRS monitored on behalf of Panhandle Forest Collaborative (PFC).

The IPNF enters National BMP Review Forms' data into the national database. The spreadsheets that display the data are available on request. The technical guide is available at: https://www.fs.fed.us/naturalresources/watershed/pubs/FS_National_Core_BMPs_April2012.pdf.

Results

Data

A review of 32 National BMP forms completed for projects displayed that the IPNF implemented 93% (336 of 363) of the BMPs correctly. We also found that 97% of the implemented BMPs had the desired effect (Table 46). Two types of projects reviewed included ineffective BMPs. Weed treatment monitoring in 2016 found that the limited herbicides available for use in outdated NEPA decisions constrained effective treatment. The other type was road reconstruction in a near-stream location.

Completing 32 Best Management Practices (BMPs) evaluations, for an average of more than 5 per year exceeds the three BMPs evaluations per year proposed in the Monitoring Guide (one for each of the three zones per year).

Table 46. Summary of BMPs Implemented and their Effectiveness

Year	Number of Reviews	BMPs not Implemented Correctly	Comment related to BMP Implementation	BMPs not Effective	Comment related to BMP Effectiveness
2015	3	1 of 35	Signage was noted as lacking.	3 of 35	Ineffective BMPs all related to Medimont Boat Launch construction project that under-estimated the effect of people on the environment at the popular site
2016	9	5 of 114	Facility maintenance, Harvest RHCA to narrow, Fire suppression rehab.	2 of 109	Ineffective BMPs related to lack of availability of herbicide types.
2017	2	1 of 18	No fish screen on an instream pump.	NA	The monitoring was only implementation monitoring
2018	5	13 of 47	Road Drainage at Pack R., Garbage at Recreation site, Harvest RHCA to narrow	4 of 36	Ineffective BMPs all related to one near-stream road reconstruction project
2019	6	1 of 68	Two parallel firelines in harvest unit	0 of 24	Only 24 BMPs rated for effectiveness because some were implementation monitoring reviews
2020	7	6 of 81	Harvest RHCA to narrow	0 of 75	
Total	32	27 of 363	93 % Implemented Correctly	9 of 279	97% Effective

Of the 13 harvest units monitored with the National BMP process, six (46%) had a RHCA narrower than prescribed in the planning documentation.

Results of monitoring by other sources includes similarly high adherence to most BMPs. They found minor deficiencies (Table 47). These monitoring events by other entities did not monitor RHCA widths, because it is not part of their methodology.

Table 47. BMPs evaluation by other entities

Sale Name	Audit Type and Date	Description
Lower Priest	Idaho State Forestry BMP Audit, 2016	Two of the 63 applicable BMPs were not met. Debris from road construction (stumps and dirt) was 20 feet from class II stream and, non-biodegradable waste (petroleum product containers) were found in a burn pile.
Pyramid and Red Solo Timber Sales, Tower Fire Salvage	Active Timber Sale Monitoring by RMRS on behalf of Panhandle Forest Collaborative, 2016.	Reviewers observed one segment of a skid trail with rilling, and it was not connected with surface water. It lacked the slash placed on all the other skid trails reviewed. All the skid trails with slash placed on them had no signs of erosion.
Jasper II GNA	Idaho State Forestry BMP Audit, 2020	All 45 of the BMPs needed were implemented and effective. No deficiencies observed.

Discussion

In 2016, 2018, and 2020 Riparian Habitat Conservation Areas (RHCAs) in timber harvest units were marked and then cut more narrowly than the NEPA documentation prescribed. In 2020, three of four units with BMP reviews found RHCAs smaller than prescribed. The IPNF initiated a follow-up review to verify the 2020 sample and found that the issue was observed in 5 of 12 of the sampled areas (42%), less than three of four found in the original sample. It should also be noted that fine sediment was not noted to be reaching the stream at any of the monitored harvest units regardless of the narrower RHCAs along the streams. No documentation tracks why the IPNF laid-out the units with smaller RHCAs than the NEPA prescribed. The reasons for intact RHCAs include protection from pollutants, such as fine sediment, providing of complex and unique habitats for aquatic and terrestrial species, and providing shade to maintain water temperatures.

Reviewers found that BMP effectiveness was lacking along near-stream roads. These sites are notoriously difficult to maintain to the level needed to consistently avoid erosion (Jones et al. 2000). This is particularly concerning because a premise of WTR-02.01 and 02.02 is that our reconstruction of roads in riparian areas is a substantial benefit to watershed conditions.

Reviewers also found that by implementing a BMP related to using only the herbicides listed in the outdated NEPA document, they were less effective at treating weeds than they would be with updated guidance (NEPA documentation). New herbicides to be considered are likely to be more effective at controlling noxious invasive weeds, less damaging to non-target plants, and less hazardous to other resources like water quality and fishes.

Evaluation of Results for Adaptive Management Finding

Table 48. Summary of findings for Plan Monitoring Item WTR-01

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] **Do monitoring results demonstrate intended progress (i.e. maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?**	**(C) Uncertain** - Methods inadequate to answer monitoring question. The performance indicator is: "Number of Best Management Practices (BMPs) evaluations, and number of BMPs planned, with an identification of BMPs that were not implemented correctly or not effective." BMP implementation rate is high and BMP effectiveness rate is high. This question by itself does not answer the question, however taken in context with the other monitoring data (i.e., PIBO) there is evidence that the Forest is trending as desired.
RECOMMENDATION **Based on the evaluation of monitoring results, may changes be warranted?**	Yes. Based on the evaluation of monitoring results, recommended changes include: Management Activities: 1. Provide clear site-specific documentation regarding the RHCA widths to be applied at each unit. The central zone of the IPNF uses a Unit Card to identify RHCAs and other attributes of a timber sale unit. These cards are then used by the lay-out crews and others to define areas of treatment on the ground. Our recommendation is to consistently use unit cards across the IPNF. Also, there needs to be periodic training and oversight to ensure consistent implementation of prescribed RHCAs in harvest units. 2. Create a prioritized list of near-stream roads that require a focus on improving their conditions, including but not limited to BMP upgrades, or relocating the problematic roads. This list would assist in prioritizing projects. 3. Review current NEPA documentation to ensure that it allows for safe and effective treatment of noxious weeds (using modern herbicides

	FINDINGS
	and practices), and if it does not prioritize updating of the NEPA documents.
	Monitoring Program:
	4. Collect BMP data with a more diverse group and line officer representation to provide better insight. Most of the BMP review included in this report are completed by personnel in fisheries and hydrology with occasional representation from other resources.
	5. Another way to improve is to consistently use and store monitoring forms. We use the National BMP database to store forms related to the National BMP monitoring. Although this is a tedious task, the forms are consistently there for review and compiling. Other forms, such as the Soils and Water Conservations Practices get stored in various locations and are not consistently completed or available for review.
	6. Larger sample sizes (more monitoring) within the established process (or an updated process) would ensure that the results represent the actual outcome of implemented projects. For example, thirteen harvest units monitored with the National BMP process found that six (46%) had RHCAs narrower than prescribed in the planning documentation. Thirteen samples over a period of six years is a small sample size, and there is limited assurance that this is an accurate portrayal of the situation. Other sampling was conducted informally, and some of that was included in this report. However, informally collected monitoring data is often unavailable.
MANAGEMENT FRAMEWORK **If a change may be warranted, where may the change be needed?[2]**	Monitoring Program and Management Activities

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item WTR-02 – Watershed Desired Conditions

Table 49. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-WTR-02: To what extent are management activities moving watersheds towards desired conditions?	FW-DC-WTR-01 FW-DC-WTR-02 FW-DC-WTR-03 FW-DC-WTR-04 FW-OBJ-WTR-01 FW-OBJ-WTR-02 FW-STD-WTR-01 FW-GDL-WTR-01	MON-WTR-02-01: Acres or miles of restoration activities accomplished, by subwatershed; (N) MON-WTR-02-02: Acres or miles of restoration activities accomplished by subwatershed in 4a impaired waterbodies; (N) and MON-WTR-02-03: Percent of subwatersheds trended towards an improved condition. (N)	Annual	geo-enabled Performance Accountability System (gPAS) and INFRA	Forest Aquatics Program Manager

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 50. Monitoring Item WTR-02 - Monitoring Collection Summary

For monitoring item WTR-02:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	This is the first MER
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-WTR-01. Watersheds, riparian areas, and other hydrologically dependent systems, such as streams, lakes, and wetlands have characteristics, processes, and features consistent with their natural potential condition. These features and related ecosystems retain their inherent resilience by responding and adjusting to disturbances without long-term, adverse changes to their physical or biological integrity.

FW-DC-WTR-02. All management activities will emphasize protection of water quality in order to meet applicable state water quality standards and fully support beneficial uses. Surface and groundwater flows support beneficial uses and meet the ecological needs of aquatic species and maintain the physical integrity of their habitats.

FW-DC-WTR-03. Stream channels transport water, sediment, and woody material over time, while maintaining their proper dimension, pattern, and profile for a given landscape and climatic setting. Sediment deposits, from over-bank flows, allow floodplain development and maintenance and support the propagation of flood-dependent riparian plant species. Surface and groundwater flows recharge riparian aquifers, provide for late-season flows, cold water temperatures, and sustain the function of surface and subsurface aquatic ecosystems.

FW-DC-WTR-04. Lands that contribute to municipal watersheds and public water systems (source water protection areas) are in a condition that contributes to consistent delivery of clean water.

FW-OBJ-WTR-01. Over the life of the Plan, trend 20 percent of subwatersheds that have a condition rating of "Moderate" or "High," toward a better condition, through the removal or mitigation of risk factors that are within reasonable control of management. Subwatersheds rated "Moderate" and "High," may have degraded habitat conditions, water quality limitations, depressed populations of native fish species, or a combination of the above, but have a relatively high potential for improvement.

FW-OBJ-WTR-02. Annually, improve aquatic ecosystem function and processes across 100 to 500 acres of subwatersheds that are rated as "Moderate" or "High," emphasizing activities in subwatersheds with Category 4a water bodies, on Idaho's §303(d) list of impaired waters. Category 4a water bodies have an approved total maximum daily load (TMDL), have pollution control requirements in place, other than a TMDL, or are impaired by pollution (e.g., flow alteration and habitat alteration) but not pollutants.

FW-STD-WTR-01. Ground-disturbing activities in source water areas (designated special or public water supply watersheds) shall prevent risks and threats to public uses of water. Short-term effects from activities in source water areas may be acceptable when those activities support long-term benefits to the RHCAs, soils, and aquatic resources.

FW-GDL-WTR-01. Ground-disturbing activities in subwatersheds with Category 5 water bodies, on Idaho's §303(d) list of impaired waters, should not cause a decline in water quality or further impair beneficial uses. A short-term or incidental departure from state water quality standards may occur

where there is no long-term threat or impairment to the beneficial uses of water and when the state concurs. Category 5 water bodies are waters where an approved TMDL is not available.

The IPNF quantified the amount of watershed and aquatic-focused restoration activities to measure progress toward the goal of improving watershed condition across the planning area. These include watershed conditions of "impaired waters" identified by the state. Guidance for addressing this monitoring question is in the Monitoring Guide for the 2015 Forest Plan (V2) (IPNF 2016).

Results and Discussion

Methods

Monitoring item WTR-02 includes three monitoring indicators (Monitoring Item Summary).

Performance Indicator 1 quantifies restoration activities including stream channel or riparian habitat restoration, road decommissioning, and restorative road management activities (such as road relocation or road reconstruction). Existing guides included counting activities considered restorative, but not normal maintenance. The geo-enabled Performance Accountability System (gPAS) Reports and INFRA provide the sources for this information. The gPAS system combines the annual accomplishment reporting information in the Watershed Improvement Tracking database and the INFRA database. Using INFRA, the IPNF tabulated roads decommissioned, stored, or reconstructed by subwatershed.

Performance Indicator 2 quantifies the same activities as indicator 1 but emphasizes activities that restore waters listed by the state as impaired (Category 4a). Category 4a waters have a water quality improvement plan, called a total maximum daily load (TMDL). A key reference is the Idaho Department of Environmental Quality (IDEQ) Integrated Report (IDEQ 2021).

Performance Indictor 3 is the percent of subwatersheds trending toward an improved physical or biological condition. To account for physical and biological trends we attempted to mimic the Watershed Characterization Spreadsheet (2011) and Salmonid Assessment Spreadsheet (2013). The IPNF used these in the EIS for Forest Plan revision and recommended their use in the monitoring plan (USFS 2016).

The effort to rerun the metrics in the watershed characterization spreadsheet V2.5 (February 2011) was complicated by changes in how data was collected and stored over the last decade. An example is a GIS road layer that is much more accurate now than it was in 2011. Although the increased accuracy provides precision, the measuring the change in watershed health at the two points in time is over-shadowed by mapping changes rather than the differences made by management activities to benefit the watershed.

The watershed characterization spreadsheet incorporates results from the three processes: watershed sensitivity, watershed disturbance, and riparian disturbance to create a watershed condition rating. A key reference is Appendix D —Aquatics: Analyses and Methodology in the Idaho Panhandle National Forest – EIS (USFS 2015).

Subwatersheds rated as "low" generally have a relatively low inherent sensitivity to disturbances and low level of overall disturbance. These subwatersheds exhibit geomorphic, hydrologic, and biotic integrity relative to their natural potential condition. The drainage network is generally stable. Soil, aquatic, and riparian systems are assumed to be functional, in terms of supporting beneficial uses.

A rating of "moderate" generally indicates a subwatershed with a low to moderate inherent sensitivity and/or a low to moderate level of disturbances. Watersheds exhibit moderate geomorphic, hydrologic, and biotic integrity relative to their natural potential condition. Portions of these subwatersheds may exhibit an unstable drainage network. Soil, aquatic, and riparian systems may or may not support beneficial uses.

In general, subwatersheds rated as "high" have a relatively higher sensitivity to natural and human caused natural disturbances and relatively higher level of overall disturbances. These subwatersheds may have limited geomorphic, hydrologic, and biotic integrity relative to their natural potential condition. Most of the drainage network may be unstable.

Watershed condition rating may also include professional judgment. Review by resource specialists, with local field knowledge and site-specific data may add a notation to document why they recommend a change to a condition rating. This was done more often in 2011 (less than 10% of the ratings) than in 2021 (less than 5% of the ratings).

Salmonid Assessment Spreadsheet

The fisheries population information and watershed condition ratings in the Salmonid Assessment Spreadsheet were updated as outlined in the monitoring guide and Appendix D. Spreadsheets and background information for their development are available upon request. The fisheries population information includes a rating for each subwatershed for presence, abundance, and whether the stream's use includes spawning and rearing, or migration and overwintering.

Results

Data

Performance Indicator 1

Restoration management activities occurred in 64 of the IPNFs 145 subwatersheds (12-digit HUCs). The number of watersheds on the Forest vary depending on the criteria used to enumerate them. The 145 is based on at least 25% of the subwatershed being IPNF managed lands. The number of miles or acres vary by an order of magnitude between years, which happens because some projects emphasize more restoration type of work (Table 51 and and Figure 25).

Table 51. Watershed Restoration for All Watersheds [from Monitoring Guide]

Fiscal Year	Stream Restored or Enhanced (Miles)	Restorative Road Management Activities (Miles)	Stream Acres of Watershed Improved	Road-Related Acres of Watershed Improved	Total Acres of Watershed Improved
2015	11.0	79.7	6	1015.7	1021.7
2016	14.8	47.6	3	405.5	408.5
2017	21.0	10.9	9	103.4	112.4
2018	14.7	49.4	49	447.1	496.1
2019	3.8	102.2	4	1047.8	1051.8
2020	2.0	121.8	3	1259.4	1262.4
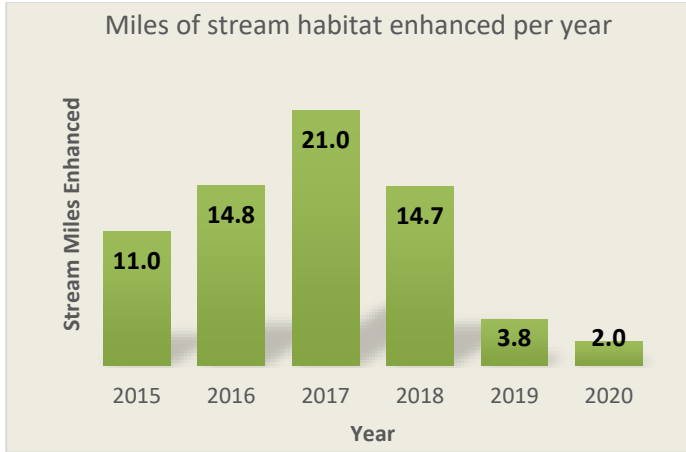
Figure 24. Miles of stream habitat enhanced per year
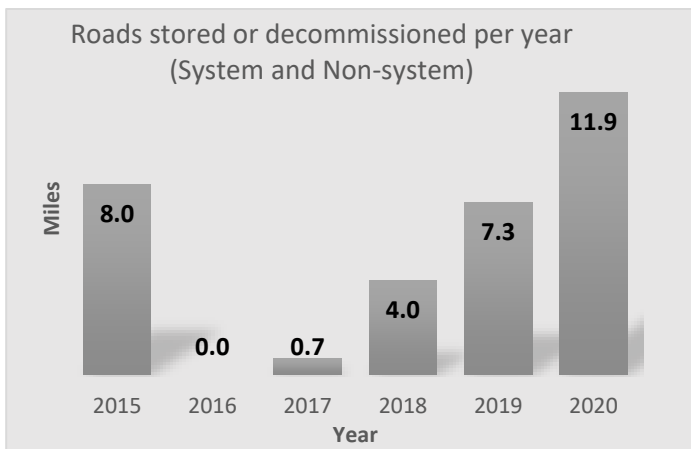
Figure 25. Roads stored or decommissioned per year

Performance Indicator 2

Of the 64 subwatersheds with restorative activities since 2015, 45 (70.3%) were in subwatersheds, or closely upstream of subwatersheds, that contain waters listed by the state as impaired (Category 4a) (Figure 26, and Table 52). The process for counting the acres restored (Monitoring Guide 2016) gives weight to roads restored in riparian areas, because these areas are most likely to benefit water quality. In comparison the benefits seen from instream restoration is relatively small.
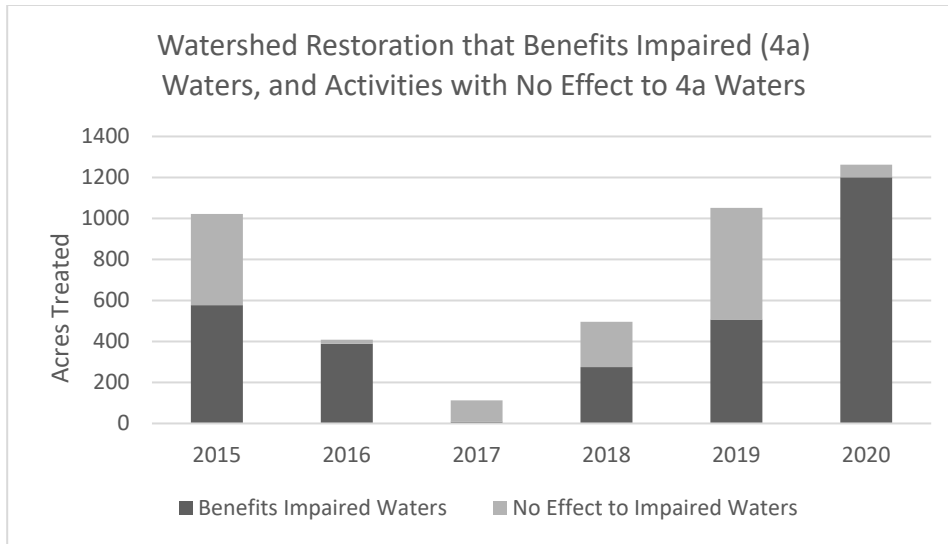
Figure 26. Watershed restoration that benefits impaired waters and activities with no effect to impaired waters

Table 52. Watershed improvement in subwatershed that affect impaired waterbodies (listed as 4a)

Fiscal Year	Acres of Stream Restored or Enhanced	Miles of Road with Restorative Activities	Acres of Watershed Improved	Percent of acres affecting 4a Listed streams
2015	4	38.4	577	56.5
2016	2	44.1	389	95.1
2017	9	0	9	8.0
2018	49*	27.8	275	55.4
2019	0	38.3	507	48.2
2020	2	107.4	1201	95.1

*Hughes Meadow Project significantly increased stream acres in 2018.

Performance Indicator 3

The updated Watershed Condition Characterization process resulted in an increase in watersheds rated as low (relatively low inherent sensitivity to disturbances and low level of overall disturbance) and a decrease in the number rated high (Table 53). Perhaps indicating that overall, the subwatersheds are more functional, in terms of supporting beneficial uses.

Table 53. Watershed Condition Characterization [from Monitoring Guide]

Watershed Characterization	Year	Number of Subwatersheds Rated Low	Number of Subwatersheds Rated Moderate	Number of Subwatersheds Rated High
V2.5 (Feb 2011)	2014	47	58	40
Watershed Comp Spreadsheet Feb 19, 2021	2020	58	53	34

The limited updates to the bull trout population categories had very little effect on watershed management category. However, the changes made to watershed rating, included in the watershed management categorization, switched several calls, mostly from active restoration to conservation (Table 54).

Table 54. Watershed Management [from Monitoring Guide]

Salmonid Assessment	Year	Number of Conservation Subwatersheds	Number of Active Restoration Subwatersheds	Number of Passive Restoration Subwatersheds
V7.0 (Jan 2013)	2014	48	56	40
Feb.2020	2020	62	50	33

Discussion

During the monitoring period of six years, the IPNF restored an average of 378 acres per year in subwatersheds that are rated by the Watershed Condition Characterization process as "Moderate" or "High" and that were affecting Category 4a waterbodies (data available on request). This achieved the objective FW-OBJ-WTR-02 that is defined as annually improving aquatic ecosystem function and processes across 100 to 500 acres of subwatersheds that are rated as "Moderate" or "High," emphasizing activities in subwatersheds with Category 4a water bodies.

An objective for performance indicator 3 is FW-OBJ-WTR-01: over the life of the Plan, trend 20 percent of subwatersheds that have a condition rating of "Moderate" or "High," toward a better condition, through the removal or mitigation of risk factors that are within reasonable control of management. According to the review performed, 14.3 percent of the subwatersheds that had a condition rating of moderate or high in 2011 moved toward a better condition (Table 55).

Table 55. Condition trend for subwatersheds with moderate and high ratings

Year	Subwatersheds with a condition of Moderate or High	Number that moved toward a better condition	Percent Trending as Planned
2011	98	NA	NA
2020	84	14	14.3%

Appendix D of the Forest Plan defines the three categories for managing watersheds.

1) Evaluated conservation watersheds by selecting subwatersheds that had strong or stable populations of native trout in subwatersheds rated as "low" from the watershed characterization rating spreadsheet (V2.5).

2) Active restoration watersheds were determined by selecting subwatersheds that had small populations or populations of unknown size of native trout present in subwatersheds rated as "moderate" watershed condition.

3) Passive restoration watersheds were determined by selecting subwatersheds that had small populations or populations of unknown size of native trout present in subwatersheds rated as "high" watershed condition.

Table 54 shows a trend toward the IPNF ranking more subwatersheds as conservation watersheds, and fewer remaining in the active restoration and passive restoration categories. The change is partially based on the completion of a few large-scale projects, such as the Moose Drool Restoration Project, and many smaller projects. These projects reduce the effects of roads on the watershed, thereby improving the watershed condition. It may also be a result of the evolving data sets. The years between running the original watershed characterization and the current re-run of the best data available raised concern that the results may not be a result of management, but a mix of management and inconsistent data.

The intent of performance indictor 3 is to display trends based on physical or <u>biological</u> condition. Factors complicating the biological assessment, which is based on native trout, is clouded by the migratory nature of these fish, the effects of non-native predation on these fishes, effects of climate change, and the evolving data collection processes such as use of environmental DNA that show presence where we had not detected the fish previously. Also, the biological condition of watersheds are ranked by several terrestrial and other aquatic factors. These other factors are reviewed in other monitoring items such as trends of vegetation composition, structure and pattern, increasing resistance and resiliency to disturbance factors including climate change (MON-VEG-01) and changes in the aquatic macroinvertebrate composition (MON-FOC-01-02).

In this monitoring item we fail to look closely enough at the specifics of road-related activities that affect watersheds. The most influential portion of the data, to show evaluation of monitoring indicators 1 and 2, was the roads data from INFRA. Following the Monitoring Report Guidance (2016), decommissioned, stored, or reconstructed roads by subwatershed was tabulated, by year, and then made conclusions given the information available. Although decommissioning and storing roads is an accepted practice to improve watersheds, these treatments were relatively minor in comparison to the number of roads reconstructed. Road reconstruction can be beneficial or detrimental to the watershed depending on the site-specific conditions and the specific activities incorporated. For example, a reconstructed road may be stable on the landscape, narrowed to a minimal safe driving width, adequately drained, and surfaced. This type of reconstruction would be a project that is restorative to the watershed. In contrast, a road reconstructed to allow for more traffic and larger vehicles may have a net negative effect on the watershed regardless of the BMPs implemented (see WTR-01).

The GIS specialists found that the complex process used to evaluate monitoring indicator 3 contained impractical calculations of the soil coefficients related to Detrimental Soil Disturbance. At times, the process required subjective interpretation of the Timber Stand Management Record System (TSMRS) data, and the coefficients poorly interpreted combinations of activities. In addition to the issues with the soil coefficients, analyzing Forest Service Activity Tracking System (FACTS) data is considerably different than analyzing TSMRS data, therefore, the analysis process needs updating using the latest techniques, software, and databases. This would take considerable time and research.

Evaluation of Results for Adaptive Management Finding

Table 56. Summary of findings for Plan Monitoring Item WTR-02

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] **Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?**	**(C) Uncertain** - Methods inadequate to answer monitoring question. The results observed from the complex analysis could show a different result if a closer look at some of the details of the analysis were investigated, such as the actual impacts or benefits of road reconstruction to the subwatersheds.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes. Use more BMP-like reviews (WTR-01) to provide a closer look at project-scale benefit. The cumulative effect of projects will demonstrate trends for larger scale change. The current small sample size for the influential activities, such as road-related activities, provides limited insight. Use the PIBO data and annual reports at the Forest scale and perhaps the 5th code HUC (10-digit) scale to monitor changes. Do not re-invest in another complex GIS exercise unless there is a long-term commitment to upkeep and scrutinize each factor in the analysis. Consider a cumulative approach of other monitoring items to answer this question: MON-VEG-01, MON-FOC-01-02 et al. Add FW-OBJ-AQH-02 to the list of plan components. Update the monitoring guide to reflect an approach that would provide an answer more comprehensive understanding of the status of plan components
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?* [2]	Monitoring Program

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item AQH-01 – Reconnecting Stream Habitat

Table 57. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
AQH-01: To what extent is the Forest meeting Forest Plan objectives and trending towards desired condition to reconnect fragmented stream habitat to increase population resilience to disturbance including climate change?	FW-DC-AQH-02 FW-DC-AQS-01 FW-DC-AQS-04 FW-DC-AQS-05 FW-OBJ-AQH-03	MON-AQH-01-01: Miles of reconnected stream habitat (N)	Annual/Class A	WIT database	Forest Aquatics Program Manager

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 58. Monitoring Item AQH-1 - Monitoring Collection Summary

For monitoring item AQH-01-01:	Year
Data was last collected or compiled in:	2018
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	2019
Next scheduled MER evaluation of this monitoring item:	2021

Referenced Plan Components:

FW-DC-AQH-02. Connectivity between water bodies provides for life history functions (e.g., fish migration to spawning areas, amphibian migration between seasonal breeding, foraging, and overwintering habitats) and for processes such as recolonization of historic habitats.

FW-DC-AQS-01. Over the long term, habitat contributes to the support of well-distributed self-sustaining populations of native and desired non-native aquatic species (fish, amphibians, invertebrates, plants, and other aquatic-associated species). In the short-term, stronghold populations of native fish, especially bull trout, westslope cutthroat trout, and interior redband trout, continue to thrive and expand into neighboring unoccupied habitats, and depressed populations increase in numbers. Available habitat supports genetic integrity and life history strategies of native fish and amphibian populations. Macroinvertebrate communities have densities, species richness, and evenness comparable to communities found in reference conditions.

FW-DC-AQS-04. Bull trout. Recovery and delisting of bull trout is the long-term desired condition. Spawning, rearing, and migratory habitat is widely available and inhabited. Bull trout have access to historic habitat and appropriate life history strategies (e.g., resident, fluvial, and adfluvial) are supported. Recovery is supported through accomplishment of bull trout recovery plan tasks under Forest Service jurisdiction. Bull trout population trends toward recovery through cooperation and coordination with USFWS, tribes, state agencies, other federal agencies, and interested groups.

FW-DC-AQS-05. Bull trout. Habitat conditions improve in occupied bull trout streams and in connected streams that were historically occupied, resulting in an increase in the overall number of stronghold populations. Bull trout habitat and populations continue to be protected through the application of standards and guidelines for aquatic habitat and species.

FW-OBJ-AQH-03. Over the life of the Plan, reconnect 30 to 55 miles of fragmented habitat in streams where aquatic and riparian-associated species' migratory needs are limiting distribution of those species.

Miles of reconnected habitat provides to insight regarding whether the IPNF is trending toward the desired conditions of habitat connectivity for all life histories of aquatic species. Providing access to as much available habitat as possible will maximize refugia for cold water aquatic species during a range of climatic scenarios. The IPNF's intent includes reconnecting the human-caused habitat fragments on the IPNF by altering, removing or replacing dams and poorly installed culverts that impede the movement of aquatic organisms (IPNF 2016).

Results and Discussion

Methods

The miles of reconnected habitat are a subset of the data recorded annually in the WIT database (USDA FS 2018) and stored in gPAS under the stream habitat enhanced category (code: HAB-ENH-STRM). The IPNF compares the miles of reconnected habitat to the objective (FW-OBJ-AQH-03) of 30 to 55 miles of reconnected habitats over the life of the Forest Plan.

Results

Data

The IPNF met the objective of reconnecting fragmented habitat by reconnecting over 30 miles of stream habitat (FW-OBJ-AQH-03) (Table 59). The quality of the data is good as it follows the guidelines laid-out in the Criteria for Reporting Fisheries Accomplishments (Stream Habitat Enhanced; USFS 2018). The guidelines dictate the start and end points where benefits to aquatic species should extend.

Table 59. Miles of Reconnected Stream Habitat by Fiscal Year

Fiscal Year	Structures Removed, Replaced, or Enhanced	Miles of Reconnected Stream Habitat
2015	Wall Creek	1.8
	Kriest Creek	2.7
	Shertz Creek	0.6
	Annual Total	5.1
2016	Hellroaring	1.9
	Quartz Creek	7.8
	East Fork Charlie Creek	2.4
	Annual Total	12.1
2017	Katka Creek	0.5
	Big Creek Bridge	10.0
	Spruce Creek	2.0
	Annual Total	12.5
2018	Burnt Cabin Creek	2.4
	Charlie Creek	1.4
	Canuck Creek	2.8
	Meadow Creek	1.5
	Iron Creek	2.9

Fiscal Year	Structures Removed, Replaced, or Enhanced	Miles of Reconnected Stream Habitat
	Copper Creek-Moyie River	0.5
	Skin Creek-Moyie River	0.7
	Annual Total	12.3
2019	Round Meadows Creek	0.5
	Upper Boulder Creek	2.3
	Round Meadows Creek	0.4
	Round Meadows Creek	0.4
	Annual Total	3.6
2020	Trail Creek-Deep Creek	1.9
	Annual Total	1.9
Grand Total		47.5

Discussion

Forest plan objective FW-OBJ-AQH-03 provides for reconnecting 30 to 55 miles of fragmented habitat during the life of the plan for the benefit of aquatic and riparian-associated species. In the years since implementing the 2015 Forest Plan the IPNF met the objective of reconnecting fragmented habitat by reconnecting over 47 miles of stream (Table 59). In recent years the trend downward. The future amount of reconnected fragmented stream habitat will vary as priorities may shift to different types of projects (such as adding woody structure to streams to improve habitat complexity or relocating near-stream roads to reduce impacts of roads). The IPNF may realize fewer miles of reconnected each year because we completed many of the projects that provided the big benefit and were easily accessible. The projects remaining are often more complicated or remote (expensive) and produce fewer miles of reconnected habitat.

Another plan component not listed in the monitoring Item Summary table above, is FW-OBJ-AQH-01. This objective sets a much higher bar of annually, enhancing or restoring 15 to 50 miles of habitat to maintain or restore structure, composition, and function of habitat for fisheries and other aquatic species.

Science continues to support the importance of reconnecting fragmented habitats for our native fishes, especially bull trout and cutthroat trout. Most bull trout, and many cutthroat populations, are migratory. Migratory forms occur in areas where conditions allow for movement from upper watersheds' spawning streams to larger downstream waters that contain greater foraging opportunities. Removing human-caused barriers to the movements of aquatic species ranks high for the persistence of bull trout local populations. Migratory bull trout become much larger than resident fish, because they use the more productive waters of larger streams and lakes, leading to increased reproductive potential.

Drivers of native fish habitat include the four C's: connected, clean, cold, and complex. Road management, particularly where roads intersect streams, is one of the keys to keeping streams connected. Roads and intact riparian areas also affect the other stream conditions, including sediment contributions (clean), influencing streamside trees that may someday fall in the stream and floodplain (complex), and trees provide shade (cold). Roads are a substantial factor in the watershed conditions evaluated in WTR-02.01, 02.02, and 02.03.

Table 60. Summary of findings for Plan Monitoring Item AQH-01

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] **Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?**	**(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired, based on 47 miles of stream reconnecting since 2015.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes. The Forest has met the objective outlined by FW-OBJ-AQH-03, but the monitoring plan does not track accomplishment of the objective encompassed by FW-OBJ-AQH-01, which states "Annually [underlined for emphasis], enhance or restore 15 to 50 miles of habitat to maintain or restore structure, composition, and function of habitat for fisheries and other aquatic species." Recommend adding the plan component FW-OBJ-AQH-01 to this monitoring item add as an indicator.
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?*[2]	Monitoring Program

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.
[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item SOIL-01 – Coarse woody debris retention

Table 61. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
SOIL-01: To what extent has coarse woody debris been retained for long-term soil productivity and other ecosystem functions?	FW-DC-SOIL-01, FW-DC-SOIL-03, FW-GDL-SOIL-02, FW-GDL-SOIL-03, FW-DC-VEG-08, FW-GDL-VEG-03	MON-SOIL-01-01: Number of harvest units surveyed and percent meeting coarse woody debris criteria post-harvest (N)	Annual/Class A	On-forest surveys	Forest Soil Scientist

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 62. MON-SOIL-01 - Monitoring Collection Summary

For monitoring item SOIL-01:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	NA
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-SOIL-01. Soil organic matter, soil physical conditions, and down woody debris maintain soil productivity and hydrologic function. Physical, biological, and chemical properties of soil are within the natural range of variability; enhance nutrient cycling, maintain the role of carbon storage, and support soil microbial and biochemical processes. Areas with sensitive and highly erodible soils or land types with mass failure potential are not detrimentally impacted or destabilized as a result of management activities.

FW-DC-SOIL-03. Soil organic matter and down woody debris support healthy mycorrhizal populations, protect soil from erosion due to surface runoff, and retain soil moisture. Volcanic ash-influenced soils that occur on most of the Forest are not compacted and retain unique properties, such as low bulk density and high-water holding capacity, to support desired vegetative growth.

FW-GDL-SOIL-02. Coarse woody debris is retained following vegetation management activities per (FW-GDL-VEG-03).

FW-GDL-SOIL-03. Soil impacts are minimized and previously activity areas that have incurred detrimental soil disturbance recover through natural processes and/or restoration activities. Organic matter and woody debris, including large diameter logs, tops, limbs, and fine woody debris, remain on site after vegetation treatments in sufficient quantities to retain moisture, maintain soil quality, and enhance soil development and fertility by periodic release of nutrients as they decompose (refer to FW-GDL-VEG-03).

FW-DC-VEG-08. Down wood occurs throughout the forest in various amounts, sizes, species, and stages of decay. The larger down wood (i.e., coarse woody debris) provides habitat for wildlife species and other organisms, as well as serving important functions for soil productivity.

FW-GDL-VEG-03. Vegetation management activities should retain the amounts of coarse woody debris (including logs) that are displayed in table 3 of the forest plan. A variety of species, sizes, and decay stages should be retained. Exceptions may occur in areas where a site-specific analysis indicates that leaving the quantities listed in the table would create an unacceptable fire hazard to private property, people, or sensitive natural or historical resources. In addition, exceptions may occur where the minimum quantities listed in the table are not available for retention.

Organic matter is a critical component of a productive soil as a contributor to soil structure and stability, hydrologic function and biological function (Deluca et al. 2019). Organic matter is comprised of dead and decaying leaf litter, logs, branches, and other biotic contributions that occurs both on the soil surface and within the mineral profile. This material gives the fuel needed by soil microbes to provide soil nutrients. It also improves the soil environment much like garden mulch, where the forest floor holds moisture and temperatures for root and microbe respiration. The types of organic matter also regulate decomposition processes.

The amount of organic matter is seasonally dynamic, with spring growth producing new roots and leaf litter that recycles in fall for decomposers to sustain forest nutrition. Similarly, the cycling can be more extreme from large pulse events such as wind throw and wildfire that produce substantial changes to live versus dead material and may leave larger coarser material such as tree boles. This dynamic process is recognized in natural forest succession.

The Idaho Panhandle National Forest (IPNF) manages forests according to the ecological principles of succession, recognizing forest stands have varying levels of disturbance. Wildfire represents the most extreme, infrequent natural disturbance, that removes the bulk of forest biomass leaving mostly boles – also termed as coarse woody debris - behind for decomposition. These extreme events are

punctuated by long periods of regrowth where forest mulch rebuilds along with vegetation succession. Managing organic matter in land management projects is necessary to ensure soil productivity is maintained with the sustainable extraction of forest products.

The forest plan recognized the importance of organic matter and focuses on coarse woody debris (CWD) as the strongest indicator. CWD consists of dead woody material larger than 3 inches in diameter primarily derived from tree boles. Coarse woody debris fills a niche role in a forest ecosystem as wildlife habitat, substrate for mycorrhizal fungi, a moisture reservoir, as well as potentially long-term storage of plant essential nutrients (Graham et al. 1994). Managing coarse wood represents a tradeoff of soil productivity and wildlife needs, while limiting amount and concentrations that heighten fire hazard (Brown et al. 2003). The recommended levels correlate to research developed in the 1970s and 1980s, reported in Graham et al. 1994, which still exist as our best available science for the forest's biophysical settings. The Idaho Panhandle Land Management Plan (U.S. Department of Agriculture 2015) recommends the retention of CWD in a treatment unit per the guidelines in Table 63.

Table 63. Level of logs and other Coarse Woody Debris to Retain after Vegetation Management Activities for each Biophysical Setting (this table can also be found in the 2015 IPNF Land Management Plan to accompany FW-GDL-VEG-03).

Biophysical Setting	Total Coarse Woody Debris to Retain (tons/acre)	Number of Logs to Retain/Acre	Desired Size to Retain
Warm/Dry	Dry Sites: 5-12	6-14	Diameter: >10" with at least 2 pieces >20"
	Moister Sites: 10-20		Length: >12'
Warm/Moist	12-33	20-30	Diameter:>12" with at least 10 pieces >20" Length: >12'
Subalpine	Moister Sites: 12-25	Moister Sites: 20-30	Diameter: >10" (8" for lodgepole pine)
	Drier Sites: 7-15	Drier Sites: 15-20	Length:>12'

Results and Discussion

Methods

CWD data is collected using a modified transect intercept technique from the *Handbook for Inventorying Downed Woody Material* (Brown 1974). Woody material larger than 3 inches in diameter, greater than 4 feet in length, is inventoried along 100 foot transects, documenting diameter and decay class (solid or rotten). CWD volume and estimated weight of the material is calculated. Five transects are conducted in each activity unit surveyed, and the average of the five transects is used to report tons per acre of CWD for the entire unit. CWD data is collected simultaneously with detrimental soil disturbance monitoring data (MON-SOIL-02), which occurs two to five years post-harvest.

This report summarizes the number and percentage of treatment units that align with CWD guidelines in the IPNF Forest Plan (Table 64). Every year data is collected, recorded, and summarized.

Results

Data

Table 64 shows the harvest units that achieve CWD recommendations from annual monitoring, with an average of 32% over the analysis period. This data represents a subset of all harvest locations and methods and represents a limited sample size for statistical inference. Methodology of estimating CWD content may have a range of certainty based on the spatiotemporal variability of CWD occurrence on a site (Keane 2016), with even greater ranges of variation since a fixed number of transects is gathered regardless of size of activity unit. Exceptions in the monitoring frequency occurred when widespread wildfire on the IPNF in 2015 that inhibited the capacity of the soils scientist to safely collect monitoring data, and in 2018 when priority projects postponed surveys.

Table 64. Monitoring results of units achieving FW-GDL-SOIL-03*

Fiscal Year	Number of units monitored	Number of units below CWD recommendation	Number of units achieving CWD recommendation	Number of units exceeding CWD recommendation	Units achieving CWD recommendation (% per year)
2015	0	NA	NA	NA	NA
2016	17	15	2	0	12%
2017	13	8	5	0	38%
2018	0	NA	NA	NA	NA
2019	9	3	4	2	44%
2020**	11	4	5	2	45%
Total	50	30	16	4	
%		60%	32%	8%	

*This data is summarized visually for the full monitoring period in Figure 27.

**Note: eight of the eleven units surveyed for post-harvest monitoring in 2020 were from a wildfire salvage sale. Available material for CWD retention may have been affected by the fire.
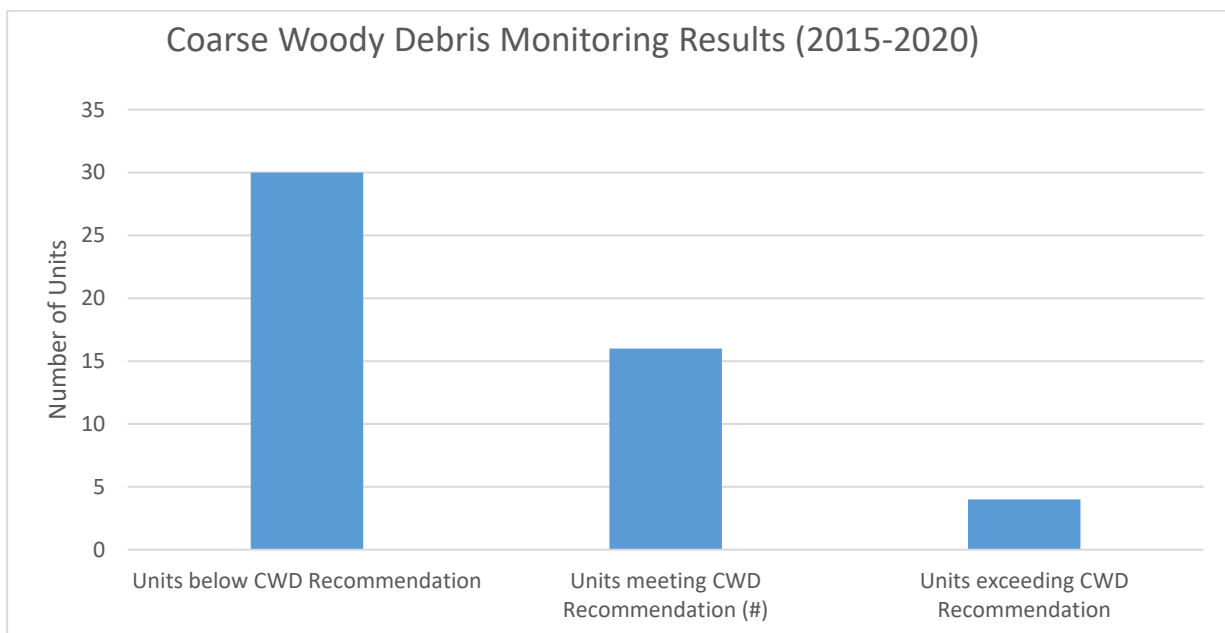
Figure 27. Coarse Woody Debris Monitoring Results summary based on compliance with retention recommendations described in FW-VEG-GDL-03*

[#] Data is broken out further by year monitored in Table 64 to show compliance trends over time.
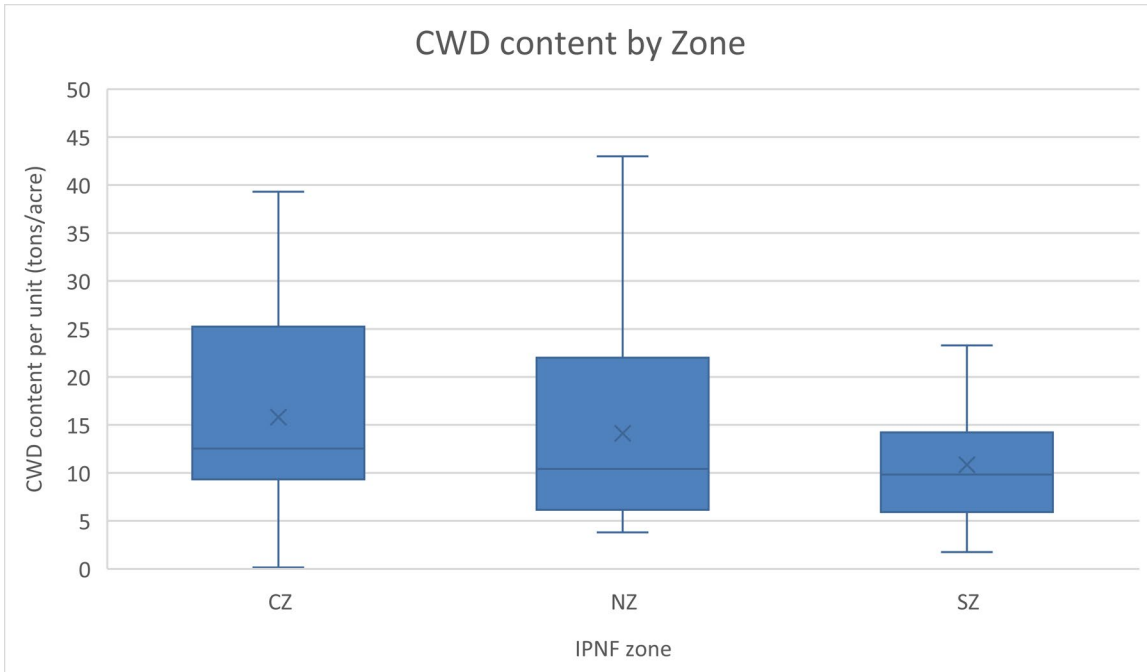
Figure 28. Shows the distribution of CWD data per zone*

* While each zone varies, the south zone shows lower CWD content than the other two zones in the variation of data as well as the average content.
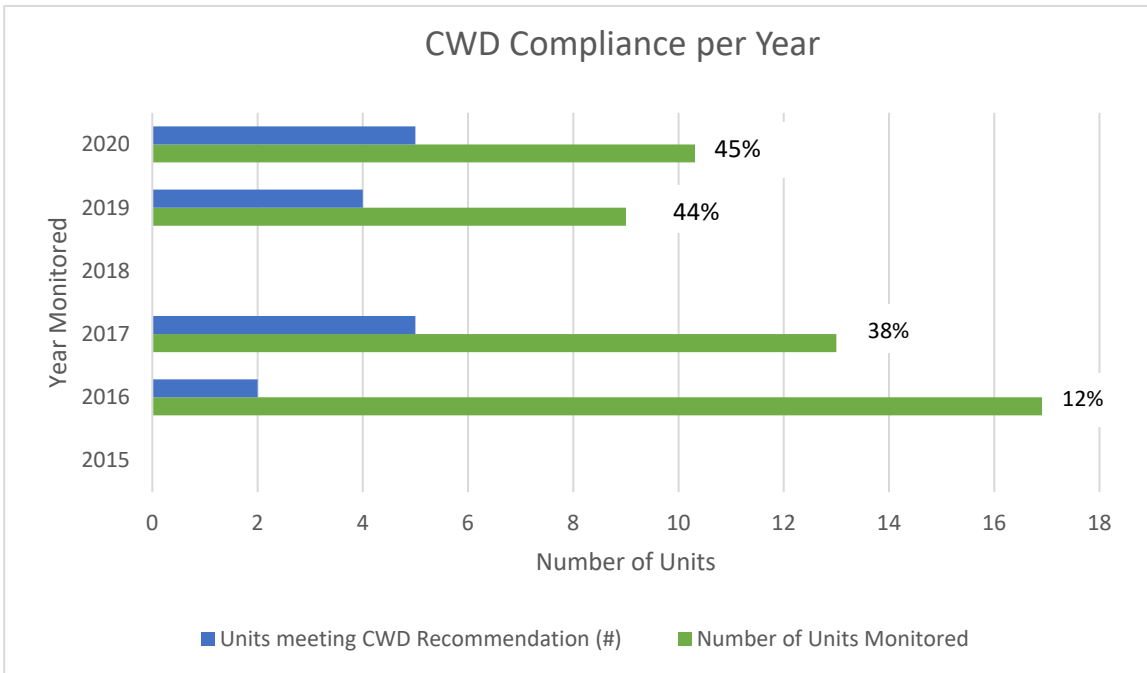
Figure 29. Comparison of units monitored for CWD and units aligning with FW-GDL-VEG-03*

*There is a slight trend of units in compliance increasing over the monitoring period.

Discussion

With a 6-year average of 32% of units containing the recommended ranges (Table 64), the IPNF has not been successful in achieving the guideline FW-GDL-VEG-03 after vegetation management activities are completed. However, proper CWD retention compliance increased over time, with 45% of the units surveyed in 2020 achieving recommendations. While the majority of units outside the range of compliance are estimated to have CWD content below the recommendations, four of these units (8%) had amounts greater. When checking for trends across the IPNF, there was nothing obviously different except the south zone had somewhat lower amounts. It is acknowledged that the 50 units monitored is a small sample compared to the amount of ground harvested in the six-year period. Despite the varying sample sizes in each year, it's clear that in every year monitored, the number of units achieving CWD recommendations was less than 50 percent of the total units monitored. The low amounts of CWD post-harvest is not a new trend. A compilation of CWD data back to 1999 found that of 135 activity units monitored, 45 percent had sufficient CWD (USFS 2017, internal report).

From a soil productivity standpoint, exceeding the thresholds does not necessarily impair soil function since after all its an indicator. However, by not sustaining CWD to recommended levels, FW-GDL-VEG-03, the Forest lacks evidence to support moving towards desired conditions to sustain soil functional attributes as outlined in FW-DC-SOIL-01 and FW-DC-SOIL-03. These guidelines are important for maintaining soil productivity and function, specifically healthy mycorrhizal populations.

An important note or caveat to this monitoring dataset is that the data reports a snapshot in time two to five years after the vegetation management activities. Further recruitment potential is possible over time, as the silvicultural prescriptions may include "leave trees" that are expected to contribute to CWD over longer time periods. Recruitment potential includes tree mortality due to burn activities, trees that may be expected to fall due to increased wind exposure, or recruitment through other natural forest processes. This is particularly true in the salvage units where tree mortality prior to the harvest was high, and many of the trees left on-site can be expected to fall as decay continues. A secondary dataset of CWD in the same units at a later date would provide more information on the success of long-term CWD recruitment in alignment with the silvicultural prescription.

The results of this monitoring evaluation identify a need to improve CWD retention in vegetation management units. Recommendations to accomplish LMP guidelines involve the following: (1) adjust monitoring to incorporate preharvest CWD data to better signal where an abundance of material may exist and where there is a need for long term recruitment. Provide information in both the planning and implementations phases to move towards the recommended levels with silvicultural prescriptions or contract provisions (2) clearly describe sufficient CWD content to all parties implementing projects, including providing newer photo load training materials, and (3) expand monitoring to address the effects of prescribed burning on CWD. This is important as the IPNF proposes to increase this activity.

Preharvest surveys of CWD could help the Forest decide where CWD recruitment may be an issue. We suspect that leaving enough CWD hinges strongly on the amount existing prior to forest operations. Many current forest operations efficiently remove slash with whole tree yarding techniques and regeneration harvest types. Regeneration prescriptions remove a large portion of the forest biomass, leaving retention patches and seed trees as potential CWD recruitment once these trees fall. Activity slash and non-merchantable fuels may also be removed via various fuels prescriptions and site preparation activities. Thus, it takes active engagement of soils, silviculturists, and implementation staff to ensure sufficient CWD is left behind in addition to what is already on the ground. Increasing the amount of treatment units that are sampled prior to timber harvest would help to correlate pre-activity CWD loads, harvest method, and site preparation technique to post-activity CWD loads.

Past Forest communication has also illustrated a clear benefit to working with implementation on achieving CWD guidelines. An informal monitoring evaluation was prepared in 2016, that had preliminarily identified poor implementation of FW-GDL-VEG-03 (with 12% in 2016). After discussions with the IPNF implementation staff including the Contracting Officer (CO) and Forest Service Representatives (FSR), this topic was identified as a priority to rectify during project implementation and was communicated as such to the timber industry (2019 Sale Administration Emphasis Items). After this priority was established, CWD content in harvest units has begun to increase. These recent improvements are slow to document since units are surveyed 2-5 years post-harvest.

The link with implementation is important since the Timber Sale Administrator (TSA) has final authority to decide timber sale units meet contract specifications. It is in these contract specifications, or provisions, that the Forest Service requires the purchaser to retain a given amount of CWD; these provisions correlate to LMP guidelines listed in Table 63 above. Based on personal continuing conversations with the FSR and TSA, there are a few pieces of information missing that impede the TSA's estimations of CWD content. Though not fully vetted, the following points may serve a useful start.

First, as mentioned above, the planning team needs to identify units during the planning phase that will likely need additional measures to achieve CWD guidelines. The FSR and TSA could then work to leave the necessary material. In 2020, the site condition contract provision was updated regionally to require the listing of existing CWD content for treatment units, giving operators a starting point for recruitment.

Second, we need to create more opportunities to communicate what desired CWD levels look like on the ground. The TSA's do not have the capacity to complete modified Brown's transects in every treatment unit to identify the difference in target CWD loads. An alternative would be the TSA request soil staff measure CWD loads to help determine compliance. This approach serves dual purposes by calibrating implementation staff to visually estimate CWD loads while increasing monitoring instances. However, the capacity of both staff areas prohibits widescale, systematic use, and would only be feasible as an occasional educational tool. Another option would be to conduct field trips with training on the photo load guide (Keane and Dickinson 2007, Holley and Keane 2010) that could help educate operators and forest implementation staff to visually estimate CWD. The trainings would involve visual guides and handouts with clear photos to gage desired CWD levels.

Finally, the IPNF has an active prescribed burning program. Most of the soil monitoring concentrates on timber harvest and thus misses the engagement on these highly important landscape burns. Documentation of the success of these burns would ensure the IPNF move towards the soil desired conditions of the LMP.

Evaluation of Results for Adaptive Management Finding

Table 65. Summary of findings for Plan Monitoring Item SOIL-01

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] **Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?**	**(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired, based on the sample of units showing less than recommended levels of coarse woody debris retention post project implementation.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?* [2]	Monitoring Program: Increase the sample size of units surveyed to adequately represent conditions of the full suite of units treated. To address poor implementation of coarse woody debris guidelines, the soils staff shall work with implementation staff to identify action items necessary to for improved performance. Management activities, as implemented, need to ensure proper retention of CWD. Continued communication between soils, silviculturists and implementation will identify actions to improve guideline compliance. Recommended remedies: Adjust monitoring to incorporate preharvest CWD data to better signal where an abundance of material may exist and where there is a need for long term recruitment. Provide information in both the planning and implementations phases to design projects to achieve CWD compliance with silvicultural prescriptions or contract provisions Create more opportunities with implementation, including operators, on what sufficient CWD looks like, including providing newer photo load training materials, and Expand monitoring to address prescribed burning.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item SOIL-02 – Soil Disturbance

Table 66. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-SOIL-02: To what extent have design features prevented irreversible damage to soil conditions?	FW-DC-SOIL-02, FW-DC-SOIL-03, FW-GDL-SOIL-01, FW-GDL-SOIL-04	MON-SOIL-02-01: Number of harvest units surveyed and percent that meet the Regional Soil Quality Standard, post-harvest (FSM, R1 Supplement No. 2500-99-1) (N)	Annual/Class A	On-forest field surveys	Forest Soil Scientist

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 67. Monitoring Collection Summary

For monitoring item SOIL-02:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	NA
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-SOIL-02. Soil impacts are minimized and previous activity areas that have incurred detrimental soil disturbance recover through natural processes and/or restoration treatments. Organic matter and woody debris, including tops, limbs, and fine woody debris, remain on site after vegetation treatments in sufficient quantities to maintain soil quality and to enhance soil development and fertility (refer to FW-GDL-VEG-03).

FW-DC-SOIL-03. Soil organic matter and down woody debris support healthy mycorrhizal populations, protect soil from erosion due to surface runoff, and retain soil moisture. Volcanic ash-influenced soils that occur on most of the Forest are not compacted and retain unique properties, such as low bulk density and high-water holding capacity, to support desired vegetative growth.

FW-GDL-SOIL-01. Ground-based equipment should only operate on slopes less than 40 percent, in order to avoid detrimental soil disturbance. Where slopes within an activity area contain short pitches greater than 40 percent, but less than 150 feet in length, ground-based equipment may be allowed, as designated by the timber sale administrator.

FW-GDL-SOIL-04. Ground-disturbing management activities on landslide prone areas should be avoided. If activities cannot be avoided, they should be designed to maintain soil and slope stability.

Soil is a critical resource as it is the foundation for ecosystem health. As a substrate for plant growth, soils recycle and store plant essential nutrients, provide water storage, and is a home to symbiotic organisms like mycorrhizal fungi. The soil is an integral part of the water cycle as well, as it infiltrates, filters, and stores water to maintain water quality in both above ground and belowground water bodies. Long-term, sustainable vegetation management is dependent on maintaining soil productivity and function. Widespread detrimental soil conditions result in a decrease in forest productivity, impacts to belowground biodiversity, a disruption in nutrient cycling, and impacts to water quality. Because soil forms over geologic timeframes, widespread damage to soil may be irreversible within our lifetime or that of several tree rotations. As such, it is prudent to design vegetation management activities to minimize detrimental soil conditions and maintain soil productivity and function.

Maintaining soil productivity and function is required by several laws and regulations. The over-arching law of this type, related to vegetation management, is the National Forest Management Act (NFMA). This act recognizes "the fundamental need to protect and, where appropriate, improve the quality of soil, water, and air resources". To protect soil resources, vegetation management activities are only to be permitted where soil conditions will not be irreversibly damaged (16 USC 1604(g)(3)(E)(i)) and where harvest is "carried out in a manner consistent with the protections of soil... and the regeneration of the timber resource".

To inform decision makers about whether proposed or implemented management activities may result in irreversible damage to soil conditions, each region within the Forest Service was charged with developing soil quality indicators. The Northern Region Soil Quality Standards were developed to establish a means to communicate the degree of change in soil indicators for which a loss in long-term soil productivity may be expected (U.S. Department of Agriculture 2014). Soil quality indicators

should be selected with consideration to the resources available, data collected should be easily replicated, and applicable to the wide variety of soil conditions across the region.

Detrimental Soil Disturbance is a single number used to quantify the amount of management-induced disturbance within an activity unit. This percentage refers to the surface area of a unit that has or is expected to incur detrimental soil conditions. Detrimental soil disturbance (DSD) is a useful approach in assessing management impacts as it encompasses a variety of soil indicators and summarizes them in a single metric using a standardized classification and rating protocol. Region 1 utilizes detrimental soil disturbance in the Soil Quality Standards, which is defined as follows:

> *Soil quality is maintained when soil erosion, compaction, displacement, rutting, burning and loss of organic matter are maintained within defined soil quality standards. Design new activities that do not create detrimental soil conditions on more than 15% of an activity area. In areas where more than 15% detrimental soil conditions exist from prior activities, the cumulative detrimental effects from project implementation and restoration should not exceed the conditions prior to the planned activity and should move toward a net improvement in soil quality. (FSM Region 1 Supplement 2500-2014-1 2554.03)*

The use of detrimental soil disturbance is additionally referenced in the Idaho Panhandle National Forest Land Management Plan (2015). Both FW-DC-SOIL-02 and FW-GDL-SOIL-03 state, "Soil impacts are minimized and previous activity areas that have incurred detrimental soil disturbance recover through natural processes and/or restoration treatments". Detrimental impacts to soils are not entirely avoidable in active vegetation management, therefore this guidance is interpreted on the Idaho Panhandle to mean that detrimental soil disturbance would be avoided, where possible, and would not exceed 15% detrimental soil disturbance per activity area.

Results and Discussion

Methods

The Forest Soil Disturbance Monitoring Protocol (Page-Dumroese et al. 2009a, Page-Dumroese et al. 2009b) (FSDMP) was developed by Rocky Mountain Research Station to standardize the manner in which disturbance data is collected. Onsite assessments (Page-Dumroese et al. 2009b) include "toe-point" sampling shovel tests on random transects to record observations of soil disturbance. At each point, spade holes are used to observe soil horizons, soil structure, amounts and distribution of roots and pores, and relative soil strength to estimate departure from the undisturbed condition. The presence and severity of disturbance (i.e., compaction, rutting, erosion, burn severity, topsoil displacement) is recorded by rating the site according to the FSDMP classification system. Each point is either detrimental or non-detrimental based on the presence and degree of disturbance and the recovery response of a site. The percentage of the detrimental points is reported for each treatment unit. Post-harvest monitoring data is collected two to five years post-timber harvest and after site preparation is completed.

The FSDMP provides a statistically sound sampling methodology in which to collet this data, and users may choose the confidence interval and margin of error they would like to use. On the IPNF, pre-harvest data as presented in forest NEPA analysis uses a confidence interval of 70 percent with a 10 percent margin of error. Post-harvest data is collected at a more rigorous 85 percent confidence interval +/- 5 percent margin of error. Results are summarized by harvest method, assuming it is the variable that is most strongly correlated with detrimental soil disturbance. However, the data for each harvest method includes various site and fuels preparation treatments that would also affect site condition.

Data is normally collected annually, however two years within this monitoring period (2015-2020) were not sampled. The first was in 2015, as widespread wildfire on the IPNF shifted forest priorities to wildfire suppression. The second year was in 2018, when the soils staff was unable to shift to post-harvest monitoring due to a prioritization on pre-harvest surveys.

Results

Data

From 2015 to 2020, between 0 and 17 harvested units were sampled per year and 90% met Regional Soil Quality Standards (Table 68). Total units surveyed is a small subset of those harvested each fiscal year. Fifty units were surveyed over the six-year period and, due to the seasonal rotation of field crew employees, data was collected by 11 individuals. While the FSDMP provides a clear classification system for DSD, the detrimental determination is based on the degree of disturbance and the perceived ability of the site to recover. The detrimental call is subjective, and because a variety of people collected the data, inconsistencies in the detrimental determination are expected. Depending on level of experience, knowledge of soils, and ability to interpret landscape processes and vegetative recovery, individuals may interpret site conditions differently, with varying thresholds for a detrimental call.

Table 68. Soil Quality Standards - Activity areas (harvest units) with 15% or less detrimental soil disturbance post-harvest

FISCAL YEAR	NUMBER OF UNITS MONITORED	UNITS MEETING R1 SOIL QUALITY STANDARDS (#)	UNITS MEETING R1 SOIL QUALITY STANDARDS (%)
2015	0	NA	NA
2016	17	17	100%
2017	13	13	100%
2018	0	NA	NA
2019	9	9	100%
2020	11	6	*55%
TOTAL	50	45	90%

* 8 of the 11 units surveyed in 2020 were within a post-fire salvage sale. The remainder of the units surveyed were from standard timber harvests.

All units exceeding the 15 percent threshold were surveyed in 2020, and all but one of those units were from post- fire timber salvage sales. The remaining unit that exceeded the 15 percent detrimental disturbance threshold was harvested using a combination of a feller buncher and shovel yarding. As stated, all units exceeding thresholds were collected during the 2020 field season, which may indicate inconsistencies between field crews in how detrimental soils were being evaluated. Utilizing a seasonal workforce is useful to increase capacity during the field season, but frequently results in high turnover rates with a new crew of technicians each season.

As salvage sales are carried out in areas that had recently experienced a stand-replacing wildfire, disturbance observations include effects of the fire (namely bare soils from the consumption of forest floor and post-fire erosion) as well as disturbance that may have been exacerbated by harvesting in a post-fire environment. Salvage sales harvest timber on sites where soils are disturbed, and sensitive to further damage. While the salvage units are displayed independently from green timber sales in Figure 30, they are not exempt from the Soil Quality Standards. Cumulative detrimental soil disturbance of a site may not exceed the threshold, and the data indicates adaptive management may need to be considered in future salvage sales.

While the use of shovel logging is not entirely new, it is being increasingly requested on the Forest. There is currently a lack of local data from this method to inform the severity of soil impacts that may be expected. One other unit within the dataset also used shovel yarding for a portion of the unit and resulted in zero percent DSD post-harvest. An expanded monitoring dataset is needed to draw conclusions related to use of this equipment in harvest systems and its relationship to soil productivity and function.

DSD data is summarized based on harvest method, using the assumption that this variable is the primary factor in determining DSD. However, there are several other factors that will contribute to soils disturbance that are not accounted for when reporting this data. These other factors include but aren't limited to operator skill level, fuels mitigation or site preparation, soil moisture during harvest, and soils characteristics (such as rock fragment content). The subjectivity of disturbance calls and these confounding factors for soils disturbance may explain the wide distribution of DSD data within harvest methods, as seen in figure 1.

Disturbance data and field notes were reviewed to assess site specific differences and develop a reasoning behind the large distribution of data for skyline harvest. Historically, skyline harvest does not create large amounts of DSD (three percent as seen in Table 69). It is logical that skyline harvest would result in less soil disturbance than ground-based harvest methods, as heavy equipment does not access the unit to complete the harvest. Trees are felled by hand, and disturbance is primarily generated from the yarding as the bottom end of logs may be dragged along the ground while being pulled up to the processing site (particularly if there is poor deflection). This is in comparison to the more widespread compaction and rutting in a ground-based unit, as heavy machinery operates on forest soils to both fell and yard material. However, data in the recent monitoring cycle indicates that skyline harvests (including salvage) result in more disturbance than ground-based harvest, which is counter-intuitive. Many of the detrimental calls in the skyline units were due to bare soils and/or signs of erosion that were associated with fire, either from post-harvest prescribed burning or the wildfire pre-salvage harvest.

Disturbance data collected both within this monitoring period and as reported by Rone in 2011 included a variety of post-harvest site preparation and fuels treatments. It is suspected that the trends in DSD for skyline harvest may be more indicative of the interactions of fire on steep slopes than the timber harvest.
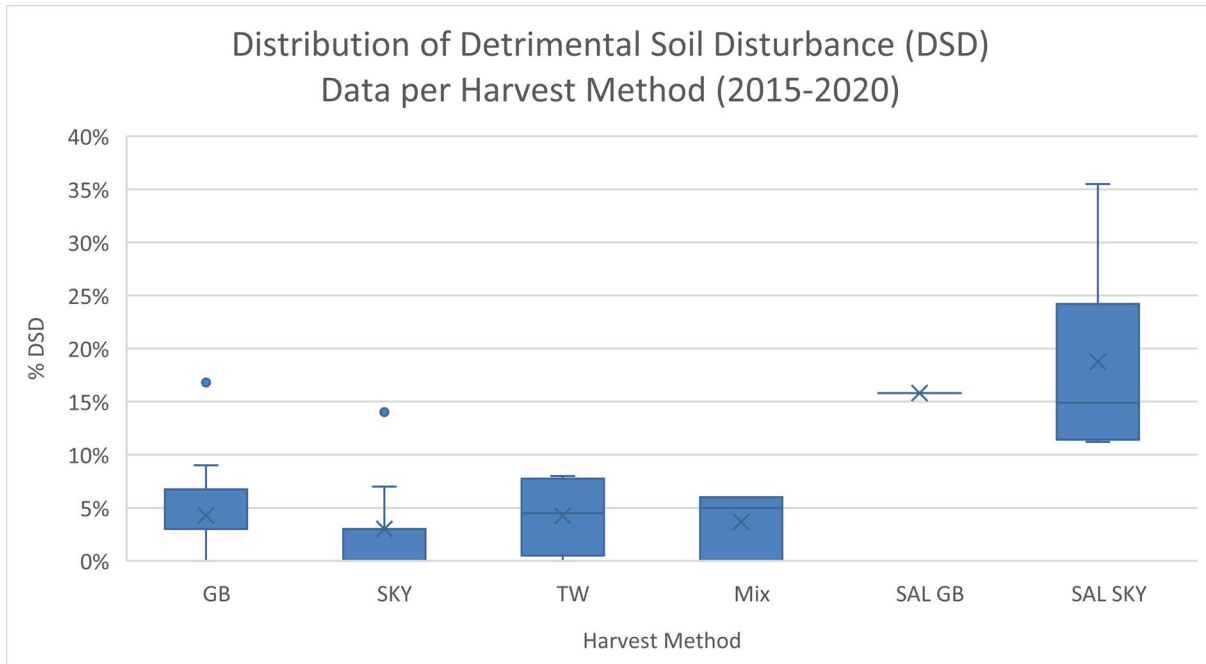
Figure 30. Detrimental disturbance by harvest method 2015-2020*

*Harvest method abbreviations are as follows: Ground based (GB), Skyline (SKY), and Tractor winter harvest (TW). Harvest methods that utilize a mix of ground based and cable methods, such as escaliner, tracked line machine, and mechanical felling with cable yarding, have been grouped for the purposes of this report (Mix). A larger dataset is needed to provide information on different varieties of mixed systems. SAL systems use the abbreviations described above but were harvested in the fire salvage environment.

To inform future analysis, DSD coefficients should continue to be updated to reflect changes in logging technology and techniques. Many changes have been made over time to the standard operating procedures of timber sales as impacts to resources like soils are better understood. With greater understanding of resource interactions, there is greater success in those resources being advocated for and protected, such as the application of best management practices (BMP's). Table 69 compares the average DSD per harvest method for the current monitoring period and those reported in the 2011 IPNF soils monitoring report.

Table 69. Range and Average % DSD by Harvest Method during different decades

Harvest Method	Disturbance Range (1990-2010)	Average DSD (2000-2010)	Disturbance Range (2015-2020)	Average DSD (2015-2020)
Ground Based	10-80%	11%	0-17%	4.3%
Salvage Ground Based	NA	NA	NA	15.8%
Tractor Winter	0-19%	13%	0-8%	4.3%
Skyline	0-7%	3%	0-14%	3.0%
Salvage Skyline	NA	NA	11-36%	18.8%
Mix	NA	NA	0-6%	3.7%

Discussion

The results of this monitoring effort have been useful in determining the success rate of the Forest in meeting the Regional Soil Quality Standards within vegetation treatment units. Based on the data gathered during this monitoring period, the Forest was successful at maintaining site productivity for

90% of the units surveyed. Post-fire erosion was a key contributor to skyline units that did not satisfy the disturbance threshold.

A different approach to unit design and resource protection may be necessary in post-fire environments, specifically in steep skyline units. Although skyline systems cause comparatively minimal DSD compared to other harvest systems, the lack of soil cover from organics (forest floor), damage to surface roots, and loss of surface soil structure due to fire make these sites prone to erosion. Decreases in infiltration accompanied by increases in runoff and erosion are natural and expected processes post-fire. In a salvage sale, this erosion may be exacerbated by harvest activities as the yarding of material may have created preferential flow paths to channel overland flow and increase erosion. Although soil disturbance in many of the salvage units exceeded the 15 percent threshold, a closer look is needed to determine what degree of this disturbance was caused by the harvest activities and what disturbance was a result of post-wildfire processes. This would help focus efforts in maintaining soil productivity and function moving forward with salvage harvests. In units that were affected by post-harvest under burn or broadcast burn treatments, a larger monitoring effort is needed to determine if current design features are sufficient to protect soil quality and function.

The interactions of fire on skyline harvested units highlights that current monitoring methodology is not sufficient to understand the disturbance contributions from mechanical harvest activities and post-harvest site preparation or burning. Monitoring data is currently collected after all activities are complete and summarized as total percent DSD by harvest method. Data reported within each harvest unit may include mechanical piling of slash, pile burning, broadcast burn, or no fuels treatment. While the disturbance threshold applies to all land management activities, monitoring units after all implementation activities are complete makes it difficult to identify specific implementation issues and propose adaptive management strategies.

General trends for ground-based harvest methods and tractor winter harvest see a decrease in DSD, both in terms of the upper range of the data gathered and in terms of average DSD per harvest method. It appears that adopting a standard suite of design features and incorporating contract provisions that are specifically intended to protect resources has been successful in reducing DSD since the 1990s. A decrease in the range of data over time indicates that current unit design features has been increasingly successful at eliminating outliers in the data. Additionally, a supplementary explanation for the downward trend in DSD post-activity would be s shift in the determination of DSD over time since the on-forest soils monitoring effort was initiated. While the data displayed in Table 69 show data being collected as early as 1990, the FSDMP was not published until 2009. While the methodologies pre- and post-2009 are very similar, a notable difference is that pre-2009 DSD determinations included natural disturbances such as game trails. Post- 2009, natural disturbances are recorded in the data, but only anthropogenic disturbances are considered detrimental.

While improvements have been made since the 1990s in protecting soil resources, this dataset shows that the Forest has not been entirely successful at meeting the Regional Soil Quality Standards. While DSD issues involving fire effects in skyline units was addressed above, there are data gaps that prevent this analysis from drawing conclusions on the other unit that exceeded disturbance thresholds. With innovations of new logging equipment and increased use in some logging systems, the Forest lacks disturbance data on various combinations of logging equipment. While all considered ground-based machinery, there is nuance to management approaches between feller-buncher/rubber-tired skidder (whole tree yard) systems, harvester/forwarder (cut-to-length) systems, and to what is generally referred to in this report as mixed systems (escaliner, tracked line machine). With increased use of shovel logging systems, more information is needed to determine when and where it is suitable.

Proper training of the surveyors is essential to creating consistency in detrimental determinations. Of the 11 people that helped to collect this data, only one person was present the full monitoring period.

Bringing on a new crew of technicians each year requires extensive training and routine calibration with the Forest Soil Scientist to understand the conditions under which a detrimental soil disturbance call may be required. Of the data collected, the units that exceeded the 15 percent threshold were almost entirely surveyed in 2020 which indicates this crew may have been more prone to calling DSD than crews in the past. However, this field crew conducted the majority of their monitoring contributions in the post-fire salvage sale, so the disproportional amount of disturbance might be due to salvage conditions.

Evaluation of Results for Adaptive Management Finding

Table 70. Summary of findings for Plan Monitoring Item SOIL-02

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] **Do monitoring results demonstrate intended progress (i.e. maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?**	(B) Uncertain – Although ground-based and skyline units demonstrate DSD are within desired levels, more data are needed to evaluate soils when salvage/shovel/TLM/escaliner methods are used
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?[2]*	Monitoring Program: Recommend increasing the sample size of units surveyed to adequately represent the variety of treatment methods. Increase calibration between surveyors to create more consistency in detrimental soil disturbance determination. Accurate and detailed information on implementation is needed to address any causes of excessive soil disturbance. As causes of disturbance are identified, recommend the soils staff work with implementation staff to identify action items necessary to maintain soil productivity and function. Short-term monitoring recommendations: The wide variation in pairings of logging equipment and site prep/fuels techniques is a variable that is not accounted for in the current dataset. To provide more nuance to these monitoring reports that is reflective of activities on the ground, and to better inform soils analysis on a project planning scale, a larger sample size is needed to capture these different vegetation treatment methods. This larger sample size will also provide a greater degree of confidence in reporting on Forest Plan compliance with this monitoring element. A larger dataset is needed to better inform both project analysis and design features for post-fire salvage harvests. Specialized salvage design features may need to be developed in order to protect soil productivity and function. Monitoring treatments units at different phases of implementation, for instance post-harvest and pre-prescribed burning, would provide more detailed information on the activities that contribute DSD. By better identifying the cause of DSD, new design features may be proposed to minimize soil disturbance and better achieve FW-SOIL-DC-02. Specifically, work needs to be done to ensure fuels treatments and site preparation design features are sufficient in minimizing DSD and that cumulative effects remain within the 15% threshold. Long-term monitoring recommendations: Monitoring data be recorded in a geodatabase so DSD data may be evaluated according to site characteristics and soil types. As mentioned, summarizing data by harvest method provides a narrow interpretation of

	FINDINGS
	the data that may not be sufficient in explaining the wide range of data. Recording DSD data geospatially would allow the soil scientist to begin to correlate trends in disturbance with rock fragment content, slope, aspect, and other soils and site characteristics that may indicate differences in soil resiliency. This may lead to the development of site-specific design features that would better maintain soil productivity and function.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item FLS-01-01 – Federally Listed Species Grizzly Bear

Table 71. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)*	Data collection interval	Data Source / Partner	Point of Contact
MON-FLS-01-01: (Grizzly Bear) To what extent is forest management contributing to the conservation of federally listed species and moving toward habitat objectives?	FW-DC-WL-03 FW-DC-WL-05 FW-STD-WL-02 FW-STD-WL-03	**MON-FLS-01-01:** *Selkirk and Cabinate Yaak Recovery Zones* • Acres of **core** habitat (% of the total BMU) (N) • Total motorized routes density **(TMRD)** within a density category of 2.0 miles/square mile (% of the total BMU) (N) • Open motorized routes density **(OMRD)** within a density category of 1.0 miles/square mile (% of the total BMU) (N) • locations, dates, duration, and circumstances for invoking **Access allowance** for entering core area for the purposes of road decommissioning or stabilizations (N) • # of closure devices showing signs of incursions in Recover Zones (N) *Bears Outside the Recovery Zone* • Linear miles of total and open roads in BORZ polygons (N)	Annual	Forest Supervisors Office Records	Forest Wildlife Program Manager

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 72. Monitoring Item FLS-01-01 - Monitoring Collection Summary

For monitoring item FLS-01-01:	Year
Data was last collected or compiled in:	2011 to 2019
Next scheduled data collection/compilation:	2020
Last MER evaluation for this monitoring item:	N/A
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-WL-03. Recovery of the terrestrial threatened and endangered species is the long-term desired condition. Foraging, denning, rearing, and security habitat is available for occupation. Populations trend toward recovery through cooperation and coordination with USFWS, state agencies, other federal agencies, tribes, and interested groups.

FW-DC-WL-05. Recovery of the grizzly bear is promoted by motorized access management within the IPNF portion of the Cabinet-Yaak and Selkirk recovery zones.

FW-STD-WL-02. The Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zone Management Direction and ROD is included in appendix B and shall be applied.

FW-STD-WL-03. Permits and operating plans (e.g., special use, grazing, and mining) shall specify sanitation measures and adhere to the IPNFs food/attractant storage order in order to reduce human/wildlife conflicts and mortality by making wildlife attractants (e.g., garbage, food, livestock carcasses) inaccessible through proper storage or disposal.

The 2015 Forest Plan incorporated the Biological Opinions for Grizzly Bear Access Amendment. In its biological opinion (2011) to the Grizzly Bear Access Amendment and the revised Plan (2020) the USFWS identified terms and conditions that the Forest must fulfill in order for the take exemption in the Incidental Take Statement to be valid. These terms and conditions are considered non-discretionary. Contributing towards the recovery of grizzly bears in both the Selkirk and Cabinet-Yaak recovery zones and was incorporated the Forest Plan. (IPNF Forest Plan 2015, page 29). MON-FLS-01-01shows the progress towards achieving and maintaining standards for percent core area, OMRD, and TMRD within the Recovery Zones. (Monitoring Guide 2016, page 39).

(See IPNF Monitoring Guide – https://www.fs.usda.gov/main/ipnf/landmanagement/planning).

Results and Discussion

Methods

Starting in 2011, the U. S. Fish and Wildlife Service issued their Biological Opinion (BO) for the Grizzly Bear Access Amendment of the Kootenai, Idaho Panhandle, and Lolo National Forest Plans (USDI 2011). This monitoring requirement has been carried through in the 2015 and 2020 Biological Opinion's for the Idaho Panhandle Land Management Plan (USDI 2013 and 2020). These documents directed the Forest Service to report annually on their progress made towards achieving Interagency Grizzly Bear Committee (IGBC) access management standards for the Selkirk and Cabinet-Yaak Recovery Zones (USDI 2011).

Bears Outside Recovery Zones (BORZ) are discrete areas of recurring grizzly bear use within proximity to the Selkirk and Cabinet-Yaak Recovery Zones (Allen 2011). The Access Amendment and the Forest Plan also provided direction for BORZ and to ensure "no permanent increases in the total linear miles of "open roads" and "total roads" above baseline conditions on National Forest System lands in any individual BORZ area, except in cases where the Forest Service lacks discretion to prevent road building across National Forest System lands due to legal or other obligations (USDI 2011, 2015, and 2020). BORZ areas have not been identified by the Service as areas that are essential to the recovery of grizzly bears in the Selkirk and Cabinet-Yaak Recovery Zones, nor has the area within their boundaries been assessed for their suitability as grizzly bear habitat. However, it is recognized that on-going and future land management activities (e.g., road building) in these areas

could result in adverse effects (e.g., incidental take) to grizzly bears (Allen 2011, Allen et al. 2011, USDI 2011b).

Each grizzly bear recovery zone is divided into individual bear management units (BMUs) which biologists use for habitat evaluation and population monitoring. An individual BMU is roughly 100 square miles in size; the approximate area required for supporting an adult sow with cubs. BORZ are discrete areas of recurring grizzly bear use in proximity to the Selkirk and Cabinet-Yaak recovery zones (Allen 2011). Each BMU has individual standards for open and total motorized route densities.

Data Collection is the responsibility of each district for tracking administrative use/closure devise and updating individual Bear Management Units (BMU) and BORZ GIS layers with road status changes (i.e., IGBC codes). The tracking of admin use is done at the district level and data is entered into spreadsheets in the 2600WildifeMgmt\NZ\access_mgmt folder in Pinyon. The updated data would be used to create a current Bear Year roads layer to calculate core, TMRD, and OMRD within the BMUs. Linear miles of total and open routes within the BORZ would also be calculated. Each district is responsible for tracking when core areas are entered for the purposes of road decommissioning or stabilizations and reporting the dates/locations to the Forest Supervisor's Office.

Analysis methods using the moving windows analysis, for BMUs, and linear route miles, for the BORZ, are explained in the 2012-2014 Forest Plan Monitoring Report (2016) on pages 41-44 (https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd548505.pdf). Within the Recovery Zone all ownerships are considered while within the BORZ only NFS lands are used in the analysis. As of bear year 2019, all motorized trails and Special Use Permitted roads, that were inadvertently left out of the 2011, are now included in the BORZ baseline.

Data is used biennially for Forest Plan monitoring and annually in reports to USFWS as per the BOs for the Grizzly Bear Access Amendment (USDI 2011) and the 2015 Forest Plan (USDI 2020).

The annual monitoring report is submitted to USFWS and the results are summarized here in this Forest Plan monitoring report. The annual report includes not only permanent changes within the BMUs or BORZ but also temporary changes in each Bear Year. These temporary changes were due to project activities, administrative use levels that exceeded allowable limits, or known illegal use. Illegal use, even though considered temporary, was included in the calculations until the 2019. Lumping all these authorized and unauthorized temporary changes together makes it difficult to determine whether the permanent condition within the BMU or BORZ is currently achieving or progressing toward the standards. The recent Forest Plan consultation (USDA Forest Service 2020 and USDI 2020) took a different approach and separated out the illegal unauthorized use from the metric calculations, and further divided the bear year metrics into a current bear year (including all database corrections made that year and all authorized activities) and a post bear metric (all authorized activities implemented and completed, while routes with continuing ongoing project activity reflect that status). These post bear year metrics reflect the actual on-the-ground progress toward achieving the standard in the BMU, or where the BORZ linear miles are in relation to the baseline.

Results

Data

Table 73. BMU summary for the 2019 bear year [April 1 through November 30] in the Cabinet-Yaak and Selkirk Recovery Zones

Bear Management Unit Values in blue (#) reflect existing BMU standards (FW-STD-WL-02). Values in with * indicate parameters that did not achieve standards in 2019.	Open Roads >1 mi/mi^2 (%)	Total Roads >2 mi/mi^2 (%)	% Core
Cabinet-Yaak Recovery Zone			
13 (Keno)	*34 (33)	24 (26)	59 (59)
14 (NW Peak)	29 (31)	24 (26)	56 (55)
18 (Boulder)	32 (33)	*31 (29)	*52 (55)
19 (Grouse)	*64 (59)	*61 (55)	*30 (37)
20 (North Lightning)	35 (35)	18 (20)	64 (61)
21 (Scotchman)	34 (34)	24 (26)	65 (62)
Selkirk Recovery Zone			
Blue Grass	30 (33)	*29 (26)	*48 (55)
Long-Smith	24 (25)	*16 (15)	71 (67)
Kalispell-Granite[4]	33 (33)	24 (26)	55 (55)
Salmo-Priest[4]	27 (33)	23 (26)	68 (64)
Sullivan-Hughes[4]	23 (23)	18 (18)	63 (61)
Myrtle	32 (33)	23 (24)	58 (56)
Ball-Trout	16 (20)	11 (13)	72 (69)
Lakeshore	80 (82)	44 (56)	22 (20)
Le Clerc[4]	44 (48)	56 (60)	27 (27)

[3] The Keno and NW Peak BMUs are almost entirely on the Kootenai National Forest.

[4] The Le Clerc BMU is almost entirely on the Colville National Forest. The Salmo-Priest, Sullivan-Hughes, and Kalispell-Granite BMUs are shared in part with the Colville National Forest.

NOTE: The numbers used for road densities and Core Area include consideration of roads on State and private lands within grizzly bear habitat, even though the standards apply only to NFS lands.

Table 74. Summary of restricted and closed route monitoring within the Selkirk and Cabinet-Yaak Recovery Zones located on the Idaho Panhandle National Forest, 2019*

Grizzly Bear Recovery Zone	Closure Type	Number of Devices	Number of Closures Monitored in Bear Year 2019	Percent monitored for Bear Year 2019
Selkirk	Gate/Barrier	114	74	65
Cabinet-Yaak	Gate/Barrier	87	51	59

*Data on file at the ranger district offices

Table 75. List of ongoing locations, dates, duration, and circumstances for invoking the allowance for entering core area for the purposes of road decommissioning or stabilizations in the IPNF portion of the Selkirk and Cabinet-Yaak Recovery Zones

BMU	Location	Date	Duration	Circumstances
				None to report for 2019

Table 76. Bear Year 2019 motorized access conditions for Bears Outside of Recovery Zone (BORZ) areas situated on the Idaho Panhandle National Forest

BORZ Name	Grizzly Bear Ecosystem	2015 Total Roads on NFS Lands (Linear Miles) 2015 / (2011 baseline[1])	2015 Open Roads on NFS Lands (Linear Miles) 2015 / (2011 baseline[1])	Total Motorized Routes on NFS Lands (Linear Miles) 2019[3] / (2019 baseline[2])	Open Motorized Routes on NFS Lands (Linear Miles) 2019[3] / (2019 baseline[2])
Priest Lake	Selkirk	319.2 (316.4)	317.2 (314.4)	340.0 (340.0)	337.4 (337.4)
Pack River[4]	Selkirk	37.7 (41.9)	33.7 (37.9)	63.7 (63.7)	58.0 (58.0)
Mission-Moyie[4]	Cabinet-Yaak	200.3 (200.3)	167.3 (167.3)	367.7 (367.7)	335.3 (335.3)

[1] The 2011 baseline calculation did not include motorized trails, only roads. This was part of the corrections included in the 2019 baseline miles.

[2] The baseline was updated in 2020 with the re-consultation on the Land and Resource Management Plan for Grizzly Bears (USDI 2020). Includes linear miles of permanent open and total roads and motorized trails as of 2019.

[3] The Bear Year 2019 Monitoring Report displays the condition, as of 2019, in each BORZ, including temporary changes to open and total routes as a result of projects that have undergone project-specific Section 7 consultation. The USFWS acknowledged the temporary on the ground conditions but defined the Environmental Baseline in 2020 based on the permanent condition within the BORZ (USDI 2020).

[4] The Pack River and the Mission-Moyie BORZ were expanded in 2019. The Mission-Moyie BORZ was also expanded in 2016. These expansions were based on the continued presence of bears in these expanded areas and incorporated the open and total road miles at the time of those expansions (Allen 2011 and USDA Forest Service 2020).

Discussion

Roads provide access for people into grizzly bear habitat. In areas of high road densities, grizzly bears are prone to being disturbed by vehicle traffic or people on foot. A bear may learn to avoid areas near open roads, forgoing access to any suitable habitats adjacent to the road corridor. The risk of human-caused grizzly mortality is higher in areas with high road densities, than in areas with few or no roads. Each BMU has individual standards for open and total motorized route densities. Additionally, each BORZ has its own set of standards for linear miles of open and total motorized routes, which were updated in the Forest Service 2020 Biological Assessment (BA). This update included adjustments to the existing condition/database route miles when pre-existing (i.e., prior to the 2011 baseline calculations) roads and motorized trails are discovered and acknowledging those additional areas receiving reoccurring use by bears over the last nine years (expansion or creation of BORZ) (USDA Forest Service 2020).

When the revised Forest Plan was approved in 2015, there were seven out of the thirteen BMUs that did not achieve the motorized access standards. This included Keno, Boulder, Grouse, North Lighting, Blue Grass, Kalispell-Granite, and Sullivan-Hughes BMUs. Of these the Keno, Sullivan-Hughes, and Kalispell-Granite BMUs share management with the Kootenai and Colville National Forests. The Le Clerc BMU was not included in the 2011 Access Amendment. Table 73 shows that in 2019, five BMUs currently meet the motorized access standards. All BMUs are required to achieve the motorized access standards by 2023, except for Boulder which will not meet the standards until 2028 due to project activities (USDI 2020). This shows that the IPNF is working towards full compliance with the motorized access standards and has made steady progress in meeting that standard.

In the Grouse BMU there was a temporary increase in OMRD due to timber harvest activities within that BMU. The Grouse Bear Management Unit Compliance Decision Notice (DN) was signed on August 13, 2019. The selected actions will reduce open and total motorized route densities and increase grizzly bear core habitat in the Grouse BMU. Implementation activities will occur over the next two to three years.

In the Boulder BMU, the Boulder Creek Restoration Project DN, signed on October 29, 2018, was partly designed to bring the Boulder BMU into compliance and manage forest stands through vegetation management. Implementation activities are expected to occur for up to eight years.

In the Blue-Grass BMU one of the primary objectives of the Bog Creek Road Project Record of Decision (ROD), signed on January 28, 2020, is to achieve standards for motorized access in grizzly bear habitat in the Blue-Grass BMU. Implementation activities will be occurring for two to three years.

Table 74 shows the summary of percent of closure devices (gates and barriers) monitored annually within the Selkirk and Cabinet-Yaak Recovery Zones. The Access Amendment and the Forest Plan Biological Opinion required at least 30 percent of closure devices (gates and barriers) in BMUs be monitored annually within the respective ecosystems (USDI 2011, USDI 2020, USDA Forest Service 2015, USDA Forest Service 2020). Table 74 shows that in 2019, 65 and 59 percent of the closure devices in the Selkirk and Cabinet-Yaak, respectively, were monitored. This is consistent with past annual monitoring reports that show from 2011-2019, 87 and 49 percent of closure devices in the Selkirk and Cabinet-Yaak, respectively, were monitored to ensure OMRD compliance (USDA Forest Service 2011-2020), as outlined in the US Fish and Wildlife Service Biological Opinion for the Access Amendment. It is important to understand when considering the number of devices monitored that many gates restrict use to 'undrivable' roads (i.e., road prisms have grown in with vegetation due to a lack of use) and other gates may have additional gates behind them which receive less monitoring in any given year if the first gate is deemed effective. Most high-visibility gates get monitored 3-5 times per year ensuring that at least 90% of all drivable roads receive monitoring in any given year. This ensures that all the gates are monitored over time with the vast majority of the closures monitored annually.

Table 75 shows the list of ongoing locations, dates, duration, and circumstances for invoking the allowance for entering core area for the purposes of road decommissioning or stabilizations in the IPNF portion of the Selkirk and Cabinet-Yaak Recovery Zones. The Access Amendment and the Forest Plan BO required the IPNF to update the list of ongoing activities that would allow for motorized entry into core areas for the purpose of road decommissioning or stabilizations. As Table 75 shows there are no activities occurring that meet this core reduction allowance. The monitoring reports from 2011-2019 show that the IPNF has not used this core reduction allowance (USDA Forest Service 2011-2020).

Table 76 shows the 2019 motorized access conditions (linear route miles) for each BORZ on the IPNF. The baseline was updated in 2020 with the re-consultation on the Land and Resource Management Plan for Grizzly Bears (USDI 2020). The updated baseline includes linear miles of permanent open and total roads and motorized trails as of 2019; and is the new baseline moving forward. As shown in the table there is an increase from the 2011 baseline. This increase is due to expansions of the BORZ areas, incorporation of roads that were present in 2011 but not accounted for in the 2011 baseline (database or clerical errors), and the addition of motorized trails and roads under Special Use Permits (SUP) that were not counted in 2011.

Evaluation of Results for Adaptive Management Finding

The monitoring indicators were first developed for the 2011 Access Amendment and incorporated into the 2015 Forest Plan to contribute towards the recovery of grizzly bears in both the Selkirk and Cabinet/Yaak Recovery Zones. Currently, The Selkirk Recovery Zone is meeting 1 of the 3 recovery goals (Distribution of females with young in the most recent 6 years) (Kasworm et al 2020a) and the Cabinet/Yaak is meeting 1 of the 3 recovery goals (Human Caused Mortality limits) (Kasworm et al 2020b). As stated in the grizzly bear recovery plan, "Because of low estimated population and uncertainty in estimates, the current human-caused mortality goal to facilitate recovery of the population is zero. In reality, this goal may not be realized because human bear conflicts are likely to occur at some level within the ecosystem" (USDI 1993).

When the revised Forest Plan was approved in 2015, there were seven out of the thirteen BMUs that did not meet the motorized access standards. In 2019, five BMUs did not achieve the motorized access standards (Keno, Boulder, Grouse, Blue-Grass, and Long-Smith BMUs). All BMUs are required to achieve the motorized access standards by 2023, except for Boulder which will not meet the standards until 2028 due to project activities (USDI 2020).

The BORZ monitoring shows an increase in the linear miles of motorized routes between 2015 and 2019. However, this is due to the expansion of the BORZ and database corrections over time. Expansions are based on bear occurrences and incorporate the linear route miles that are present on the ground at the time of that expansion (USDA Forest Service 2020 and Allen 2011). Example of database corrections that were incorporated into the 2019 baseline are the inclusion of motorized trails, legal 'open' roads that were missed in the original baseline, and also roads associated with Special Use Permits that were mistakenly left out of the 2011 baseline (USDI 2020). This provides a more accurate and inclusive baseline of permanent open and total motorized route miles in BORZ (USDI 2020).

Table 77. Summary of findings for Plan Monitoring Item FLS-01-01

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired. TMRD, OMRD, and linear miles metrics are either at or better than standards outlined in the Forest Plan (FW-STD-WL-02) and expected to achieve them in the next few years. BORZ metrics show temporary increases above the standards outlined in the 2015 Forest Plan, which is allowed for project activities. Illegal use was included in the calculations until the 2019. Illegal use is generally temporary in nature. Illegal use is now displayed separately because it is not a FS authorized activity.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes.
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?*[2]	Monitoring Program: Consider adding secure habitat as the metric for BORZ under FW-STD-WL-02 to be consistent with the 2020 ITS for the Forest Plan.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area

Monitoring Item FLS-01-02 – Federally Listed Species Canada lynx

Table 78. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)*	Data collection interval	Data Source / Partner	Point of Contact
MON-FLS-01-02: (Canada lynx) To what extent is forest management contributing to the conservation of federally listed species and moving toward habitat objectives?	FW-DC-WL-03 FW-STD-WL-01 FW-DC-VEG-01 FW-DC-VEG-02 FW-DC-VEG-05 FW-DC-VEG-08 FW-DC-VEG-11 FW-OBJ-VEG-01 FW-GDL-VEG-03 FW-DC-FIRE-03	MON-FLS-01-02: *% of LAU lynx habitat (acres) in stand initiation structural stage not currently providing winter snowshoe hare habitat as a result of:* natural events, vegetation management or fuel treatment projects, or any combination of these or other causes (Lynx amendment standard VEG S1) (Y) regeneration harvest over a ten-year period ((Lynx amendment standard VEG S2) (N) *Changes from baseline of miles, acres, location, and intensity of:* snow compacting activities (N) and designated and groomed routes (N)	5-year cycle	Forest Supervisors Office Records	Forest Wildlife Program Manager

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 79. Monitoring Item FLS-01-02 - Monitoring Collection Summary

For monitoring item FLS-01-02:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	
% of LAU lynx habitat (acres) in stand initiation structural stage not currently providing winter snowshoe hare habitat	2021
Snow compacting activities in lynx habitat	2025
Last MER evaluation for this monitoring item:	N/A
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-WL-03. Recovery of the terrestrial threatened and endangered species is the long-term desired condition. Foraging, denning, rearing, and security habitat is available for occupation. Populations trend toward recovery through cooperation and coordination with USFWS, state agencies, other federal agencies, tribes, and interested groups.

FW-STD-WL-01. The Northern Rockies Lynx Management Direction (2007) and ROD is included in appendix B and shall be applied.

FW-DC-VEG-01. The composition of the forest is within the desired ranges for the dominance groups illustrated in figure 2. More of the forest is dominated by western white pine, ponderosa pine, western larch, and whitebark pine. Conversely, less of the forest is dominated by grand fir, western hemlock, western redcedar, Douglas-fir, lodgepole pine, and subalpine fir. Although they are not depicted in figure 2, more hardwood trees occur in the forest such as quaking aspen, black cottonwood, and paper birch.

FW-DC-VEG-02. The structure of the forest is within the desired ranges for the size classes illustrated in figure 3. More of the forest is dominated by stands occurring in the seedling/sapling size class and less of the forest is dominated by stands that occur in the small and medium size classes.

FW-DC-VEG-05. The pattern of forest conditions across the landscapes consists of a range of patch sizes that have a diversity of successional stages, densities, and compositions. Formerly extensive, homogenous patches of forests that are dominated by species and size classes that are very susceptible to disturbance agents have been diversified. Generally, there is an increase in the size of forest patches that are dominated by trees in the seedling/sapling size class, as well as in the large size class. There is a decrease in the size of the patches that are dominated by trees in the small and medium size classes.

FW-DC-VEG-08. Down wood occurs throughout the forest in various amounts, sizes, species, and stages of decay. The larger down wood (i.e., coarse woody debris) provides habitat for wildlife species and other organisms, as well as serving important functions for soil productivity.

FW-DC-VEG-11. The desired forest composition, structure, and pattern for each biophysical setting are described below:

> **Subalpine** –This biophysical setting occupies the higher elevations of the forest. This setting ranges from the cool and moist lower subalpine sites, up to the cold and dry high elevation sites that have more open forests. The desired and current conditions for dominance type and size classes are displayed in figure 8 and figure 9, respectively.

FW-OBJ-VEG-01. Forest Resilience–Over the life of the Plan, the outcome per decade is:
- Increased relative representation of early seral, shade-intolerant, drought- and fire-tolerant, insect/disease resistant species dominance types (e.g., ponderosa pine, white pine, western larch, whitebark pine, and hardwoods) on approximately 85,000 to 90,000 acres (these acres are also included in those listed in the following bullet).
- Treatment of approximately 250,000 acres to maintain and/or improve forest resilience, natural diversity, and productivity and to reduce negative impacts of non-native organisms. Treatments may include timber harvest, planting, thinning, management of fire (including planned and unplanned ignitions), mechanical fuel treatments, revegetation with native species, blister rust pruning, integrated tree improvement activities, non-native invasive plant treatments, and other integrated pest management activities including forest health protection suppression and prevention activities.

FW-GDL-VEG-03. Vegetation management activities should retain the amounts of coarse woody debris (including logs) that are displayed in table 3. A variety of species, sizes, and decay stages should be retained. Exceptions may occur in areas where a site-specific analysis indicates that leaving the quantities listed in the table would create an unacceptable fire hazard to private property, people, or sensitive natural or historical resources. In addition, exceptions may occur where the minimum quantities listed in the table are not available for retention.

FW-DC-FIRE-03. The use of wildland fire (both planned and unplanned ignitions) increases in many areas across the Forest. Fire plays an increased role in helping to trend the vegetation towards the desired conditions while serving other important ecosystem functions. However, when necessary to protect life, property and key resources, many wildfires are still suppressed.

The 2015 Forest Plan incorporated the Northern Rockies Lynx Management Direction (NRLMD) (2007) and Record of Decision (ROD) (IPNF Forest Plan 2015, page 31 and pages 157-169). In the biological opinions to the NRLMD (2007) and the IPNF Forest Plan (2015) the USFWS identified terms and conditions that the Forest must fulfill for the take exemption in the Incidental Take

Statement. The NRLMD was designed with the standards and guides to contribute towards the recovery of Canada lynx. (IPNF Forest Plan 2015, pages 157-169).

The forest plan identifies that direction in the Northern Rockies Lynx Amendment (NRLMD) will be used in the management of lynx and lynx habitat on the Forest (FW-STD-WL-01). The NRLMD (USDA Forest Service 2007) contains standards for both the lynx habitat monitoring components (standards VEG S1 and VEG S2), as well as reporting and monitoring requirements. (2016 Monitoring Guide, page 47) Monitoring indicator MON-FLS-01-02 would show changes in lynx habitat as a result of moving towards the desired conditions for vegetation through vegetation management, prescribed fire, or natural disturbance (see monitoring requirements for the NRLMD in appendix B of the Forest Plan). (2016 Monitoring Guide, page 47)

There are also project level reporting requirements from the NRLMD (page 9 in Attachment 1 of the NRLMD ROD) and associated BO (pages 82-83 in USFWS 2007) that would continue to be tracked as part of the annual monitoring report to the USFWS.

Additionally, the NRLMD (USDA Forest Service 2007) contains objectives and guidelines for human use projects including snow compacting activities, ski areas etc. The NRLMD ROD contains required monitoring for this indicator (NRLMD ROD, attachment page 9). The snow compacting activities in lynx habitat is shown as the performance indicator component 2.

The primary mechanism through which forest and backcountry roads could negatively impact Canada lynx is through facilitation of winter recreation, such as snowmobiling, cross-country skiing, or snowshoeing. These snow-compacting activities may facilitate the movement of competing carnivores, primarily coyotes, along snow compacted routes into lynx habitat during winter. (Forest Plan BA, page 39). The BA also pointed out that, Kolbe (2005) concluded that there is no conclusive evidence to indicate that compacted snow routes increased competition from other species to levels that adversely affected lynx populations. In their BO for the NRLMD, the FWS stated, "The best information available has not indicated that compacted snow routes increase competition from other species to levels that adversely impact lynx populations, and under the [NRLMD], the amount of areas affected by snow compacted routes within the NRLA would not substantially increase. Thus the [NRLMD] would allow projects that may adversely affect individual lynx in some specific cases, however the [NRLMD] as a whole would avoid appreciable reductions in the reproduction, numbers, and distribution of lynx in core areas and all occupied habitat, and in the NRLA area" (USDI Fish and Wildlife Service 2007).

The NRLMD had a monitoring requirement to map the location and intensity of snow compacting activities and designated and groomed routes that occurred inside LAUs during the period of 1998 to 2000. This mapping effort was to be completed within one year of the amendment decision (March 2007) and formed the baseline to determine changes that occur in snow compacting activities and designated and groomed routes. The changes in activities and routes are to be monitored every five years after the NRLMD decision.

Definitions (USDA 2007, NRLMD ROD)

Standard VEG S1 – Unless a broad scale assessment has been completed that substantiates different historic levels of stand initiation structural stages limit disturbance in each LAU as follows:

If more than 30 percent of lynx habitat in an LAU is in a stand initiation structural stage that does not provide winter snowshoe hare habitat, no additional habitat may be regenerated by vegetation management projects (NRLMD ROD attachment 1 pages 2 and 3).

Standard VEG S2 – Timber management projects shall not regenerate more than 15 percent of lynx habitat on NFS lands within an LAU in a ten-year period (NRLMD ROD attachment 1 page 3).

Vegetation Management – Vegetation management changes the composition and structure of vegetation to meet specific objectives, using such means as prescribed fire and timber harvest. For purposes of this decision, the term does not include removing vegetation for permanent developments like mineral operations, ski runs, roads and the like, and does not apply to fire suppression or to wildland fire use (NRLMD ROD attachment 1 page 15).

Timber Management – Timber management consists of growing, tending, commercially harvesting, and regenerating crops of trees (NRLMD ROD attachment 1 page 14).

Project – All or any part or number of the various activities analyzed in an EIS, EA, or DM. For example, the vegetation management in some units or stands analyzed in an EIS could be for fuel reduction. Therefore, those units or stands would fall within the term fuel treatment project even if the remainder of the activities of the EIS is being conducted for other purposes, and the remainder of those units or stands have other activities prescribed for them. All units in an analysis do not necessarily need to be for fuel reduction purposes for certain units to be considered a fuel reduction project (NRLMD ROD attachment 1 page 13).

Regenerate (regeneration harvest in the glossary) – The cutting of trees and creating an entire new age class, an even-age harvest. The major methods are clearcutting, seed tree, shelterwood, and group selective cuts (Helms, 1998 in USDA Forest Service 2007, NRLMD ROD attachment 1 page 14).

Stand Initiation Structural Stage – The stand initiation stage generally develops after a stand replacing disturbance by fire or regeneration timber harvest. A new single-story layer of shrubs, tree seedlings, and saplings establish and develop, reoccupying the site. Trees that need full sun are likely to dominate these even-aged stands (Oliver and Larson, 1996 in USDA Forest Service 2007, NRLMD ROD attachment 1 page 14).

Winter Snowshoe Hare Habitat – Winter snowshoe hare habitat consists of places where young trees or shrubs grow densely (thousands of woody stems per acre) and tall enough to protrude above the snow during winter, so snowshoe hare can browse on the bark and small twigs (Lynx Conservation Assessment Strategy (LCAS) in USDA Forest Service NRLMD ROD 2007). Winter snowshoe hare habitat develops primarily in the stand initiation, understory re-initiation and old forest multistoried structural stages (NRLMD ROD attachment 1 page 15).

Lynx Habitat in an Unsuitable Condition – Lynx habitat in an unsuitable condition consists of lynx habitat in the stand initiation structural stage where the trees are generally less than approximately 10 to 30 years old and have not grown tall enough to protrude above the snow during winter. Stand replacing fire or certain vegetation management projects can create unsuitable conditions. Vegetation management projects that can result in unsuitable habitat include clearcuts and seed tree harvest, and sometimes shelterwood cuts and commercial thinning depending on the resulting stand composition and structure (LCAS in USDA Forest Service 2007, NRLMD ROD attachment 1 page 12).

Results and Discussion

Methods

Starting in 2007, the U. S. Fish and Wildlife Service issued their BO for the NRLMD (USDI 2007). These monitoring requirements identified in the NRLMD were carried through in the 2015 BO and Forest Plan for the Idaho Panhandle Land Management Plan (USDI 2015 and Forest Plan, pages 163-164). These documents provided reporting and monitoring requirements for management of lynx habitat (once a year) and snow compacting activities (every 5 years) (Forest Plan, pages 163-164).

The Forest has delineated and mapped lynx analysis units (LAUs) and lynx habitat within each of those LAUs based on the best available science first in 2000 under the LCAS direction and then updated the map in 2008 (USDA Forest Plan BA 2013, pages 7, 20, 183-207). The Forest has been keeping track of these habitat components for several years, although the terminology has changed; unsuitable lynx habitat equals stands in the early stand initiation structural stage that do not provide winter snowshoe hare habitat.

The acres of lynx habitat in an early stand initiation stage that does not currently provide winter snowshoe hare habitat as a result of all-natural events or management activities are expressed as a percentage of all lynx habitat in the LAU (Veg S1). The acres of lynx habitat in an early stand initiation stage that does not currently provide winter snowshoe hare habitat as a result of timber management projects are expressed as a percentage of all lynx habitat in the LAU and determined over a ten-year period (Veg S2).

GIS layers of the lynx analysis units are retained in the Forest's GIS library. Timber stand activity information (including prescribed fire) is retained in the Forest Activity Tracking System (FACTS) database and fires (unplanned ignitions) in the fire history GIS layer. FSVeg Spatial contains stand data used to query for lynx habitat. The output from the analysis is stored in the GIS library: T:\FS\Reference\GIS\r01_ipnf\Layerfile_ArcGIS10/Fish_and_Wildlife.

For performance indicator 1, the changes in lynx habitat is calculated to show the amount of lynx habitat within each LAU that is in an early stand initiation stage. This is done by using the most recent lynx habitat layer for the Forest, updated using FACTS and fire history layer to determine the amount of habitat that is in an early stand initiation stage that does not currently provide winter snowshoe hare habitat. The lynx habitat layer is also updated to account for those stands that have reached an age since the last update that they now are tall enough to provide winter snowshoe hare habitat. The percentage is calculated for the lynx habitat within each LAU that is in an early stand initiation stage that does not currently provide winter snowshoe hare habitat (VEG S1). This includes all land ownerships within the LAU.

Additionally, the percent of lynx habitat that is currently in an early stand initiation stage that does not currently provide winter snowshoe hare habitat due to timber management projects in the last 10 years on NFS lands (VEG S2) is calculated for each LAU.

Performance indicator 2, looks to show the snow compacting activities in lynx habitat. This is done by looking at the miles, acres, location, and intensity of snow compacting activities, and designated and groomed routes, when compared to the baseline map.

Every five years the amount (miles, acres), location, and intensity of snow compacting activities, designated and groomed routes will be determined and mapped. The forest wildlife biologist, with help from the recreation program manager, district wildlife biologists, and district recreation

specialists will update the baseline map with all snow compacting activities and designated and groomed routes.

The map of snow compacting activities and designated and groomed routes will be updated at least every five years.

The forest wildlife biologist and/or recreation manager will determine and map snow compacting activities. Designated and groomed routes will be mapped by the forest recreation manager and/or district personnel. Miles and/or acres of snow compaction activities and designated and groomed routes will be mapped and compared to the baseline map. A determination of intensity will be made when monitoring is being conducted.

Results

Data

The series of tables below show the lynx habitat indicators and the designated and groomed routes. This is the first monitoring report since the finalization of the revised 2015 Forest Plan.

Table 80. Northern Rockies Lynx Management Direction (NRLMD) VEG S1 and VEG S2 – 2020 status

LAU	VEG S1 (%)[1]	VEG S2 (%)[2]
American-Canuck	2.3%	0.2%
Blue-Grass	1.2%	0
Boulder	0	0
Cascade	0.8%	0
Copper Ruby	6.6%	0
Deer-Skin	8.0%	0.2%
Five Lakes Butte	6.8%	0
Fly Mosquito	6.3%	0
Gold Creek	1.1%	0
Grouse	0.1	0.2%
Hemlock	3.5%	0
Hughes	20.8%	0
Kalispell	0.6%	0.4%
Katka	3.7%	3.7%
Lightning	19.5%	0
Little North Fork	7.9%	0
Lunch	0	0
Pack River	0	0
Parker	9.5%	0
Red Ives	0.8%	0
Round-Prairie	5.0%	1.7%
Saddle-Cow	1.0%	0.5%
Sawtooth Canyon	2.9%	0
Scotchman	9.3%	0
Sema	0.9%	0
Simmons	4.5%	0

LAU	VEG S1 (%)[1]	VEG S2 (%)[2]
Snow	0	0
St. Joe Headwaters	12.1%	0
Stateline Quartz	3.4%	0.6%
Tola-Pelke[3]	42.2%	5.6%
Trestle	10.9%	0
Trout	6.7%	0
Upper Priest	8.2%	0
Upper Smith	9.6%	0
Willow	0	0

[1] Lynx habitat in an early stand initiation stage that does not currently provide winter snowshoe hare habitat *as a result of all-natural events or management activities*

[2] Lynx habitat in an early stand initiation stage that does not currently provide winter snowshoe hare habitat *as a result of timber management*

[3] Tola-Pelke numbers are the result of the Tower Fire and percentages are derived from the Tower Fire Salvage Analysis.

Table 81. Summary of ALL vegetation projects in lynx habitat and use of the Fuels Treatment Exemptions in lynx habitat within the Wildand Urban Interface, August 2013 - December 2020

Total Acres of Lynx Habitat Treated	Acres of Lynx Critical Habitat Treated	Total Acres of Lynx Habitat Treated Outside WUI Total	Acres of Lynx Critical Habitat Treated Outside WUI Critical Habitat	Total Acres of Lynx Habitat Treated w/in WUI	Acres of Lynx Critical Habitat Treated w/in WUI	Total Acres of Lynx Habitat in WUI Where Exceptions to Standard(s) are Applied	Acres of Lynx Critical Habitat in WUI Where Exceptions to Standard(s) are Applied	Forest Allocation per Incidental Take Statement	Current Balance (acres)
5,079	1,502	3,165	0	1,914	751	592	0	34,966	**34,374**

Table 82. Summary of the use of NRLMD Exceptions to Vegetation Standard S5 for Pre-commercial Thinning, August 2013 - December 2020

Total Acres Treated (acres)	Acres of Critical Habitat Treated (acres)	Forest acreage allocation per Incidental Take Statement (acres)	Exception for Research (acres)	Exception for Genetic Testing (acres)	Exception for Admin (acres)	Exception for White Pine (acres)	Exception for Whitebark Pine (acres)	Exception for Aspen (acres)	Current Balance (acres)
3,025	0	16,403	180	500	200	13,000	3,000	200	13,378

Table 83. IPNF Designated and Groomed routes (Not all acres or miles occur in a LAU or near lynx habitat)

INDICATOR	2015	2016	2017	2018	2019
MON-AR-03-01					
Acres open to over-snow vehicle use	176,732	176,732	176,732	176,732	176,372
MON-AR-03-02					
Miles of managed over-snow vehicle trails	1421.5	1421.5	1421.2	1421.5	1422.0
MON-AR-03-03					
Miles of managed cross-country ski trails	23.8	23.8	23.8	23.8	23.8
Miles of managed snowshoe trails	17.1	17.1	17.0	17.1	17.1

Table 84. IPNF Designated and Groomed routes in LAUs (2013 Forest Plan BO and current conditions in 2019)

Year	Groomed/ Designated Over-snow Routes in mapped Lynx Habitat (miles)	Groomed/ Designated Over-snow Routes Critical Habitat (miles)	Over-Snow Motorized Use in mapped Lynx Habitat (acres)	Over-Snow Motorized Use in Lynx Critical Habitat (acres)	Designated Over-Snow Play Areas in mapped Lynx Habitat (acres)	Designated Over-Snow Play Areas in Lynx Critical Habitat (acres)
2013	123	6	249,727	34,649	0	0
2019	123	6	249,727	34,649	0	0

Overall, confidence in the quantity and quality of the data collected is moderate to high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking. The data for performance indicator 1 is entered into the Watershed Improvement Tracking (WIT) database yearly and relies on data from vegetation treatments that have been entered into the FACTS database. FACTS and WIT are Forest Service agency corporate database for tracking activities. The data for performance indicator 2, which looks at snow compacting activities in lynx habitat, is moderate to low for both accuracy and precision. The over snow trail data was updated in 2017 from on-the-ground data; however, the snow use area data is based mostly on educated assumptions and has not been updated since 2010.

Discussion

This is the first report for MON-FLS-01-02, and thus establishes the baseline for this monitoring question and indicators. However, many of these parameters have been tracked since 2007 to meet achieve the conditions established in the NRLMD (USDI 2007, USDI 2015 and Forest Plan, pages 163-164). None of the potential lynx habitat acres shown in table 45 of the forest plan FEIS have changed and provide the basis for calculating the percentages in Table 80.

The NRLMD (USDA Forest Service 2007) and the forest plan contain objectives and guidelines for vegetation treatments and human use projects including snow compacting activities, ski areas, etc. Performance indicator 1 for MON-FLS-01-02 (Table 80, Table 81, and Table 82) show changes in lynx habitat as a result of moving towards the desired condition for vegetation through vegetation management, prescribed fire, or natural disturbance. Performance indicator 2 for MON-FLS-01-02 (Table 83 and Table 84) shows the snow compacting activities in Lynx Analysis Units. Both of these indicators were developed to answer the question on forest management contributing to the conservation of federally listed species, moving toward lynx habitat objectives, and moving towards vegetation desired conditions.

Table 80 shows the percentages in 2020 that pertain to VEG S1 and VEG S2 from the NRLMD. Only one LAU is above the 30% criteria identified for LAUs (Veg S1). The Tower Fire Salvage Project affected the percent in the Tola-Pelke LAU of early stand initiation structural stage that is not currently providing winter snowshoe hare habitat. None of the LAUs are above the 15% criteria identified in a ten-year time period for LAUs (Veg S2).

Table 81 and Table 82 show the acres of treatments within lynx habitat since 2007. Most of these treatments occurred prior to the 2015 Forest Plan approval. There has been approximately 3,782 acres of lynx habitat treated with decisions made after 2015. These tables show the exemptions the IPNF has used since 2007, under the NRLMD for Veg S6 and Veg S5. No exemptions have been used since 2015.

Table 83 shows the acres and miles of potential snow compacting activities occurring on the Forest. Table 84 shows the acres and miles of the motorized activities that occur within the LAUs. These acres and miles are not broken down to show if the activity overlaps with lynx habitat in the LAUs. Since 2015 there have been no changes in the acres or miles of snow compacting activities.

In 2019, the IPNF, in conjunction with the Rocky Mountain Research Station (RMRS), conducted surveys to look at lynx presence on the Forest. There were four lynx track detections on the IPNF: Black Mountain; Copper Mountain; near Deer Creek; and on Hall Mountain (Golding 2021). Previous surveys conducted with the United States Fish and Wildlife Service (USFWS) and Idaho Department of Fish and Game (IDFG) have also shown detections of lynx in the Northern portion of the Forest. These surveys have shown low numbers but consistent use of forests by lynx in Northern Idaho.

Evaluation of Results for Adaptive Management Finding

Table 85. Summary of findings for Plan Monitoring Item FLS-01-02

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	For performance indicator 1: (E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired. Most LAUs well below the 30% threshold for the amount of early stand initiation not currently provide winter snowshoe hare habitat. The one LAU that is above the threshold is due to a large fire. For performance indicator 2: (C) Uncertain - Methods inadequate to answer monitoring question. The amount of groomed/designated over the snow routes has not changed since the analysis conducted in 2013.
<u>**RECOMMENDATION**</u> *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
<u>**MANAGEMENT FRAMEWORK**</u> *If a change may be warranted, where may the change be needed?[2]*	Monitoring Program: For performance indicator 2: Remove this indicator from the monitoring plan, since new research is not showing compaction is an issue for lynx. Map has not been updated. Snow compaction tracking is an issue and currently based on a lot of assumptions and very little on the ground data. OSV Planning should update map and define managed over-snow vehicle trails and areas for the NZ. There will still be a lack of data for the CZ and SZ

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan

component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired;
(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.
[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item FLS-01-03 – Federally listed species Bull Trout

Table 86. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
FLS-01-03: To what extent is forest management contributing to the conservation of federally listed species [bull trout] and moving toward habitat objectives?	FW-DC-AQH-01 FW-DC-AQH-02 FW-DC-AQH-03 FW-DC-AQH-05 GOAL-AQS-01 FW-DC-AQS-01 FW-DC-AQS-04 FW-OBJ-AQS-01 FW-GDL-AQS-01	**MON-FLS-01-03:** Bull Trout populations trends based on redd counts in known spawning reaches. (Y)	Annually	Idaho Department of Fish and Game	Forest Aquatics Program Manager

* Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 87. Monitoring Item FLS-01-03 - Monitoring Collection Summary

For monitoring item FLS-01-03	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	This is the first
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-AQH-01. Water bodies, riparian vegetation, and adjacent uplands provide habitats that support self-sustaining native and desirable non-native aquatic communities, which include fish, amphibians, invertebrates, plants, and other aquatic-associated species. Aquatic habitats are diverse, with channel, lacustrine, and wetland characteristics and water quality reflective of the climate, geology, and natural vegetation of the area. Water quality supports native amphibians and diverse invertebrate communities. Streams, lakes, and rivers provide habitats that contribute toward recovery of threatened and endangered fish species and address the habitat needs of all native aquatic species.

FW-DC-AQH-02. Connectivity between water bodies provides for life history functions (e.g., fish migration to spawning areas, amphibian migration between seasonal breeding, foraging, and overwintering habitats) and for processes such as recolonization of historic habitats.

FW-DC-AQH-03. Conservation subwatersheds provide habitats that can support population strongholds of federally listed and sensitive species. Conditions in restoration subwatersheds improve to support population strongholds.

FW-DC-AQH-05. Stream channels supply the required structure for desired stream habitat features such as pools, pool tails, banks, large woody material, backwaters, and riffles that provide aquatic species the necessary niches for holding, overwintering, spawning, cover, rearing, and feeding.

GOAL-AQS-01. Maintain or improve the distribution of native aquatic and riparian-dependent species and contribute to the recovery of threatened and endangered aquatic species.

FW-DC-AQS-01. Over the long term, habitat contributes to the support of well-distributed self-sustaining populations of native and desired non-native aquatic species (fish, amphibians, invertebrates, plants, and other aquatic-associated species). In the short-term, stronghold populations of native fish, especially bull trout, westslope cutthroat trout, and interior redband trout, continue to thrive and expand into neighboring unoccupied habitats, and depressed populations increase in numbers. Available habitat supports genetic integrity and life history strategies of native fish and amphibian populations. Macroinvertebrate communities have densities, species richness, and evenness comparable to communities found in reference conditions.

FW-DC-AQS-04. Bull trout. Recovery and delisting of bull trout is the long-term desired condition. Spawning, rearing, and migratory habitat is widely available and inhabited. Bull trout have access to historic habitat and appropriate life history strategies (e.g., resident, fluvial, and adfluvial) are supported. Recovery is supported through accomplishment of bull trout recovery plan tasks under Forest Service jurisdiction. Bull trout population trends toward recovery through cooperation and coordination with USFWS, tribes, state agencies, other federal agencies, and interested groups.

FW-OBJ-AQS-01. Over the life of the Plan, improve watershed condition in 5 percent of "Moderate" or "High" rated subwatersheds that contain populations of sensitive or threatened and endangered species. Improvements in condition ratings may also be accounted for in the trend described in FW-OBJ-WTR-01.

FW-GDL-AQS-01. Management activities that may disturb native salmonids or have the potential to directly deliver sediment to their habitats, should be limited to times outside of spawning and incubation seasons for those species.

The Forest Plan emphasizes management of native species and threatened, endangered, and sensitive species. Bull trout, a native fish, are federally listed under the Endangered Species Act as threatened.

Redd counts are used for tracking bull trout population trends within four bull trout core areas on the IPNF. One core area, the Kootenai River, is only partially on the IPNF. Interagency personnel survey established sections of many streams in the Coeur d'Alene (St Joe River), Priest Lake, and Lake Pend Oreille (LPO) core areas. The long-term use of redd counts provides a baseline for populations, and these data are used to decipher population trends. The status of bull trout at is generally addressed at the scale of the core area or by local population. Core areas are networks of local populations. A core area is assumed to provide habitat elements necessary for a group of populations to persist. The IPNF core areas are complex and provide for replication by having more than one local population in each core area.

Results and Discussion

Methods

Trained personnel of several agencies, including the Forest Service, walk selected stream segments and count redds (trout nests) constructed by bull trout during the spawning season. The effort is led and organized by the Idaho Department of Fish and Game (IDFG). The IDFG sets protocols, collects data from all the participants, and maintains and analyzes the data.

Results

Data

The IDFG analyzed trend data for the three core areas by using log-transformed data to build the trend (Table 88). In this analysis, an "r" represents the rate of change (stable, increasing, or declining) and 95 percent confidence bounds around the rate were used to judge the confidence of the statistic. A positive "r" with bounds that don't overlap zero defines an increasing population trend. This is the case for Priest Lake core area. Alternatively, both the Lake Pend Oreille (LPO) and Coeur d'Alene (St Joe River) core areas show declining trends as defined by negative "r." Another guideline is that if the confidence bounds of "r" overlap zero, then the trend is relatively flat, and can be considered stable. This is the case with the LPO core area population. The LPO core area was considered stable using the 95% confidence interval, because even though the "r" is very slightly negative (-0.009), the confidence intervals include zero (-0.018 through 0.001) (Pers. Comm., A. Dux, November 2020).

Table 88. Trend and rate of change in three core areas of the IPNF

	Lake Coeur d'Alene Core Area (St Joe River)	Priest Lake Core Area	Lake Pend Oreille (LPO) Core Area
Number of Index Streams Evaluated	3	7	6
Rate of Change (r).	-0.051	0.046	-0.009
95% LCI [1]	-0.088	0.015	-0.018
95% UCI [2]	-0.014	0.077	0.001
Trend	Negative (Declining)	Positive (Increasing)	Slightly Negative (Stable)

[1] Rate of change with confidence bounds that don't overlap zero
[2] Rate of change with confidence bounds that do overlap zero

The graphs and results described below address the redd counts in the IPNF's bull trout core areas from south to north.

Little North Fork Clearwater River

Bull trout are widely distributed within the North Fork Clearwater River core area with bull trout redds documented in at least 33 streams, including the Little North Fork Clearwater (Figure 31). The Little North Fork Clearwater local population is 1 of 12 in the core area. Redd count data suggests that the local population has been variable, but stable since 2002. Due to priorities and funding the redd count surveys for the Little North Fork Clearwater are being collected less frequently (i.e., not in 2016, 2017, 2019, and 2020).

**Redds in the Little North Fork Clearwater River
Idaho Panhandle National Forest 2002 to 2018**
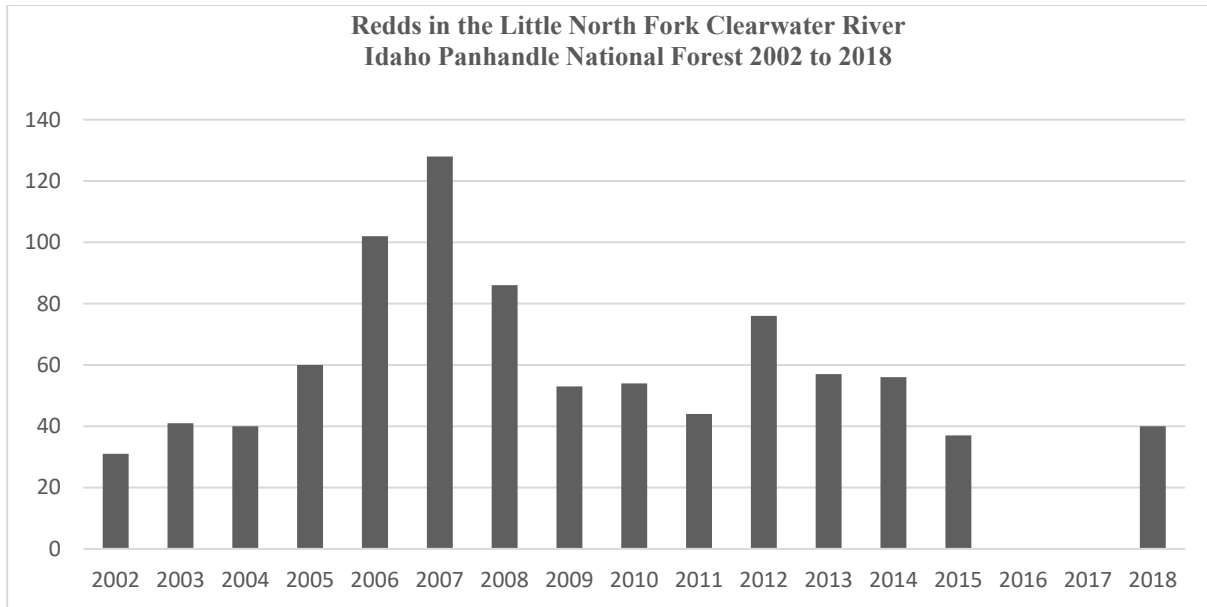
Figure 31. Redds in the Little North fork Clearwater River 2002 to 2018

Coeur d'Alene Core Area

The Coeur d'Alene core area's local populations are at very low density and the long-term conservation of this core area is a concern (Figure 32). The core area is large, complex, and centered on Lake Coeur d'Alene. It eventually flows into the mid-Columbia River far downstream of the Lake Pend Oreille systems. This area includes the Coeur d'Alene River, St. Joe River, and the St. Maries River. Only the St. Joe River and Lake Coeur d'Alene are known to support bull trout. Slightly more bull trout redds were found in the index reaches of the St Joe River in the past two years, following the low counts in 2017 and 2018.

**Bull Trout Redd Counts of
St Joe River Index Streams: 1992 -2020**
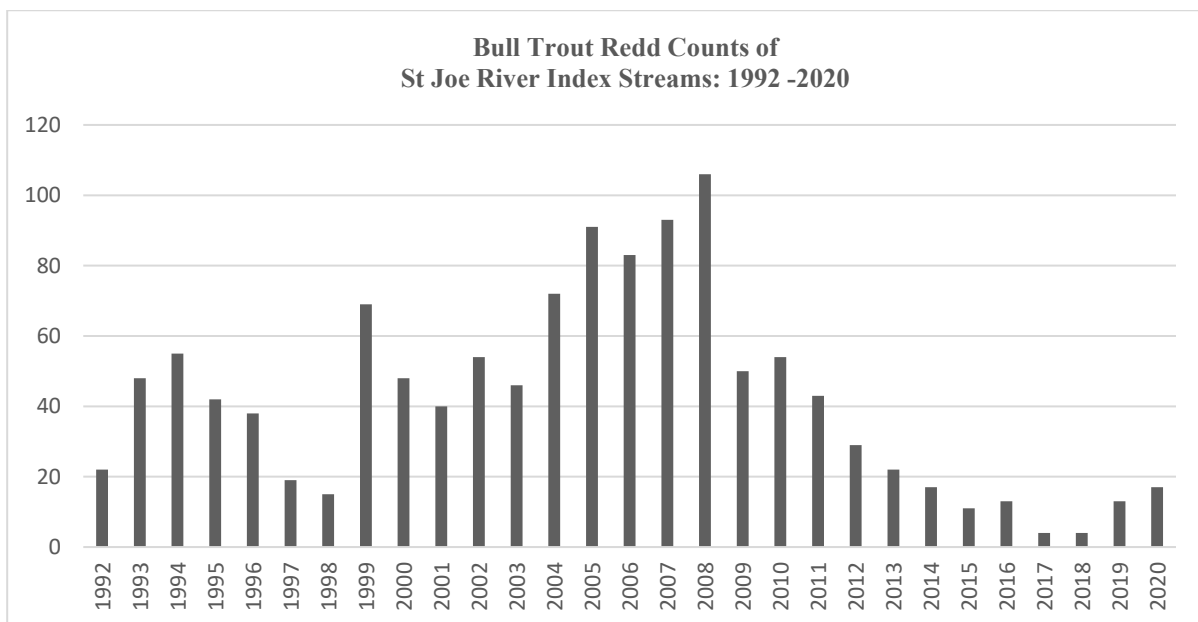
Figure 32. Bull trout red counts of the St. Joe River index streams - 1992-2020

Lake Pend Oreille (includes Lower Priest River)

Officially, the core area is termed LPO-B by the USFWS. It is the Pend Oreille lake basin and its tributaries, extending between Albeni Falls Dam downstream from the outlet of Lake Pend Oreille and Cabinet Gorge Dam just upstream of the lake, almost entirely in Idaho.

Redd counts since 2015 (Figure 33), the monitoring timeline of this report, show variability in number of redds from year to year, which is common. Overall, the total number of redds in the core area indicates a robust population that continues to fluctuate but is relatively stable over longer terms. This suggests effective management of threats to bull trout in the Pend Oreille drainage (Pers comm A. Dux, IDF&G, November 2020 and February 2021).
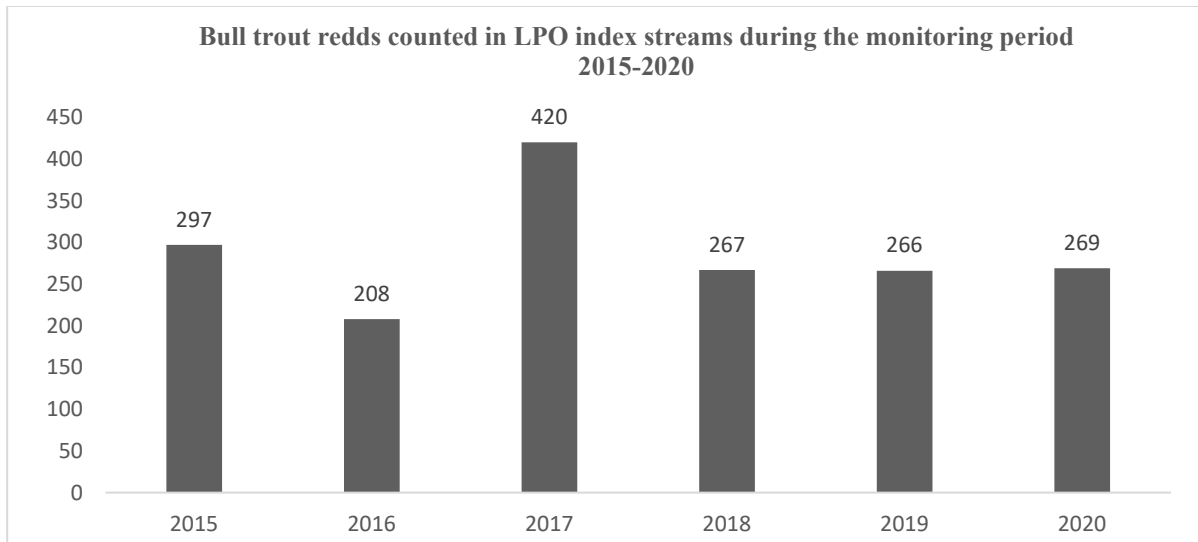
Figure 33. Bull trout redds counted in Lake Pend Oreille index streams - 2015 to 2020

Looking back to 1992 (Figure 34) precedes many of the substantial management actions, such as lake trout suppression. The variability and robustness of the LPO population remains consistent (A. Dux, IDFG, February 2021).
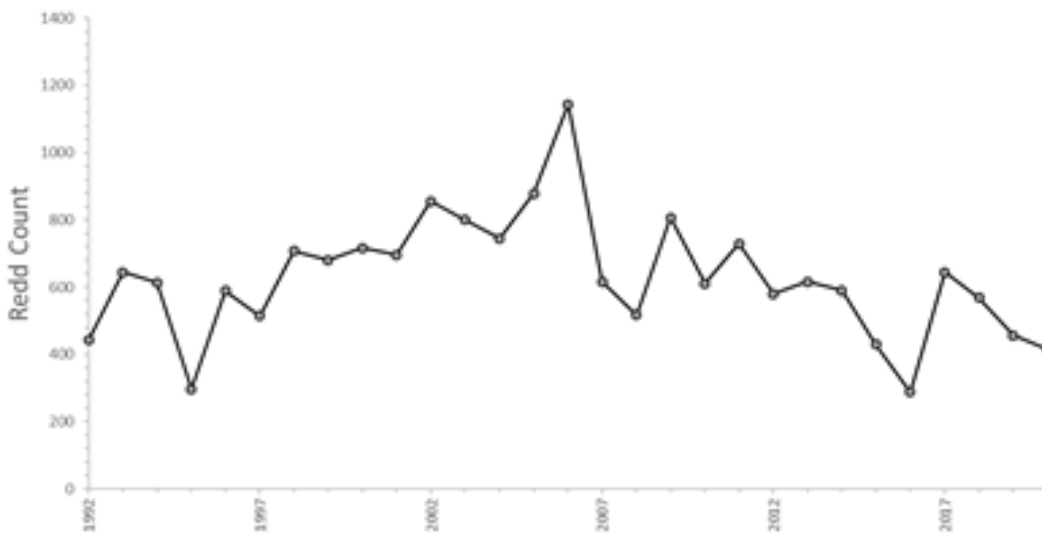
Figure 34. Bull trout redds counted in almost 30 years in the LPO core area.

Priest Lakes

Priest Lakes Core area is separated from the LPO by the dam on the lower Priest Lake. Lake trout in Priest Lake severely reduced bull trout survival through predation or competition and contributed to near collapse of several local populations (USFWS 2015). The IDFG continues small-scale suppression in Upper Priest Lake each year. The effort appears to keep lake trout from becoming more abundant, and bull trout redds appear to be in an upward trend in conjunction with the lake trout suppression (Pers. Comm: A. Dux IDFG, February 2020). Despite the ongoing success of managing lake trout abundance, a long-term solution has not been found and lake trout continue to place native bull trout local populations at risk. Redd counts for some of the small local populations within the Priest Lake core area show substantial declines and potential extirpation (Kovach et al. 2018).
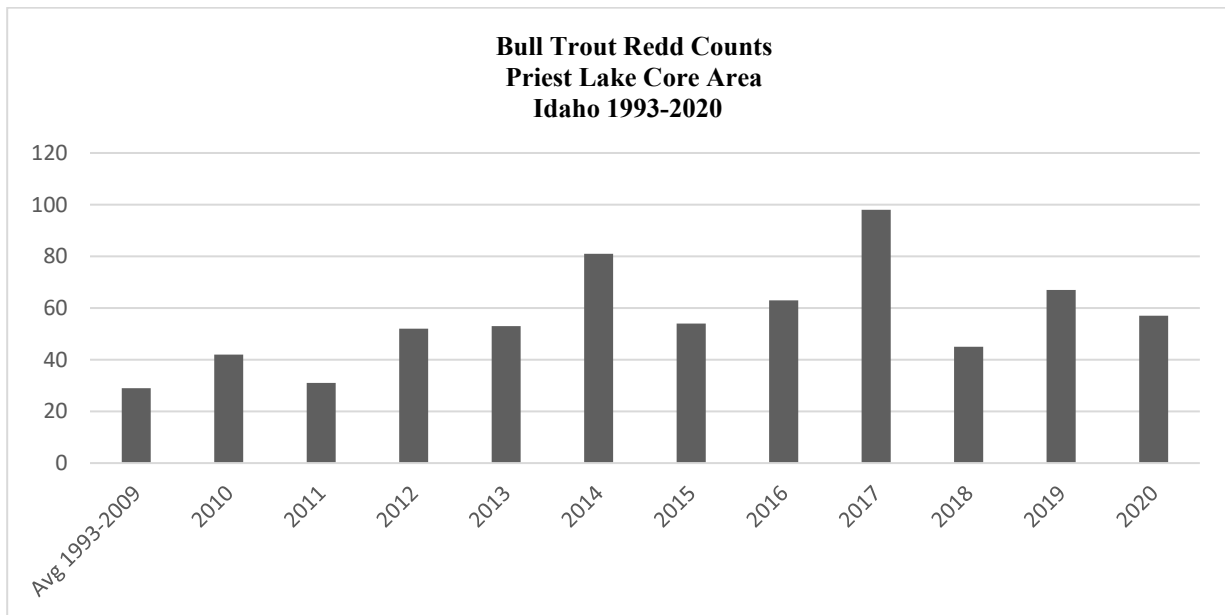
Figure 35. Bull trout red counts in Priest Lake Core Area – 1992-2020

Kootenai River

Kootenai River core area was not assessed. Most of the Kootenai River core area is in Montana, and not on the IPNF. Boulder Creek was the only drainage on the IPNF known to have spawning and rearing bull trout. Environmental DNA (eDNA) results from 2018 and IDFG redd counts indicate bull trout use lower Boulder Creek, however, redd counts are done every three-years due to the limited use of the creek by bull trout. Other drainages are listed as migratory, unoccupied, or unknown (Table 6, USFS 2013).

Discussion

It is difficult to say with any confidence whether IPNF management activities in the plan area positively or negatively influence the monitoring results. General trends of the numbers of bull trout redds in the IPNFs area have been variable, ranging from declining on the St Joe, to stable on the LPO and Little North Fork Clearwater, to slightly increasing in the Priest Lake core area. This is better than many parts of the upper Columbia Headwaters (western Montana, northern Idaho, and the northeastern corner of Washington). Bull trout numbers continue to decline in much of their range in the western United States, including many core populations in the headwaters of the upper Columbia (USFS

2013c, USFWS 2015). More specifically, local population abundances in the upper Columbia River basin were generally low (<20 redds annually) and most trends were either stable (85%) or declining (13%) (Kovach et al. 2018).

The intent of this monitoring item is to indicate the extent that forest management contributes to the conservation of bull trout, and to indicate whether the IPNF lands are moving toward habitat objectives. It was reasonable to develop this monitoring item at the time, considering that the 2015 recovery plan for bull trout (USFWS 2015) states that a primary threat to the bull trout in the core area are the legacy impacts from forest roads, logging, and fires because they increase sediment and cause riparian and instream degradation, loss of large wood, and pool reduction in bull trout habitat (e.g., Lightning and Grouse creeks and the Pack River). In recent years, there has been re-consideration of risk and threats to the LPO bull trout population by most managers. Some consider the LPO population large and stable, and listing a "primary" threat is not warranted. Many consider the interaction with non-native species to be a dominating factor that substantially influences the potential population size and stability.

Kovach et al. (2018) suggest that multiple statistics describing population dynamics at various scales are needed for monitoring and assessing bull trout recovery. A problem with using bull trout redds as an indicator for monitoring the effect of the IPNF Forest Plan is that the species is migratory and effects to the populations occur both on and off the IPNF, and the direst effect is likely occurring in the migratory and overwintering areas downstream of the IPNF lands (Kovach, et al. 2017). Bull trout are particularly susceptible to negative interactions with lake trout and pike. In both LPO and Priest lakes, bull trout faced a significant conservation threat after the introduction of lake trout. Lake trout population modeling was conducted in 2006 and indicated that the population in Lake Pend Oreille was doubling every 1.6 years. Similar changes were also expected in Priest lakes. The incentivized angling, gill netting, and trap netting from 2006 through 2016 in LPO, decreased lake trout abundance by a mean total annual mortality of 31.1%. Limiting the lake trout population is probably a dominating reason why bull trout redd counts are stable at LPO (Dux, et al. 2019).

Similarly, IDFG continues to do small-scale lake trout suppression in Upper Priest Lake each year. The effort appears to keep lake trout from becoming more abundant, and core area-wide bull trout redd counts appear to be in an upward trend in conjunction with the lake trout suppression (Pers. Comm: A. Dux IDF&G, February 2020).

In the St Joe (Coeur d'Alene core area) bull trout redds trends are declining. The IPNF has been implementing projects to secure or improve spawning and rearing habitat in the headwaters, such as an extensive instream habitat improvement project in Sherlock Creek. There has not been a positive or negative effect on the number of bull trout redds, supporting a conclusion that downstream effects may also drive population dynamics.

The IPNF is re-emphasizing its focus on the upper St. Joe by working with the Coeur d'Alene Restoration Partnership to restore aquatic habitat in the headwaters of the St Joe River. This management action or others on the IPNF, without other actions downstream, are unlikely to be apparent in the redd count data.

Encouragingly, the Coeur d'Alene Tribe's Fisheries Program is continuing their down-river: non-native pike research and suppression that was implemented in 2015. Firehammer and Vitale (2020) expect the annual removal of pike in the southern end of the lake to restore the depressed status of the native adfluvial westslope cutthroat trout population in Benewah Creek, and provide adults in the Lake that could re-populate other tributaries that historically contained the adfluvial salmonid. An interagency subgroup led by the U.S. Fish and Wildlife Service is planning a multifaceted approach to

address habitat and interspecies interactions to benefit bull trout. These actions, in coordination with the IPNF's management, will hopefully improve the strength and resilience of bull trout populations in the St. Joe River to a degree that can be documented with bull trout redd counts.

Table 89. Summary of findings for Plan Monitoring Item FLS-01-03

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(C) Uncertain - Methods inadequate to answer monitoring question. Bull trout interaction with non-native species are likely the dominating factor that influences the potential bull trout population size and stability. Redd counts may correlate with bull trout populations, but the populations don't fluctuate with trends in IPNF habitat conditions.
<u>**RECOMMENDATION**</u> *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
<u>**MANAGEMENT FRAMEWORK**</u> *If a change may be warranted, where may the change be needed?[2]*	Change the questions and the analysis method contained in the Forest Plan Monitoring Guide[3]. Use the PIBO data to answer this monitoring item because that data closely monitors aquatic habitat conditions on the IPNF. Their sampling process is much less susceptible to the management by other entities, and non-native species interactions downstream. Specific areas, such as bull trout strongholds can be emphasized in the monitoring.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

[3] **The existing question:** To what extent is forest management contributing to the conservation of federally listed species [bull trout] and moving toward habitat objectives? (This used redd counts as an indicator).

Proposed new question: What are habitat trends for bull trout?

Proposed Indicator: PIBO habitat metrics comparing managed vs references sites.

PIBO's compares the status of stream habitat conditions at sites in 'managed' watersheds (watersheds exposed to disturbance from various management actions) to habitat conditions at sites within 'reference', or relatively pristine, watersheds, which are used as a benchmark of expected condition (USFS 2020). The IPNF will request PIBO for assistance in analyzing a subset of the Forest's managed sites, those that best correlate with bull trout presence and persistence and compare these to reference sites. The subset would include sites in the drainages of the upper St Joe River, Lake Pend Oreille, and others (overlay of occupied designated critical habitat map with the map of the PIBO sites).

Monitoring Item FOC-01-01 – Landbird assemblage habitat trends

Table 90. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U))	Data collection interval	Data Source / Partner	Point of Contact
MON-FOC-01-01: Are habitat trends for the landbird assemblage and macroinvertebrate assemblage consistent with the objectives?	FW-OBJ-WL-03 FW-DC-VEG-01 FW-DC-VEG-02 FW-DC-VEG-03 FW-DC-VEG-04 FW-DC-VEG-05 FW-DC-VEG-07 FW-DC-VEG-11 FW-OBJ-VEG-01 FW-STD-VEG-01 FW-GDL-VEG-01 FW-GDL-VEG-04 FW-GDL-VEG-05 FW-GDL-VEG-06 FW-DC-FIRE-03	**MON-FOC-01-01:** Number of acres where planned ignitions were used to maintain/improve habitat (Y) Percent of natural unplanned ignitions managed for the maintenance or restoration or fire adapted ecosystems. (Y)	Annual	Forest Supervisors Office Records, WIT, FACTS, WFDSS	Forest Wildlife Program Manager

* Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 91. Monitoring Item FOC-01-01 - Monitoring Collection Summary

For monitoring item FOC-01-01:	Year
Data was last collected or compiled in:	2015-2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	N/A
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-OBJ-WL-03. Landbird assemblage (insectivores). The outcome is the management of planned ignitions on 1,000 to 5,000 acres annually to provide habitat for olive-sided flycatchers, hairy woodpeckers, chipping sparrows, and Hammond's and dusky flycatchers. (Also see FW-OBJ-FIRE-02, which provides additional habitat for these species).

Several other plan components for this monitoring item are listed in the monitoring plan, although the primary focus is the first one listed (FW-OBJ-WL-03). We are clarifying that MON-FOC-01 was intended to track our accomplishments in relation to FW-OBJ-WL-03. The other plan components listed because they provided some of the background as to why we were tracking FW-OBJ-WL-03.

FW-DC-VEG-01. The composition of the forest is within the desired ranges for the dominance groups illustrated in figure 2 of the forest plan. More of the forest is dominated by western white pine, ponderosa pine, western larch, and whitebark pine. Conversely, less of the forest is dominated by grand fir, western hemlock, western redcedar, Douglas-fir, lodgepole pine, and subalpine fir. Although they are not depicted in figure 2, more hardwood trees occur in the forest such as quaking aspen, black cottonwood, and paper birch.

FW-DC-VEG-02. The structure of the forest is within the desired ranges for the size classes illustrated in figure 3 of the forest plan. More of the forest is dominated by stands occurring in the seedling/sapling size class and less of the forest is dominated by stands that occur in the small and medium size classes.

FW-DC-VEG-03. The amount of old growth increases at the forestwide scale. At the finer scale of the biophysical setting, old growth amounts increase for the Warm/Dry and Warm/Moist settings while staying close to the current level for the Subalpine setting. Relative to other tree species, there is a greater increase in old growth stands that contain substantial amounts (i.e., 30% or more of the total species composition) of one or more of the following tree species: ponderosa pine, western larch, western white pine, and whitebark pine. Old growth stands are more resistant and resilient to disturbances and stressors such as wildfires, droughts, insects and disease, and potential climate change effects. The size of old growth stands (or patches of multiple contiguous old growth stands) increase, and they are well- distributed across the five Geographic Areas on the Forest.

FW-DC-VEG-04. Tree densities and the number of canopy layers within stands are generally decreased.

FW-DC-VEG-05. The pattern of forest conditions across the landscapes consists of a range of patch sizes that have a diversity of successional stages, densities, and compositions. Formerly extensive, homogenous patches of forests that are dominated by species and size classes that are very susceptible to disturbance agents have been diversified. Generally, there is an increase in the size of forest patches that are dominated by trees in the seedling/sapling size class, as well as in the large size class. There is a decrease in the size of the patches that are dominated by trees in the small and medium size classes.

FW-DC-VEG-07. Snags occur throughout the forest in an uneven pattern, provide a diversity of habitats for wildlife species, and contribute to the sustainability of snag dependent species. Snag numbers, sizes, and species vary by biophysical setting and dominance group. Table 1 of the forest plan displays the desired range of snag densities. Over time, the number of large-diameter snags (20 inches in DBH or greater) increases in all biophysical settings.

FW-DC-VEG-11. The desired forest composition, structure, and pattern for each biophysical setting are described below:

- **Warm/Dry** – This biophysical setting includes the warmest and driest sites that support forest vegetation.

The desired and current condition for dominance groups and size classes are displayed in figure 4 and figure 5 of the forest plan, respectively.

FW-OBJ-VEG-01. Forest Resilience–Over the life of the Plan, the outcome per decade is:

- Increased relative representation of early seral, shade-intolerant, drought- and fire-tolerant, insect/disease resistant species dominance types (e.g., ponderosa pine, white pine, western larch, whitebark pine, and hardwoods) on approximately 85,000 to 90,000 acres (these acres are also included in those listed in the following bullet).

- Treatment of approximately 250,000 acres to maintain and/or improve forest resilience, natural diversity, and productivity and to reduce negative impacts of non-native organisms. Treatments may include timber harvest, planting, thinning, management of fire (including planned and unplanned ignitions), mechanical fuel treatments, revegetation with native species, blister rust pruning, integrated tree improvement activities, non-native invasive plant

treatments, and other integrated pest management activities including forest health protection suppression and prevention activities.

FW-STD-VEG-01. Within old growth stands, timber harvest or other vegetation management activities shall not be authorized if the activities would likely modify the characteristics of the stand to the extent that the stand would no longer meet the definition of old growth (see glossary for old growth definition).

FW-GDL-VEG-01. Timber harvest or other vegetation management activities may be authorized in old growth stands if the activities are designed to increase the resistance and resiliency of the stand to disturbances or stressors, and if the activities are not likely to modify stand characteristics to the extent that the stand would no longer meet the definition of old growth (see the glossary for the definitions of resistance and resilience).

FW-GDL-VEG-04. Vegetation management activities should retain snags greater than 20 inches DBH and at least the minimum number of snags and live trees (for future snags) that are displayed in table 4 of the forest plan. Where snag numbers do not exist to meet the recommended ranges, the difference would be made up with live replacement trees. Exceptions occur for issues such as human safety and instances where the minimum numbers are not present prior to the management activities.

FW-GDL-VEG-05. Where vegetation management activities occur and snags (or live trees for future snags) are retained, the following direction should be followed:

- Group snags where possible;

- Retain snags far enough away from roads or other areas open to public access to reduce the potential for removal (generally more than 150 feet);

- Emphasize retention of the largest snags and live trees as well as those species that tend to be the most persistent, such as ponderosa pine, larch, and cedar;

- Favor snags or live trees with existing cavities or evidence of use by woodpeckers or other wildlife.

FW-GDL-VEG-06. During vegetation management activities (e.g., timber harvest), and in the event that retained snags (or live trees being retained for future snags) fall over or are felled (for safety concerns), they should be left on site to provide coarse woody debris.

FW-DC-FIRE-03. The use of wildland fire (both planned and unplanned ignitions) increases in many areas across the Forest. Fire plays an increased role in helping to trend the vegetation towards the desired conditions while serving other important ecosystem functions. However, when necessary to protect life, property and key resources, many wildfires are still suppressed.

When desired conditions targeted by forest management are difficult to measure directly, focal species that have a functional relationship to these conditions can be monitored. These focal species can provide information on whether desired conditions are being achieved. The landbird assemblage was chosen as one of the focal species to provide information on whether the IPNF is moving towards the desired conditions in the forest plan.

The forest plan provides direction to maintain or improve habitat for landbirds. Landbirds are of interest not only for wildlife viewing but also because of the international interest in conservation and the protection afforded them through the Migratory Bird Treaty Act (Forest Plan FEIS, pp. 209). The landbird assemblage was chosen as a Focal Species for movement towards the desired conditions for

vegetation. FW-OBJ-WL-03 set an objective for the management of planned ignitions on 1,000 to 5,000 acres, annually, to provide habitat for olive-sided flycatchers, hairy woodpeckers, chipping sparrows, and Hammond's and dusky flycatchers. FW-OBJ-FIRE-02, provides an additional objective for providing habitat for these species. The wildlife analysis supporting the revised Forest Plan relied heavily on the desired conditions for vegetation and the importance of using fire to move towards those desired conditions (Anderson 2014). FW-DC-FIRE-03 and FW- DC-OBJ-FIRE-02 are particularly important pieces for providing wildlife habitat on the IPNF as per the desired conditions for vegetation.

The treatment of the 1,000 to 5,000 acres of wildlife habitat annually is part of the goals, desired conditions, and objectives in the forest plan (pp. 29-31). Restoration or enhancement of terrestrial habitat is achieved by many different methods or treatments. Planned ignitions, unplanned ignitions, commercial timber harvest, weed treatment, and precommercial thinning are some examples that were identified in the IPNF Monitoring Guide.

Past resource use and the exclusion of fire for almost 100 years has caused changes in some wildlife habitats. These changes have benefited some species and been detrimental to others. (Forest Plan FEIS, pp. 209) The vegetation features assessed as "key indicators", in the forest plan analysis, for the wildlife considered changes in forest composition, structure, and pattern in addition to security habitat (non-motorized areas). These features are related to the quality and quantity of wildlife habitats.

As identified on page 366 of the Forest Plan FEIS, a review of the literature shows landbirds can have varied responses (densities) to thinning and burning treatments such as those that would be expected in order to move towards the desired conditions for vegetation (Gaines et al. 2007, Gaines et al. 2010, Saab et al. 2007). Hammond's flycatcher was included because it uses mature coniferous forests, and the hairy woodpecker was included because it uses snags for foraging and nesting.

Maintaining or mimicking natural processes and naturally occurring structural diversity, promoting natural pattern and connectivity, restoring ecosystems, communities, and species, and protecting rare species or sensitive environments are all means to maintain biodiversity in an ecosystem (USDA Forst Service 2013 FEIS, pp.209 cited page 7 in CEQ 1993). Movement toward the desired conditions for vegetation under the revised forest plan would provide for an array of ecological communities of sufficient size, structure, and distribution that is expected to maintain habitats for the vast majority of native species that occur on the Forest. (USDA Forest Service 2013 FEIS, p. 212) It was identified in the forest plan FEIS that active restoration through mechanical and prescribed burn treatments as well as fire and natural disturbance can help in moving wildlife habitats towards the desired conditions (USDA Forest Service 2013 FEIS, p. 213). As part of the FEIS analysis, Ecosystem Research Group (ERG 2012) simulated the IPNF landscape under different management scenarios, which laid the groundwork for the forest plan analysis of focal species (USDA Forest Service 2013 FEIS, pp. 368). This report concluded that habitat for most of these species would increase or at the very least be maintained with the management strategies identified in the forest plan (ERG 2012, p. ES-9). Although, as stated above, it was recognized that not every wildlife species benefits from fire, overall, the Forest Plan analysis showed that habitat would be maintained for most species through the coarse filter for viability (Anderson 2014, ERG 2012).

There is also a supplemental monitoring indicator would provide information on population trends, to determine if the Forest is making progress towards desired conditions for landbirds. This optional supplemental monitoring indicator boosted the sample size for the IPNF portion of the Regional Landbird Monitoring Program (IMBCR – Integrated Monitoring using Bird Conservation Regions). This allows for a finer scale analysis to determine if the Forest is making progress towards desired

conditions for landbirds. This information is incorporated in the MON-FOC-01-01 analysis in this report.

The indicators of acres of terrestrial habitat restored or enhanced, the number and acres of natural, unplanned fire ignitions, and the supplemental information on population trends will determine if the Forest is making progress towards desired conditions (FW-OBJ-WL-03, FW-DC-VEG-01, FW-DC-VEG-02, FW-DC-VEG-03, FW-DC-VEG-04, FW-DC-VEG-05, FW-DC-VEG-07, FW-DC-VEG-11, FW-OBJ-VEG-01, FW-STD-VEG-01, FW-GDL-VEG-01, FW-GDL-VEG-04, FW-GDL-VEG-05, FW-GDL-VEG-06, FW-DC-FIRE-03) for landbirds.

Results and Discussion

Methods

For this monitoring question and indicator, the data is reported as acres per year for wildlife habitat maintained or restored at a five-year timeframe (2015 to 2020). The unplanned fire ignitions managed for maintenance/restoration is reported as number of ignitions and acres at a five-year timeframe. However, due to reporting cycle it has a year lag time, so the data time frame is for fiscal years 2015-2019.

Restoration or enhancement of terrestrial habitat is achieved by many different methods or treatments. Planned and unplanned ignitions, commercial timber harvest, weed treatment, and precommercial thinning are some examples.

As identified in the forest plan monitoring guide the district biologists will report to the forest wildlife biologist the number of acres, annually, wildlife habitat maintained or restored. The number and acres natural, unplanned fire ignitions managed will be obtained through the forest fire planner.

Data collection for the acres of planned ignitions is the responsibility of each district for tracking and entering the data using (national and regional protocols) into the Forest Service's Watershed Improvement Tracking (WIT) database. The forest wildlife program manager can pull and review this data from the WIT database to determine acres and species benefited from the treatments. The unplanned ignitions information is gathered from Wildland Fire Decision Support System (WFDSS) by the forest fire planner.

The optional supplemental monitoring item data would be collected through the Regional Landbird Monitoring Program protocol. It would boost the sample size for the IPNF portion of the Regional Landbird Monitoring Program (IMBCR – Integrated Monitoring using Bird Conservation Regions, https://www.birdconservancy.org/what-we-do/science/monitoring/imbcr-program/). Additional transects are sampled beyond the 10 transects already sampled by the IMBCR Program. The populations of the landbird assemblage focal species, in addition to other landbirds, are currently sampled using the ongoing Regional Landbird Monitoring Program. The surveys are conducted by the IMBCR crews rather than IPNF employees and the data is retained by the Regional Landbird Monitoring Program with the results provided to the Forest. Trends can be determined based on the ongoing monitoring. The IMBCR provided an analysis in 2018 to assess whether trends likely reflect forest-level management practices versus broader environmental or climatic changes and to improve understanding of focal species' habitat relationships to inform interpretation of trends identified from IMBCR.

Results

Data

Table 92. Focal species' habitat descriptions in KIPZ forest monitoring plans*

Species	Habitat description
Chipping Sparrow	"openings and early successional forests"
Hairy Woodpecker	"coniferous forests, including large-tree stands, which contain snags"
Olive-sided Flycatcher	"openings and early successional forests that contain residual conifers or snags, such as would be expected to occur after a fire"
Dusky Flycatcher	"open coniferous forests, open areas with scattered trees, brushy areas, and riparian habitats"
Hammond's Flycatcher	"mature coniferous forests that contain canopy openings"

*These descriptions condense and highlight key components appearing in more extensive descriptions in the Ecosystem Research Group report (ERG 2012). Selection of these species to focus monitoring is based on these and ERG descriptions.

Table 93. Acres of Planned Ignitions and the Landbird Assemblage Members that Benefited

Fiscal Year	Acres Burned	Species Benefited
2015	1,134	Chipping sparrow, Hammond's Flycatcher, olive-sided flycatcher, & dusky flycatcher
2016	2,693	Chipping sparrow, Hammond's Flycatcher, olive-sided flycatcher, & dusky flycatcher
2017	0	None
2018	2,174	Chipping sparrow, Hammond's Flycatcher, olive-sided flycatcher, & dusky flycatcher
2019	1,721	Chipping sparrow, Hammond's Flycatcher, olive-sided flycatcher, & dusky flycatcher
2020	0	None

Table 94. Number of Natural, Unplanned Ignitions and the Landbird Assemblage Members that Benefited

Fiscal Year	Total Number of Natural, Unplanned Ignitions	Number of Natural, Unplanned Ignitions Managed for Maintenance/Restoration	% of Natural, Unplanned Ignitions Managed for Maintenance/Restoration	Species Benefited
2015	161	0	0%	Chipping sparrow, Hammond's Flycatcher, olive-sided flycatcher, & dusky flycatcher
2016	24	0	0%	Chipping sparrow, Hammond's Flycatcher, olive-sided flycatcher, & dusky flycatcher
2017	45	0	0%	Chipping sparrow, Hammond's Flycatcher, olive-sided flycatcher, & dusky flycatcher
2018	63	0	0%	Chipping sparrow, Hammond's Flycatcher, olive-sided flycatcher, & dusky flycatcher

Fiscal Year	Total Number of Natural, Unplanned Ignitions	Number of Natural, Unplanned Ignitions Managed for Maintenance/Restoration	% of Natural, Unplanned Ignitions Managed for Maintenance/Restoration	Species Benefited
2019	43	1	2%	Chipping sparrow, Hammond's Flycatcher, olive-sided flycatcher, & dusky flycatcher

Table 95. Number of sampling units (top panel) and number of detections by species (bottom panel) represented in monitoring data for the Idaho Panhandle National Forest monitoring plans*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	All years
Number of sampling units (points)	*156*	*105*	*321*	*264*	*204*	*308*	*289*	*308*	*322*	*311*	*312*	*2,900*
Number of Hairy Woodpecker (HAWO) detections	28	14	19	15	13	18	14	14	20	26	21	202
Number of Olive-sided Flycatcher (OSFL) detections	11	2	29	12	21	17	32	22	34	40	46	266
Number of Hammond's Flycatcher (HAFL) detections	20	75	38	56	57	43	36	34	56	81	100	596
Number of Dusky Flycatcher (DUFL) detections	16	4	54	35	24	30	39	25	55	60	45	387
Number of Chipping Sparrow (CHSP) detections	20	22	103	114	73	191	191	68	104	307	263	1,456

*Survey points are nested within 3281-ft2 grids in 4×4 arrays. Each unit (point) was surveyed at most once per year. n units = the number of units (point) surveyed. n detections = the sum of all detections of individuals recorded across all points.

[a]At some grids in some years, fewer than 16 points were surveyed due to access limitations, safety, or logistical constraints.
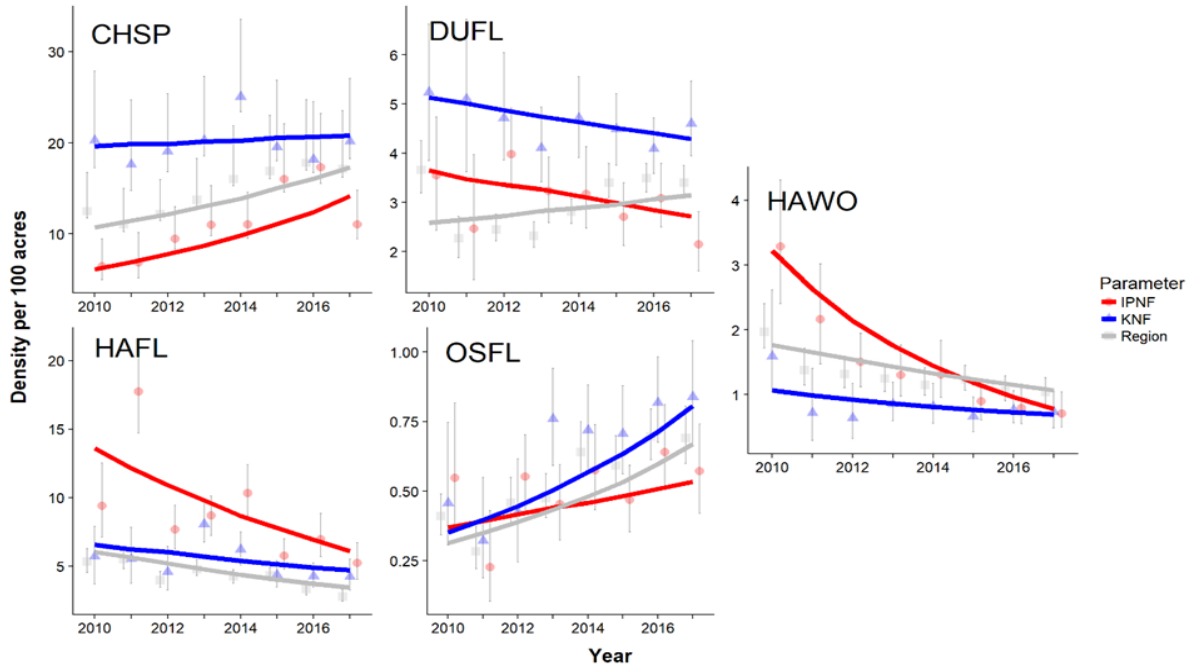
Figure 36. Regional and forest-level population trends (lines) and year-specific abundance estimates with 95% credible intervals (points and error bars) for KIPZ focal species in 2010–2017*

*Focal species are Chipping Sparrow (CHSP), Dusky Flycatcher (DUFL), Hammond's Flycatcher (HAFL), Olive-sided Flycatcher (OSFL), and Hairy Woodpecker (HAWO). All regional trends (gray) are statistically supported (95% credible intervals exclude zero). Trends for CHSP, HAFL, and HAWO in Idaho Panhandle National Forest (IPNF; red), and OSFL in Kootenai National Forest (KNF; blue) were also statistically supported. Trends are those reported by Green et al. (2019). (Latif et al. 2019)

Overall, confidence in the quantity and quality of the data collected is moderate to high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking. Data is entered into the WIT database yearly and relies on data from vegetation treatments that have been entered into the Forest Service Activity Tracking System (FACTS). Confidence is high in the quantity, quality, and ability to detect trends in the IMBCR data. This is due to the statistically reliable and repeatability of the data collection process that is used in the Regional Landbird Monitoring Program.

Discussion

This is the first report for MON-FOC-01 and MON-FOC-Supplement, and thus establishes the baseline for these monitoring questions and indicators.

FW-OBJ-WL-01 sets an objective of 1,000-5,000 acres annually. Restoration or enhancement of terrestrial habitat is achieved by many different methods or treatments. Planned and unplanned ignitions, commercial timber harvest, weed treatment, and precommercial thinning are some examples. Table 92 shows the habitat descriptions that each of these focal species are expected to associate. All these habitat descriptions contain elements that are expected for fire to promote or at least affect in some way and in turn have the potential to affect habitat for landbirds.

Since 2015, the number of acres treated for the benefit of wildlife species has met or exceeded the forest plan objective (FW-OBJ-WL-01) every year (MON-WDL-01,Table 93). The number and acres of planned and unplanned ignitions has fluctuated from year to year (Table 93 and Table 94). With no

planned or unplanned ignitions managed for maintenance/restoration in 2017 and 2020. All other years met the objective of 1,000 to 5,000 acres of habitat treatments that would benefit the habitat for the landbird assemblage.

FW-OBJ-WL-03 is poorly worded by indicating that all the landbird assemblage would benefit from prescribed fire. As identified in the Forest Plan analysis (USDA Forest Service 2013 and Anderson 2014, Forest Plan Wildlife Specialist Report), the habitat for each of the five species in the landbird assemblage varies. Movement towards the desired conditions for vegetation would maintain or restore habitat adequate for these species. Fire would create open habitat which would benefit some species but not others. However, overall, the desired conditions for vegetation would still provide habitat for all five species. This trade-off and dynamic are not adequately reflected in the wording of FW-OBJ-WL-03.

The planned ignition treatments were designed to move the different habitat types towards the desired conditions by changing the forest composition, structure, and pattern in addition to security habitat (non-motorized areas).

There was only one unplanned ignition fire from 2015 to 2019 that was managed for maintenance/restoration (Table 94). This was for the Snow Peak Fire (137 acres) of which 110 acres was managed for resource benefit. Of the total fire acres 27 acres had a primary goal of suppression.

Although the landbird assemblage were selected to help monitor progress towards the desired conditions for vegetation, not all of these species may work as focal species as intended. Latif et al. 2019 looked at breeding bird data from the Integrated Monitoring in Bird Conservation Regions (IMBCR) program and vegetation data from the USFS Northern Region's Existing Vegetation Mapping Program (VMAP). They analyzed population abundance or occupancy in relation to vegetation covariates, then evaluated whether covariate relationships matched the expected direction (e.g. positive, negative) implied in the habitat descriptions for the five focal species in the landbird assemblage (chipping sparrow, dusky flycatcher, Hammond's flycatcher, olive-sided flycatcher, and hairy woodpecker).

As stated in Latif et al. 2019 (p. 6):

> "The 2012 Planning Rule requires monitoring focal species to address desired conditions (36 CFR § 219.19). Focal species are intended to inform ecological integrity and the presence or quality of ecological characteristics that are difficult to measure or monitor directly. As such, focal species should relate functionally with ecological characteristics of interest (e.g., vegetation attributes that provide important habitat features for a species). The current planning rule mandates monitoring of at least one focal species by each forest, with local resource specialists and forest planners being responsible for determining which species to monitor and which ecological characteristics they are supposed to represent.

> Restoring wildfire and associated vegetation conditions represent central management goals for both the Kootenai and Idaho Panhandle National Forests (hereafter KIPZ forests). Acres burned by wildfire and prescribed fire therefore represent key metrics in monitoring plans for these forests... Wildfire is central to maintaining canopy openings and landscape heterogeneity, which provide critical habitat components for many species of wildlife…"

Table 95 and Figure 36 show the monitoring results from the IMBCR surveys. There are 38 4X4 grids, which are distributed at random across the IPNF. The IMBCR survey points are nested in each grid cell. Monitoring has been on-going since 2010, but not all grids were surveyed every year, in part because grids were added in 2013 with sampling intensification to meet the MON-FOC-Supplement

question. All five landbird assemblage species have been detected every year since 2010. Chipping Sparrows have the most detections and hairy woodpecker have the least detections in that time-period (Table 95). Note that the IMBCR data used in Latif et al. 2019 was from 2010-2017. This means that only the data from 2015-2017 were after the revised Forest Plan was finalized. Only projects with decisions in 2015 and afterwards implement the revised Forest Plan.

Figure 36 shows the regional and forest-level population trends (lines) and year-specific abundance estimates with 95 percent credible intervals (points and error bars) for the Kootenai and Idaho Panhandle national forest focal species from 2010 to 2017 (Latif et al. 2019). The IPNF population trends are shown in red.

The IMBCR Focal Species Evaluation (Latif et al. 2019) summarized for both the Kootenai and Idaho Panhandle National Forest:

> We found statistically supported habitat relationships for all species (Table 6, Figures 2–6). Estimated relationships were consistent with most but not all of our predictions (Table 4). All statistically supported relationships were consistent with habitat descriptions for Chipping Sparrow and Dusky Flycatcher, but we were unable to corroborate all predictions for these species. Furthermore, we either could not corroborate or found relationships contradicting predictions for the remaining 3 species – Hammond's Flycatcher, Olive-sided Flycatcher, and Hairy Woodpecker. We also found supported relationships with canopy composition for 4 focal species (all except Hairy Woodpecker), suggesting course-scale differences in population density among forest types (Table 6, Figures 2–5). Models corrected for spatial and temporal variation in detectability when estimating species habitat relationships. Statistically supported detectability patterns consisted of seasonal variation for 3 species and relationships with canopy cover for 4 species (all except Hairy Woodpecker; Table 6).

Latif et al. 2019 concluded (p. 27):

> "We suggest reevaluating KIPZ focal species for monitoring desired conditions in light of our study. Reevaluation could include reexamining which focal species adequately represent desired habitat conditions, and which conditions are of interest for focal species monitoring (e.g., which conditions are difficult to measure directly). Leveraging existing data (e.g., IMBCR, VMAP) could facilitate a more rigorous selection of focal species (or guilds) informed by empirically determined habitat relationships along with published habitat descriptions."

Latif et al. 2019 also found that (p. 26):

> "Focal species' monitoring could particularly inform management of heterogeneity, a key habitat feature of management interest that is difficult to measure directly. Disturbance maintains heterogeneity by generating forest canopy openings. Homogenization via loss of openings is widely attributed to anthropogenic impacts that alter natural disturbance processes…"

Evaluation of Results for Adaptive Management Finding

Table 96. Summary of findings for Plan Monitoring Item FOC-01-01

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(C) Uncertain - Methods inadequate to assess the status or progress toward achieving plan component(s). Acres treated for the benefit of wildlife species has met or exceeded the forest plan objective and density of select landbirds shows mixed results on the trends for the selected landbirds. Latif et al 2019 could not corroborate all predictions on habitat effects for all these species. As recommended by Latif et al 2019, more information and data are needed to make the correlation between the landbirds and habitat desired conditions.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?[2]*	See Evaluation of Results for Monitoring Item Fire-02 Recommended actions: Change Monitoring question to "Are management actions achieving vegetation composition and structure desired conditions?" Add the Density of selected landbirds to the current indicators. (See Table 95 and Figure 36 taken from Latif et al. 2019) Consider reexamining which focal species adequately represent desired habitat conditions per the recommendations from Latif et al. 2019. Consider managing fires for strategies other than full suppression within the WFDSS decision, especially those within management areas where fire is the primary tool for vegetation management. Consider Fires with a Contain, Confine, and point protection strategies as candidates to be managed for multiple objectives. Prioritize accomplishment data entry into WIT.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item FOC-01-02 – Macroinvertebrate assemblage habitat trends

Table 97. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-FOC-01: Are habitat trends for the macroinvertebrate assemblage consistent with the objectives?	FW-OBJ-AQH-02	**MON-FOC-01:** Changes in the River Invertebrate Prediction and Classification System (Observed/Effect model) score (Y)	Data collected annually. Data analyzed every 5 years.	PACFISH/INFISH biological opinion (PIBO) effectiveness monitoring program (USFS)	Forest Aquatics Program Manager

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 98. Monitoring Item FOC-01-02 - Monitoring Collection Summary

For monitoring item FOC-01-02:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	This is the first.
Next scheduled MER evaluation of this monitoring item:	2025

Referenced Plan Components:

FW-OBJ-AQH-02. Over the life of the Plan, a representative assemblage of aquatic macroinvertebrates is present across the Plan area and observed taxa maintain a score of 0.78 or greater using the River Invertebrate Prediction and Classification System (RIVPACS) analysis model.

The Forest Plan emphasizes water quality improvement and enhancing in-stream and riparian habitats. Macroinvertebrate species richness is an indicator of disturbance and pollutants and used to evaluate changes to channel conditions over time.

Results and Discussion

Methods

Macroinvertebrates are collected by a crew supervised by the National PACFISH/INFISH Biological Opinion (PIBO) Effectiveness Monitoring Program. They collect several monitoring metrics on streams in the western US. Their data is summarized by a program scientist in Ogden UT, and their reports are then distributed to the field units. The most current PIBO report is referenced and interpreted for this monitoring report. An average value for "managed" sites on the IPNF is determined and compare that to the baseline value in 2014.

The macroinvertebrate samples are sorted, and the abundances of key species are entered into a computer model called RIVPACS (River Invertebrate Prediction and Classification System). It compares the macroinvertebrates expected in the absence of major environmental stress to the macroinvertebrates observed at the site (Wright et al. 2000). Changes RIVPACS score relative to the baseline indicate positive or negative changes in water quality across the planning area.

Results

Data

Based on the data presented in the following table, there was no significant deviation from the 2014 score of 0.89. The score of 0.90 exceeds the objective of FW-OBJ-AQH-02 that states that over the life of the Plan, a representative assemblage of aquatic macroinvertebrates is present across the Plan area and observed taxa maintain a score of 0.78 or greater using the River Invertebrate Prediction and Classification System (RIVPACS) analysis model.

Table 99. RIVPACS Score and Amount of Deviation from Previous Period

Calendar Year	RIVPACS Score	Amount of Deviation from Previous Reporting Period (value +/-)
2014	0.89	N/A
2019	0.90	+0.01

Discussion

Habitat trends for the macroinvertebrate assemblage indicate maintenance of water quality and stream integrity and indicate that that the IPNF achieved the objective of a RIVPACS score greater than 0.78 (FW-OBJ-AQH-02). There are also three Watershed Desired Conditions (FW-DC-WTR-01, FW-DC-WTR-02, and FW-DC-WTR-03; detailed in the Finding section below) that support the objective but were not part of the 2016 Monitoring Guide. These desired conditions pertain to the characteristics, processes, and features consistent with their natural potential conditions that protect water quality, and these conditions are the crux of the RIVPACS scores, and comparisons between years.

The Observed versus Expected (O/E) macroinvertebrate score index values across the IPNF indicate that the major environmental stresses are similar in 2014 and 2019 (Table 99). Figure 36 below displays that the distribution of values for managed reaches (histogram) tracks very closely to expected values at reference reaches (the line in the graph). Close matches between histogram (bar) height and line indicate conditions are similar at managed and reference reaches (USFS 2020a). Trend in stream habitat attributes across the IPNF for the Observed/Expected macroinvertebrate score, as measured from 2001-2019, was insignificantly downward (-0.9%; p-value 0.55) (USFS 2020a, p. 22).
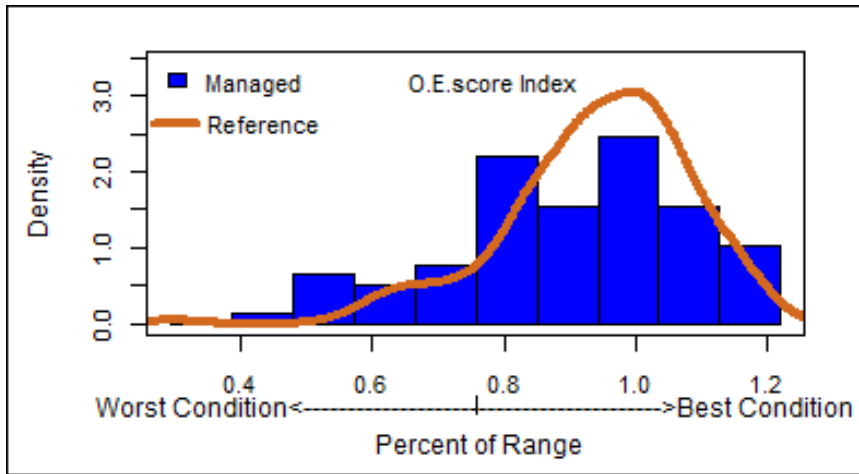
Figure 37. Values of managed and reference streams

Table 100. Summary of findings for Plan Monitoring Item FOC-01-02

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired. This is based upon the 2020 River Invertebrate Prediction and Classification System (RIVPACS) analysis model score of 0.90, which is similar to the 2014 score of 0.89. This achieves the Forest Plan's target score of 0.78 or greater.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?*[2]	Monitoring Plan This monitoring item depends on the macroinvertebrate sampling from the PIBO Monitoring program that was removed from the sampling methodology in 2018 for cost-savings reasons. The PIBO sampling is organized at the regional scale. The IPNF found the funding to

	FINDINGS
	partially continue sampling macroinvertebrates in 2019 and 2020; future funding is not secure.
	We recommend macroinvertebrate sampling continue because it provides a reasonable method to indicate trends of water quality and aquatic habitat. It focuses on the conditions within the IPNF, unlike redd counts of FLS-01-03. However, we recognize the varying opinions as to the value of this monitoring. Skeptics state that it would take a readily apparent change in the environment to reach the score of 0.78, and we do not need macroinvertebrate sampling to detect something readily visible. Others state that the macroinvertebrate sampling shows a trend prior the point when potential detrimental effects of management are clearly visible. Macroinvertebrate sampling complements habitat and water quality monitoring of:
	Habitat parameters sampled by the PIBO Monitoring program,
	Aquatic habitat restoration (Mon item - AQH-01),
	BMP implementation and effectiveness monitoring (Mon item - WTR-01), and
	Watershed condition (Mon item - WTR-02).

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

[3] **Desired conditions** to add to the Monitoring Item and Forest Plan Monitoring Guide to support the objective.

FW-DC-WTR-01. Watersheds, riparian areas, and other hydrologically dependent systems, such as streams, lakes, and wetlands have characteristics, processes, and features consistent with their natural potential condition. These features and related ecosystems retain their inherent resilience by responding and adjusting to disturbances without long-term, adverse changes to their physical or biological integrity.
FW-DC-WTR-02. All management activities will emphasize protection of water quality in order to meet applicable state water quality standards and fully support beneficial uses. Surface and groundwater flows support beneficial uses and meet the ecological needs of aquatic species and maintain the physical integrity of their habitats.
FW-DC-WTR-03. Stream channels transport water, sediment, and woody material over time, while maintaining their proper dimension, pattern, and profile for a given landscape and climatic setting. Sediment deposits, from over-bank flows, allow floodplain development and maintenance and support the propagation of flood-dependent riparian plant species. Surface and groundwater flows recharge riparian aquifers, provide for late-season flows, cold water temperatures, and sustain the function of surface and subsurface aquatic ecosystems.

Monitoring Item WL-01 – Terrestrial Habitat Restored or Enhanced

Table 101. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-WDL-01 Have management activities met Plan objectives and maintained or improved habitat to achieve desired terrestrial habitat conditions?	FW-OBJ-WL-01 FW-DC-VEG-01 FW-DC-VEG-02 FW-DC-VEG-03 FW-DC-VEG-04 FW-DC-VEG-05 FW-DC-VEG-07 FW-DC-VEG-08 FW-DC-VEG-11	MON-WDL-01: Acres of terrestrial habitat restored or enhanced for wildlife. (Y) MON-FIRE-02-01: # and acres of natural, unplanned fire ignitions managed: for the maintenance and/or restoration of fire-adapted ecosystems (Y) with the primary goal of suppression (Y) MON-VEG-01-01:	Annual	WIT database FACTS database FIRESTAT	Forest Wildlife Program Manager Forest Fuels Planner Forest Silviculturist

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
	FW-OBJ-VEG-01 FW-STD-VEG-01 FW-GDL-VEG-01 FW-GDL-VEG-03 FW-GDL-VEG-04 FW-GDL-VEG-05 FW-GDL-VEG-06 FW-DC-FIRE-03	Acres treated towards achieving FW-OBJ-VEG-01; (Y) MON-VEG-01-02: Acres burned; (Y) MON-VEG-01-03: Acres of forest by dominance type and size class compared to the desired condition; (Y) MON-VEG-01-04: Acres meeting the old growth definition (see glossary of the Forest Plan) as determined by the FIA program; (Y) MON-VEG-01-05: Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures. (Y)			

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 102. Monitoring Item WL-01 - Monitoring Collection Summary

For monitoring item WL-01:	Year
Data was last collected or compiled in:	2015-2020
Next scheduled data collection/compilation: See report sections MON-FIRE-02 and MON-Veg-01 for the next data collection years for those indicators.	2021
Last MER evaluation for this monitoring item:	N/A
Next scheduled MER evaluation of this monitoring item:	2023

Several plan components for this monitoring item are listed in the monitoring plan, although the primary focus is the first one listed (FW-OBJ-WL-01). We are clarifying that MON-WDL-01 was intended to track our accomplishments in relation to FW-OBJ-WL-01. The other plan components were listed because they provided some of the background as to why we were tracking FW-OBJ-WL-01.

Referenced Plan Components:

FW-OBJ-WL-01. The outcome is the maintenance or restoration of wildlife habitat on 1,000 to 5,000 acres of NFS lands, annually, with an emphasis on restoration of habitats for threatened and endangered listed species and sensitive species.

FW-DC-VEG-01. The composition of the forest is within the desired ranges for the dominance groups illustrated in figure 2 (of the forest plan). More of the forest is dominated by western white pine, ponderosa pine, western larch, and whitebark pine. Conversely, less of the forest is dominated by grand fir, western hemlock, western redcedar, Douglas-fir, lodgepole pine, and subalpine fir. Although they are not depicted in figure 2, more hardwood trees occur in the forest such as quaking aspen, black cottonwood, and paper birch.

FW-DC-VEG-02. The structure of the forest is within the desired ranges for the size classes illustrated in figure 3 (of the forest plan). More of the forest is dominated by stands occurring in the seedling/sapling size class and less of the forest is dominated by stands that occur in the small and medium size classes.

FW-DC-VEG-03. The amount of old growth increases at the forestwide scale. At the finer scale of the biophysical setting, old growth amounts increase for the Warm/Dry and Warm/Moist settings while staying close to the current level for the Subalpine setting. Relative to other tree species, there is a greater increase in old growth stands that contain substantial amounts (i.e., 30% or more of the total species composition) of one or more of the following tree species: ponderosa pine, western larch, western white pine, and whitebark pine. Old growth stands are more resistant and resilient to disturbances and stressors such as wildfires, droughts, insects and disease, and potential climate change effects. The size of old growth stands (or patches of multiple contiguous old growth stands) increase, and they are well- distributed across the five Geographic Areas on the Forest.

FW-DC-VEG-04. Tree densities and the number of canopy layers within stands are generally decreased.

FW-DC-VEG-05. The pattern of forest conditions across the landscapes consists of a range of patch sizes that have a diversity of successional stages, densities, and compositions. Formerly extensive, homogenous patches of forests that are dominated by species and size classes that are very susceptible to disturbance agents have been diversified. Generally, there is an increase in the size of forest patches that are dominated by trees in the seedling/sapling size class, as well as in the large size class. There is a decrease in the size of the patches that are dominated by trees in the small and medium size classes.

FW-DC-VEG-07. Snags occur throughout the forest in an uneven pattern, provide a diversity of habitats for wildlife species, and contribute to the sustainability of snag dependent species. Snag numbers, sizes, and species vary by biophysical setting and dominance group. Table 1 (of the forest plan) displays the desired range of snag densities. Over time, the number of large-diameter snags (20 inches in DBH or greater) increases in all biophysical settings.

FW-DC-WL-08. Peregrine falcon nests have a low level of disturbance during periods of use. Forest landbirds and small mammals are abundant and support the current and expanding population of peregrine falcons on the Forest.

FW-DC-VEG-11. The desired forest composition, structure, and pattern for each biophysical setting are described below:

- **Warm/Dry** – This biophysical setting includes the warmest and driest sites that support forest vegetation. The desired and current condition for dominance groups and size classes are displayed in figure 4 and figure 5 (of the forest plan), respectively.

FW-OBJ-VEG-01. Forest Resilience–Over the life of the Plan, the outcome per decade is:

- Increased relative representation of early seral, shade-intolerant, drought- and fire-tolerant, insect/disease resistant species dominance types (e.g., ponderosa pine, white pine, western larch, whitebark pine, and hardwoods) on approximately 85,000 to 90,000 acres (these acres are also included in those listed in the following bullet).
- Treatment of approximately 250,000 acres to maintain and/or improve forest resilience, natural diversity, and productivity and to reduce negative impacts of non-native organisms. Treatments may include timber harvest, planting, thinning, management of fire (including planned and unplanned ignitions), mechanical fuel treatments, revegetation with native species, blister rust pruning, integrated tree improvement activities, non-native invasive plant treatments, and other integrated pest management activities including forest health protection suppression and prevention activities.

FW-STD-VEG-01. Within old growth stands, timber harvest or other vegetation management activities shall not be authorized if the activities would likely modify the characteristics of the stand to the extent that the stand would no longer meet the definition of old growth (see forest plan glossary for old growth definition).

FW-GDL-VEG-01. Timber harvest or other vegetation management activities may be authorized in old growth stands if the activities are designed to increase the resistance and resiliency of the stand to disturbances or stressors, and if the activities are not likely to modify stand characteristics to the extent that the stand would no longer meet the definition of old growth (see the glossary for the definitions of resistance and resilience).

FW-GDL-VEG-04. Vegetation management activities should retain snags greater than 20 inches DBH and at least the minimum number of snags and live trees (for future snags) that are displayed in table 4 (of the forest plan). Where snag numbers do not exist to meet the recommended ranges, the difference would be made up with live replacement trees. Exceptions occur for issues such as human safety and instances where the minimum numbers are not present prior to the management activities.

FW-GDL-VEG-05. Where vegetation management activities occur and snags (or live trees for future snags) are retained, the following direction should be followed:

- Group snags where possible;
- Retain snags far enough away from roads or other areas open to public access to reduce the potential for removal (generally more than 150 feet);
- Emphasize retention of the largest snags and live trees as well as those species that tend to be the most persistent, such as ponderosa pine, larch, and cedar;
- Favor snags or live trees with existing cavities or evidence of use by woodpeckers or other wildlife.

FW-GDL-VEG-06. During vegetation management activities (e.g., timber harvest), and in the event that retained snags (or live trees being retained for future snags) fall over or are felled (for safety concerns), they should be left on site to provide coarse woody debris.

FW-DC-FIRE-03. The use of wildland fire (both planned and unplanned ignitions) increases in many areas across the Forest. Fire plays an increased role in helping to trend the vegetation towards the desired conditions while serving other important ecosystem functions. However, when necessary to protect life, property and key resources, many wildfires are still suppressed.

The IPNF provides habitat for a great variety of wildlife. This includes almost 300 species of birds, from the calliope hummingbird to the bald eagle, and more than 50 species of mammals, from the little brown bat to the grizzly bear (Anderson 2014). Past resource use and the exclusion of fire for almost 100 years has caused changes in some wildlife habitats. These changes have benefited some species and been detrimental to others. As documented in the forest plan revision analysis, defining and measuring the status of ecosystems now, and comparing them to desired future conditions, is the foundation for sustainability of ecosystems on the IPNF. The vegetation features assessed as "key indicators" for the wildlife considered in the IPNF Forest Plan FEIS were changes in forest composition, structure, and pattern in addition to security habitat (non-motorized areas). (Anderson 2014)

The treatment of 1,000 to 5,000 acres of wildlife habitat annually with an emphasis on restoration of habitats for threatened and endangered and sensitive species are part of the goals, desired conditions, and objectives in the Forest Plan (pp. 29-31). Restoration or enhancement of terrestrial habitat is

achieved by many different methods or treatments. Planned ignitions, unplanned ignitions, commercial timber harvest, weed treatment, and precommercial thinning are some examples that were identified in the IPNF Monitoring Guide.

Past resource use and the exclusion of fire for almost 100 years has caused changes in some wildlife habitats. These changes have benefited some species and been detrimental to others. (USDA Forest Service 2013 FEIS, p. 209) The vegetation features assessed as "key indicators", in the Forest Plan analysis, are related to the quality and quantity of wildlife habitats.

Maintaining or mimicking natural processes and naturally occurring structural diversity, promoting natural pattern and connectivity, restoring ecosystems, communities, and species, and protecting rare species or sensitive environments are all means to maintain biodiversity in an ecosystem (page 7 in CEQ 1993). Movement toward the desired conditions for vegetation under the revised forest plan would provide for an array of ecological communities of sufficient size, structure, and distribution that is expected to maintain habitats for the vast majority of native species that occur on the Forest (USDA Forest Service 2013 FEIS, p. 212). It was identified in the FEIS that active restoration through mechanical and prescribed burn treatments as well as fire and natural disturbance can help in moving wildlife habitats towards the desired conditions (USDA Forest Service 2013 FEIS, p. 213).

The indicators of acres of terrestrial habitat restored or enhanced and the number and acres of natural, unplanned fire ignitions managed, planned ignition activities, forest dominance and size class compared to the desired conditions, and retention of old growth will measure the attainment of this objective and movement towards desired conditions.

Results and Discussion

Methods

For this monitoring question and indicator, the data is reported as acres per year for wildlife habitat maintained or restored at a five-year timeframe (2015-2020). The unplanned fire ignitions managed for maintenance/restoration is reported as number of ignitions and acres at a five-year timeframe. However, due to reporting cycle it has a year lag time, so the data time frame is for fiscal years 2015-2019. The vegetation indicators for dominance type, size class, and old growth are reported as acres as reported in the MON-VEG-01 monitoring report.

Restoration or enhancement of terrestrial habitat is achieved by many different methods or treatments. Planned ignitions, commercial timber harvest, weed treatment, and precommercial thinning are some examples.

As identified in the forest plan monitoring guide the district biologists will report to the forest wildlife biologist the number of acres, annually, wildlife habitat maintained or restored. The number and acres natural, unplanned fire ignitions managed will be obtained through the forest fire planner. The MON-VEG-01 indicators will be obtained through the forest silviculturist.

Data collection is the responsibility of each district for tracking and entering the data using (national and regional protocols) into the Forest Service Watershed Improvement Tracking (WIT) database. The forest biologist can pull and review this data from the WIT database to determine acres and species benefited from the treatments. The unplanned ignitions information is gathered from Wildland Fire Decision Support System (WFDSS) by the forest fire planner. The vegetation indicator information is gathered from FSVeg, FACTS, and Forest Inventory Analysis (FIA) data by the forest silviculturist.

Results

Data

Table 103. Acres of habitat restored or maintained on the IPNF under the implementation of the 2015 revised Forest Plan. Activities include prescribed burns, road closures (including decommissioning and storage), gate repairs, food storage infrastructure, toilet vent pipe installation, fence removal, and nest boxes.

Fiscal Year	Acres Restored/Maintained	Species Benefited
2015	103	Cavity Nesters
2015	349	Grizzly Bear, Cavity Nesters, Fire Dependent Species, Migratory Birds
2015	786	Cavity Nesters, Fire Dependent Species, Migratory Birds, Winter Range
2015	3,923	Grizzly Bear, Cavity Nesters, Fire Dependent Species, Migratory Birds, Winter Range
2016	12,524	Grizzly Bear, Security
2016	53	Cavity Nesters
2016	312	Grizzly Bear, Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds, Winter Range
2016	118	Grizzly Bear, Flammulated Owl, Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds, Winter Range
2016	126	Grizzly Bear
2016	445	Flammulated Owl, Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds, Winter Range
2016	1,565	Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds
2016	2,018	Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds, Winter Range
2016	2,038	Cavity Nesters
2016	4,059	Bats
2016	11,338	Grizzly Bear, Security
2016	23,150	Game Species, Security
2017	2,045	Bats
2017	2,198	Cavity Nesters
2017	3,193	Game Species, Security
2017	5,961	Grizzly Bear, Security
2018	260	Bats
2018	357	Cavity Nesters
2018	2,174	Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds
2018	3586	Game Species, Security
2018	962	Grizzly Bear, Security
2019	52	Cavity Nesters
2019	1827	Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds
2019	14055	Grizzly Bear, Security
2019	160	Game Species
2020	1213	Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds
2020	2018	Game Species, Security
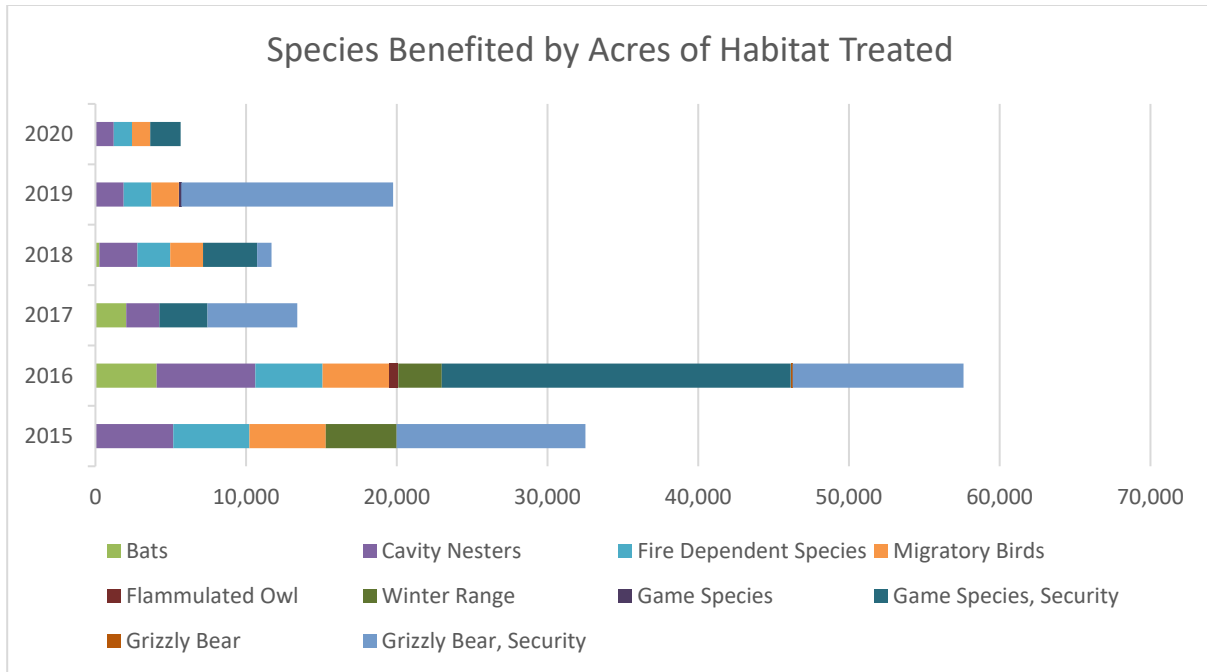
Figure 38. Acres of Habitat Restored or Maintained and the Species that Benefited

Table 104. Number of Natural, Unplanned Ignitions and the Species that Benefited

Fiscal Year	Total Number of Natural, Unplanned Ignitions	Total acres of Natural, Unplanned Ignitions	Number of Natural, Unplanned Ignitions Managed for Maintenance/ Restoration (number/acres)	Percent of Natural, Unplanned Ignitions Managed for Maintenance/Restoration	Species Benefited
2015	161	50,951	0	0%	
2016	24	2,324	0	0%	
2017	45	5,046	0	0%	
2018	63	17,169	0	0%	
2019	43	137	1 / 110 acres	2%	Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds

Overall, confidence in the quantity and quality of the data collected is moderate to high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking. Data is entered into the WIT database yearly and relies on data from vegetation treatments that have been entered into Forest Service Activity Tracking System (FACTS).

Table 105. Acres burned and the Species that Benefited (MON-VEG-01-02)

Treatment / Activities	2015	2016	2017	2018	2019	2020	Total	Species Benefited
Planned Ignitions; Broadcast Burn	Not analyzed	1,207	2,100	2,361	3,624	2,292	11,584	Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds
Planned Ignitions; Fire Use	Not analyzed	12,656	228	67	233	0	13,184	Cavity Nesters, Fire Dependent Species, Game Species, Migratory Birds

Discussion

One of the main outcomes of the direction in the revised forest plan is the restoration of habitat for native wildlife species. Movement toward the desired conditions for vegetation under the revised IPNF Forest Plan would provide for an array of ecological communities of sufficient size, structure and distribution that is expected to maintain habitats for the vast majority of native species that occur on the Forest. (Anderson 2014). By moving towards the condition's wildlife evolved with, species viability would be maintained. Active restoration through multiple treatments types can help in moving towards the desired conditions listed in the forest plan. (Anderson 2014)

This is the first report for MON-WDL-01 and thus establishes the baseline for this monitoring question and indicators.

FW-OBJ-WL-01 sets an objective of 1,000-5,000 acres annually. Restoration or enhancement of terrestrial habitat is achieved by many different methods or treatments. Planned ignitions, wildfires, commercial timber harvest, weed treatment, and precommercial thinning are some examples.

Since 2015, the number of acres treated for the benefit of wildlife species has met or exceeded the forest plan objective (FW-OBJ-WL-01) every year (Table 103). The acres treated have been between 3,231 acres (2020) and 81,938 acres (2016). These treatments were designed to move the different habitat types towards the desired conditions by changing the forest composition, structure, and pattern in addition to security habitat (non-motorized areas).

The number of acres that are burned on the Forest (both planned and unplanned) is an indicator of whether or not our desired condition (FW-DC-FIRE-03) is being met to have wildland fire play an increased role in helping to trend the vegetation conditions towards the desired conditions by changing the forest composition, and structure (Table 104 and Table 105). There was only one unplanned ignition fire from 2015 to 2019 that was managed for maintenance/restoration (Table 104). This was for the Snow Peak Fire (137 acres) of which 110 acres was managed for resource benefit. Of the total fire acres, 27 acres had a primary goal of suppression. Many of the planned ignitions (Table 105) are included in Table 103.

The number of acres that are treated on the Forest that contribute towards achieving FW-OBJ-VEG-01 is a strong indication of how much active management is occurring to help trend the vegetation towards the desired conditions. Vegetation monitoring Table 7 and Table 8 show that the Forest is trending in a positive direction to achieve FW-OBJ-VEG-01, which will continue to move the different wildlife habitat types towards the desired conditions.

The number of acres of forest vegetation by dominance type and size class shows to what extent management activities and natural processes are trending the forest vegetation towards desired species composition (dominance types - FW-DC-VEG-01) and structure (size class - FW-DC-VEG-02) of the forest vegetation. Overall, there has not been much of a change in either the dominance types or size classes from 2015-2020 (Vegetation monitoring Table 7 through Table 14). Even though not all of the dominance types or size classes have reached the desired conditions in the forest plan, there is still an increase in the benefits of small changes in these conditions to wildlife habitat as it creates an increase in the mosaic habitats on the Forest.

Old growth plots, based on the FIA data, are used to monitor old growth amounts across the Forest to determine if more old growth is developing over time and progressing toward forest plan desired conditions (FW-DC-VEG-03). It is also desirable to spatially track old growth and recruitment potential old growth across the Forest. Unlike the FIA plot analysis, monitoring element MON-VEG-01-04 (stand level inventory) is a stand-level inventory and mapping procedure which provides

information on where the old growth stands are spatially located across the Forest and allows for the identification and tracking of recruitment potential old growth stands. Both the FIA plot-based system and stand-level inventory provide tools in which to monitor how much and what kind of old growth exists across the Forest and increasing habitat for old growth dependent species. The trend is slightly away from the desired condition of old growth as determined by FIA data (MON-VEG-01-04, Vegetation monitoring Table 18). The trend is also slightly away from the desired condition of old growth as determined by the Forests' stand inventory and mapping procedures (MON-VEG-01-05, Vegetation monitoring Table 19). Even though existing old growth amounts have trended slightly away from the desired conditions in the forest plan, there is still an increase in the benefits of small changes in these conditions to wildlife habitat as it creates an increase in the mosaic habitats on the Forest.

Evaluation of Results for Adaptive Management Finding

Table 106. Summary of findings for Plan Monitoring Item WL-01

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired. This is based on the fact that the number of acres treated for the benefit of wildlife species has met or exceeded the forest plan objective (FW-OBJ-WL-01) every year. The treatments are designed to move the different habitat types towards the desired conditions by changing the forest composition, structure, and pattern in addition to security habitat (non-motorized areas). In addition, vegetation desired conditions are also progressing toward desired conditions (see finding for MON-VEG-01)
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?[2]*	Monitoring Program: Recommend a modification to the monitoring item for FW-OBJ-FIRE-02 to include unplanned ignitions, which would include fires that might also have suppression activities associated with them. Not just fires that list resource benefits in WFDSS (see Findings for Monitoring Item Fire-02). Incorporate any changes identified for MON-VEG-01 and MON-FIRE-02.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired**.**

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item WL-02 – Habitat Trends for Elk

Table 107. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-WDL-02: Are habitat trends for elk consistent with the objectives?	FW-OBJ-WL-02 FW-GDL-WL-13	**MON-WDL-02:** Number of elk management units providing >30% security** on NFS lands during the hunting season. (U)	Annual	INFRA and FSVeg Forest Supervisor's Office Records	Forest Wildlife Program Manager

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

**Buffer motorized routes open during hunting season by 0.5 miles. Eliminate patches smaller than 250 acres in size and/or non-timbered (non-timbered = rock, water, meadow, recent regen units or burns where the stands likely do not currently provide hiding cover such as stands in the seedling structural stage). Tally the acres of security habitat by planning subunit and calculate the percent of the subunit in secure habitat.

Table 108. Monitoring Item WL-02 - Monitoring Collection Summary

For monitoring item WL-02:	Year
Data was last collected or compiled in:	2015-2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	N/A
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Plan Components:

FW-DC-WL-17. Habitat for native ungulates (elk, deer, moose, and mountain goat) is managed in coordination with state agencies. Cover is managed according to FW-DC-VEG-01, FW-DC-VEG-02, FW-DC-VEG-04, FW-DC-VEG-05 and FW-DC-VEG-11.

FW-OBJ-WL-02. Elk. Over the life of the Plan, increase by three the number of high or medium priority elk management units (determined in cooperation with Idaho Department of Fish and Game; see FW-DC-WL-17) that provide >30 percent elk security (see glossary).

FW-GDL-WL-13. Elk. Management activities in elk management units should maintain existing levels of elk security (see glossary). Where possible, management activities in high and medium priority elk management units (determined in cooperation with Idaho Department of Fish and Game; see FW-DC-WL-17) should improve elk security.

Although the monitoring plan points to both FW-OBJ-WL-02 and FW-GDL-WL-10, the intent was to monitor our progress towards FW-OBJ-WL-02.

The desired conditions from the IPNF Forest Plan are similar to what wildlife, including elk, would have evolved with on the Forest, so the amount and pattern of big game habitat would be similar to what they evolved with. This includes the amount of winter range, cover, and forage, on the IPNF. (Anderson 2014, p. 351) The forest plan stated that habitat for native ungulates, including elk, would be managed in coordination with State agencies, with cover/forage managed based on the desired conditions for vegetation and fire in the revised forest plan (FW-DC-WL-17). In addition to the desired conditions for vegetation and fire, habitat connectivity would be improved/maintained through FW-DC-WL-18, and FW-GDL-WL-15 through 17.

The Idaho Department of Fish and Game (IDFG) was identified in the IPNF Forest Plan as the data source for monitoring population trends for many species on the Forest. Elk, white-tailed deer, and moose continue to be commonly hunted in North Idaho. Population trends for elk are stable to increasing (IDFG 2019).

IDFG recognizes that the high level of timber harvest (1980s and 1990s) created additional elk forage, however; they also identified that the more important impact was the construction of logging roads that allowed hunters easy access to elk and increased elk vulnerability (IDFG 2019). High road densities and threats to large areas of elk security continue to be a concern to IDFG because of the high road densities continue to put pressure on elk populations (IDFG 2019).

Results and Discussion

Methods

The IPNF uses elk management units as the analysis unit for elk security. This was agreed upon as the best biologically based unit of measure through coordination with the IDFG. Elk management units are maintained as a layer in the Forest GIS library.

The forest plan defined elk security as "*Generally timbered stands on National Forest System (NFS) lands at least 250 acres in size and greater than 0.5 mile away from open motorized routes during the hunting season. Roads that are not open to the public for motorized use during the hunting season are not included in the elk security calculation. Additionally, the effects of non-motorized use and/or administrative motorized use of closed or temporary roads during the hunting season are not included in the elk security calculation and would instead be analyzed separately at the project level.*" (IPNF Land Management Plan, p. 124).

Generally timbered stands filtered out non-timber and seedling/sapling areas from the other stand vegetation data (USDA Forest Service 2013 FEIS, FEIS, page 361). This is because many regenerated stands on the Forest contain enough horizontal cover to provide cover for elk and at larger scales the available data is not detailed enough to tease out small patches of hiding cover (USDA Forest Service 2013 FEIS, FEIS, page 361). Generally, trees that provide security cover grow fast on the Forest and many stands have enough horizontal cover to provide hiding cover for elk. Approximately a decade after a clearcut, seed tree, or shelterwood harvest unit is planted the stand would again provide cover and contribute to the effectiveness of a security block. This is approximately the time when a stand transitions from a seedling stage into a small (5-10" DBH) size class.

Elk security is calculated for individual planning subunits (Elk Management Units). Elk management units (EMU) are pre-defined areas on the IPNF that are based on IDFG big game hunting subunit delineations. Only the central and southern portions of the IPNF were considered for priority rating by IDFG due to their already very low security at the time of the forest plan and a desire to see no net loss of elk security over the life of the forest plan. This was due in part to an acknowledgement that the northern part of the IPNF already has considerable security provided for grizzly bears in the two recovery areas that will benefit elk and other wildlife species (USDA Forest Service 2013 FEIS, FEIS, page 361).

The definition of elk security in the forest plan glossary applies only to lands managed by the Forest. This is because the Forest assumes that other land ownerships do not contain security habitat, or if they currently do, that any existing security habitat may not be retained (Anderson 2014, p. 346-347). Therefore, the Forest focused elk security habitat calculations on lands managed by the Forest only. Security percentages are based only on the acreage of Forest ownership within the EMU (Table 109).

High and medium priority EMUs were identified through coordination with IDFG, and a map of an EMUs' priority is included in the Forest GIS library (USDA Forest Service 2013 FEIS, pp. 361-366).

Criteria used to spatially define area of security include:

>   Non-Secure Areas which are defined as 0.5 mile buffer around open roads, motorized trails, and Forest Service ownership boundaries; Vegetation Classifications of agriculture, non-forest, rock outcrop scree, urban, and water: Stand Conditions of bare soil, immature pole, non-stocked, non-forest, pole timber, and saplings.

>   Security Areas are all other areas larger than 250 Acres.

This criterion does not use FACTs codes in the current measurement of elk security. It is tied to roads and generally timbered stands only and does not look at foraging or other cover needs that make up elk habitat and are treated with vegetation projects.

For this monitoring question and indicator, the data is reported as acres of elk security. Forest plan objective, FW-OBJ-WL-02, states that, over the life of the plan, the Forest will increase by three the number of EMUs (high or medium priority) that provide greater than 30 percent elk security on NFS lands during the hunting season.

As identified in the forest plan monitoring guide, EMUs and their priority ranking are maintained as a layer in the Forest GIS library. The INFRA (for motorized routes), FACTS (vegetation management), and fire history layers are used to determine current timber and non-timbered stands.

Results

Table 109. Status of the 33 Elk Management Units (EMU) security located within and near the Idaho Panhandle NF boundary and prioritization for improvement by the Idaho Department of Fish and Game

Elk Management Unit	IPNF Zone	IDF&G Priority Ranking	Total Size 2013 (Acres)	Forest Plan Baseline Fall Security (Acres)	Forest Plan Baseline Fall % Security	Total Size 2019 (Acres)	2019 Fall Security (Acres)	2019 Fall % Security
3-1	CDA[a]	Low	42,699	8,808	20.6%	42,694	9,075.0	21.3%
3-2	CDA	Low	69,743	13,606	19.5%	73,114	13,419.5	18.4%
3-3	CDA	Low	70,701	8,784	12.4%	70,742	8,772.8	12.4%
4-2	CDA	Low	32,418	2,971	9.2%	32,417	3,001.0	9.3%
4-3	CDA	Low	28,760	3,434	11.9%	28,760	3,434.1	11.9%
4-4	CDA	Medium	37,908	6,061	16.0%	37,924	6,282.3	16.6%
4-5	CDA	Medium	72,140	18,464	25.6%	72,250	17,985.4	24.9%
4-6	CDA	Medium	55,800	14,432	25.9%	55,991	14,436.5	25.8%
4-7	**CDA**	**Medium**	**75,715**	**35,817**	**46.7%**	**76,728**	**36,068.3**	**47.0%**
4-9	CDA	High	39,052	9,699	24.8%	39,052	9,774.8	25.0%
4-10	CDA	High	52,978	4,843	9.1%	52,978	5,566.0	10.5%
4-11	**CDA**	**Medium**	**47,431**	**14,793**	**31.2%**	**47,431**	**14,963.6**	**31.5%**
4-12	CDA	Medium	21,933	6,543	29.8%	21,968	6,544.4	29.8%
4-13	CDA	High	32,874	6,428	19.6%	33,141	6,505.8	19.6%
4-14	CDA	Medium	42,583	5,801	13.6%	42,583	5,798.8	13.6%
4A-1	Kaniksu	Medium	29,058	5,778	19.9%	29,093	6,132.8	21.1%
4A-2	**Kaniksu**	**Medium**	**34,272**	**11,416**	**33.3%**	**34,332**	**11,415.7**	**33.3%**
4A-3	Kaniksu	Medium	22,637	2,421	10.7%	22,656	1,970.6	8.7%

| Elk Management Unit	IPNF Zone	IDF&G Priority Ranking	Total Size 2013 (Acres)	Forest Plan Baseline Fall Security (Acres)	Forest Plan Baseline Fall % Security	Total Size 2019 (Acres)	2019 Fall Security (Acres)	2019 Fall % Security
6-1	St. Joe	Low	10,218	0	0.0%	10,218	682.7	6.7%
6-2	St. Joe	High	44,834	7,943	17.7%	44,834	7,907.4	17.6%
6-3	St. Joe	High	75,795	16,404	21.6%	75,796	17,456.6	23.0%
6-5	St. Joe	High	83,550	10,737	12.9%	83,550	9,663.6	11.6%
6-8	St. Joe	Medium	32,320	3,054	9.4%	32,422	2,896.9	8.9%
6-9	St. Joe	Medium	29,023	1,444	5.0%	29,063	1,787.3	6.1%
7-1	St. Joe	High	60,475	13,847	22.9%	60,476	13,782.7	22.8%
7-2	St. Joe	Medium	47,207	11,200	23.7%	47,207	11,207.1	23.7%
7-3	St. Joe	High	55,167	14,374	26.1%	55,232	14,521.1	26.3%
7-4	**St. Joe**	**Low**	**89,678**	**46,672**	**52.0%**	**89,704**	**46,770.6**	**52.1%**
7-5	**St. Joe**	**Medium**	**27,870**	**11,679**	**41.9%**	**27,870**	**11,691.8**	**42.0%**
7-6	St. Joe	Low	35,189	2,025	5.8%	35,426	2,339.5	6.6%
9-1	St. Joe	Low	22,775	3,399	14.9%	22,775	2,355.2	10.3%
9-2	**St. Joe**	**Low**	**40,246**	**24,520**	**60.9%**	**40,245**	**24,601.8**	**61.1%**
9-3	St. Joe	Low	38,884	16,044	41.3%	38,885	16,114.2	41.4%

[a]Coeur d'Alene
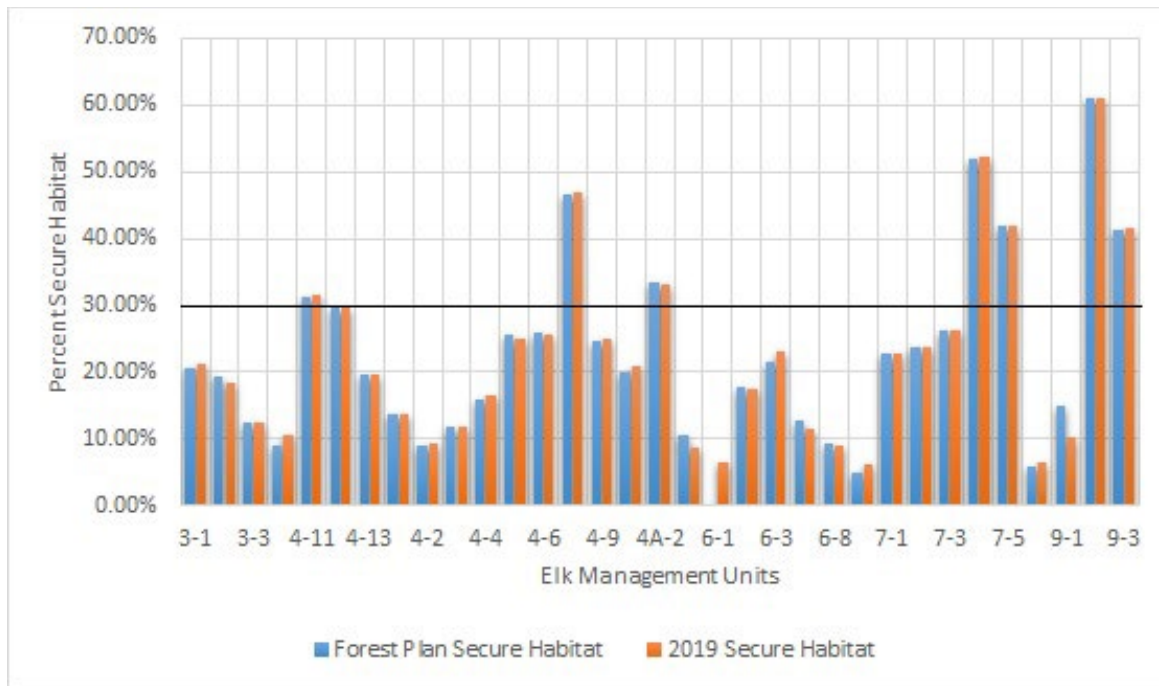
Figure 39. Percent of Elk Security in All Elk Management Units

Table 110. Number of High and Medium Priority Elk Management Units Meeting the 30% Threshold

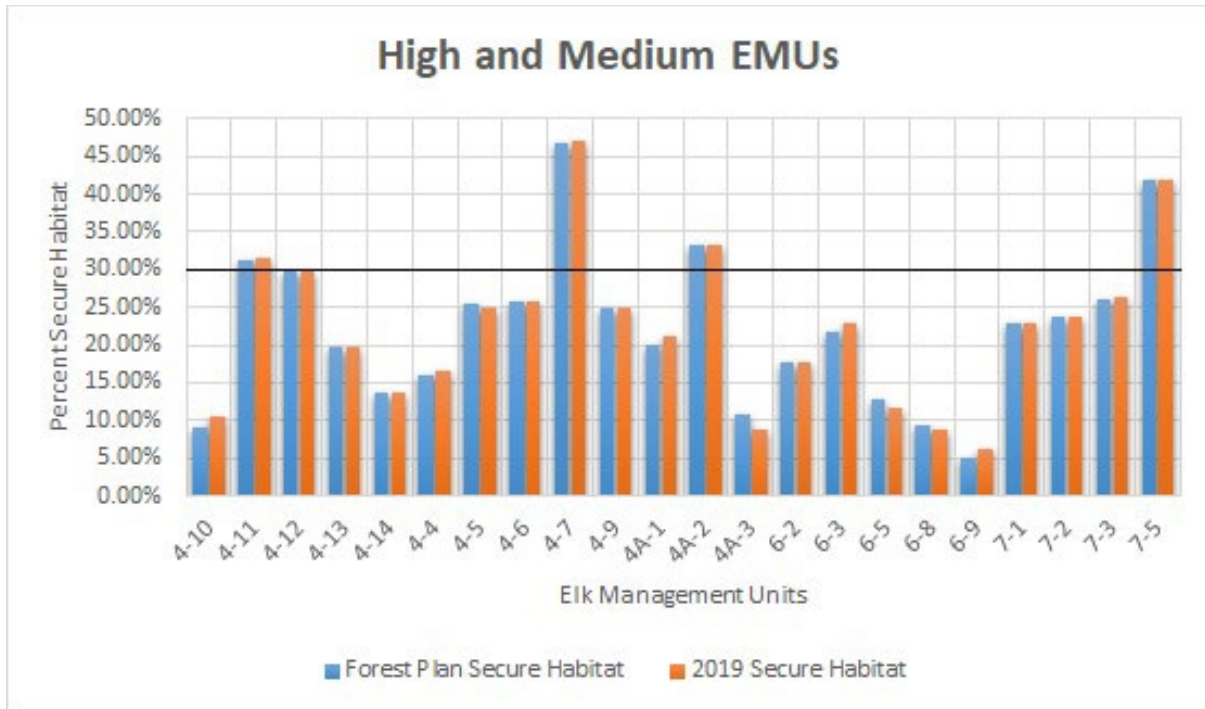| Priority Level	Baseline Number of EMUs Meeting Threshold	Current Number of Subunits Meeting Threshold
High/Medium Emphasis (≥30% security)	4	4

Figure 40. Percent of Elk Security in High and Medium Elk Management Units

Overall, confidence in the quantity and quality of the data collected is moderate to high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking for data entry in FSVEG and INFRA (roads). Data is entered into FSVEG and INFRA (roads) yearly, providing updates in a timely manner.

Discussion

The 2016 forest monitoring plan states that the results of the monitoring calculations would be compared to the baseline elk security conditions shown in table 74 on pages 362-363 of the FEIS for the revised forest plan. Progress towards objective FW-OBJ-WL-02 would be documented. The objective states that over the life of the Plan, the Forest would increase by three the number of high or medium priority elk management units that provide at least 30 percent elk security.

The FEIS for the forest plan documents the existing condition estimate as of 2013 for elk security by EMU on the Forest (USDA Forest Service 2013 FEIS, pp. 362-363). However, this is a coarse scale calculation of security and the FEIS states that analyses at smaller scales (e.g., project level) may be able to use more project field data, if available, and therefore refine the existing condition (USDA Forest Service 2013, FEIS, p. 361). Although Hillis et al. (1991) was used as a starting point in developing FW-GDL-WL-13 and the definition of elk security in the glossary of the forest plan, it is important to note that Hillis et al. (1991) stated the following about the guidelines in their paper:

> "Unquestioning adherence to these guidelines may lead to serious misapplications and should be avoided. We believe the guidelines are properly applied when used to compare relative security levels in an analysis unit over time or to compare and evaluate cumulative impacts of various timber-harvest alternatives on security" (p. 40 in Hillis et al. 1991).

"In analyzing security requirements for a specific area, interpretation of the guidelines is needed to ensure that the result makes biological sense for local conditions. The point of designating elk security areas is not to meet some generalized guidelines, but to provide functional habitat" (p. 40 in Hillis et al. 1991).

This is the first report for monitoring element MON-WLD-02 and addresses any changes in elk security for this monitoring question and indicator. Since 2013, updates to the security habitat baseline includes instances where on-the-ground knowledge or updated data revealed routes open to motorized use, adjacent land ownerships that are within 0.5 mile of the Forest, secure habitat included beyond the IPNF boundary, errors in the 2013 FACTS and INFRA data, and land exchanges. This updated data altered the amount of security habitat on the Forest from what was identified in Table 74 of the forest plan to reflect the on-the-ground conditions more accurately (Table 109 and Figure 39). Additionally, due to land exchanges and improvements in mapping tools (GIS), there have been a few changes in total acres in the EMUs from the 2013 data in table 74 of the forest plan FEIS. Those changes are shown in Table 109. There has been very little change in elk security on-the-ground through Forest activities.

Six EMUs did not show any measurable change in security acres between 2013 and 2019 (Table 109). There were six EMUs where there was a 0.1 percent change in security (EMU 4-2, 4-6, 7-1, 7-2, 7-4, and 9-3). These changes in elk security are GIS mapping errors between the 2013 and the 2019 data. For example, EMU 4-6 shows a reduction of 0.1 percent of secure habitat (25.9 to 25.8 percent); however, there was only an increase of 4 acres (14,432 to 14,436) of elk security in the EMU. The total acres in the EMU changed from 55,800 acres to 55,991 acres, which resulted in a very small increase in the percent of elk security.

Also shown in Table 109, there are six EMUs that show a decrease in elk security. Of these, one has a priority ranking of high, three have a priority ranking of medium and two have a low priority ranking. Changes in EMU 4A-3 included a reduction of 450 acres because of motorized trail 77, which was missed in the 2013 INFRA data. This correction reduced the baseline acres of elk security from 2,421 acres to 1,971 acres (10.7 to 8.4 percent). Changes in EMU 6-5 included a reduction of 1,073 acres because the Little Bear Creek OHV trail and Forest Service Road 1914 were missed in the original 2013 INFRA data. These two corrections reduced the baseline acres of elk security from 10,737 acres to 9,664 acres (12.9 to 11.6 percent). The remaining acres appear to be because of private land that was not accounted for in the 2013 data (EMU 3-2=186 acres; EMU 4-5= 479 acres; EMU 6-8= 187 acres; and EMU 9-1=1044 acres).

EMU 6-2 showed a decrease in the percent (17.7 to 17.6 percent) in elk security. The elk security acres in the EMU decreased (7,943 to 7,907 acres). This reduction in elk security is due to a motorized trail in the EMU that was not identified in the Forest Plan but has been on the landscape since before 2013. The reason why the percent increased while the acres decreased is due to the total acres mapped the EMU. The total acres in the EMU decreased due to GIS differences between 2013 and 2019.

Between 2013 and 2019, 14 EMUs have shown an increase in elk security (4 high, 6 medium and 4 low) (Table 109). Of these EMUs with increases, six are high/medium EMUs and no new high/medium EMUs have moved from below 30% to above 30%.

Table 110 and Figure 40 show the number of EMUs that are above 30 percent and have a medium or high priority ranking. This is the same EMUs as was in the forest plan. Three of these EMUs (4-7, 4-11, and 7-5) have all seen a slight increase in the amount of elk security in the EMU. There has been no change in the elk security in EMU 4A-2.

Table 111. Summary of findings for Plan Monitoring Item WL-02

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(D) No – as measured by the definition in the LMP there has not been progress in increasing the number of med/high EMUs to at least 30% security. While Table 110 does show that we are maintaining the EMUs that were at 30% in 2015 none of the EMUs have increased above 30% to achieve the plan component, the current criteria do not use FACTs activity codes in the current measurement of elk security. It is tied to roads and generally timbered stands only and does not look at foraging or other cover needs that make up elk habitat and are treated with vegetation projects. By adding these activity codes, the monitoring results would align closer to the current research of elk security and take into account both foraging and cover habitat.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?*[2]	Consider changing the monitoring question to say, "Are habitat trends for elk moving towards objectives?" Recommend pulling together IDFG to discuss road designation and if roads can be seasonally closed on the MVUM and signed or if roads have to be gated to qualify as seasonally closed. Add plan components FW-DC-WL-17 to the list of plan components this monitoring question would address. Add indicators: Add FACTs activity codes, as additional indicators, that would reduce cover and remove a stand from a generally timbered stand condition to help inform progress towards plan component FW-DC-WL-17. and show both a reduction and growth from vegetation projects. Current measurement of elk security is tied to roads and generally timbered stands and does not look at foraging or other cover needs that make up elk habitat and are treated with vegetation projects.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item AR-01 – Recreation Sites

Table 112. Monitoring Item Summary

Monitoring Question	Plan Component(s)[1]	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-AR-01: Have appropriate management actions been taken on recreation sites where opportunities have been identified, where use is at or near capacity, or	FW-DC-AR-01 FW-OBJ-AR-01 FW-OBJ-AR-02 MA6-DC-AR-01 MA7-DC-AR-01 MA7-DC-AR-05 GA-DC-AR-CDA-03 GA-DC-AR-CDA-04	**MON-AR-01**-01: Number and type of recreation sites. (N) **MON-AR-01-02:** Number of Persons at One Time (PAOT - capacity). (N) **MON-AR-01-03:** Amount of deferred maintenance for developed recreation sites. (N)	A facility condition survey is performed for each recreation site once every five years. Approximately 20 percent of sites are	Recreation & Heritage Resources Integrated Business Systems website, http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml. National ROS Inventory Mapping Protocol, 7/01/2003,	Forest Recreation Program Manager

Monitoring Question	Plan Component(s)[1]	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
where there are resource concerns?	GA-DC-AR-LK-03 GA-DC-AR-LK-06 GA-DC-AR-PO-01 GA-DC-AR-PR-02 GA-DC-AR-SJ-03 GA-DC-AR-SJ-04	**MON-AR-01-04:** Number of recreation partnerships. (N) **MON-AR-01-05:** Changes in percent of Forest in each Recreation Opportunity Spectrum (ROS) setting. (N)	surveyed annually. Evaluate MON-AR-01 data once every five years.	http:www.fs.fed.us/eng/ros. Archived Visitor Services reporting website. New Visitor Services Reporting website https://usdagcc.sharepoint.com/sites/fs-nfs-vs/SitePages/VSReports.aspx	

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

[1] Idaho Panhandle National Forests Land Management Plan 2015 Revision (usda.gov)

Table 113. Monitoring Item MON-AR-01 - Monitoring Collection Summary

For monitoring item AR-01:	Year
Data was last collected or compiled in:	2019
Next scheduled data collection/compilation:	2024
Last MER evaluation for this monitoring item:	2020
Next scheduled MER evaluation of this monitoring item:	2024

The Forest Service manages national forests for outdoor recreation and to offer a range of recreational opportunities. The public expects to have recreation sites available and managed for their use. The agency is responsible for managing the sites within established standards and for balancing recreation uses with other resource needs. Monitoring is the tool used to determine if desired conditions at recreation sites are being met.

The forest plan desired conditions and objectives provide for a wide range of recreation opportunities while aligning operation and maintenance of the Forest's recreation infrastructure with available revenue. The number and type of recreation sites serve as a measure of the range of recreation opportunities and improvements available on the forest. Persons at One Time (PAOT) is a measure of the number of visitors that can be accommodated, and when compared with actual visitor use numbers, measures the ability of existing recreation sites to meet current use. The amount of maintenance that has been deferred over time at recreation sites measures the funding needed to bring the entire recreation infrastructure up to standards established by laws and regulations. Recreation partnerships help the forest leverage funds and provide opportunities that may not be otherwise available. The percentage of forest in the various Recreation Opportunity Spectrum (ROS) categories shows how the mix of recreation opportunities changes over time.

Results and Discussion

Methods

For the following indicators, the Forest Recreation Program Manager provides overall direction and coordination of data collection and data analysis. The Forest INFRA Coordinator manages the database. District Recreation Managers are responsible for data collection. Actual condition surveys were performed by Forest Service personnel, contractors, and volunteers with appropriate skills.

MON-AR-01-01: Number and type of recreation sites (developed and dispersed). Developed Sites - All Forest Service real property, including recreation sites (development scale 3-5), is inventoried every five years to verify existence. In addition, site condition surveys are performed at 5-year intervals to document the condition of facilities, and to estimate costs to complete deferred maintenance.

Dispersed Sites - The Forest started inventorying and recording dispersed sites (development scale 0-2) in 2011 and anticipates substantially completing the effort in 2015. Additional sites will be added to the inventory as they are discovered and recorded.

Individual recreation sites may be moved from dispersed to developed (and vice versa) as the result of management decisions.

Data for MON-AR-01-01 is maintained in the Natural Resource Management (NRM) database and reports are available upon request.

MON-AR-01-02: Number of Persons at One Time (PAOT). PAOT reflects the designed capacity of developed recreation sites and take into consideration national design criteria, user amenities, and resource impacts. For example, the national standard for an individual camping unit is five people at one time. Picnic tables are designed to accommodate five people, parking areas are designed for one or two vehicles, and one toilet is provided per 25 PAOT. Total capacity for a site reflects the amount of use that can be accommodated without resource impacts or user conflicts. PAOT DAYS reflects operating season in which the site is open and the average daily occupancy rate.

Data for MON-AR-01-02 is maintained in the Natural Resource Management (NRM) database and reports are available upon request.

MON-AR-01-03: Amount of deferred maintenance for developed recreation sites. Deferred maintenance refers to needed repairs that are deferred to a later time. Deferred maintenance costs grow as annual maintenance is deferred and as facilities reach their designed life and require major repairs. Deferred maintenance costs are estimated and recorded every five years during condition surveys. Costs are reduced when repairs are completed.

Data for MON-AR-01-03 is maintained in the Natural Resource Management (NRM) database and reports are available upon request.

MON-AR-01-04: Number of recreation partnerships and hours of volunteer labor. Data is collected by counting the number of signed forest partnership agreements for recreation and trail projects and collecting hours of volunteers. Data for MON-AR-01-04 is maintained in the NRM database under Grants & Agreements. Volunteer hours were archived from the previous Visitor Services Reporting Websites, Future reports from 2020 and beyond can be found at following website https://usdagcc.sharepoint.com/sites/fs-nfs-vs/SitePages/VSReports.aspx.

MON-AR-01-5: Changes in percent of Forest in each ROS setting. National ROS Protocol for mapping and tabulating forest-wide recreation opportunity spectrum settings for winter and summer is located http://www.fs.fed.us/eng/ros. Current ROS distribution is compared to desired distribution and GIS layers, which are available upon request.

Results

Data

The following table reflects data over the last five years for all five indicators identified for monitoring item MON-AR-01.

Table 114. Results for Monitoring Item MON-AR-01

INDICATOR	2015	2016	2017	2018	2019
MON-AR-01-01					
Number of developed recreation sites (actual)	125	124	129	128	126
Number of dispersed sites (inventoried)	1,192	1,617	1,614	1,614	1,616
Converted from Dispersed to Developed	0	0	5	0	0
Converted from Developed to Dispersed	0	0	0	0	0
MON-AR-01-02					
Capacity of Developed Sites (PAOTS)	8,691	8,666	8,891	8,875	8,831
Seasonal Operating Capacity of Developed Sites (PAOT-DAYS)	1,212,475	1,203,350	1,230,050	1,229,300	1,223,140
MON-AR-01-03					
Deferred Maintenance Cost					
Recreation Sites	369,671	365,036	378,408	380,920	362,081
Recreation Buildings	5,994,344	5,809,787	5,978,508	6,071,529	5,727,965
Recreation Water Systems	54,851	54,964	54,597	54,597	54,597
Recreation Wastewater Systems	66,500	66,500	66,500	66,500	66,500
MON-AR-01-04					
Number of Recreation Partner Agreements	27	30	32	29	25
Number of Partner and Volunteer Hours	37,494	36,050	30,511	32,119	37,991
MON-AR-01-05					
Recreation Opportunity Spectrum % Winter					
Primitive	5.1	5.1	5.1	5.1	5.1
Semi-Primitive Non-motorized	13.6	13.6	13.6	13.6	13.6
Semi-Primitive Motorized	66.7	66.7	66.7	66.7	66.7
Roaded Natural	12.4	12.4	12.4	12.4	12.4
Rural	2.2	2.2	2.2	2.2	2.2
Urban	0.0	0.0	0.0	0.0	0.0
Recreation Opportunity Spectrum % Summer					
Primitive	5.0	5.0	5.0	5.0	5.0
Semi-Primitive Non-motorized	53.3	53.3	53.3	53.3	53.3
Semi-Primitive Motorized	17.9	17.9	17.9	17.9	17.9
Roaded Natural	21.6	21.6	21.6	21.6	21.6
Rural	2.2	2.2	2.2	2.2	2.2
Urban	0.0	0.0	0.0	0.0	0.0

Table 115. Monitoring Indicator Status Summary

INDICATOR	RECENT TREND
MON-AR-01-01	Advancing
MON-AR-01-02	Maintaining
MON-AR-01-03	Maintaining
MON-AR-01-04	Maintaining
MON-AR-01-05	Maintaining

Discussion

In 2010, the Idaho Panhandle National Forests (IPNF) became an "Urban" national forest due to the increasing population centers of Eastern Washington and Northern Idaho. An urban national forest is within an hour drive of a million people. As national leadership has encouraged Americans to get outside and utilize the nation's natural resources to recharge, energize, and improve our health; these area residents seek the variety of opportunities that can be enjoyed on the IPNF.

As a result of the continued increase in year-round recreation (refer to MON-AR-04-01), this has placed a high demand on recreation sites and facilities, as well as trails and dispersed sites, and has resulted in increased strain on recreational personnel striving to meet these demands. To be successful at providing high quality recreation experiences while protecting the resource, the Forest continues to look for opportunities to maintain, improve, renovate, and expand sites through the use of fees, grant funds, working with partners as well as volunteers to accomplish these tasks.

The Federal Lands Recreation Enhancement Act (FLREA) was passed in the 2005 Consolidated Appropriations Act (PL 108-447, 94 16 USC-Ch 87) and allows federal agencies to charge user fees that are returned to the site where they are collected. Ninety-five percent of all fees collected stay on the Forest and are used to operate, maintain, and improve local sites.

As part of a Region-wide effort in 2017 and 2018, the IPNF increased fees as well as implemented new fees at the majority of the campgrounds that are operated by the Forest. This incorporated a few lake-based designated dispersed sites to be improved to developed sites. These fee changes support the Forest's ability to continue providing high levels of services to visitors at popular recreation sites while improving resource conditions.

In addition, the IPNF awarded the 15-year campground concessions permit in 2019 for the largest and most highly developed campgrounds on the Forest. This has allowed the Forest to maintain as well as improve recreation infrastructure within the permitted campgrounds. By awarding this permit, it has extended the operation season (PAOT-DAYS) of these sites for the next few years.

Furthermore in 2019, the IPNF approved a Sustainable Recreation Strategy that positions the Forest through a leveraged organization, working with our communities, stakeholders, and partners, to take advantage of unique funding opportunities to deliver a sustainable recreation program. Part of the strategy identifies a ten-year implementation plan for large scale improvement projects associated with the Forest's developed recreation infrastructure. This has allowed the Forest to utilize fees collected through FLREA as well as concession fees paid to the government as a match toward grant opportunities provided by the Idaho Department of Parks and Recreation through their Recreation Vehicle and Waterway grant funding sources.

Finally, partners and volunteers remain a critical resource for the IPNF to implement a successful recreation program. The Forest continues to find better ways to streamline some of our partner

agreements to be focused forest-wide to reduce administrative burden as well as to actively pursue the most appropriate type of agreement to successfully implement the management objectives.

As a result of these management actions of identifying opportunities while protecting the resource, based on minimal change with the data above, we have been taking appropriate actions identified within the Forest Plan.

Evaluation of Results for Adaptive Management Finding

Table 116. Summary of findings for Plan Monitoring Item AR-01

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - based on the monitoring indicator status summary summarized in Table 115.
<u>**RECOMMENDATION**</u> *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
<u>**MANAGEMENT FRAMEWORK**</u> *If a change may be warranted, where may the change be needed?[2]*	Monitoring Program: Modify monitoring indicator MON-AR-01-02 to include PAOT-DAYS. Remove percentages of ROS Classification indicator MON-AR-01-05. It is not a meaningful indicator of change to recreation opportunities on recreation sites and is captured better in indicator MON-AR-01-01.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item AR-02 – Minimum Transportation System

Table 117. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-AR-02: Have management activities trended towards desired conditions for a minimum transportation system that provides recreation opportunities, allows for safe and efficient public and agency access, and is environmentally compatible?	FW-DC-AR-03 FW-DC-AR-04 FW-DC-AR-05 FW-DC-AR-07 FW-OBJ-AR-03 MA6-DC-AR-01	**MON-AR-02-01:** Miles of road open year-long (N) **MON-AR-02-02:** Miles of road open seasonally (N) **MON-AR-02-03:** Miles of roads maintained by maintenance level (N) **MON-AR-02-04:** Miles of roads decommissioned (N) **MON-AR-02-05:** Miles of roads put into intermittent storage (N)	These indicators will be reported annually and evaluated every 5 years.	INFRA Database and the MVUM	Forest Transportation Planner

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 118. Monitoring Item AR-02 - Monitoring Collection Summary

For monitoring item AR-02:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2022
Last MER evaluation for this monitoring item:	This is the first MER
Next scheduled MER evaluation of this monitoring item:	2022

Referenced Plan Components:

The collection of the monitoring information is provided in the following authorities, and assists with identifying and responding to changing conditions, changing public desires, and new information, such as that obtained through research and scientific findings.

- The Multiple-Use Sustained-Yield Act of 1960 and the Federal Land Policy and Management Act of 1976 require that the National Forests be managed for outdoor recreation and human occupancy and use while protecting other resources.
- Monitoring management effectiveness and progress toward achieving or maintaining the Forest Plan's desired conditions or objectives is outlined in 36 CFR 219.
- National Forest road management direction is found at 36 CFR 212 and Forest Service Manual (FSM) 7703.

FW-DC-AR-03. Opportunities for outdoor recreation, such as hunting, fishing, wildlife viewing, berry picking, firewood gathering, and bird watching are available for a wide variety of users. Interpretation and education opportunities enrich the visitors experience and promote a land ethic that preserves the cultural and natural resources of the Forest for future generations.

FW-DC-AR-04. Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the recreation opportunity spectrum (ROS). The desired distribution of forest-wide ROS settings are displayed in Table 119.

Table 119. Desired Distribution of Forest-wide Recreation Opportunity Spectrum Settings

	Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural
Summer	24,700 acres (1%)	1,410,200 acres (56%)	515,300 acres (21%)	495,800 acres (20%)	51,700 acres (2%)
Winter	24,700 acres (1%)	444,400 acres (18%)	1,669,100 acres (67%)	307,700 acres (12%)	51,900 acres (2%)

FW-DC-AR-05. A variety of motorized and non-motorized winter and summer recreation opportunities are available. Well-designed and maintained trailheads exist and offer adequate parking and turnaround areas. Trails are designed and maintained for the given users (saddle stock, snowmobiles, OHV users, hikers, mountain bikers, etc.).

FW-DC-AR-07. A transportation system is in place that provides safe and efficient public and administrative access to the Forest for recreation, special uses, forest resource management, and fire management activities. It is efficiently maintained, environmentally compatible, and responsive to public needs and desires. The transportation system and its use have minimal impacts on resources including threatened and endangered species, sensitive species, heritage, and cultural sites.

FW-OBJ-AR-03. National Forest System Road Maintenance. The outcome is:

- Annually, achieve maintenance level requirements on 15 to 20 percent of Operational Maintenance Level 3, 4, and 5 roads (roads that are drivable by passenger vehicles and provide primary access to many recreation opportunities);
- Annually, achieve maintenance level requirements on 10 to 15 percent of Operational Maintenance Level 2 roads (roads that are drivable by high clearance vehicles and provide additional access to recreation opportunities); and
- Decommission or place into intermittent stored service 10 to 15 miles of road, averaged over a 5-year period (50 to 75 miles over a 5-year period).

MA6-DC-AR-01. A range of recreational opportunities (e.g., motorized and non-motorized) are provided within this MA while route conditions are maintained or improved.

Results and Discussion

Methods

- Road data is tracked in two data sets, tabular and spatial data. Road maintenance accomplishments are recorded yearly as required by national road accomplishment reporting requirements.
- The Travel Routes module within the national INFRA database is the repository for the tabular data about roads. Natural Resource Manager and the INFRA database were used to collect information. The method of collection is described in the 2015 IPNF Monitoring Guide.
- The MVUM layer contains information about which roads are open seasonally and year-long. The MVUM layer is dynamic and needs to be saved at the end of each year. The MVUM data was not being saved at the end of each year, so data was difficult to acquire for past years. Recommendations are listed in the Finding and Results section.

Results

Table 120. Miles of road open year-long and seasonally

Indicator	2016	2017	2018	2019	2020
Miles of Road Open Year-long	3646.6	3627.6	Not available	3781.0	3648.3
Miles of Road Open Seasonally	486.0	460.0	Not available	479.5	479.5

Table 121. Miles of road maintained by maintenance level

Indicator		2016	2017	2018	2019	2020
Miles of ML 3-5 Roads Maintained	Annually, achieve maintenance level requirements on 15-20% of OPML 3-5 roads	833.4	591	582.9	260.2	399
Miles of ML 2 Roads Maintained	Annually, achieve maintenance level requirements on 10-15% of OPML 2 roads.	413.9	239.9	224.4	128.7	163.8

Maintenance Level 2 (ML2): Assigned to roads open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations.

Maintenance Level 3 (ML3): Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.

Maintenance Level 4 (ML4): Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced.

Maintenance Level 5 (ML5): Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities.

Table 122. Miles of road decommissioned and put into intermittent storage

Indicator	2016	2017	2018	2019	2020
Miles of Road Decommissioned[1]	0	1	3	8	11
Miles of Road Stored[2]	50	2	3	0	0

[1]**Road Decommissioning**: Activities that result in the stabilization and restoration of unneeded roads to a more natural state. This includes reestablishing vegetation and, if necessary, initiating restoration of ecological processes interrupted or adversely impacted by the unneeded road.

[2]**Road Storage**: Includes physically closing the road to public use. The reduces maintenance costs, provides opportunities for non-motorized recreation activities, minimizes future reconstruction costs, and protects wildlife habitat.

Discussion

MON-AR-02-01 and **MON-AR-02-02**: Although there is no target number of miles of road open to the public, there is a slight downward trend for miles of road open yearlong and seasonally (Table 120). The Forest's open road system continues to contribute to the forest plan desired conditions that include providing access for administrative access to manage NFS lands and access to a variety of outdoor recreation activities for a wide variety of users.

MON-AR-02-03: There is a downward trend in miles of road maintained at all maintenance levels (Table 121). This could appear to indicate decreasing access, safety, and efficiency, which trends away from the forest plan desired condition FW-DC-AR-07. However, some years may not have had all accomplishment data entered into the database, and therefore the downward trend may not be an accurate picture. Additionally, FW-OBJ-AR-03 states that the objective is to meet the maintenance level requirements on the listed percentage of roads, not to maintain a certain percentage of road miles. Therefore, with our accomplished maintenance that is completed annually through completion of service contracts for things such as blading and brushing as well as maintenance work done via force account/forest employees along with the maintenance completed to roads for log hauling for timber sale the contracts, the forest is contributing to achieving forest plan objective FW-OBJ-AR-03. Roads often do not require annual maintenance to meet maintenance level requirements. Visual inspections of roads occur regularly to guide maintenance priorities for the year. Road managers on each district

rotate maintenance performed based on accessing the road conditions each year as they plan for that year and future years maintenance needs.

MON-AR-02-04 and **MON-AR-02-05**: There has been steady progress towards the Forest-wide objective to decommission or place into stored service 10-15 miles of road, averaged over a 5-year period (50-75 miles over a 5-year period). There is an upward trend for miles of road decommissioned and is trending toward the forest plan desired condition of enhancing environmental compatibility of the overall road system by reducing environmental impacts over the long term (Table 122).

Evaluation of Results for Adaptive Management Finding

Table 123. Summary of findings for Plan Monitoring Item AR-02

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired for open year-long roads and seasonally opened roads. The Forest is moving towards desired conditions and objectives to annually meet maintenance level requirements on 15 to 20 percent of Operational Maintenance Level 3, 4, and 5 roads. The Forest is also moving towards desired conditions and objectives to annually meet maintenance level requirements on 10 to 15 percent of Operational Maintenance Level 2 roads. The Forest is moving towards desired conditions and objectives to decommission or place into intermittent stored service 10 to 15 miles of road, averaged over a 5-year period (50 to 75 miles over a 5-year period).
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?*[2]	MON-AR-02-01 and MON-AR-02-02: The MVUM layer is dynamic and needs to be saved at the end of each year. MVUM data was not being saved at the end of each year, so data was difficult to acquire for past years. No static MVUM data was found for 2018. Changes in open miles to the public occur with NEPA decisions, but the changes shown in this report are generally a result of data clean-up over time. Due to lack of personnel in some districts, it was difficult to keep the database updated. Database work was not kept up for many years, and issues are corrected as they are noticed. To ensure data is kept current, ensure that adequate personnel are available to track and complete the database work as project decisions that affect the road data occur. Our GIS coordinator will set up a task to archive the MVUM every year. If there are no changes, we don't recreate the spatial layer, and the map is just reprinted, but the spatial layer will be archived even if there are no changes. Better end-of-year reporting is needed. The monitoring guide recommends, "On or before September 30th of each year a copy of the II_ROAD_ROE_V file for the Forest will be placed in: T:\NFS\IdahoPanhandle\Program\7100Engineering\7110EngineeringMgmt\ForestPlanMonitoring\### (where the ### represents the fiscal year)." The recommended folder does not exist, and the data is not being saved at the end of each year. Recommend on or before September 30th of each year a copy of the II_MVUM_ROAD_ALLOW file for the Forest will be placed in T:\NFS\IdahoPanhandle\Program\7100Engineering\7110EngineeringMgmt\ForestPlanMonitoring\. MON-AR-02-03: Better end of year reporting is needed. The monitoring guide recommends, "Yearly road accomplishment report will be filed electronically in the Forest Service data center at:

	FINDINGS
	T:\NFS\IdahoPanhandle\Program\7100Engineering\7110EngineeringMgmt\ForEng\Roads\Reports.
	The recommended folder does not exist. Recommend yearly road accomplishment report will be filed electronically in the Forest Service data center at T:\NFS\IdahoPanhandle\Program\7100Engineering\7110EngineeringMgmt\ForEng\Roads\Reports.
	To make progress toward the Forest plan desired condition for miles of road maintained, and miles of road stored, it is recommended to increase funding of maintenance activities. Increase personnel resources, both for completing the work on the ground and contracts for the work. Assure there are enough personnel to enter accomplished work into the INFRA roads database before fiscal year end deadlines.
	MON-AR-02-04 and MON-AR-02-05: Better end-of-year reporting is needed, and more coordination between watershed and engineering personnel to assure all storage and decommissioning for each year is tracked and entered into the appropriate location of the INFRA and WIT databases. Due to inadequate staffing, some data is hard to find and hasn't been entered into the database until discovered and entered years later. Therefore, it may not appear in accomplishment reports that were captured at fiscal years' end.
	Update monitoring guide steps for data collection and storage to be more current and accurate, including suggested reports to run.
	To ensure data is tracked and entered as required, assure there are adequate personnel to understand and complete the database work at each district. If the district does not have the capacity, the data should be forwarded to someone that can do the entry before fiscal end-of-year deadlines.
	Update Monitoring Guide to recommend yearly decommissioning and storage reports are filed electronically in a file folder created for each year in the following Pinyon/Box folder: 7700TravelMgmt/7710TravelPlng/BiennialMonitoringReport.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item AR-03 – Winter and Summer Trail Recreation Opportunities

Table 124. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-AR-03: To what extent are motorized and non-motorized winter and summer trail recreation opportunities available for a variety of users?	FW-DC-AR-03, FW-DC-AR-04, FW-DC-AR-05, FW-OBJ-AR-04, FW-OBJ-AR-05, MA5a/b/c-DC-AR-03, MA6-DC-AR-03, MA7-DC-AR-03, GA-DC-AR-CDA-06, GA-DC-AR-CDA-07, GA-DC-AR-LK-05, GA-DC-LK-06, GA-DC-AR-PO-03, GA-DC-AR-PR-01, GA-DC-AR-SJ-07	**MON-AR-03-01:** Acres open to over-snow vehicle use (N) **MON-AR-03-02:** Miles of managed over-snow vehicle trails (N) **MON-AR-03-03:** Miles of managed cross-country ski trails (N) **MON-AR-03-04:** Miles of trail designated for motor vehicle use year-long or seasonally (N) **MON-AR-03-05:** Miles of trails maintained for varied managed uses (e.g., hiker, equestrian, mountain biking, OHV, motorcycle) (N)	Monitor items yearly, with summary report every 5 years.	Recreation & Heritage Resources Integrated Business Systems website, http://fsweb.wo.fs.fed.us/rhwr/ibsc/tr-reports.shtml	Forest Recreation Program Manager

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 125. Monitoring Item MON-AR-03 - Monitoring Collection Summary

For monitoring item AR-03:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2022
Last MER evaluation for this monitoring item:	2020
Next scheduled MER evaluation of this monitoring item:	2022

Referenced Plan Components:

As described in the Analysis of the Management Situation, increases in recreation demand, decreasing maintenance budgets, habitat protection measures, and watershed restoration activities are all factors influencing winter and summer trail opportunities. Monitoring these items allows the agency and public to see trends in IPNF trail management.

Measures **MON-AR-03-01**, **MON-AR-03-02**, and **MON-AR-03-03** address the level of opportunities for motorized and non-motorized winter recreation.

Measure **MON-AR-03-04** addresses the amount of trail designated for each managed use.

MON-AR-03-05 addresses the level of trail maintenance accomplished. The purpose of monitoring trail maintenance accomplishments is to determine if budgets for trail maintenance are adequate to maintain trails for their managed uses to meet recreation demand. As budgets and staffing change, the ability to efficiently allocate both financial and human resources, needs to be periodically assessed. Upward reporting requirements are also served by completing this monitoring item. The Washington Office requires that the Forest annually submit our Trails Accomplishment Report in NRM which reports miles of trail achieving standard, miles of trail maintained, and miles of trail improved.

Results and Discussion

Methods

Trail data is tracked in two data sets, spatial and tabular. Trail maintenance accomplishments are recorded yearly as required by national trail accomplishment reporting requirements.

Spatial data is managed by data stewards according to the Core Data Standards set forth in the Forest Service National GIS Data Dictionary.

Tabular data is managed by data stewards according to national standards set forth in the Recreation Heritage and Resource Integrated Business site housed in the Forest Service Natural Resources Manager Web Site's Infra database. The Travel Trails module within the national NRM database is the repository for the tabular data about travel routes.

MON-AR-03-01: Spatial data for IPNF areas allowing over -snow vehicle use is kept at the Forest Service national data center and is available on request.

MON-AR-01-02 through MON-AR-01-05: Tabular data can now be found at the Integrated Business Solutions website http://fsweb.wo.fs.fed.us/rhwr/ibsc/tr-reports.shtml. Under reporting results, Trails Data Summary and Status, provides Year-end summaries of Infra Trail inventory results and data status by region and forest. (data pulled from Infra Trails on 9/30 annually). In each spreadsheet, click on the + or - in the left margin to expand or collapse view to see details specific to the Idaho Panhandle National Forests. Information can be found for each year under the **ATM Uses** Tab for **MON-AR-01-02 thru MON-AR-01-04** and **PAS Accomp. Detail** Tab for **MON-AR-01-05**.

Results

Data

The following table reflects data over the last five years for all five indicators identified for monitoring item MON-AR-03.

Table 126. Results for Monitoring Item MON-AR-03

INDICATOR	2015	2016	2017	2018	2019
MON-AR-03-01					
Acres open to over-snow vehicle use	176,732	176,732	176,732	176,732	176,372
MON-AR-03-02					
Miles of managed over-snow vehicle trails	1,421.5	1,421.5	1,421.2	1,421.5	1,422.0
MON-AR-03-03					
Miles of managed cross-country ski trails	23.8	23.8	23.8	23.8	23.8
Miles of managed snowshoe trails	17.1	17.1	17.0	17.1	17.1
MON-AR-01-04					
Miles of managed summer motorized trails	1,682.93	1,508.8	1,514.3	1,526	1,517.6
Motorbike	850.6	691.2	688.3	694.4	692.3
ATV	798	784.7	793.1	798.7	792.2
4WD> 50 inches	34.33	32.9	32.9	32.9	33.1

Miles of managed summer non-motorized Trails	2,623.3	2,671.9	2,657	2,646	2,635
Hiker	1,459.4	1,484.4	1,470	1,467.7	1,458.5
Stock	1,081.6	1,105.6	1,098.1	1,097.4	1,095.9
Mountain Bike	82.3	81.9	80.9	80.9	80.9
MON-AR-01-05					
Miles Maintained	1,709	1,353.7	1,449.6	1,339.4	1,344.3

Table 127. Monitoring Indicator Status Summary

INDICATOR	RECENT TREND
MON-AR-03-01	Maintaining
MON-AR-03-02	Maintaining
MON-AR-03-03	Maintaining
MON-AR-03-04	Maintaining
MON-AR-03-05	Achieving

Discussion

The above monitoring indicators were selected to help show how management activities, increases in recreation demand, decreasing maintenance budgets are all factors influencing winter and summer trail opportunities. Monitoring these items allows the agency and public to see trends in trail management on the IPNF.

The IPNF has not completed Over Snow Vehicle Use Travel Planning since the revision of the Forest Plan, thus there are no significant changes concerning acres open to over snow vehicles and to winter trail miles. The Forest continues to rely heavily on partner organizations, volunteers, local communities, and Idaho State Parks and Recreation to annually maintain significant miles of groomed trails. The IPNF continues to achieve and exceed forest-wide objectives within the forest plan associated to maintenance of groomed motorized and non-motorized winter trails from 2015 thru 2019.

In 2016, the St. Joe Ranger District completed the Travel analysis for summer motorized use. The travel analysis report is a summary of the science-based transportation analysis completed to ensure that the National Forest System network of roads and motorized trails are those deemed essential for resource management and use; that construction, reconstruction and maintenance of roads and motorized trails minimize adverse environmental impacts; and that unneeded roads and motorized trails are decommissioned, and restoration of ecological processes is initiated. This was the last district to complete travel analysis on the Forest. This decision made minor changes with the exception to trails managed for motorbike use. The Forest continues to have a wide variety of motorized and non-motorized summer trail opportunities to a wide variety of users.

The Forest relies heavily on grant funds from the Idaho Department of Parks and Recreation as well as the workforce from our partner organizations, volunteers, and other stakeholders to annually maintain a diverse maintenance program for our summer trails. The IPNF continues to achieve and exceed forest-wide objectives within the Forest Plan associated to maintenance of both motorized and non-motorized summer trails from 2015-2019.

Evaluation of Results for Adaptive Management Finding

Table 128. Summary of findings for Plan Monitoring Item AR-03

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired. The Forest continues to make meaningful strides through organizational workforce investment, working with our communities, stakeholders, and partners, to take advantage of unique funding opportunities to deliver a sustainable trails program. This has allowed us to maintain and improve our trail system while protecting the resource.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	No
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?[2]*	N/A

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item AR-04 – Forest-wide visitation trends

Table 129. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-AR-04: What are the trends in visitation forest wide, and are visitors satisfied with the facilities, access, services, and perception of their safety?	FW-DC-AR-01 FW-DC-AR-04 MA6-DC-AR-01 MA7-DC-AR-01 MA7-DC-AR-05	**MON-AR-04-01:** Visitor use and trends in use forest wide. (N) **MON-AR-04-02:** Percent Satisfaction Index (National Visitor Use Monitoring) for developed facilities, access, services, and perception of safety. (N)	Visitor Use and Satisfaction (National Visitor Use Monitoring) are surveyed at five-year intervals.	National Visitor Use Monitor Program: https://apps.fs.usda.gov/nvum/results/	Forest Recreation Program Manager

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 130. Monitoring Item AR-04 - Monitoring Collection Summary

For monitoring item AR-04:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2025
Last MER evaluation for this monitoring item:	2020
Next scheduled MER evaluation of this monitoring item:	2026

Referenced Plan Components:

FW-DC-AR-01. Quality, well-maintained recreation facilities exist at key locations to accommodate concentrations of use, enhance the visitor's experience, and protect the natural resources of the area. Day use access is available for relaxation, viewing scenery and wildlife, and for water and snow-based play. Recreation rental cabins and lookouts provide safe, comfortable, overnight facilities that allow visitors to experience and learn about the rich history of the area. Dispersed camping opportunities are available for a wide variety of users while considering resource concerns, activity conflicts, or over-use. Food and garbage storage do not contribute to conflicts between recreation users and wildlife.

FW-DC-AR-04. Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the recreation opportunity spectrum (ROS).

MA6-DC-AR-01. A range of recreational opportunities (e.g., motorized and non-motorized) are provided within this MA while route conditions are maintained or improved.

MA7-DC-AR-01. These recreation areas and sites are maintained or improved to serve the forest visitor and provide a specific recreation experience. Major site modifications and facility installations (both private and public) are present in some of these areas. These installations and improvements appear individually or in a combination within recreational complexes.

MA7-DC-AR-05. Many facilities are designed for specific activities used by large numbers of people and are fully accessible. These facilities blend in with the forest surroundings and provide the necessary services for forest visitors. Buildings and structures serve administrative and historic preservation purposes.

The Forest Service manages National Forests for outdoor recreation to offer a range of recreational opportunities. The public has stated they expect to have recreation sites available and managed for their use. It is the agency's responsibility to manage the sites within established standards and balance those uses with other resource needs. Monitoring is necessary to determine if the desired conditions at recreation sites are being met.

The status and trend of visitor use numbers indicate the demand for recreation facilities. The satisfaction elements most readily controlled by managers were aggregated into four categories: developed facilities, access, services, and visitor safety. The site types sampled were aggregated into three groups: developed sites (includes both day use and overnight developed sites), dispersed areas, and designated Wilderness.

The Percent Satisfied Index (PSI) is the proportion of all ratings for the elements in the category where satisfaction was rated as of 4 or 5. The agency's national target for this measure is 85 percent. It is usually difficult to consistently have a higher satisfaction score than 85 percent, given the tradeoffs between user groups and other factors.

Results and Discussion

Methods

The population of site days for sampling was constructed from information provided by forest recreation staff. For each site, each day of the year was given a rating of very high, high, medium, low, or none according to the expected volume of recreation visitors who would be leaving the site or area for the last time (last exiting recreation use). The stratum, a combination of site type and use level, was then used to construct the sampling frame.

An important element of outdoor recreation program delivery is evaluating customer satisfaction with the recreation setting, facilities, and services provided. Satisfaction information helps managers decide where to invest in resources and to allocate resources more efficiently toward improving customer satisfaction. To describe customer satisfaction, several different measures are used. Recreation visitors were asked to provide an overall rating of their visit to the national forest, on a 5-point Likert scale. About one-third of visitors interviewed on the forest rated their satisfaction with fourteen elements related to recreation facilities and services, and the importance of those elements to their recreation experience. Visitors were asked to rate the specific site or area at which they were interviewed. Visitors rated both the importance and performance (satisfaction with) of these elements using a 5-point scale. The Likert scale for importance ranged from not important to very important. The Likert scale for performance ranged from very dissatisfied to very satisfied. Although the satisfaction ratings specifically referenced the area where the visitor was interviewed, the survey design does not usually have enough responses for any individual site or area on the forest to present information at a site level. Rather, the information is generalized to overall satisfaction within the three site types: Day Use Developed (DUDS), Overnight Use Developed (OUDS), General Forest Areas, and on the Forest as-a-whole.

The satisfaction responses are analyzed in which aggregate measures were calculated from the set of individual elements. The satisfaction elements most readily controlled by managers were aggregated into four categories: developed facilities, access, services, and visitor safety. The site types sampled were aggregated into three groups: developed sites (includes both day use and overnight developed sites), dispersed areas, and designated Wilderness. This aggregate measure is called "Percent Satisfied Index (PSI)", which is the proportion of all ratings for the elements in the category where the satisfaction ratings had a numerical rating of 4 or 5. Conceptually, the PSI indicator shows the percent of all recreation customers who are satisfied with agency performance.

Data collection is through national protocol located at:

National Visitor Use Monitoring Program | US Forest Service (usda.gov)

Results

Data

The following table reflects data over the last three cycles for indicators identified for monitoring item MON-AR-04.

Table 131. Results for Monitoring Item MON-AR-04

INDICATOR	2009	2014	2019
MON-AR-04-01- Visitor Use			
Total Estimated Site Visits	1,250,000	1,050,000	2,062,000
Day Use Developed Site Visits	187,000	218,000	392,000
Overnight Use Developed Site Visits	149,000	91,000	155,000
General Forest Area Visits	905,000	741,000	1,510,000
Designated Wilderness Visits	9,000	0	5,000
MON-AR-04-02- Percent Satisfied Index (PSI)			
Developed Sites:			
Developed Facilities	86.1%	90.5%	89.9%
Access	87.7%	89.8%	87.6%
Service	84.4%	84.9%	86.6%
Feeling of Safety	96.2%	94.4%	94.9%
Undeveloped Areas:			
Developed Facilities	81.2%	75.2%	79.1%
Access	80.4%	85.6%	78.5%
Service	64.5%	79.6%	77.2%
Feeling of Safety	87.4%	90.5%	96.8%
Designated Wilderness:			
Developed Facilities	0%	33.3%	80%
Access	40%	85.7%	69.2%
Service	50%	50.0%	53.8%
Feeling of Safety	100%	100%	100%
MON-AR-04-03 – Overall Satisfaction*			
Very Satisfied	69.4%	77.5%	80.5%
Somewhat Satisfied	19.7%	16.7%	15.1%
Neither Satisfied nor Dissatisfied	7.5%	3.3%	3.0%
Somewhat Dissatisfied	2.0%	1.0%	0.3%
Very Dissatisfied	1.4%	1.5%	1.1%

*See Evaluation of Results discussion for explanation of this element.

Table 132. Monitoring Indicator Status Summary

INDICATOR	RECENT TREND
MON-AR-04-01	Increasing
MON-AR-04-02	Maintaining
MON-AR-04-03	Increasing

Discussion

The above monitoring indicators were selected to help show what are the trends in visitation forest-wide, and are visitors satisfied with the facilities, access, services, and perception of their safety on the IPNF.

In 2010, the IPNF. became an "Urban" national forest due to the increasing population centers of Eastern Washington and Northern Idaho. An urban national forest is within an hour's drive of a million people. The IPNF is the only urban forest in the Northern Region and within the state of Idaho. Over the past few years as national leadership has encouraged Americans to get outside and utilize the nation's natural resources to recharge, energize, and improve our health; these area residents seek the variety of opportunities that can be enjoyed on the IPNF. This has placed a high demand on recreation sites and facilities, as well as trails and dispersed sites, and has resulted in increased strain on recreational personnel striving to meet these demands. Seventy-five percent of the over two million site visits occurred from this nearby population source. This pattern will continue to increase as visitation has almost doubled in the past five years.
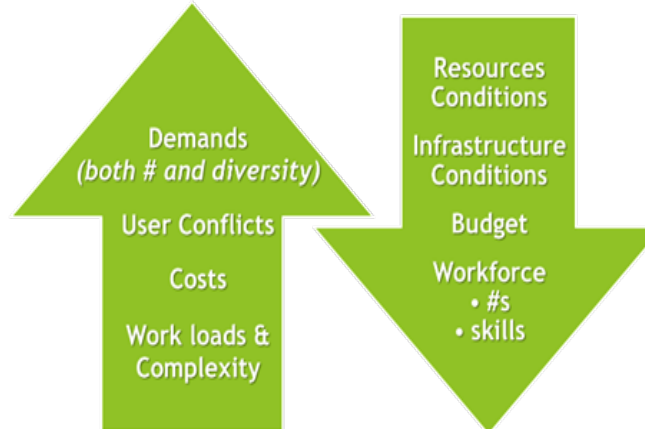
Urban Forests such as the IPNF, experiencing population growth & high rates of local visitation can expect the following recreational trends documented in the diagram to the left. In 2018, the IPNF approved a sustainable recreation strategy that will strengthen the following efforts:

- Provide a diverse range of quality recreation opportunities in partnership with people and communities.
- Protect the natural, cultural, and scenic environment for present and future generations to enjoy.
- Partner with public and private recreation benefit providers.
- Perform and plan by implementing systems and processes to ensure effective decisions, sound investments and accountability, collaborative approaches to integrated solutions across the landscape, and the enhanced professionalism of our workforce.

As a result, the Forest continues to see very high marks in overall satisfaction as well as perception of safety. The overall satisfaction results are quite good with over 95% of users either very satisfied or satisfied with their overall recreation experience. Satisfaction ratings for perception of safety were over 95% for all types of sites. Ratings for the other composites for Wilderness and developed sites were over 80%.

Evaluation of Results for Adaptive Management Finding

Table 133. Summary of findings for Plan Monitoring Item AR-04

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - based on visitor responses indicating satisfaction of opportunities provided by the forest.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?[2]*	Monitoring Program: Add a proposed indicator to be identified as MON-AR-04-03 to the Forest's monitoring plan for the purpose of measuring overall user satisfaction.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item WLDN-01 - Wilderness

Table 134. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-WLDN-01: Have management activities met Plan objectives and trended towards management area desired conditions for designated wilderness?	MA1a-DC-AR-01 MA1a-DC-AR-04	**MON-WLDN-01-01:** Designated Wilderness managed to minimum stewardship level (based on ten elements from national protocol on measuring. (N)	Data collected yearly with two-year reporting intervals	Elements are listed in the Wilderness Performance Guidebook Archived elements and ratings are located within the Natural Resource Manager (NRM) website under Wilderness User Views: II_PAS_WLD_STWD_PERF_NUM_16	Forest Recreation Program Manager

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 135. Monitoring Item WLDN-01 - Monitoring Collection Summary

For monitoring item WLDN-01:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	2020
Next scheduled MER evaluation of this monitoring item:	2026

Referenced Plan Components:

MA1a-DC-AR-01. Designated wilderness areas provide non-motorized and non-mechanized opportunities for exploration, solitude, risk, challenge, and primitive recreation.

MA1a-DC-AR-04. Campsites may be visible at popular destinations and at major trail junctions. These sites accommodate moderate use and have minimal impacts to wilderness characteristics.

The performance measure "wildernesses managed to a minimum stewardship level", commonly referred to as the "10-Year Wilderness Stewardship Challenge", was established in 2001 and remained largely unchanged throughout the challenge. The 50th Anniversary of the Wilderness Act and the culminating year of the 10-Year Wilderness Stewardship Challenge (10YWSC) in 2014 provided an opportune time to reassess the current performance measure and determine if changes were needed looking ahead to the next 10 years and beyond.

Informed by input gathered in two surveys to the field, the national and regional wilderness programs determined that a new performance measure was needed to address several shortcomings: (1) units should have greater flexibility in the selection of elements of local concern; (2) the linkage between the performance measure and wilderness character needed to be strengthened; and (3) several existing elements needed to be modified significantly in response to lessons learned over the previous decade.

In 2016, the Ten-Year Wilderness Strategy was replaced with the Wilderness Stewardship Performance (WSP), covering the same elements and annual reporting of accomplishments as previous years.

WSP places heightened emphasis on the interdisciplinary responsibilities of wilderness stewardship and the potential linkages with other program areas. It seeks to foster improved integration and communication between program areas, to accurately reflect the collaboration required to steward our wilderness resource.

Results and Discussion

Methods

The ten elements are evaluated annually for the portion of the Salmo-Priest Wilderness on the IPNF to determine changes in standards rating and to provide recommendations for mitigation or improvement. For the following elements, Forest Recreation Program Managers from both the Colville and the Idaho Panhandle National Forests provide overall direction and coordination of data collection and data analysis. The Colville National Forest maintains the database, while District Recreation Managers are responsible for data collection. Actual work is performed by Forest Service personnel, contractors, and volunteers with appropriate skills.

In order to meet standard within the Wilderness Stewardship Program and to meet plan objectives, the total score for all elements must be above 60. The following are the 10 elements selected and the rating criteria for each:

Table 136. Element #1 Invasive Species

Score	Description	Deliverables / Outcomes
2 points	An informal survey has been conducted to determine the presence of all invasive species (plant, animal, insect, terrestrial, and aquatic). A coarse approximation of extent/abundance has been developed. If populations have been identified, immediate actions are taken (Early Detection and Rapid Response) to eradicate, control, or contain infestations within a relatively short time. Any treatment actions taken have been entered into TESP-IS.	Invasive species survey records current in TESP-IS
4 points	A more detailed, quantitative inventory has been conducted to determine abundance and distribution of invasive species populations, consistent with the accepted protocols for the appropriate taxa. Populations have been mapped and data entered into TESP-IS.	Inventory records including spatial and tabular data current in TESP-IS
6 points	An integrative invasive species management plan has been developed, consistent with national policy (FSM 2900), that identifies the priority invasive species to be managed in this wilderness.	An integrative invasive species management plan in place consistent with national policy (FSM 2900)
8 points	Management actions have been implemented (e.g., prevention, EDRR, control treatments, regulations, education, etc.), according to the priorities outlined in the integrative species management plan, in the areas or populations posing the highest risk to wilderness values.	Planned priority management actions implemented, and details of those activities recorded in TESP-IS
10 points	The management actions identified in the integrative species management plan have been monitored and evaluated for effectiveness, and the treatment efficacy has been recorded in TESP-IS.	Invasive Species Treatment Efficacy data collected, recorded, and current in TESP-IS

Table 137. Element #2 Air Quality Values

Score	Description	Deliverables / Outcomes
2 points	A wilderness air quality value plan has been developed that identifies wilderness air quality values, sensitive receptors and indicator(s). This plan has been reviewed periodically and revised as needed.	Air quality plan
4 points	A document has been produced that identifies the WAQV threshold, critical load, or critical level that will be used to protect each sensitive receptor indicator for this wilderness. This document has been signed by the Forest Supervisor.	Signed document with WAQV threshold, critical load, or critical level that will be used to protect each sensitive receptor indicator for this wilderness
6 points	A monitoring baseline has been established for a priority sensitive receptor.	Baseline data stored in corporate database
8 points	Trends data for a priority sensitive receptor indicator have been collected and analyzed, and trends in air quality evaluated.	Data analysis and evaluation, stored in corporate database
10 points	A report has been prepared that 1) presents the baseline results, 2) describes any trends in air quality and the sensitive receptor indicator(s), and 3) determines if wilderness resources are currently protected from air pollution effects. The report has been provided to the Forest Supervisor(s) for this wilderness.	Narrative report provided to Forest Supervisor(s)

Table 138. Element #3 Fish and Wildlife

Score	Description	Deliverables / Outcomes
2 points	An indigenous fish and/or wildlife management strategy has been established for this wilderness, in coordination with the state fish and wildlife agency and U.S. Fish and Wildlife Service/National Marine Fisheries Service, as appropriate.	Strategy is in place and signed by appropriate line officer and has been reviewed and (if needed) updated within the past year.
4 points	Management actions to conserve and/or recover at least one terrestrial and one aquatic priority indigenous species in this wilderness have been implemented.	Management action map in GIS with narrative
6 points	Management actions for at least one terrestrial and one aquatic priority indigenous species in this wilderness have been monitored and evaluated for effectiveness.	Narrative detailing priority actions Project file contains documentation of action effectiveness
8 points	All management actions identified in the strategy and determined to be the minimum necessary for the administration of the area as wilderness have been taken and evaluated, with changes to these actions implemented as needed.	Narrative detailing management actions Changes listed in strategy appendices
2-point checkbox	The Forest Service has a current, signed Wilderness Memorandum of Understanding (MOU) with the state fish and wildlife agency, tribes, or applicable federal agencies (as appropriate) and/or a coordination meeting has been held with representatives from that agency/those agencies this fiscal year to discuss issues specific to fish and/or wildlife management in this wilderness.	Current MOU on file and/or meeting notes from yearly meeting are available in corporate database

Table 139. Element #4 Trails - National Forest System Trails

Score	Description	Deliverables / Outcomes
2 points	TMOs have been established and approved for all NFSTs in this wilderness. These objectives have been reviewed, when already in existence, to determine if they are consistent with wilderness management objectives.	incurrent TMOs recorded in NRM Trails
4 points	All NFSTs in this wilderness have been assessed for conformance with the TMOs within the past 5-years and results documented.	Assessment survey results
6 points	Management actions have been taken when current conditions for NFSTs in this wilderness do not conform with the TMOs.	All NFSTs in conformance with TMOs

Table 140. Element #4 Trails - User Developed Trails

Score	Description	Deliverables / Outcomes
2 points	A documented protocol has been used to survey user developed trails in all "priority areas" in this wilderness.	Survey data for priority areas complete with documented protocol
4 points	A management plan to address user developed trails has been developed and is being implemented to address the high priority resource needs identified by each unit consistent with forest plan direction.	User developed trail management plan Implementation of management actions to address priority issues

Table 141. Element #5 Non-Compliant Infrastructure

Score	Description	Deliverables / Outcomes
2 points	An inventory of all significant infrastructure has been completed, records entered in the applicable corporate database (e.g., bridges, facilities), and linked to the appropriate wilderness.	Records for all significant infrastructure have been entered into NRM-Wilderness
4 points	A coarse screen has been developed locally to identify the types of infrastructure deemed to be non-compliant and/or inappropriate for this wilderness.	Completed evaluation of significant infrastructure in this wilderness and identification of non-compliant infrastructure
6 points	All non-compliant infrastructure has been evaluated using the MRA process to determine the appropriate management action, including removal from this wilderness. A budget and timeline for all proposed management actions have been developed.	Completed MRAs for all non-compliant infrastructure Documentation describing appropriate management actions to all non-compliant infrastructure, with budget and timeline
8 points	Appropriate management actions have been taken on all non-compliant infrastructure in this wilderness.	Documentation describing how all non-compliant infrastructure issues have been appropriately addressed
2-point checkbox	There are no new additions of non-compliant infrastructure in this wilderness.	Affirmation from forest staff with wilderness responsibilities that there were no new additions of non-compliant infrastructure during this fiscal year

Table 142. Element #6 Agency Management Actions

Score	Description	Deliverables / Outcomes
2 points	The Forest Supervisor has sent a letter to all staff, within the past two years, describing the importance of the untrammeled quality of wilderness character and how the Forest will track and evaluate trends in management actions that affect it.	Letter to file
4 points	Forest wilderness staff have identified key forest personnel who need to track trammeling actions and have held a meeting or conference call this fiscal year with those contacts emphasizing the importance of this aspect of wilderness character and their role in tracking these actions.	Notes from a conference call or meeting that identify key personnel and items discussed
6 points	Wilderness staff have compiled information from resource specialists on trammeling actions and entered this information into the corporate database during this fiscal year.	Complete fiscal year record of all trammeling actions stored in corporate database
8 points	Forest wilderness staff have presented and discussed trends in trammeling actions and their implications with the Forest Leadership Team (FLT), and these annual trends are reported to the regional wilderness program manager for this fiscal year.	Presentation, briefing paper, or some other documentation of what was discussed at the FLT/sent to the regional wilderness program manager
2-point checkbox	All authorized trammeling actions in this wilderness, of a non-emergency nature, have been evaluated through the MRA process or other appropriate analyses**.**	MRAs stored by year and location in corporate database

Table 143. Element #7 Opportunities for Solitude

Score	Description	Deliverables/Outcomes
2 points	A solitude monitoring plan has been developed for this wilderness along with a solitude monitoring protocol, which, at a minimum, conforms to the national solitude monitoring protocol.	Solitude monitoring plan Solitude monitoring protocol
4 points	A baseline inventory of current conditions for opportunities for solitude has been completed in the selected monitoring areas for this wilderness (per the national minimum protocol) within the past 10 years and data have been entered in an electronic format to support subsequent analysis.	Baseline inventory of opportunities for solitude completed, within the past 10 years All data is entered into appropriate database or spreadsheet
6 points	If monitoring shows that unacceptable levels of degradation exist, management actions have been taken in targeted areas. If conditions are determined to be stable or improving, no further actions are needed.	Documentation of the management actions taken to improve opportunities for solitude
Enhanced Monitoring 2-point checkbox	Solitude monitoring has been conducted in this wilderness and yields statistically valid data for all areas where 80% of use occurs (i.e., monitoring confirms), at a minimum, to the national "enhanced" protocol. If a Forest or Wilderness Management plan contains direction or standards, this monitoring yields sufficient data to determine if conditions are outside of that direction/standard.	Data have been entered into appropriate database or spreadsheet.
Plan Direction	Direction for protecting opportunities for solitude has been incorporated into the Forest Plan, Wilderness	Direction for protecting opportunities for solitude incorporated in the Forest Plan.

Table 144. Element #8 Workforce Capacity

Score	Description	Deliverables / Outcomes
Personnel 2-point checkbox	An adequate number of personnel are in place to effectively manage and provide a field presence in this wilderness. This is a local determination.	An explanatory justification to support the determination that either there are or are not an adequate number of personnel in place to effectively manage and provide a field presence in this wilderness
Partners and Volunteers 2-point checkbox	Partners and volunteers are effectively incorporated in stewardship activities to accomplish significant work. This is a local determination.	A narrative describing how partners and volunteers are incorporated into stewardship activities and an explanatory justification to support the determination that this incorporation is effective and accomplishes significant work
Line Officer Training 2-point checkbox	Each line officer at the district and forest level with management responsibilities for this wilderness has completed Wilderness Line Officer Training.	An update date record identifying the training status of all applicable line officers for this wilderness
Traditional Skills 2-point checkbox	Units have inventoried their workforce's existing traditional skills in this fiscal year, identified needs based on an expected program of work, and ensured that their workforce is certified or otherwise appropriately trained in the requisite skills.	A document that includes: Completed current inventory of a unit's existing traditional skills qualifications The unit's identified traditional skill needs; and An explanation of how the unit has ensured that its workforce is certified or otherwise appropriately trained in the requisite traditional skills for stewardship of this wilderness
Wilderness Awareness 2-point checkbox	Permanent agency personnel involved in stewardship activities in this wilderness have completed wilderness awareness training.	A summary of the wilderness awareness trainings offered over the past five years and who attended the trainings.

Table 145. Element #9 Education

Score	Description	Deliverables / Outcomes
2 points	Wilderness education activities have been conducted in this fiscal year without the benefit of a wilderness education plan.	A summary of the wilderness education activities conducted
4 points	A wilderness education plan has been developed for this wilderness, signed by the forest supervisor, reviewed in this fiscal year, and modified as necessary.	The signed wilderness education plan Narrative describing the review conducted this fiscal year and any modifications made
6 points	Priority activities identified in the wilderness education plan have been implemented, according to the schedule and frequency prescribed in the plan.	An inventory of the priority education activities implemented
8 points	All activities identified in the education plan have been implemented, according to the schedule and frequency prescribed in the plan. Activities have been evaluated for effectiveness and changes made to the educational plan, as appropriate.	A table comparing all of the activities identified in the education plan and all of the activities implemented Narrative describing the effectiveness evaluation and any appropriate changes made to the education plan
2-point checkbox	Specific and targeted actions have been identified and implemented in this fiscal year to reach non-traditional audiences and to engage youth.	Narrative describing the specific and targeted actions that have been implemented to reach non- traditional audiences and to engage youth

Table 146. Element #10 Wilderness Character Baseline

Score	Description	Deliverables / Outcomes
2 points	Legislative and administrative documentation associated with this wilderness has been compiled.	Compilation of legislative and administrative documentation – stored in a centralized repository
4 points	Written wilderness narrative that captures the overall "character" of the wilderness, including what is unique and special. Each quality of wilderness character should receive a section describing the key resources and conditions for that quality, as well as major threats.	Completed wilderness character narrative – stored in a centralized repository
6 points	Measures for each of the indicators have been selected and a decision has been made on whether to monitor the "Other Features of Value Quality." The local data sources to support these measures have been evaluated to assess data adequacy (quantity and quality).	Identification of all measures to be monitored Completed evaluation of the adequacy of local data sources
8 points	A wilderness character baseline has been established, including data compilation, analysis, entry into the appropriate database and development of a baseline assessment report.	Completed wilderness character baseline All data entered to the WCM Database Completed baseline assessment report
10 points	Trends in wilderness character have been assessed. This trend cannot be determined until at least 5 years since the baseline was determined.	Trend in wilderness character assessed

Results

Data

The following table reflects data over the last five years for all ten elements identified for monitoring item MON-WLDN-01.

Table 147. Results for Monitoring Item MON-WLDN-01

ELEMENT	2015	2016	2017	2018	2019	2020
E1 – Invasive Species	4	4	4	4	4	4
E2- Air Quality Values	4	8	8	8	8	8
E3- Fish and Wildlife	6	6	6	6	6	6
E4 - Trails	2	2	2	2	2	2
E5 - Non-Compliant Infrastructure	0	0	0	0	0	0
E6 - Agency Management Actions	2	2	2	2	2	2
E7 – Opportunities for Solitude	2	0	0	0	0	0
E8 – Workforce Capacity	4	2	2	2	2	0
E9 - Education	4	0	0	0	0	0
E10 – Wilderness Character Baseline	2	2	2	2	2	2
Extra Credit[1]	N/A	N/A	N/A	4	4	4
Total Score	30	26	26	30	30	28
MANAGED TO STANDARD	NO	NO	NO	NO	NO	NO

[1]Wilderness Boundaries and Upward Reporting completed on time.

Discussion

The Idaho Panhandle National Forests shares with the Colville National Forest in the management of one congressionally designated wilderness area called the Salmo-Priest Wilderness. Even though this monitoring only covers the portion covered by the IPNF Forest Plan, element scoring reflects the score of the entire wilderness area.

The Salmo Priest Wilderness has not met standard since the inception of the Wilderness Challenge in 2005. Although we maintain or meet elements associated to invasive species, air quality values, and fish and wildlife, we continue to fall short in management of the human dimension components in preserving wilderness character. These include the following:

- Not being able to manage the trail system in a way to provide quality wilderness experiences while minimizing biophysical impacts.

- Inability to inventory and remove all infrastructure and those items determined not in compliance with the Wilderness Act.

- Have not taken managerial restraint in wilderness stewardship by tracking actions that intentionally manipulate the biophysical environment.

- Have not provided adequate direction, monitoring, and management actions to protect outstanding opportunities for solitude.

- Lack of capacity to adequately manage wilderness as a function of the workforce numbers, training, and skills of personnel, partners, and volunteers involved in stewardship activities.

- Unsuccessful at specific and targeted educational activities undertaken by Forest Service personnel, partners, and/or volunteers to improve understanding and awareness of wilderness values by the public.

- A wilderness character baseline has not been established for this wilderness. This element includes the intermediate steps required to determine a baseline and provide the foundation for evaluating trends in wilderness character. These trends indicate the outcome of our stewardship actions and our success at "preserving wilderness character," as directed by the Wilderness Act.

Evaluation of Results for Adaptive Management Finding

Table 148. Summary of findings for Plan Monitoring Item WLDN-01

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(D) NO - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired, based upon the Forest continuing to fall short in management of the human dimension components in preserving wilderness character.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?*[2]	Management Activities: Increase workforce capacity. If the workforce capacity (element E8), can be improved, it will provide the basis to start making progress on elements E4, E5, E6, E7, E9 and start improving the scoring of these elements. The Forest is currently exceeding in elements 2 & 3. For element #1, the Forest is very close to achieving standard. The next step for element #1 would be to complete an integrative invasive species management plan consistent with national policy (FSM 2900), that identifies the priority invasive species to be managed in this wilderness.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item CR-01 - Number Properties Identified and Evaluated

Table 149. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-CR-01: To what extent is the Forest meeting Forest Plan objectives and trending towards desired condition to identify, evaluate, and nominate cultural resources for listing on the National Register of Historic Places?	FW-DC-CR-01 FW-OBJ-CR-01 FW-OBJ-CR-02 FW-OBJ-CR-03	**MON-CR-01-01:** Number of properties identified (N) **MON-CR-01-02:** Number of properties evaluated (N) **MON-CR-01-03:** Number of properties nominated (N)	Annual	IPNF	Forest Archaeologist

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 150. Monitoring Item CR-01 - Monitoring Collection Summary

For monitoring item CR-01:	Year
Data was last collected or compiled in:	2015
Next scheduled data collection/compilation:	2022
Last MER evaluation for this monitoring item:	2015
Next scheduled MER evaluation of this monitoring item:	2021

Referenced Plan Components:

FW-DC-CR-01. Cultural resources are inventoried, evaluated for inclusion on the National Register of Historic Places, and managed according to their allocation category, including preservation, enhancement-public use, or scientific investigation. National Register ineligible cultural resources may be released from active management. Until evaluated, cultural resources are treated as National Register eligible. Historically and archaeologically important cultural resources and traditional cultural properties may be nominated to the National Register.

FW-OBJ-CR-01. Annually complete an inventory of 50 to 100 acres containing, or predicted to contain, highly valuable, threatened, or vulnerable cultural resources (non-project acres).

FW-OBJ-CR-02. Over the life of the Plan, evaluate and consider for nomination 5 to 10 significant cultural resources to the National Register of Historic Places.

FW-OBJ-CR-03. Over the life of the Plan, develop five historic contexts, overviews, thematic studies, or cultural resources property preservation plans to help guide management and use of National Register eligible or listed properties, districts, traditional cultural properties, and cultural landscapes.

Cultural Resources/Heritage/History/Archaeology is a non-renewable resource, in other words once it is destroyed it cannot be brought back. Cultural Resources encompasses all history of human activity on the landscape. Archaeological and historical sites are the physical remains of those activities and include but not limited to prehistoric camps and villages, prehistoric hunting blinds and traps, historic fire lookouts, historic logging camps, historic mines, prehistoric and historic travel routes (trails,

roads, railroads). Modern activities often are proposed to take place where previous prehistoric and historic activities occurred.

National Register of Historic Places (NRHP) has criteria on which a site is assessed to determine the importance of the site on local, regional, or national levels. Prior to a site being evaluated or if the decision is made not to evaluate a site at the time of its recording then the site is protected as if it is eligible for the NRHP. If a site is determined eligible for the NRHP then it is protected. If a site is determined not eligible then it no longer requires protection.

The National Historic Preservation Act of 1966 (NHPA) was developed to prevent the wanton destruction of our prehistoric and historic sites. The NHPA requires all Federal land management agencies to first determine if any historic or prehistoric sites will be adversely affected by the proposed project either directly by destroying part or all of the site, or indirectly by affecting the historic ambiance of the site (i.e., a modern multi story concrete building next to a prehistoric village). Next the agency assesses the possibility of altering the proposed project in a way that would reduce or avoid impacting the sites. However sometimes adverse impact to the site cannot be avoided and mitigation for the impact is negotiated with the State Historic Preservation Office (SHPO).

Monitoring question MON-CR-01 comes from the IPNF Land Management Plan (page 105). The purpose of the question is to determine if the desired condition, FW-DC-CR-01 and the objectives, FW-OBJ-CR-01 and FW-OBJ-CR-02 (page 37) are met. Individual measures were identified because each measurement is explicitly identified in law and regulation and has a separate and distinct measurement.

Results and Discussion

Methods

The two types of archaeological surveys include NHPA Section 110, surveying with the sole intent of finding sites and NHPA Section 106, surveying to find sites to avoid adversely effecting those sites by a proposed project.

Once a project is proposed under NHPA Section 106, a Forest Service Archaeologist examines the proposed project for potential impacts to known and unknown sites. The methods are the same for both Section 106 and 110 from this point on. The archaeologist then determines what the survey needs are to locate any potential sites. The survey/field work is conducted, and data is collected. The results of the survey are then written up with NRHP site eligibility determinations and submitted to SHPO for concurrence. That data is summarized at the end of the year in an annual report. The data for this report was taken from the annual reports.

Results

Data

Cultural Resources is a difficult resource to predict and put targets on. It is impossible to say that X number of sites will be found in a given time frame or area. It is also impossible to guarantee that all sites in an area will be found during survey. This is because sites may not be visible on the surface due to vegetation or that time and the environment has buried them. Therefore, the numbers of sites identified will vary.

The table below includes not only the newly located and recorded sites but also the sites that were previously recorded. The previously recorded sites located within a proposed project area are relocated, have records up dated and re-evaluated based on their current condition. This is done because some sites lose value and integrity due to time, environmental impacts, or unauthorized activities (such as vandalism or trespassing). Previously recorded sites may also gain value as our understanding and knowledge of the past increases.

Table 151. Number of sites identified, evaluated and nominated for fiscal years 2015 through 2020

INDICATORS	2015	2016	2017	2018	2019	2020
MON-CR-01-01: Number of properties/sites identified	28	18	43	48	39	62
New sites*	6	7	11	6	7	26
Relocated, updated sites**	22	11	32	42	32	36
MON-CR-01-02: Number of properties/sites evaluated	27	18	33	48	39	61
New sites	6	7	11	6	7	26
Relocated, updated sites	21	11	22	42	32	35
MON-CR-01-03: Number of properties/sites nominated	0	1	0	0	0	0

*New sites are archaeological and historic sites that were not previously recorded.
**Relocated, updated sites are archaeological and historic sites that were previously recorded but were revisited and assessed in relation to a new proposed project.

Discussion

The data for the management plan was collected annually for the last six years and shows no change in status. The monitoring plan does not track all the data needed for the desired ranges and benchmarks stated in the objectives in the Forest Plan for Cultural Resources. FW-OBJ-CR-01 is the annually completion of inventory of 50 to 100 non-project acres (or Section 110 surveys). The non-project acres are included in the database and annual reports. The survey of these acres is not done annually but are usually done in 200 acres blocks the equivalent of 4 years of 50 acres blocks. Therefore, we are on track for this objective. FW-OBJ-CR-02 is the evaluation and consideration for nomination of 5 to 10 cultural resources sites to the NRHP over the life of the plan. Ninety-five percent of identified sites are evaluated for their eligibility to the NRHP. During the evaluation process the Forest Service Archaeologist will also assess the eligible ones for potential nomination. Therefore, we have met this objective. The objective of FW-OBJ-CR-03 is to develop five historic contexts, overview, thematic studies or cultural resources property preservation plans over the life of the plan. This data is not tracked by the monitoring plan but is in the database and annual reports. We have at least three cultural resources property preservation plans and are working on several more.

The anticipation for cultural resources is that sites will be identified and evaluated. Every site identified and evaluated shows the trend towards the forest plan objective and the desired condition. The rate of change is dependent on the variables of 1) we do not know how many sites exist that have not been located, 2) the majority of sites are located during project (proposed ground disturbing activities) driven surveys, and 3) if the sites can be found during a survey (sites maybe subsurface and have no visible presence on the ground surface, or they may be obscured by vegetation).

One unanticipated trend that the data shows is the number of sites relocated and reevaluated. This shows the trend of proposed projects overlapping previous projects (which may date back to the late 1970s).

Other relevant data collected but not currently included in the plan is the number of sites determined eligible and not eligible for the NRHP. This information is relevant because once a site is determined to be not eligible it no longer requires protection.

All sites identified are evaluated for the NRHP. Of those determined eligible very few are ever nominated.

No new science or information collected outside of this monitoring program was considered in the evaluation of this monitoring question.

All proposed ground disturbing activities affect where, when and how much data is collected. Most of the data is collected as a result of NHPA Section 106 required surveys for all proposed ground disturbing projects regardless if they are USFS management activities, timber sale or a proposal from a non USFS entity.

Evaluation of Results for Adaptive Management Finding

Table 152. Summary of findings for Plan Monitoring Item CR-01

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired based the current trend of achieving the forest plan's cultural resource objectives.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	No change warranted
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?[2]*	N/A

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item CR-02 - Newly Interpreted or Updated Properties

Table 153. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-CR-02: To what extent are historic properties interpreted and public education provided to move towards desired conditions?	FW-DC-CR-02 FW-OBJ-CR-04	**MON-CR-02-01:** Number of newly interpreted or updated historic properties (N)	Every 5 years	IPNF	Forest Archaeologist

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 154. Monitoring Item CR-02 - Monitoring Collection Summary

For monitoring item CR-02:	Year
Data was last collected or compiled in:	2015-2020
Next scheduled data collection/compilation:	2025
Last MER evaluation for this monitoring item:	2015
Next scheduled MER evaluation of this monitoring item:	2021

Referenced Plan Components:

FW-DC-CR-02. Cultural resources are safeguarded from vandalism, looting, and environmental damage through monitoring, condition assessment, protection, and law enforcement measures. Interpretation and adaptive use of cultural resources provide public benefits and enhance understanding and appreciation of IPNF prehistory and history. Cultural resource studies provide relevant knowledge and perspectives to IPNF land management. Artifacts and records are stored in appropriate curation facilities and are available for academic research, interpretation, and public education.

FW-OBJ-CR-04. Annually complete one public outreach or interpretive project that enhances public understanding and awareness of cultural resources and/or history of the Plan area.

This performance measure is directly related to the forest plan desired condition (FW-DC-CR-02). "Cultural resources are safeguarded from vandalism, looting, and environmental damage through monitoring, condition assessment, protection, and law enforcement measures. Interpretation and adaptive use of cultural resources provide public benefits and enhance understanding and appreciation of IPNF prehistory and history. Cultural resource studies provide relevant knowledge and perspectives to IPNF land management. Artifacts and records are stored in appropriate curation facilities and are available for academic research, interpretation, and public education."

Results and Discussion

Methods

All cultural resource sites are open for interpretation. However, their best protection from vandalism and looting is for their location to remain confidential. There are a variety of on and off-site ways to interpret sites and provide public education such as signs, exhibits in local museums, presentations, and online exhibits. The data regarding interpretation and public education is in the Forest Service Heritage database and annual reports. The data for this report was taken from the data base and annual reports.

Results

Data

The interpretation and public education of historic properties is probably underrepresented in the numbers below. The number of properties represent formal presentations and physical interpretations such as signs. Forest Service archaeologists often educate members of the public, contractors and other Forest Service employees on historic properties and their importance to our local, regional and national history.

Table 155. Number of newly interpreted or updated historic properties by fiscal year

INDICATOR	2015	2016	2017	2018	2019	2020
MON-CR-02-01: Number of newly interpreted or updated historic properties	2	2	3	6	8	6

Discussion

The data for the management plan was collected annually for the last six years and shows no change in status. The monitoring plan does not track all the data needed for the desired ranges and benchmarks stated in the objectives in the forest plan for cultural resources. However, the monitoring plan does track the data for the fourth objective. The objective of FW-OBJ-CR-04 is one public outreach or interpretive project is completed each year. Each year the IPNF Heritage team gives multiple presentations on subjects pertaining to the history and/or archaeology of the area. Physical interpretative displays often depend upon variable funding or are project driven and often take more than a year to develop. Therefore, the number of physical interpretative displays vary year to year from none to four. Overall FW-OBJ-CR-04 is being met and exceeded.

This monitoring item is primarily concerned with the protection of the sites (cultural resources). The IPNF Forest Plan's primary culture resource goal (GOAL-CR-01) is also concerned with the protection of the site and the education of the public thereof. The two desired conditions (FW-DC-CR-01 & FW-DC-CR-02) and four objectives (FW-OBJ-CR-01, FW-OBJ-CR-02, FW-OBJ-CR-03, and FW-OBJ-CR-04) all contribute to this goal by locating, recording, evaluating and protecting the sites from inadvertent impact from projects and criminal activity.

No new science or information collected outside of this monitoring program was considered in the evaluation of this monitoring question.

All proposed ground disturbing activities are reviewed by Forest Service Archaeologists and other resource specialists. The archaeologists often take the opportunity of the meetings to educate Forest

Service personnel, partners and contractors on not only the importance of preserving our physical history but also on the history itself. When implemented ground disturbing activities will directly or indirectly adversely affect a site then mitigation is required. Mitigation takes a verity of forms including interpretation.

Evaluation of Results for Adaptive Management Finding

Table 156. Summary of findings for Plan Monitoring Item CR-02

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired, bases on objectives being achieved and exceeded.
<u>RECOMMENDATION</u> *Based on the evaluation of monitoring results, may changes be warranted?*	No change warranted
<u>MANAGEMENT FRAMEWORK</u> *If a change may be warranted, where may the change be needed?[2]*	N/A

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item AI-01 – Tribal Agreements

Table 157. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-AI-01: To what extent has the Forest progressed toward establishing Tribal agreements for the access and acquisition of forest products for traditional cultural uses?	FW-DC-AI-01 FW-OBJ-AI-01	**MON-AI-01-01**: Number of forest product acquisition agreements finalized. (N)	Every 5 years	IPNF	Forest Tribal Coordinator

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 158. Monitoring Item AI-01 - Monitoring Collection Summary

For monitoring item AI-01:	Year
Data was last collected or compiled in:	2021
Next scheduled data collection/compilation:	2025
Last MER evaluation for this monitoring item:	2021
Next scheduled MER evaluation of this monitoring item:	2026

Referenced Plan Components:

FW-DC-AI-02. The IPNF recognizes and maintains culturally significant species and the habitat necessary to support healthy, sustainable, and harvestable plant and animal populations to ensure that rights reserved by Tribes in treaties are protected or enhanced. The IPNF recognizes, ensures, and accommodates tribal access to the Forest for the exercise of reserved treaty rights and cultural uses.

FW-OBJ-AI-01. Over the life of the Plan, continued access and acquisition of forest products for traditional cultural uses by each federally recognized Tribe with historical or treaty interests in IPNF lands is cooperatively established through an agreement.

Federal agencies have trust responsibilities to American Indian Tribes under treaty and in compliance with various laws and executive orders. Federal guidance for tribal consultation directs the Forest Service to increase and improve the involvement of tribes in the decision-making process in the areas where decisions affect tribes and their treaty rights and interests. The Forest is also required to consult with all federally recognized tribes that had/have traditional uses within the forest boundary.

There are seven federally recognized American Indian nations affiliated with lands managed by the IPNF: the Kootenai Tribe of Idaho, the Kalispel Tribe of Indians, the Coeur d′Alene Tribe of Idaho, the Confederated Salish and Kootenai Tribes, the Spokane Tribe of Indians, the Confederated Tribes of the Colville Reservation, and the Nez Perce Tribe. Within the boundaries of the IPNF there are two tribes with Treaty reserved, off-reservation rights: the Kootenai Tribe of Idaho and the Confederated Salish and Kootenai Tribes. In addition, the Coeur d′Alene Tribe of Idaho has reserved rights through executive order on a limited section of the Coeur d′Alene River Ranger District.

This performance measure is directly related to the desired condition "The IPNF recognizes and maintains culturally significant species and the habitat necessary to support healthy, sustainable, and harvestable plant and animal populations to ensure that rights reserved by Tribes in treaties are protected or enhanced. The IPNF recognizes, ensures, and accommodates tribal access to the Forest for the exercise of reserved treaty rights and cultural uses." This measure is intended to assure that the Forest fulfills its government-to-government responsibilities to Tribes as sovereign nations.

Results and Discussion

Methods

For this report, IPNF Forest Tribal Coordinator reached out to Forest Service and Tribal employees to find out what, if any, agreements exist between the IPNF and federally recognized Tribes. The Forest Service employees contacted were Bonners Ferry District Ranger, IPNF Forest Supervisor, IPNF Deputy Forest Supervisor, former IPNF Tribal Coordinator, IPNF Timber Management Officer, and IPNF Timber Resource Specialists. The same inquiry was outreached to Administrative Director and Tribal Attorney, both with the Kootenai Tribe of Idaho.

Results

The IPNF currently has no agreements with any Native American Tribe for the access and acquisition of forest products for traditional cultural uses

Discussion

The Forest has no formal agreements with any of the federally recognized tribes for access or acquisition of forest products. Instead, the IPNF has issued special use permits for tribal activities on National Forest System lands and offered a free-use tribal products plan for tribal members who wish to acquire forest products for traditional cultural uses. These special use permits, and product plans have been lightly used by tribal members. Employees of the Kootenai Tribe of Idaho (KTOI) have not indicated any dissatisfaction with the current arrangement for tribal access to forest products. On the contrary, the KTOI Administrative Director and Tribal Attorney both praised the IPNF for the frequent consultation and responsiveness to tribal concerns. The IPNF continues reaching out to all federally recognized tribes, but the KTOI chooses to engage with IPNF more frequently and on more issues than the others.

Every year, the Bonners Ferry Ranger District issues a special use permit to members of the KTOI to occupy a site on the National Forest for longer than 14 days while those members engage in traditional tribal activities that include gathering huckleberries. Gathering huckleberries is a very important traditional cultural activity and forest product for the KTOI, but the IPNF currently requires no permit for huckleberry gathering from tribal members or the general public.

The IPNF also offers a free-use forest products plan for tribal members, in accordance with 36 CFR § 223.15, which allows the Forest Service to "provide trees, portions of trees, or forest products to Indian tribes free of charge for traditional and cultural purposes." Despite the availability of these forest products, IPNF records show very light use by tribal members. Only one tribal member has taken advantage of this plan in recent years. The same individual acquired free permits in 2017 and 2018 from the St. Joe Ranger District for gathering posts, white pine bark, cedar products, yew wood, and other miscellaneous products. There are no other records of anyone acquiring forest product permits under the tribal free-use plan in the last five years.

The IPNF continues frequently and consistently reaching out to recognized tribes to share information and offer project-level or more formal government-to-government consultation. The IPNF engages in government-to-government consultation with the KTOI every few months, while district rangers, resource specialists and interdisciplinary team leaders meet with KTOI employees and staff more frequently to discuss details and timelines of projects and shared planning efforts. Other tribes are less responsive or respond to IPNF outreaches based on very specific concerns from the tribe or tribal employees. KTOI members are very involved in the Kootenai Valley Resource Initiative, a community-based collaborative effort in the Kootenai River Basin of which the Forest Service is an integral member. Both the IPNF and KTOI participate in monthly technical coordination meetings related to the Pacific Northwest National Scenic Trail, of which both the US Forest Service and KTOI are signatories to an MOU for shared planning.

KTOI employees praised the IPNF's consultation efforts and indicated that a signed agreement is not necessarily what the KTOI desires. When contacted for feedback about this monitoring effort, KTOI Tribal Attorney said, "I think it would be especially great to include the message that the number of agreements is not necessarily the correct monitoring metric. KTOI and IPNF have not had formal agreements for a number of years, because our governments have developed an ongoing, working,

respectful relationship whereby we are in constant communication. If a number is necessary for the monitoring report, then it would be better to include the number of times we communicate with one another (which I think is impossible, since it happens so often). Similarly, I think it's more telling of the relationship that planning and implementation considers the Tribe's Treaty and cultural/religious rights, rather than the number of agreements."

Evaluation of Results for Adaptive Management Finding

Table 159. Summary of findings for Plan Monitoring Item AI-01

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired, based upon our existing tribal relationships.
<u>RECOMMENDATION</u> *Based on the evaluation of monitoring results, may changes be warranted?*	YES
<u>MANAGEMENT FRAMEWORK</u> *If a change may be warranted, where may the change be needed?[2]*	Management Activities: Relationships between IPNF and federally recognized tribes would benefit from a coordinated effort to identify the needs and interests of each tribe, and to jointly develop a strategy for the tribe and IPNF to work together in support of those goals. While the IPNF has a strong relationship with one tribe it could improve the frequency and quality of consultation with the other six federally recognized American Indian nations.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

<u>Monitoring Item AI-02 – Tribal Coordination</u>

Table 160. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-AI-02: How much has coordination between the IPNF and consulting Tribes increased?	FW-DC-A1-02, FW-OBJ-AI-02	**MON-AI-02-01:** Number of cooperatively developed communication plans established (N)	Every 5 years	IPNF	Forest Tribal Coordinator

* Is indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 161. Monitoring Item AI-02 - Monitoring Collection Summary

For monitoring item AI-02:	Year
Data was last collected or compiled in:	2021
Next scheduled data collection/compilation:	2025
Last MER evaluation for this monitoring item:	2015
Next scheduled MER evaluation of this monitoring item:	2026

Referenced Plan Components:

FW-DC-AI-01. Traditional and cultural use information, as provided by federally recognized tribes, is treated with respect, and integrated into natural resource management planning efforts with appropriate sensitivity to the tribe's views regarding information sharing. American Indian values are fully considered in planning proposed actions on the Forest. The Forest maintains sustainable products, uses, values, and services that contribute to the American Indians' way of life and cultural integrity. Access to traditional resources and sacred places is considered in all planning efforts.

FW-OBJ-AI-02. Over the life of the Plan, a cooperatively developed communication plan establishes coordination with each federally recognized Tribe with historical or treaty interests in IPNF lands.

Federal agencies have trust responsibilities to American Indian Tribes under treaty and in compliance with various laws and executive orders. Within the boundaries of the IPNF there are two tribes with Treaty reserved, off-reservation rights: the Kootenai Tribe of Idaho and the Confederated Salish and Kootenai Tribes. In addition, the Coeur d'Alene Tribe of Idaho has reserved rights through executive order on a limited section of the Coeur d'Alene River Ranger District. Federal guidance for tribal consultation directs the Forest Service to increase and improve the involvement of tribes in the decision-making process in the areas where decisions affect tribes and their treaty rights and interests. There is a trust responsibility regarding management of the resources on which the Treaties are based.

The Forest is also required to consult with all federally recognized tribes that had/have traditional uses within the forest boundary. This consultation extends to the Kootenai Tribe of Idaho, the Kalispel Tribe of Indians, the Coeur d'Alene Tribe of Idaho, the Confederated Salish and Kootenai Tribes, the Spokane Tribe of Indians, the Confederated Tribes of the Colville Reservation, and the Nez Perce Tribe.

The overall goal related to Native American rights and interests that is articulated in the IPNF Forest Plan is for the Forest Service to "Respect Indian tribal self-government and sovereignty, honor tribal Treaty and other rights through protection or enhancement of such and meet the responsibilities that arise from the unique legal relationship between the Federal Government and Indian tribal governments. Manage the Forests to address and be sensitive to traditional American Indian religious beliefs and practices."

This monitoring question is directly related to the guideline issued within the IPNF Forest Plan pertaining to Native American Tribes: "Consult with Tribes when management activities may impact treaty rights and/or cultural sites and cultural use, according to individual tribal communication plans, Consultation Protocols, or policies."

Results and Discussion

Methods

For this report, the Forest Tribal Coordinator reached out to Forest Service and Tribal employees to find out what, if any, cooperatively developed communications plans exist between the IPNF and federally recognized Tribes. The Forest Service employees contacted were Bonners Ferry District Ranger, IPNF Forest Supervisor, IPNF Deputy Forest Supervisor, and the former IPNF Tribal Coordinator. The same inquiry was outreached to the Administrative Director and Tribal Attorney, both with the Kootenai Tribe of Idaho (KTOI).

Results

The IPNF does not have a formal communication plan or signed protocol for communication with an individual tribe. The Northern and Pacific Northwestern Regions of the US Forest Service are signatories to an MOU with the Kootenai Tribe of Idaho that establishes communication and coordination protocols around development of a comprehensive master plan for the Pacific Northwest National Scenic Trail. The IPNF participates in monthly technical coordination meetings with KTOI and Forest Service regional planners in support of the PNW NST.

Discussion

The IPNF has no formal agreements with any of the federally recognized tribes that establish communication or coordination protocols. As stated above, two regions of the US Forest Service are signatories to an MOU with the KTOI that establishes communication protocols for development of a comprehensive master plan for the Pacific Northwest National Scenic Trail. The IPNF participates in monthly technical coordination meetings with the KTOI and regional planners in support of that effort and in accordance with the MOU.

In lieu of agreements or established communication plans, the IPNF continues frequently and consistently reaching out to recognized tribes to share information and offer project-level or more formal government-to-government consultation. The IPNF engages in government-to-government consultation with the KTOI every few months, while district rangers, resource specialists and interdisciplinary team leaders meet with KTOI employees and staff more frequently to discuss details and timelines of projects and shared planning efforts. KTOI members are very involved in the Kootenai Valley Resource Initiative, a community-based collaborative effort in the Kootenai River Basin of which the Forest Service is an integral member.

Other tribes are less responsive or respond to IPNF outreaches based on very specific concerns from the tribe or tribal employees. For example, tribal historic preservation officers (THPO) from the Coeur d'Alene Tribe and the Nez Perce Tribe have both contacted the IPNF recently with questions or concerns about proposed projects. The IPNF, in response, offered to meet with members of the tribal council and heritage staff to discuss the THPO's concerns and ways to improve information sharing, but the tribes did not act on the IPNF offers for government-to-government consultation. Instead, the THPO concerns were addressed by the project's interdisciplinary team and the NEPA response to comments.

Where frequent government-to-government consultation exists, there is a demonstrable pattern of productive work in support of tribal rights and interests. The IPNF and KTOI have cooperatively developed shared public messaging around huckleberry gathering that culminated in a USDA Forest Service brochure which highlights best practices and resource concerns for the general public as they

harvest huckleberries. The IPNF has also issued a special use permit every year to KTOI members to engage in traditional tribal activities, and they've jointly explored issuing a free or reduced fee to tribal members for certain recreation sites. Additionally, the frequency of the government-to-government meetings and the growing relationship between IPNF and KTOI has allowed tribal representatives to explain tribal rights and interests to the Forest as it undertakes planning efforts and has led to the IPNF modifying its work to accommodate tribal needs. When asked for feedback about the monitoring question, the KTOI Administrative Director said the current communication model is working, specifically "the regularity of our government-to-government meetings, wherein IPNF listens and responds to the Tribe's concerns, as well as updates on current and future projects. Specifically, Bog Creek is an example where IPNF addressed concerns about Tribal access and exercising of treaty rights in that area."

Evaluation of Results for Adaptive Management Finding

Table 162. Summary of findings for Plan Monitoring Item AI-02

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired based upon a demonstrable pattern of productive work in support of tribal rights and interests.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	YES
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?*[2]	Management Activities: Relationships between IPNF and federally recognized tribes would benefit from a coordinated effort to identify the needs and interests of each tribe, and to jointly develop a strategy for the tribe and IPNF to work together in support of those goals. While the IPNF has a strong relationship with one tribe it could improve the frequency and quality of consultation with the other six federally recognized American Indian nations.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item TBR-01 - Timber Offered and Sold

Table 163. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data collection interval	Data Source / Partner	Point of Contact
MON-TBR-01: To what extent is the Forest meeting Forest Plan objectives and trending towards desired conditions to provide a mix of timber products in response to market demands?	FW-DC-TBR-01 FW-OBJ-TBR-01	**MON-TBR-01-01:** MMBF offered and MMBF sold annually (Y)	Annual	TIM and Forest Plan	Timber Program Manager

* Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 164. Monitoring Item TBR-01 - Monitoring Collection Summary

For monitoring item TBR-01:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	2020
Next scheduled MER evaluation of this monitoring item:	2021

Referenced Plan Components:

FW-DC-TBR-01. Production of timber contributes to ecological, social, and/or economic sustainability, and associated desired conditions. A sustainable mix of timber products (including both sawtimber and non-sawtimber) is offered under a variety of harvest and contract methods in response to market demand. Salvage of dead and dying trees captures as much of the economic value of the wood as possible while retaining the amount needed for wildlife habitat, soil productivity, and ecosystem functions.

FW-OBJ-TBR-01. Annually offer timber for sale at the estimated predicted volume sold of 45 MMBF.

The 2015 forest plan was developed in part for the production of timber that contributes to ecological, social, and/or economic sustainability, and associated desired conditions. A sustainable mix of timber products (including both sawtimber and non-sawtimber) is offered under a variety of harvest and contract methods in response to market demand.

Results and Discussion

Methods

Data is collected throughout a fiscal year as timber sale, stewardship sales and/or convertible forest products are sold in the TIM database.

Results

Data

Table 165. Amount of Timber Offered and Sold by Fiscal Year

Fiscal Year	Timber Offered (MMBF)	Timber Sold (MMBF)	Forest Plan Objective Amount (FW-OBJ-TBR-01) (MMBF)	Forest Plan Allowable Sale Quantity (ASQ) (MMBF[1])
2015	55.9	55.9	45	120
2016	70.6[2]	63.8	45	120
2017	56.7	43.1	45	120
2018	61.2	74.2[3]	45	120
2019	61.0	61.0	45	120
2020	56.2	56.2	45	120

[1] Million Board Feet

[2] Increased timber offered volume due to 2015 Grizzly and Tower fires and subsequent salvage sales

[3] 13.6MMBF was from fiscal year 2017 no bid that was bought off the shelf and awarded in fiscal year 2018 thus more volume was sold than was offered.

Discussion

The Forest Products program ensures the productive and sustainable use of National Forest System lands by supporting healthy and resilient forests and communities while generating jobs in rural communities. The agency sets a timber volume sold target every year. In order to achieve this target, the Washington office sets the Region's target. These targets were developed based on forest capability and inputs into the Northern Region Vegetation Program of Work Tracking Database. The increased targets generally reflect market demands for timber.

For fiscal years 2015 through 2020, the MMBF offered and MMBF sold annually have been trending upward. This upward trend of the offering and selling of timber products is promoting the trending towards desired conditions and providing a mix of timber products, which is in line with market demands.

To accomplish the increasing trend the IPNF, has utilized several different Farm Bill authorities. The Good Neighbor Authority (GNA) with Idaho Department of Lands has had an additive affect to the IPNF Timber Sold to meet industry demands. Shared Stewardship is another Farm Bill authority that will aid in increase timber offered in the future. The GNA partnership along with an increased target Regionally has resulted in the Forest offering and selling more than the Forest Plans Objective of 45 MMBF. Current trends from the Forests five-year action plan show an increase in timber delivery in 2021 and leveling off from there.

Evaluation of Results for Adaptive Management Finding

Table 166. Summary of findings for Plan Monitoring Item TBR-01

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired. The MMBF offered and MMBF sold annually have been trending upward. This upward trend of the offering and selling of timber products is trending towards desired conditions of the forest plan and providing a mix of timber products, which is in line with market demands.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	No change warranted
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?[2]*	N/A

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item TBR-02 - Size of Harvest Opening

Table 167. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data Collection Interval	Data Source / Partner	Point of Contact
MON-TBR-02: To what extent is the Forest meeting NFMA requirements and desired conditions on size of harvest openings?	FW-DC-VEG-05, FW-STD-TBR-02 (Also 1982 Rule requirement [219.12(k)(5)(iii)])	**MON-TBR-02-01**: Number of even-aged regeneration harvest units exceeding 40 acres in size and category for exceeding. (N)	Annual/ Class A	RO Approval Letters (Box folder): forest 40-acre opening requests	Forest Silviculturist

Table 168. Monitoring Item TBR-02 - Monitoring Collection Summary

For Monitoring Item TBR-02:	Year
Data was last collected or compiled in:	2021
Next scheduled data collection/compilation:	2023
Last MER evaluation for this monitoring item:	2021
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Forest Plan Components:

The maximum size opening in the Northern Region created by clearcutting, seed tree cutting, shelterwood seed cutting, or other cuts designed to regenerate an even-aged or two-aged stand of timber in one harvest operation is 40 acres as a standard in most forest plans, including the Idaho

Panhandle National Forests 2015 [Forest Plan](#) [NFMA ([16 USC 1604 (g)(3)(F)(iv)](#)), planning regulations ([36 CFR 219.11(d)(4)(ii)](#)), and Forest Service Manual ([FSM 2471.1, R1 2400-2016-1](#))]. Creating openings larger than 40 acres requires 60-day public review and Regional Forester approval, with delegated authority to the Director of Forest Management in the Regional Office.

Standard **FW-STD-TBR-02** (Forest Plan (FP), p. 40) states any proposed even-aged timber harvest openings that would exceed 40 acres must follow NFMA requirements regarding public notification and approval. This measure tracks when and how many of these openings are approved, and the rationale to meet NFMA. This does not include areas harvested as a result of natural catastrophic conditions such as (but not limited to) wildfire, insect and disease attack, or windstorm as the opening size limit does not apply per NFMA, planning regulations, and the FSM in such instances [[IPNF Monitoring Guide - 2015 Forest Plan](#) (Monitoring Guide), p. 96].

Landscape pattern is a Key Indicator for potential changes to the pattern of forest conditions (**FW-DC-VEG-05;** FP, p. 13; [Forest Plan FEIS](#) (FEIS), p. 5). The historic range of variability (HRV) focuses on forest composition (dominance type or species composition), structure (successional stage, size class, and density), and landscape pattern (fragmentation and function). The HRV is the baseline for comparison with current conditions to assess the degree of past change and movement towards desired condition. Landscape pattern was assessed by geographic area and at the forest-wide scale. It included fire history and was done in the context of climate change (FEIS, pp. 50-51). Forest vegetation conditions reflect resistance and resiliency to natural disturbance and stressors (FEIS, p. 66). A resilient forest ecosystem contains the diversity of composition, size, density, and pattern to enable it to tolerate or recover from disturbance, perpetuating through periodic regeneration (FEIS, p. 90).

The current pattern is more susceptible to some insects, diseases, and wildfire disturbances. Forest patches dominated by the smallest-sized trees, as well as patches dominated by the largest trees, have decreased substantially in size relative to historical conditions. Across all size classes and fuel conditions the continuity of stand structures has increased and become more homogenized at the landscape scale (FEIS, p. 108). Active management is anticipated to lead to improvements in the pattern of forest vegetation on the landscape. The amount of improvement in landscape pattern is directly related to the amount of vegetation management that will occur (FEIS, p. 109).

Results and Discussion

Methods

See [MON-TBR-02 Appendix](#)

Results

Data

The Monitoring Guide (p. 97) specifies the evaluation for this measure is a list of units, by project, exceeding 40 acres with rationale for the size of harvest units. This analysis uses openings as a proxy for units because a regeneration harvest unit does not always exceed 40 acres on its own but may do so when considered with adjacent regeneration harvest units. Project analyses, request packages, and authorization letters are also structured this way in Region 1.

Table 169. Harvest Openings Greater than 40 Acres by Calendar Year and Project

CALENDAR YEAR	PROJECT	OPENING	ACRES	RATIONALE
2015	None	N/A	N/A	N/A
2016	None	N/A	N/A	N/A
2017	Halfway Malin	1	247	Increase forest resiliency through changing pattern and patch size; Treatment of insects and disease to improve resiliency; and Changing fuels and fire behavior to increase safety.
		2	168	
		3	194	
		4	56	
2018	Bottom Canyon Timber Sale	1	120	Address wide spread root disease infections that are causing reduced growth rates and mortality throughout the entire project area at scales greatly exceeding 40 acres; Trend the landscape towards the desired spatial pattern of forest structure, species composition, and patch sizes in accordance with Forest Plan and project area desired conditions; Facilitate management of road densities by reducing the need for new system road construction and by creating opportunities to utilize and then decommission existing roads that have been deemed unnecessary for long-term management; Regenerate large patches of potentially long-lived early seral species that are more resilient to insects and diseases, fire and drought conditions.
		2	29	
		3	96	
		4	143	
		5	89	
2018	Boulder Creek Restoration	1	70	Maintain and improve forest resiliency on the landscape that better resist insects, disease, and stand-replacing wildfires. This is primarily done by altering forest landscape patterns, stand composition, stocking levels, structure, and patch sizes towards configuration within the historic range of variability; Promote forest conditions that reduce fire hazard on National Forest System lands, aid fire suppression efforts, and reduce the potential impacts of wildfire in order to protect firefighters and resource values; and Contribute to achieving the standards of the Grizzly Bear Access Amendment for the Bear Management Units by increasing core habitat and reducing Total Motorized Route Density.
		2	68	
		3	49	
		4	283	
		5	63	
		6	112	
		7	45	
		8	73	
		9	55	
		10	57	
		11	95	
		12	47	
		13	133	
		14	73	
		15	417	
		16	135	
		17	195	
		18	439	
		19	61	
		20	64	
		21	67	
		22	45	
2018	Camp Robin	A	159	Trend the landscape pattern of stand structures and patch sizes towards a configuration falling within the historic range of variability; Promote species diversity and a mosaic of age and size classes across the
		B	49	
		C	41	

CALENDAR YEAR	PROJECT	OPENING	ACRES	RATIONALE
		D	73	landscape and reduce the acreage of lodgepole pine that is at increasing hazard to mountain pine beetle; and Create relatively large areas with fuels conditions that are less prone to extreme fire behavior. These areas will contribute to a pattern of fuel treatments that is effective in modifying potential fire behavior at the landscape scale, reducing spread rates across the landscape, and producing a safer environment in which to conduct fire control activities.
		E	47	
		F	196	
		G	185	
		H	140	
		I	1,580	
		J	50	
		K	68	
		L	165	
		M	188	
		N	55	
		O	45	
		P	51	
2018	Hanna Flats Good Neighbor Authority	A	49	Maintain or improve forest resiliency in this landscape to insects, diseases, and other natural disturbances, such as wildfire; Decrease the current and future risk of wildfires to people, land, and resources through the modification of hazardous forest fuels; Reduce the amount of road miles and corresponding maintenance needed to access the same acreage of treatment units through the creation of larger forest patch openings; Provide a benefit to hydrology resources through larger openings that would reduce the likelihood of a large, intense wildfire burning large areas of the watersheds in the project area and harming aquatic resources; and Create forest openings that appear more natural by utilizing larger patch sizes when compared to treating smaller areas with more numerous openings.
		B	115	
		C	188	
		D	106	
		E	74	
		F	112	
		G	83	
		30	65	
2019	Brebner Flat	1	635	Increase forest resiliency through changing composition, structure, and patch size; Treatment of insects and disease to improve resiliency; and Reducing hazardous fuels and changing fire behavior to increase safety and effective fire management.
		2	91	
		3	57	
		4	46	
		5	51	
		6	42	
		7	44	
		8	333	
		9	44	
2019	Potters Wheel	1	145	Address wide-spread root disease infections that are causing reduced growth rates and mortality throughout the entire project area at scales greatly exceeding 40 acres; Trend the landscape towards the desired spatial pattern of forest structure, species composition, and patch sizes in accordance with Forest Plan and project area desired conditions; Create relatively large areas that are less prone to extreme fire behavior; Facilitate management of road densities by reducing the need for new system road construction and by creating opportunities to utilize and then decommission existing
		2	247	
		3	55	
		4	166	
		6	167	
		10	335	
		13	192	
		14	423	

CALENDAR YEAR	PROJECT	OPENING	ACRES	RATIONALE
		15	102	roads that have been deemed unnecessary for long-term management; Maintain or improve hydrologic connectivity, water quality, and aquatic species habitat; and Regenerate large patches of potentially long-lived early seral species that are more resilient to insects and diseases, fire, and drought conditions.
		16	131	
		17	125	
		18	176	
		19	67	
		20	592	
		23	185	
		24	52	
		25	50	
		26	46	
		27	119	
		28	50	
		29	332	
		30	46	
		31	59	
		33	59	
		34	118	
		35	56	
		36	286	
		37	341	
2020	Buckskin Saddle Integrated Restoration	1	209	Address wide-spread root disease infections that are causing reduced growth rates and mortality throughout the entire project area at scales greatly exceeding 40 acres; Trend the landscape pattern of stand structures, species composition, and patch sizes towards desired conditions described in the IPNF Land Management Plan; and Create relatively large areas with fuel conditions that are less prone to extreme fire behavior.
		2	231	
		3	235	
		4	425	
		5	215	
		6	364	
		7	54	
		8	70	
		9	67	
		10	407	
		11	53	
		12	393	
		13	596	
		14	366	
		15	321	
		16	234	
		17	114	
		18	57	
		19	2,256	
		20	41	
		21	477	
		22	152	

CALENDAR YEAR	PROJECT	OPENING	ACRES	RATIONALE
		23	47	
		24	45	
		25	321	
		26	263	
		27	560	
		28	113	
		29	143	
		30	335	
		31	85	
		32	50	
		33	323	
		34	341	
		35	224	
		36	75	
		37	198	
		38	76	
		39	72	
		40	41	
		41	110	
		42	56	
		43	59	
		44	48	
		45	244	
		46	279	
		47	43	
		49	93	
		50	103	
		51	180	
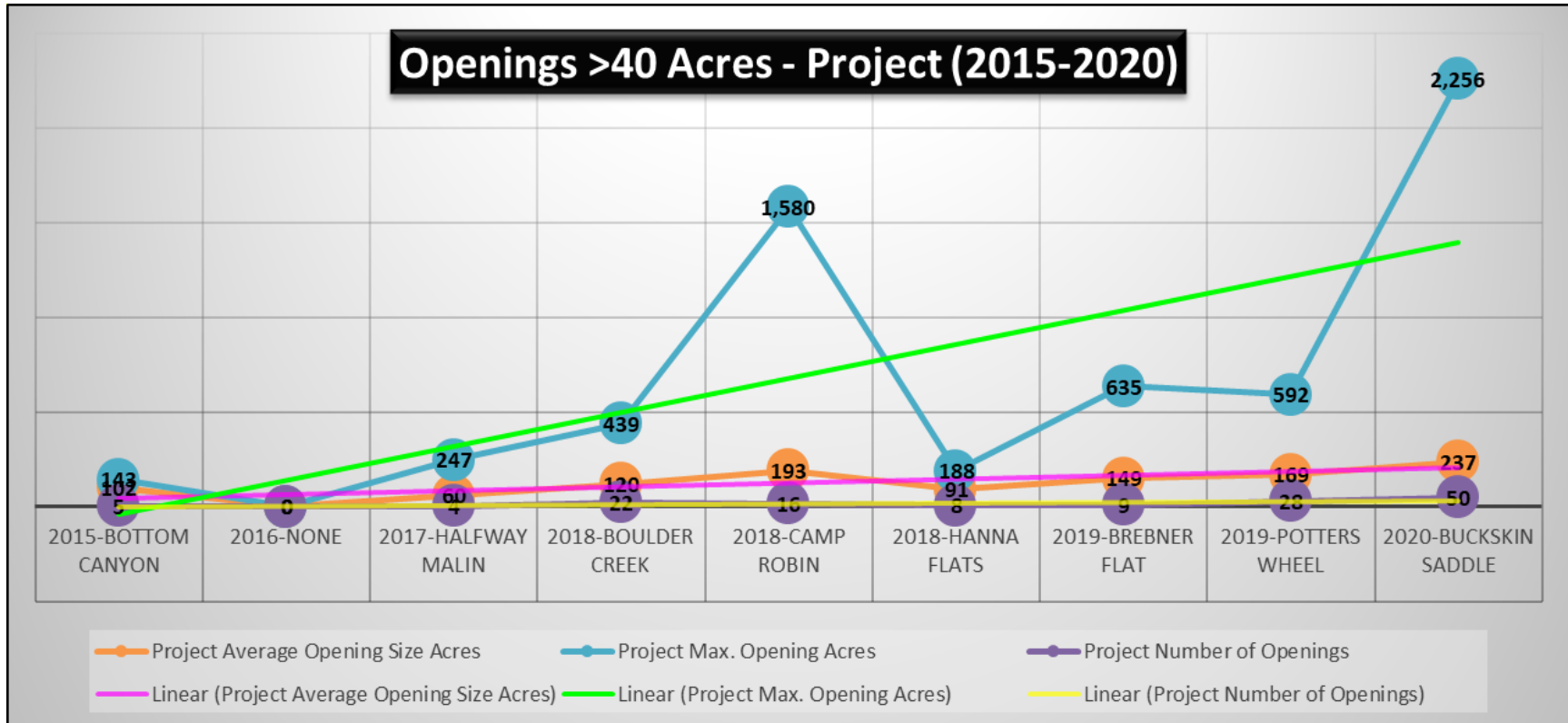
Figure 41. Openings Greater Than 40 Acres by Project (2015 to 2020)*

*Includes Project Average Opening Size Acres (orange dot), Project Maximum Opening Acres (blue dot), Project Number of Openings (purple dot), Project Average Opening Size Acres (pink line), Project Maximum Opening Acres (green line), and Project Number of Openings (yellow line)
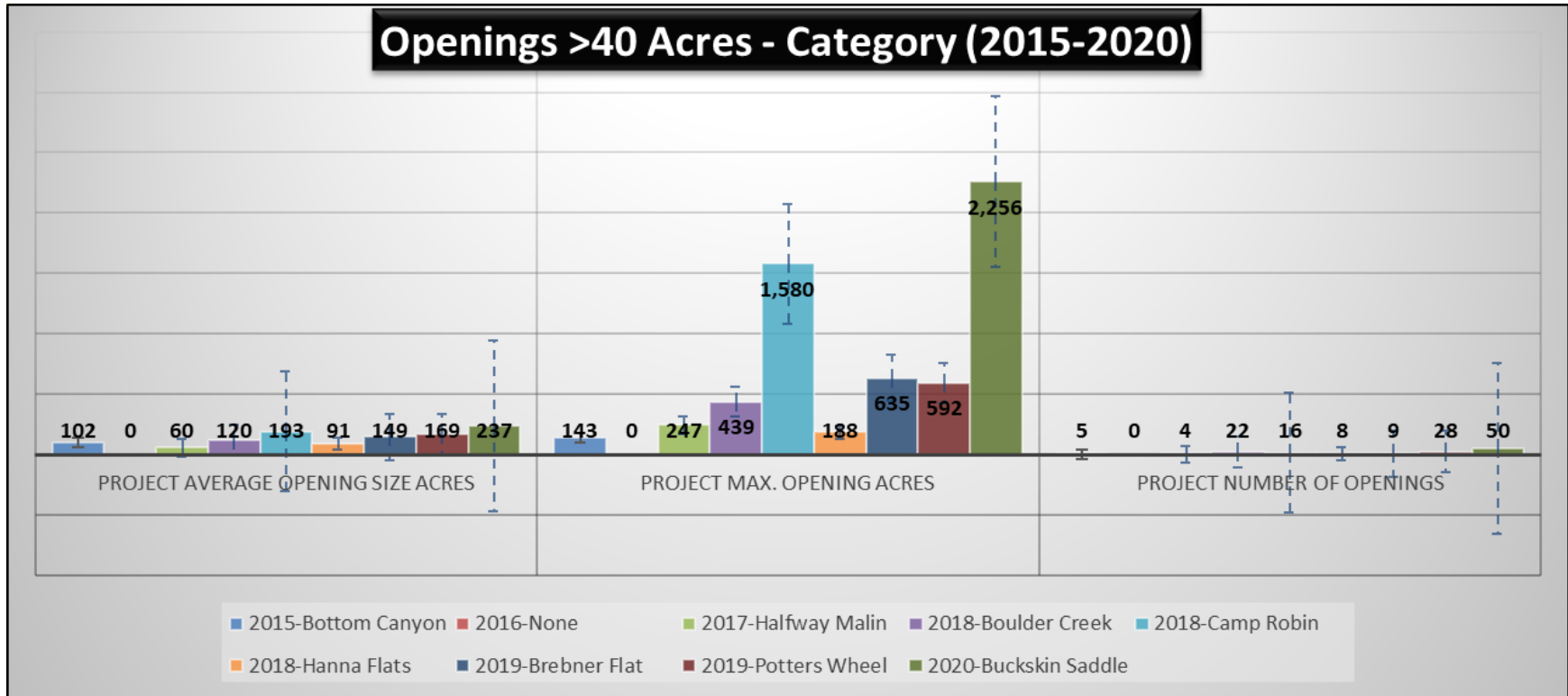
Figure 42. Openings Greater Than 40 Acres by Category (2015-2020); includes Project Average Opening Size Acres, Project Maximum Opening Acres, and Project Number of Openings
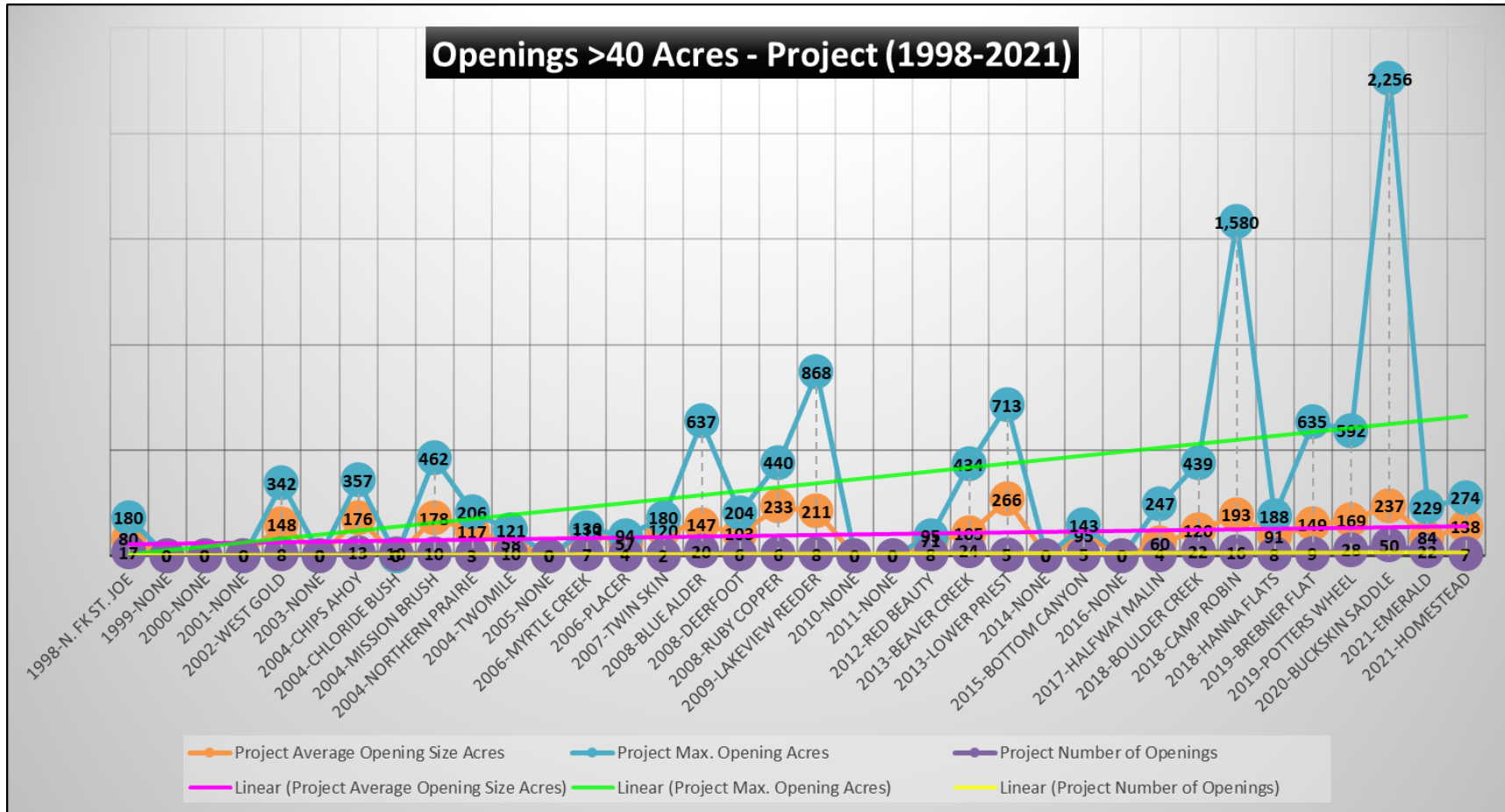
Figure 43. Openings Greater Than 40 Acres by Project (1998-2021 as of analysis date)*

*Includes Project Average Opening Size Acres (orange dot), Project Maximum Opening Acres (blue dot), Project Number of Openings (purple dot), Project Average Opening Size Acres (pink line), Project Maximum Opening Acres (green line), and Project Number of Openings (yellow line).

Prior to late 2016, "openings" were defined as both the regeneration harvest proposed (new openings), and adjacent regeneration harvest units not yet certified as reforested/restocked (existing openings). This change happened in an update to FSM 2470 R1 supplement 2400-2016-1 as a result of the 2012 Planning Rule updating the 36 Code of Federal Regulations 219.11(d)(4(i-iii)). While most new openings were larger than 40 acres individually, some were only larger than 40 acres when combined with adjacent openings. Some authorization letters from 2009-2013 only noted new harvest openings, so the request letters were also needed to determine full opening size for consistency in analysis.

As noted in regional policy, two-aged regeneration harvests larger than 40 acres are also part of the regulations for even-aged regeneration harvests and are included in even-aged definition. All regeneration harvests will be referred to as "even-aged" for simplicity in this analysis and encompass any relevant two-aged harvests in the projects.

Table 170. Twenty-three Year Project Averages (1998-2021 as of analysis date)

Number of Projects	26
Average Project Average Opening Size (Acres)	135
Average Project Maximum Opening Size (Acres)	463
Average Project Number of Openings	13

There is no target for this monitoring indicator, nor an alert level or threshold, only tracking approved openings exceeding maximum size limitations as part of the process directed by law, regulation, and policy. However, there are desired patch sizes (in addition to desired species composition and size class) based on biophysical settings (BpS) for FW-DC-VEG-11 (Table 2, Forest Plan, p. 18).

Discussion

This is the first report for MON-TBR-03, and thus establishes the reporting baseline for this monitoring question and indicator.

Desired conditions for forest pattern (Monitoring Guide, p. 97) entail a range of patch sizes with a diversity of successional stages, densities, and compositions. Generally, there is an increase in forest patch size based on the HRV. Creating openings (patches) exceeding 40 acres through even-aged regeneration harvest achieves this desired condition of larger patch sizes. These openings are dominated by regenerating trees in the seedling/sapling size class and there are often leave trees or reserve areas in the large size class, both of which are also desired conditions (FW-DC-VEG-02) (Forest Plan, pp. 12-13).

Desirable patches are usually larger than 40 acres considering the percentage of forested lands comprising the most abundant biophysical settings on the forest. These patches range from 50 to 2,500 acres on 85 percent of forested IPNF lands in the Warm/Moist and Subalpine BpS (FW-DC-VEG-11) (Forest Plan, p. 18; FEIS, pgs. 91-97). Individual patch sizes/openings on their own are not required to be within the associated BpS patch size range as these are based on the HRV. Patches larger than the maximum range size would still be moving towards the desired condition for the forest by contributing increasing mean patch size. Analysis is done at the project level comparing existing mean patch size to mean patch size resulting from implementation of proposed even-aged regeneration harvests. This would trend project areas towards desired conditions emulating historic distributions of forest size classes and patch sizes created by historic disturbance regimes, restoring the shifting mosaic of forest structure and increasing forest resilience to future disturbances.

Table 171. Patch Size by Biophysical Setting for FW-DC-VEG-11

Biophysical Setting	Percent of IPNF Forested Land	Patch Size Range (Acres)
Warm/Dry	15	20-200
Warm/Moist	61	100-300
Subalpine	24	50-2,500

Discerning a trend in number of openings exceeding 40 acres by project (Figure 41), yellow line, Figure 42, last block) cannot be determined for years 2015-2020 alone as shown by the large and variable standard error (vertical dashed bars, Figure 42, last block). This measures how far the average of the data is likely to be from the true population mean and indicates the uncertainty around the estimate of the mean (i.e., a confidence interval). When standard error increases, it becomes more likely that the sample mean is an inaccurate representation of the true population mean.

The project average opening size (Figure 41, pink line; Figure 42, first block) shows a slight increase from 2015 to 2020. There is a steeper increase in the maximum opening size for each project (Figure 41, green line), although still with large variability from year to year (Figure 42, middle block). Standard error bars are also included for project average and maximum opening sizes in Figure 42, indicating the larger the opening, the further it is from the mean of each measure. Thus, for this period larger average and maximum openings are likely outside the upper range of the confidence interval and confidence in trend is not high (i.e., there is low precision).

From 2015 to 2020, number of openings per project stay about the same, average opening size per project increases marginally, and the largest opening in a project is going up by a greater degree, although there are still large standard errors for the project average and maximum opening sizes. For the six years covered from 2015-2020, there were eight projects authorized to exceed 40-acre openings, an average of just over one project per year. Confidence in the accuracy of the data is high because of multiple checks on opening sizes and units throughout the NEPA process; it is expected there will be changes in the size of openings throughout the NEPA analysis through implementation. Very commonly, units comprising the openings will become smaller during implementation because of site, equipment, access, and resource constraints among other factors.

A larger data set available from 1998 through July 2021 better shows trends for number of openings, average opening size, and maximum opening size. There were 26 projects over these 23 years – an average of less than one project per year. The trends are similar compared to those for 2015-2020. Number of openings exceeding 40 acres by project is flat, showing no clear trend in the last 23 plus years over 26 projects (Figure 43, yellow line). The average number of openings per project is 13 (Table 170). The average opening size by project (Figure 43, pink line) shows a nearly imperceptible increase over the 23-year span. The average project average opening size across 26 projects is 135 acres (Table 170). There is a visible increase in the maximum opening size per project (Figure 43, green line), still with extremely high variability from year to year indicating large standard error and low precision. The average project maximum opening size is 463 acres (Table 170) for 26 projects due to two of the 327 openings greatly increasing the average. Without these two openings, the average maximum opening size across 23 projects is 357 acres.

Overall, trends for both the 2015-2020 and 1998-2021 timeframes show little to no change in number of openings. There is a flat to very slight increase in average opening size. There is an increase in maximum opening size, but with a wide range of variability. Opening sizes are described in the context of patch size as part of landscape pattern compared to the historic range of variability. Trends

toward larger patch sizes are anticipated through continuing active management as a desired condition of the Forest Plan.

Other forest plan components not listed in the monitoring plan related to MON-TBR-02-01 are:

- **GOAL-VEG-01.** Plant communities are trending toward the desired conditions for composition, structure, patterns, and processes (p. 11) is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **FW-DC-VEG-01.** The composition of the forest is within the desired ranges for the dominance groups with more of the forest dominated by western white pine, ponderosa pine, western larch, and whitebark pine, with more hardwood trees occurring (such quaking aspen, black cottonwood, and paper birch) (p. 11) is linked to forest pattern diversity of composition and greater representation of species resistant to disturbance agents.

- **FW-DC-VEG-02.** The structure of the forest is within the desired ranges for the size classes with more of the forest dominated by stands occurring in the seedling/sapling size class (p. 12) is linked to forest pattern diversity of successional stages and densities.

- **FW-DC-VEG-03.** The amount of old growth increases at the forest-wide scale. Relative to other tree species, there is a greater increase in old growth stands that contain substantial amounts of ponderosa pine, western larch, western white pine, and whitebark pine. Old growth stands are more resistant and resilient to disturbances and stressors such as wildfires, droughts, insects and disease, and potential climate change effects. The size of old growth stands (or patches of multiple contiguous old growth stands) increase, and they are well-distributed across the Forest (p. 12).

- **FW-DC-VEG-04.** Tree densities and the number of canopy layers within stands are generally decreased (p. 12) is linked to forest pattern diversity of successional stages and densities.

- **FW-DC-VEG-06.** Root disease and forest insects are killing fewer trees as the composition of the forest trends toward less susceptible tree species such as western larch, ponderosa pine, and western white pine (p. 13) is linked to forest pattern diversity of composition and greater representation of species resistant to disturbance agents.

- **FW-OBJ-VEG-01. Forest Resilience** – Increased relative representation of early seral, shade-intolerant, drought- and fire-tolerant, insect/disease resistant species dominance types and treatments to maintain and/or improve forest resilience, and natural diversity where treatments may include timber harvest and planting, (p. 18) is linked to forest pattern diversity of composition and greater representation of species resistant to disturbance agents.

- **FW-GDL-VEG-08.** All silvicultural practices may be used to manage forest vegetation, including planting where silvicultural practices should generally trend the forest vegetation towards conditions that are more resistant and resilient to disturbances and stressors, including climate change (p. 21) is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **FW-DC-FIRE-02.** Forest conditions, and the pattern of conditions across the landscape, exist in these areas such that the risk is low for epidemic levels of bark beetles, high levels of root disease, and large scale, stand-replacement wildfires (p. 21) is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **FW-DC-FIRE-03**. The use of wildland fire (both planned and unplanned ignitions) increases in many areas across the Forest where fire plays an increased role in helping to trend the vegetation towards the desired conditions while serving other important ecosystem functions (p. 22) is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **GOAL-SOIL-01.** Maintain soil productivity and ecological processes where functioning properly and restore where currently degraded (p. 23) is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **GOAL-RIP-01.** Maintain or improve the vegetation associated with hydrologic features to support the ecological function of riparian habitats (p. 24) is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **FW-DC-RIP-04.** Composition, structure, and function of riparian vegetation are appropriate for a given landscape and climatic setting. Riparian vegetation adjacent to larger streams with lower gradients and wide valley bottoms is dominated by conifer stands in late-seral stages. These stands have multiple canopy layers with shrub, forb, and ferns underneath stands dominated by large trees. Native hardwoods such as black cottonwood, paper birch and/or quaking aspen are found in areas along these larger streams. The narrower riparian zones along smaller, higher gradient streams have vegetation with a wide diversity of seral stages present, from relatively young stands of trees to fairly old stands. There is a greater composition of early-seral, shade intolerant trees species present than found in larger, lower gradient rivers. Natural disturbance regimes occur at intervals that maintain these conditions (p. 25). This is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **FW-DC-WL-06.** Large-diameter trees are available within potential bald eagle nesting habitat adjacent to large lakes and major rivers where forested stands are managed to promote large-diameter trees within eagle nesting territories (p. 29) is linked to forest pattern diversity with an increase in the size of forest patches that are dominated by trees in the large size class.

- **FW-DC-WL-10.** Productive plant communities, with a mosaic of successional stages, structures, and species, are available for neotropical and other migratory landbirds (p. 30) is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **FW-DC-WL-12.** Old growth, or other stands having many of the characteristics of old growth, exists for terrestrial species associated with these habitats (p. 30) is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **FW-DC-WL-20.** By trending towards the desired conditions for vegetation, habitat is provided for native fauna adapted to open forests and early seral habitats, or whose life/natural history and ecology are partially provided by those habitats (p. 31) is linked to forest pattern diversity of successional stages, densities, and composition, and greater representation of species resistant to disturbance agents.

- **GOAL-TBR-01.** Provide a sustainable level of timber products for current and future generations where production of timber from NFS lands contributes to an economically viable forest products industry (p. 39) is linked to creating openings greater than 40 acres through regeneration harvest.

- **FW-DC-TBR-01.** Production of timber contributes to ecological, social, and/or economic sustainability, and associated desired conditions and a sustainable mix of timber products is offered under a variety of harvest methods (p. 39) is linked to creating openings greater than 40 acres through regeneration harvest.

- **FW-DC-TBR-02.** Lands identified as suitable for timber production₅ have a regularly scheduled timber harvest program and where appropriate, thinning or other types of stand treatments are used to increase tree growth and create additional growing space for the desirable tree species to address forest resilience objectives and reduce mortality and fuel loading (p. 39) is linked to creating openings greater than 40 acres through regeneration harvest.

- **FW-DC-TBR-03.** Timber cutting on other than suitable for timber production lands occurs for other purposes consistent with other management direction (p. 39) is linked to creating openings greater than 40 acres through regeneration harvest.

- **GOAL-SES-01.** Contribute to the social and economic well-being of local communities by promoting sustainable use of renewable natural resources by providing timber for commercial harvest with goals for watershed health, sustainable ecosystems, and biodiversity (p. 41) is linked to creating openings greater than 40 acres through regeneration harvest, forest pattern diversity (successional stages, densities, and composition), and greater representation of species resistant to disturbance agents.

- **FW-DC-SES-01.** Outputs and values generated by the Forest contribute to sustaining social and economic systems (p. 41) is linked to creating openings greater than 40 acres through regeneration harvest.

- **FW-DC-SES-02.** The outputs and values provided by the Forest contribute to the local economy through the generation of jobs and income while creating products for use, both nationally and locally where jobs and income generated by the activities and outputs from national forest management remain stable, contributing to the functional economy surrounding the IPNF (p. 42) is linked to creating openings greater than 40 acres through regeneration harvest.

Evaluation of Results for Adaptive Management Finding

Table 172. Summary of findings for Plan Monitoring Item TBR-02

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired based on the quantitative analysis of 26 projects over 23 years authorized to create openings greater than 40-acres through even-aged regeneration harvest. Average opening (patch) size is increasing, moving towards the forest-wide desired condition FW-DC-VEG-11 (patch size range by Biophysical Setting).
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?[2]*	Monitoring Program: 1. Plan Monitoring Recommendation: Replace FW-DC-VEG-05 with FW-DC-VEG-11. This vegetation desired condition has quantitative measures and ranges of patch sizes (openings) based on the Historic Range of Variability for the forest. As

	FINDINGS
	written, the monitoring question answers the patch size component of FW-DC-VEG-05, but not species (composition) or size classes (successional stages/densities).
	2. Implementation and Outcome Progress Recommendations:
	Recommend updating the regulatory reference "1982 Rule requirement [219.12(k)(5)(iii)])" in the Plan Component for MON-TBR-02, and corresponding in the Monitoring Guide 2) Forest Plan References: FW-STD-TMBR-02 (pg. 96) to read "FW-STD-TBR-02 (1982 Rule requirement [219.12(k)(5)(iii)]), updated with 2012 Planning Rule [219.11(d)(4(i-iii)])" to incorporate the most current policy.
	Reword the monitoring question (pg. 96 of the guide): "To what extent is the Forest meeting NFMA requirements and *Forest Plan* desired conditions on size of harvest openings?" NFMA requires the forest plan designate the "… maximum size for openings that may be cut in one harvest operation…" to regenerate an even-aged stand of timber. This would clarify here are no desired conditions in the section of NFMA regulating the creation of even-aged openings through regeneration harvest, but rather they are part of the IPNF Forest Plan.
	Reword the indicator MON-TBR-02-01 (pg. 96 of the guide) to include "two-aged" in addition to "even-aged timber harvest openings" to be consistent with the R1 supplement to Forest Service Manual direction 2470. Also recommend changing "category" to "rationale" in "…harvest units exceeding 40 acres in size and ~~category~~ *rationale* for exceeding." There aren't categories for exceeding 40 acres, but there does need to be a reason(s) for doing so.
	Reword the Description on pages 96-97 of the monitoring guide from "catastrophes" to "natural catastrophic conditions" to be consistent with law, regulation, and policy language.
	In the monitoring guide on page 97 in Standards/Steps for Data Collection, recommend deleting references to FACTS. While there are database standards for entering harvest units and it tracks size and harvest type, data is not always entered or updated correctly or on time. It may also capture units not intended as part of this analysis for a variety of reasons (e.g., misclassification of harvest type, a change in unit size, or an incorrect database query). The authorization letters also track opening size and the corresponding request packages document harvest type and rationale; these are part of the project record. The letters are the most precise source to measure this indicator and are easily accessible and interpretable by anyone without requiring the permissions or training needed to access FACTS and run database queries. Additionally, recommend changing "for" to "requesting" and "approval" to "authorization" in "The document ~~for~~ *requesting* Regional Forester ~~approval~~ *authorization* to exceed 40-acre limit contains reasons."
	In the monitoring guide on page 97 in Standards/Steps for Data Collection, update and designate a consistent filing location and/or process for the RO authorization letters and forest request letters/packages, in a Pinyon Box folder under 1950 NEPA (such as individual project files) or 2470 Silvicultural Practices (the current listed data source for this analysis). Delete draft requests and associated documents after authorization is received.
	In the monitoring guide on page 97, recommend changing the Responsibility from the Forest NEPA Coordinator to the Forest Silviculturist; this is the person designated to oversee the request process to exceed the maximum opening size limit for all projects.
	Update the Monitoring Guide (pg. 97) to include "Authority: NFMA, *2012 planning regulations*, and Forest Plan."

	FINDINGS
	In the monitoring guide on page 97, recommend changing "timber sales" to "*projects*" and "unit/units" to "*openings*" in How Evaluated. The forest requests are by project which often will produce more than one timber sale, and openings are often made up of more than one unit.
	Include number of openings and total opening acres in the letter itself requesting to exceed the maximum opening size limits, not just the attached tables or stand data. This makes for more efficient filing for future monitoring analysis.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item TBR-03 – Restocking Success

Table 173. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators *Influenced by Climate Change? (Y, N, U)	Data Collection Interval	Data Source / Partner	Point of Contact
MON-TBR-03: To what extent are regeneration units restocked to trend towards vegetation desired conditions?	FW-DC-VEG-04, FW-DC-VEG-11, FW-DC-TBR-02, FW-DC-TBR-03, FW-STD-TBR-03 (Rule requirement [219.12(k)(5)(i)])	**MON-TBR- 03-01:** On lands suitable for timber production, percent of acres with regeneration harvest that are adequately restocked within 5 years of harvest (Y)	Annual/ Class A	R1 Regeneration Timeframe Report (R1 Depot - FACTS)	Forest Silviculturist

*Is the Indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 174. Monitoring Item TBR-03 - Monitoring Collection Summary

For Monitoring Item TBR-03:	Year
Data was last collected or compiled in:	2021
Next scheduled data collection/compilation:	2023
Last MER evaluation for this monitoring item:	2021
Next scheduled MER evaluation of this monitoring item:	2023

Referenced Forest Plan Components:

Restocking within five years following regeneration harvest is part of desired conditions, and a standard in the Forest Plan. On lands suitable for timber production, restocking within five years ensures sustainability of timber harvest by maintaining appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of the stand designed to secure maximum benefits of multiple-use sustained yield (Forest Plan FEIS (FEIS), p. 48). The silvicultural prescription for the stand sets the level of restocking required. Regeneration treatments include clearcut harvests, seed tree harvests, shelterwood harvests, and selection harvests. Restocking of regeneration harvest units is tracked in the Forest Service Activity Tracking System (FACTS) (2015 Forest Plan Monitoring Guide (V2), p. 98).

Tree densities and canopy layers (**FW-DC-VEG-04**; Forest Plan, p. 13) are Key Indicators of landscape pattern and potential changes of forest conditions for Forest Vegetation in the Forest Plan (FEIS, p. 49). The desired condition is to mostly decrease tree density and number of canopy layers. In general, less dense forests have decreased horizontal and vertical fuel continuity, lowering the likelihood that fuel characteristics could support a fast moving, intense crown fire. Lower density also increases trees' ability to withstand attacks by insects, pathogens, and parasites by decreasing the soil moisture deficit and improving tree vigor (FEIS, p. 87).

Forest composition and structure (**FW-DC-VEG-11**; Forest Plan, pp. 14-18) are also Key Indicators for Forest Vegetation; these are the predicted changes to tree species composition and structure (FEIS, p. 49). The objective of forest composition is increasing the amount of shade-intolerant western white pine, ponderosa pine, and western larch. These species are drought-and fire-tolerant and are relatively resistant to insects and diseases. Changing the forest composition towards the desired condition increases resistance and resiliency, reducing effects from drought, fire, insects, disease, and climate change (FEIS, p. 67). The forest structure desired condition is increasing the amount of the seedling/sapling tree size and age classes to emphasize the importance of young forest stands in sustaining ecosystem processes and biodiversity within the Historic Range of Variability and improving forest resilience (FEIS, pp. 73-74).

Where appropriate, stand treatments on lands suitable for timber production (**FW-DC-TBR-02**) are used to increase tree growth and create additional growing space for the desirable tree species to address forest resilience objectives and reduce mortality and fuel loading. Lands are adequately restocked within 5 years of final regeneration harvest, following a site-specific silvicultural prescription. This restocking may also occur on lands other than suitable for timber production (**FW-DC-TBR-03**) for purposes such as salvage, fuels management, insect and disease mitigation, protection or enhancement of biodiversity or wildlife habitat, or to perform research or administrative studies, or recreational and scenic-resource management aligned with other management direction (Forest Plan, p. 39). Regeneration harvests are only used when there is reasonable assurance of restocking within 5 years after the final harvest treatment based on silviculture prescriptions (**FW-STD-TBR-03**; Forest Plan, p. 40).

Results and Discussion

Methods

See MON-TBR-03 Appendix

Results

Data

Table 175. Regeneration (Regen) Harvest Restocking Rates (2010-2015) (from the Forest Summary report)

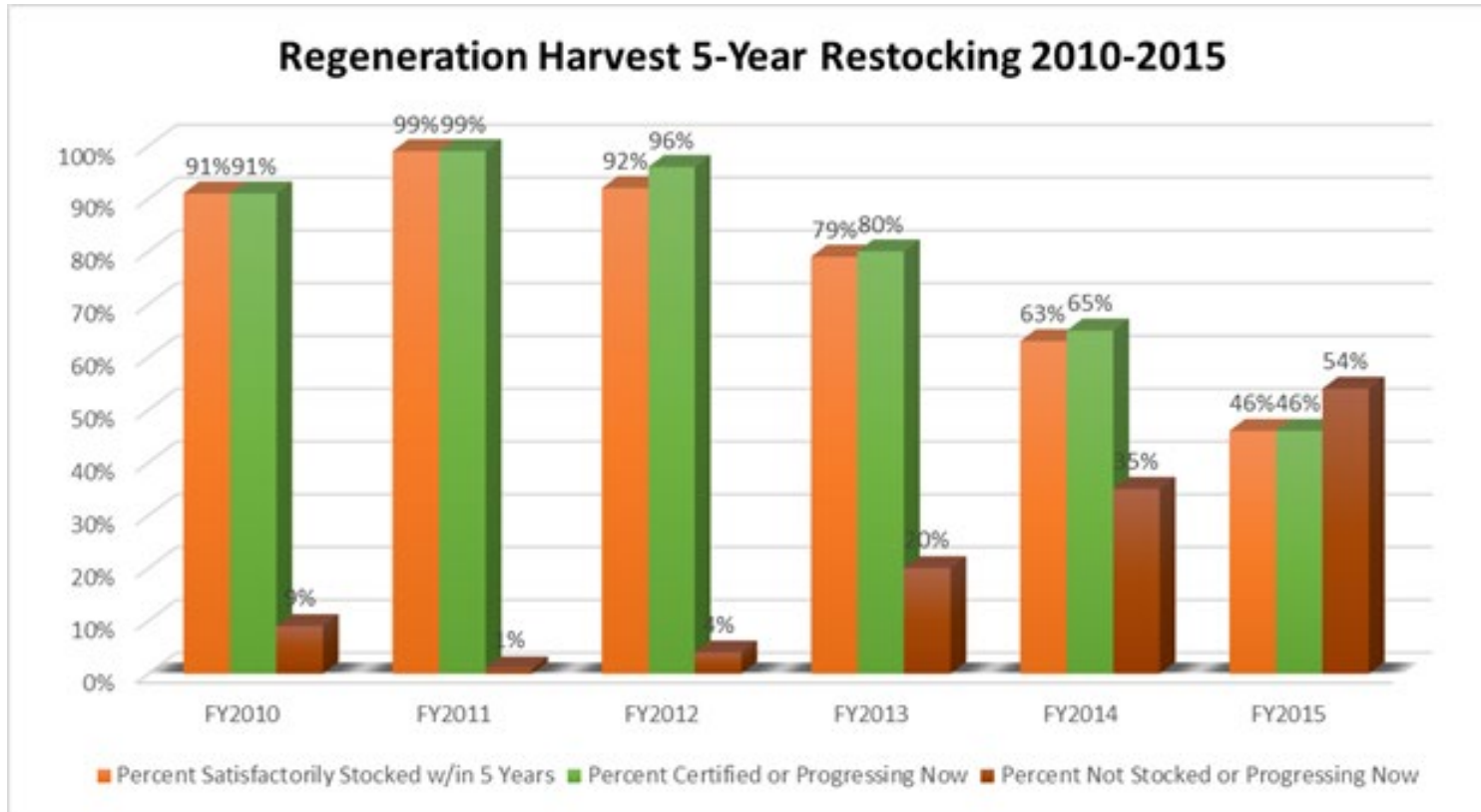| Fiscal Year	Acres of Regeneration Harvest	Acres Satisfactorily Stocked w/In 5 years	Percent Satisfactorily Stocked w/In 5 Years	Acres Certified or Progressing Now	Percent Certified or Progressing Now	Acres Not Stocked or Progressing Now	Percent Not Stocked or Processing Now
2010	328	298	91%	298	91%	30	9%
2011	547	539	99%	539	99%	8	1%
2012	758	700	92%	730	96%	28	4%
2013	1,198	943	79%	956	80%	242	20%
2014	952	601	63%	615	65%	337	35%
2015	1,019	469	46%	469	46%	550	54%
Totals	4,802	3,550		3,607		1,195	

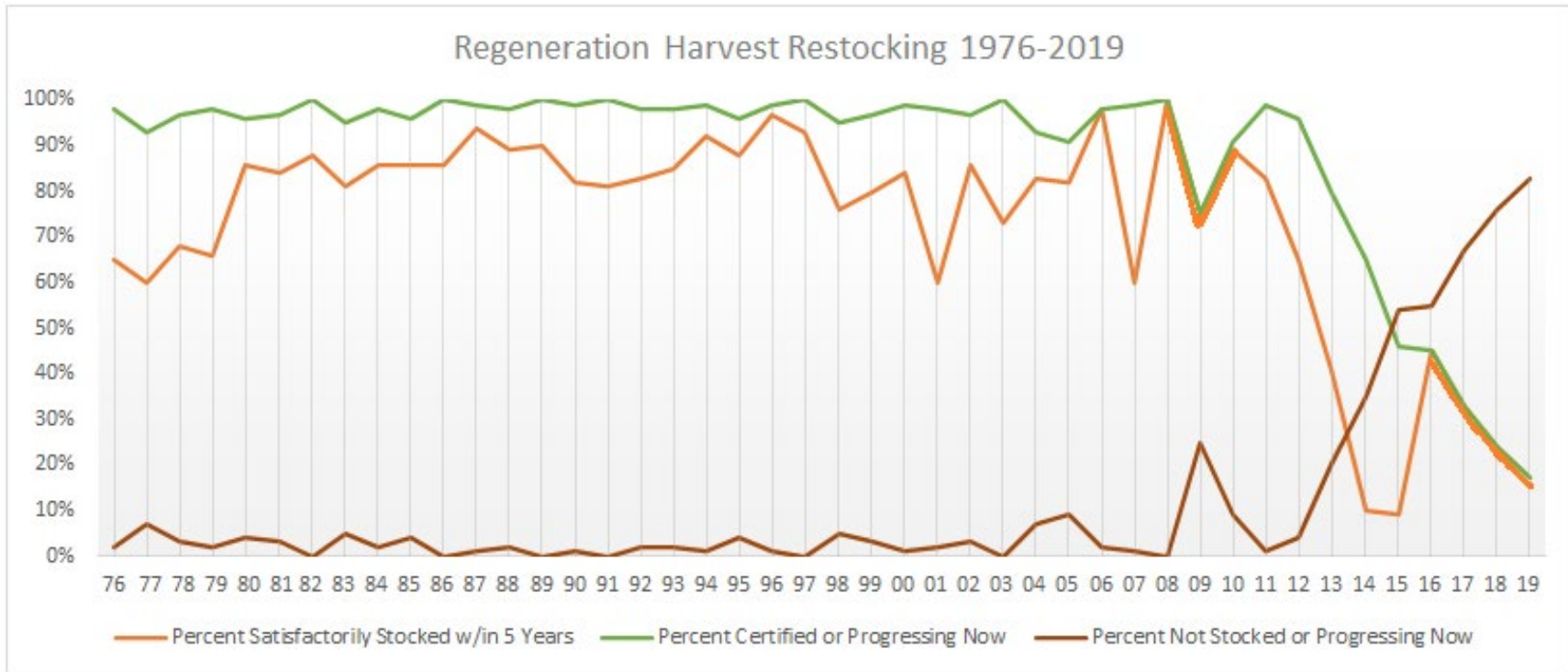**Figure 44. Regeneration Harvest Restocking Rate Percentages (2010-2015)**

Figure 45. Regeneration Harvest Restocking Rate Percentages (1976 to 2019) *

*Green (top line) – Percent Certified or Progressing Now, Orange (middle line) – Percent Satisfactorily Stocked w/in 5 Years, Red (bottom line) – Percent Not Stocked or Progressing Now; See the following Discussion section explaining these results.

Within Target (Percent Satisfactorily Stocked w/in 5 Years) – Percentage of regeneration harvest acres adequately restocked (defined as certified or progressing) within 5 years of harvest.

Towards Target (Percent Certified or Progressing Now) – Percentage of regeneration harvest acres not adequately restocked within 5 years of harvest but were certified or progressing outside of the 5-year timeframe.

Outside/Towards Target (Percent Not Stocked or Progressing Now) – Percentage of regeneration harvest acres not adequately restocked within or outside of the 5-year timeframe.

Table 176. Monitoring Indicator Status Summary (2010-2015)

On lands suitable for timber production, percent of acres with regeneration harvest that are adequately restocked within 5 years of harvest		**Recent Trend (2010-2015)**	
		Towards Target	Away from Target
Current Status	Within Target	<u>Within</u>: **+ +74% avg.** (46-99%) <u>Within & Towards</u>: **+ +75% avg.** (46-99%)	**+ -**
	Outside Target	**- +25% avg.** (1-54%)	**- -**

Table 177. Monitoring Indicator Status Summary (1976-2019)

On lands suitable for timber production, percent of acres with regeneration harvest that are adequately restocked within 5 years of harvest		**Overall Trend (1976-2019)**	
		Towards Target	Away from Target
Current Status	Within Target	<u>Within</u>: **+ +78% avg.** (9-100%) <u>Within & Towards</u>: **+ +93% avg.** (17-100%)	**+ -**
	Outside Target	**- +7% avg.** (0-83%)	**- -**

Overall, confidence in the quantity and quality of the data collected is high, in terms of both accuracy and precision given the national and regional protocols and standards for collection, entry, and tracking. We continually strive for accurate and timely data entry, but the large amount of data entered annually and recent turnover in key positions are known sources of data entry issues. This does not affect the overall forest restocking status or trend, which has consistent for decades around this level.

Discussion

This is the first report for MON-TBR-03 and establishes the reporting baseline for this monitoring question and indicator. Restocking includes both artificial regeneration (planting, seeding) and natural regeneration.

The numbers in this report come from a Northern Region reforestation dataset going back to 1976, so there have been 43 continuous years of data collection for this metric (2019 is the most recent year available). The data summarized in Table 175, Figure 44, Figure 45, Table 176, and Table 177 show a clear trend of successfully restocking acres harvested through regeneration treatments on the IPNF. The average percent of acres defined as restocked satisfactorily after 5 years or progressing is 93 percent. This is consistent and expected as previous restocking monitoring showing an average of 94 percent of lands are restocked post-regeneration harvest.

The five years covered in this initial baseline restocking monitoring report show as below the 43-year average for several reasons:

- 2015 was a major wildfire year on the forest; plantations previously certified as stocked or progressing were burned through. This not only set these stands back to the initial restocking need but also created new areas requiring reforestation.

- To be considered certified as stocked, there need to be enough live seedlings of the species specified in the prescriptions to restock the site. Generally seral species (such as western white pine, western larch, ponderosa pine) are prescribed for reforestation through planting or natural regeneration to meet Forest Plan desired composition, increasing the representation of these shade-intolerant, resilient species. Nearly all stands coded in FACTS as not certified or progressing still have many seedlings growing on site, just not enough of those desired species to be considered stocked.

- Stands where seedlings died from improper planting, site conditions, drought leading to failures continue to be interplanted or replanted until considered stocked, even if it is past the initial 5-year timeframe.

A variety of factors can influence seedling survival. Environmental factors can include site conditions such as topography, aspect, slope, soil type, climate, weather, temperature, and precipitation, and other factors like habitat type/potential vegetation type/biophysical setting, animal damage, or wildfire. Implementation factors can include season of planting, tree species, stock type selection/quality, and/or operational planting methods and logistics.

On average, it takes about 3 years for a stand to be restocked after the reforestation effort is initiated, generally by planting, sometimes naturally regenerated, and often a mix of the two methods. While the trend in the most recent past appears to go down, this is because of the logistics of restocking a site and timing of data entry for the regeneration surveys. Seedlings are usually planted on the site within 1-3 years of harvest, depending on factors such as when site preparation happens (e.g., prescribed burning, slashing), site access (snow levels, snowplowing obtainability), physical site conditions (frozen soil, soil moisture levels, number of plantable locations), and availability of seedlings in the desired species composition, stock type, and amount. Natural regeneration follows a similar timeline but may take longer as they are more dependent on environmental influences. Exams (surveys) are scheduled at years 1, 3, and 5 after the first restocking activity occurs, followed by entry into FACTS. It can take 4-7 years post-regeneration harvest for a stand to be certified as restocked in the database, even without failures necessitating replanting the site which prolong certification, although they might be progressing towards it. Silvicultural prescriptions are written expecting a percentage of stock loss through the initial reforestation phase and prescribe planting rates at stocking levels accounting for seedling mortality so there is enough likely survival to certify a stand as stocked.

FACTS reports are used as part of the annual silviculture program of work in planning reforestation for all non-certified stands, including those more than 5 years post-regeneration harvest and may need additional replanting or natural regeneration in full or part. This is in addition to the known planned needs of stands within 5 years of regeneration harvest. Replanting occurs as determined necessary by the silviculturist to meet the prescription for the stand when considering reforestation needs as part of the stand and project objective. This category of reforestation is a regional priority for funding with appropriated or reliance funds outside of Knutson-Vandenberg (K-V) funds collected as deposits to cover the cost of reforestation and related work within timber sale boundaries which is the primary means for ensuring our reforestation treatment needs are met within timber sale areas.

There is no alert level or threshold for this target. Restocking trends or values were not anticipated or described in the Forest Plan or FEIS beyond general vegetation desired conditions of forest structure, composition, and pattern.

ADDITIONAL INDICATOR INFORMATION SOURCES

The following reports were not used in this initial monitoring report for this indicator but are available and may be used in future monitoring for this indicator:

- The Reforestation Indices Report uses similar metrics as those for the R1 Depot reports used for this analysis. It is a series of indexes monitoring reforestation activity unit information also entered in FACTS. Region 1 has produced these Indices Reports in many years since 1991 to monitor both on-the-ground progress of regeneration activities and consistency in data reporting using the R1 legacy TSMRS stand information system. The reports were not produced from 2004-2012. Beginning in 2013, new reports are run from FACTS as most indices have been modified to reflect current management issues. Aspects of the program covered by the indexes are: Planted and natural regeneration success 10 and 5 years after regeneration harvest; Years to successful stocking or certification; Stands in progress longer than 5 years; and Data maintenance.

- Long-Term Regional Survival Reports (2016, updated 2017, 2019, 2020) covers R1 stake row analysis from 1998-2015; Annual Regional Survival Reports started in 2015 and are available through 2020. These surveys are used to provide consistent data for the annual national plantation survival report of first and third year planted tree survival and are designed to sample species and stock types over varying site conditions. Each forest installs a representative sample of staked rows immediately following planting and reports the survival findings after the first and third growing seasons. This data is consolidated at the regional level, where it is compiled into an annual seedling survival report. In addition to upward reporting, it is used in the Region to inform sound management decisions regarding the selection of planting methods, sites, and stock types to achieve reforestation objectives (Northern Region Stake Row Analysis, p. 1).

- Other broad-scale reforestation monitoring includes The Northern Region Reforestation Strategy (2016), covering trends in restoration and resiliency developed to assist the region in more effectively promoting the development of resilient forests through sound reforestation. The Northern Region Restoration and Resiliency Report taken annually from FACTS accomplishment data is the regional approach to monitoring trends toward desired conditions for restoring resilient forests on the National Forests in Region One. Reforestation accomplishments and other treatments that trend our forests toward more resilient conditions have been summarized each year since 2012. The report is available both in a tabular format and accomplishments can be viewed spatially with a Google Earth backdrop across the Region. This will continue to be our monitoring approach to track our trends toward resilient desired conditions at the project level (R1 Reforestation Strategy, p. 25). Details from the Northern Region Reforestation Strategy and Restoration and Resiliency Report are not included in this report since the reforestation metric does not specify the level of detail for restocking within 5 years of regeneration harvest. It does include numbers of acres that have had regeneration harvest during the year.

Other forest plan components not listed in the monitoring plan related to MON-TBR-03-01 are:

- **GOAL-VEG-01.** Plant communities are trending toward the desired conditions for composition, structure, patterns, and processes (pg. 11) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **FW-DC-VEG-01.** The composition of the forest is within the desired ranges for the dominance groups with more of the forest dominated by western white pine, ponderosa pine, western larch, and whitebark pine (p. 11) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **FW-DC-VEG-02.** The structure of the forest is within the desired ranges for the size classes with more of the forest dominated by stands occurring in the seedling/sapling size class (p. 12) is linked to a stand of planted seedlings in the early seral stage of forest succession.

- **FW-DC-VEG-05.** The pattern of forest conditions across the landscapes consists of a range of patch sizes that have a diversity of successional stages, densities, and compositions. Generally, there is an increase in the size of forest patches that are dominated by trees in the seedling/sapling size class, as well as in the large size class (p. 13) is linked to a stand of planted seedlings in the early seral stage of forest succession and to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **FW-DC-VEG-06.** Root disease and forest insects are killing fewer trees as the composition of the forest trends toward less susceptible tree species such as western larch, ponderosa pine, and western white pine (p. 13) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **FW-OBJ-VEG-01. Forest Resilience** – Increased relative representation of early seral, shade-intolerant, drought- and fire-tolerant, insect/disease resistant species dominance types and treatments to maintain and/or improve forest resilience, and natural diversity where treatments may include timber harvest and planting, (p. 18) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **FW-GDL-VEG-08.** All silvicultural practices may be used to manage forest vegetation, including planting where silvicultural practices should generally trend the forest vegetation towards conditions that are more resistant and resilient to disturbances and stressors, including climate change (p. 21) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **FW-DC-FIRE-02.** Forest conditions, and the pattern of conditions across the landscape, exist in these areas such that the risk is low for epidemic levels of bark beetles, high levels of root disease, and large scale, stand-replacement wildfires (p. 21) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **GOAL-WTR-01.** Maintain or improve watershed conditions in order to provide water quality, water quantity, and soil productivity necessary to support ecological functions and beneficial uses (p. 22) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **GOAL-SOIL-01.** Maintain soil productivity and ecological processes where functioning properly and restore where currently degraded (p. 23) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **GOAL-RIP-01.** Maintain or improve the vegetation associated with hydrologic features to support the ecological function of riparian habitats (p. 24) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **FW-DC-RIP-04.** There is a greater composition of early-seral, shade intolerant trees species present than found in larger, lower gradient rivers (p. 25) is linked to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **FW-DC-WL-10.** Productive plant communities, with a mosaic of successional stages, structures, and species, are available for neotropical and other migratory landbirds (p. 30) is linked to a stand of planted seedlings in the early seral stage of forest succession and to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **FW-DC-WL-20.** By trending towards the desired conditions for vegetation, habitat is provided for native fauna adapted to open forests and early seral habitats, or whose life/natural history and ecology are partially provided by those habitats (p. 31) is linked to a stand of planted seedlings in the early seral stage of forest succession and to desirable shade-intolerant tree species planted for restocking that are more resilient to disturbance.

- **GOAL-TBR-01.** Provide a sustainable level of timber products for current and future generations where production of timber from NFS lands contributes to an economically viable forest products industry (p. 39) is linked to ensuring reforestation after regeneration harvest.

- **FW-DC-TBR-01.** Production of timber contributes to ecological, social, and/or economic sustainability, and associated desired conditions and a sustainable mix of timber products is offered under a variety of harvest methods (p. 39) is linked to ensuring reforestation after regeneration harvest.

- **FW-DC-CCI-01.** Cooperative programs, such as grants and partnerships are occurring with federal, state, and county agencies and other nongovernmental organizations to help achieve Forest goals and improve overall resource management (p. 42) is linked to funding of many of our planted seedlings through reforestation grants from partners.

Evaluation of Results for Adaptive Management Finding

Table 178. Summary of findings for Plan Monitoring Item TBR-03

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired based on the overall trend (1976-2019) of adequately restocking lands suitable for timber production within 5 years of regeneration harvest at a rate of 93%. The recent reforestation trend (2010-2015) is 75% of lands with regeneration harvest restocked within 5 years, continuing to reforest areas previously certified but burned by wildfires or those progressing but not yet certified as stocked.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	Yes
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?*[2]	Monitoring Program 1. Plan Monitoring Recommendation: None 2. Implementation and Outcome Progress Recommendations:

	Prioritize timely FACTS data entry in relevant employee's program of work; support formal and on-the-job training for qualified personnel, as well as training and implementation of consistent and accurate field data collection by Force Account, contractors, and partners such as Idaho Department of Lands through the Good Neighbor Authority.
	List the R1 Regeneration Timeframe Report as Data Source in the IPNF Monitoring Guide analysis methods section 5) h) of the Performance Indicator. This Timeframe Report was identified by Regional Office staff as the broad-scale monitoring dataset and report to answer the monitoring question for this indicator.
	For the next monitoring and evaluation report, consider using the Reforestation Indices Reports for the planting aspect of restocking to compare data and results with the Timeframe reports and begin identifying reasons why units are not stocked for the Results section. These reports include data and subsequent analysis of stake row data provided by the RO. Previously available as a regional data set, recently broken out by forest for easier analysis and showing specific forest trend data.
	Note in the IPNF Monitoring Guide 7) Authority, restocking post-regeneration harvest restocking is required by the National Forest Management Act and the Forest Service Manual and Handbook.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item MIN-01 – Reclamation Activity

Table 179. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators (Influenced by Climate Change? (Y, N, U)*	Data collection interval	Data Source / Partner	Point of Contact
MON-MIN-01: Are reclamation activities improving ecological and human health conditions?	FW-DC-MIN-01 FW-OBJ-MIN-01	**MON-MIN-01-01:** Number of reclaimed abandoned mine sites over a five-year period. (N) Number reclaimed to reduce the risk to human health. (N)	Annual	Administrative Record	Forest Geologist

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 180. Monitoring Item MIN-01 - Monitoring Collection Summary

For monitoring item MIN-01:	Year
Data was last collected or compiled in:	2021
Next scheduled data collection/compilation:	2022
Last MER evaluation for this monitoring item:	2021
Next scheduled MER evaluation of this monitoring item:	2022

Referenced Plan Components:

FW-DC-MIN-01. The Forest continues to contribute to the economic strength and demands of the nation by supplying mineral and energy resources while assuring that the sustainability and resiliency

of other resources are not compromised or degraded. Mineral materials are made available based upon public interest, material availability, in-service needs, and protection of other resource values, including consistency with desired conditions for other resources. Geologic features are conserved for their intrinsic values and characteristics. Reclamation of abandoned mine sites occurs where human health and environmental degradation risks should occur, with reclamation priority given to mine sites with human health risks.

FW-OBJ-MIN-01. Annually, the outcome is the reclamation of one abandoned mine site.

The monitoring question exists to reduce the risk to public health and safety with regard to entering abandoned mine features, which can be hazardous for a variety of reasons. Additionally, abandoned mine closures are funded by a congressional earmark and tracking this objective can help future closure funding needs across the nation.

Results and Discussion

Methods

- Data for abandoned mines was collected by the Idaho Geological Survey (IGS) in the late 1990s and early 2000s. A database was created locally in the ArcGIS application to organize the data spatially.

- In 2015 the IPNF created an office-based tool utilizing the IGS data in ArcGIS to prioritize features based on regionally recommended parameters such as: type and description of feature, proximity to recreation, and proximity to towns or roads.

- The IPNF then uses the prioritization tool to delineate features based on a score which assigns a priority rank, a list is then created for field-based verification during the field season.

- Field verification of the priority list includes visiting each site and recording important features/details to verify the priority ranking as well as to determine appropriate closure parameters, methods, and access needs.

- A final closure list is compiled based on the data from the office-based tool combined with the field-based data. The list is vetted through the IPNF's ID Teams and closures are performed near the end of the fiscal year.

- During the off-season, any new or updated data is compiled and entered accordingly in order to fully update the ArcGIS database. The updated ArcGIS database will be re-evaluated using the prioritization tool annually to determine priority status for the following 2 field seasons.

- Per the Forest Plan Monitoring Guide, this monitoring question will be answered by evaluating the number of reclaimed Sites, and/or closed Site features, with respect to the total number of known hazardous features as documented in the 1999 Idaho Geological Survey report. An increase in the ratio of known closed or reclaimed sites with respect to known un-reclaimed Sites and/or open Site features will be considered movement towards the desired condition.

Results

Data

Table 181. Abandoned mine closures performed on the IPNF

Year	Number of Closures	Objective (FW-OBJ-MIN-01) achieved?
2020	2	Yes
2019	6	Yes
2018	8	Yes
2017	11	Yes
2016	7	Yes
2015	4	Yes
Total	**38**	

The confidence level of the data in Table 181 is very high because the closures being reported have been implemented and recorded.

Discussion

The IPNF achieves or exceeds the objective to close one abandoned mine site annually. Annual fluctuations in number of closures depend on various factors, including fire support personnel needs, forest fire restrictions and or closures.

The IPNF has not observed an increase in the total number of known Abandoned Mine Land (AML) features, as documented in the 1999 Idaho Geological Survey. The 1999 Idaho Geological Survey identified 1,107 features in the lands that the IPNF manages. All AMLs closed have contributed to the net decrease of known hazardous features on the forest. Thus, each AML closed, contributes to the net increase in safety for users of the IPNF, public and employees. As of 2021, there has been an overall movement towards a smaller ratio of open AMLs to known AMLs, thus showing movement toward the desired condition outlined in the IPNF Forest Plan.

Evaluation of Results for Adaptive Management Finding

Table 182. Summary of findings for Plan Monitoring Item MIN-01

	FINDINGS
PLAN IMPLEMENTATION STATUS [1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - based on at least one reclaimed per year.
RECOMMENDATION *Based on the evaluation of monitoring results, may changes be warranted?*	No change warranted
MANAGEMENT FRAMEWORK *If a change may be warranted, where may the change be needed?* [2]	N/A

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item SOC-01 – Contribution to local economy

Table 183. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators (Influenced by Climate Change? Y, N, U)*	Data collection interval	Data Source / Partner	Point of Contact
MON-SOC-01: To what extent is forest management contributing towards desired conditions for a stable and functioning local economy?	FW-DC-SES-02	**MON-SOC-01-01:** Number of jobs and thousands of dollars in labor income from IPNF management and percent of total planning area jobs and income. (Y)	5 years	FEAST	Forest Planner

*Is the indicator influenced by climate change? Y = Yes; N = No; U = Uncertain

Table 184. Monitoring Item SOC-01 - Monitoring Collection Summary

For monitoring item SOC-01:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2025
Last MER evaluation for this monitoring item:	2020
Next scheduled MER evaluation of this monitoring item:	2025

Referenced Plan Components:

FW-DC-SES-02. The outputs and values provided by the Forest contribute to the local economy through the generation of jobs and income while creating products for use, both nationally and locally. Jobs and income generated by the activities and outputs from national forest management remain stable, contributing to the functional economy surrounding the IPNF.

National forests are public lands that influence and are influenced by local and national publics. Local publics are represented in the communities of place and interest adjacent to national forest lands. Many of these communities were formed from the development of timber, gold, silver, grazing lands, and other natural resources. Historically, individuals in these communities developed strong place attachments to public lands that provided recreational, aesthetic, employment, and other contributions to their social environment. Work, place, and lifestyles became an integral part of the culture and social characteristics of such communities. These communities developed particular interests in the interactions of public lands with their ways of life and their economic present and future. These interests are expressed in their interactions with public lands in addition to the actions and comments of local interest groups.

National publics also have interests and concerns about public lands in general as well as particular public lands such as those of the IPNF. These interests are expressed in public comments to management actions as well as in direct experiences recreating, visiting, or otherwise using public lands. Some of these publics also express their interest through national organizations with both broad-based concerns about the management of public lands and in specific resources such as old growth forests, grizzly bears, or other threatened and endangered species. Thus, they are part of the social environment of public lands through the values and beliefs that motivate actions about particular places and by their comments and actions related to these places.

Based on the above discussion, the forest plan included a goal (GOAL-SES-01) and desired condition (FW-DC-SES-02) for the purposes of contributing to the social and economic well-being of local communities by promoting sustainable use of renewable natural resources. This includes providing timber for commercial harvest, forage for livestock grazing, opportunities for gathering firewood and other special forest products, permitted recreation residences, and settings for recreation aligned with goals for watershed health, sustainable ecosystems, biodiversity, and scenic/recreation opportunities.

The forest plan monitoring guide identified jobs and income from forest management as good measures of contributions to the quality of lifestyles and stable communities in the local area and movement towards the forest plan desired condition of sustaining social and economic systems by contributing to a functional economy surrounding the IPNF.

(See IPNF Monitoring Guide: https://www.fs.usda.gov/main/ipnf/landmanagement/planning).

Results and Discussion

Methods

The (Forest Economic Analysis Spreadsheet Tool) FEAST economic model was used to estimate jobs and income contributed from forest outputs of timber harvest, recreation, grazing, and Forest Service employment and budget. The following are the sources for resource output levels used in calculating jobs and income:

- Timber data was obtained from Cut Volume Data from Cut & Sold Reports: https://www.fs.fed.us/forestmanagement/products/cut-sold/index.shtml.
- Range data was obtained from AUM Data from NRM Annual Grazing Statistical Report: https://iweb.fs.usda.gov/login/welcome.html -> Default NRM Dashboard -> Business Areas -> Range.
- Payments to States utilized the following sources:
  - ➢ For Secure Rural Schools (SRS) & 25% data: https://www.fs.usda.gov/working-with-us/states/secure-rural-schools/payments-to-counties.
  - ➢ Mineral Royalties data: Kristen Waltz minerals spreadsheet Minerals Template – 2019.xlsx.
  - ➢ For SRS payments, States dictate the distribution of Title I funds between roads & schools. In Idaho, this is a 70%/30% split, respectively.
- Recreation Use – most recent (2019) National Visitor Use Monitoring Report (NVUM) for the Forest.
- Forest Service Employment data was obtained from the 2019 Unit Level Gross Outlays.xlsx & roster report.

Results

Data

Table 185. Employment by Program in fiscal year 2019

Resource	Number of jobs
Recreation	513
Grazing	4
Timber	921
Minerals	0
Payments to States/Counties	126
Forest Service Expenditures	712
Total Forest Management	**2,277**

Table 186. Labor income by Program in fiscal year 2019

Resource	Value
Recreation	$17,414,273
Grazing	$87,839
Timber	$44,863,175
Minerals	$4
Payments to States/Counties	$6,508,927
Forest Service Expenditures	$33,296,383
Total Forest Management	**$102,170,600**

Discussion

Data for the variables described above in the Methods section was compiled for 2019. Total labor income for the five-county area (Benewah, Bonner, Boundary, Kootenai and Shoshone) averaged over the 2019 reporting period averaged $102,170,600. The total labor income estimated for the selected alternative in the 2013 IPNF Forest Plan FEIS (Alt. B Modified) was predicted to be about $69,000,000 (IPNF Forest Plan FEIS, p. 631), yearly. At the time the forest plan was being prepared (2013), current labor income within the five-county area attributable to forest management activities was estimated to be about $54,300,000, yearly. In the six years since implementing the revised forest plan, total labor income has exceeded the then 2013 current amount and selected alternative amount by about 47 and 32 percent, respectively.

Similarly, the then current 2013 job numbers attributable to forest management and the selected alternative's estimate of attributable number of jobs were about 1,380 and 1,720, respectively. As displayed in Table 186, above, based on the level of outputs from the Forest that occurred in 2019 there were an estimated 2,277 jobs within the five-county area attributable to forest management activities. This level is 39 and 24 percent greater than the 2013 then current and selected alternative predicted yearly amounts.

Since implementation of the revised forest plan in 2015, the outputs and values provided by the Forest have contributed to the local economy and generated an increasing percentage of jobs and labor income when compared to fiscal year 2013 and the projected output levels of the forest plan's selected

alternative. As a result, jobs and income generated by the activities and outputs from national forest management are contributing to sustaining social and economic systems in the economy surrounding the IPNF.

Evaluation of Results for Adaptive Management Finding

Table 187. Summary of findings for Plan Monitoring Item SOC-01

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired based on an increase of local economy contributions since 2013.
<u>RECOMMENDATION</u> *Based on the evaluation of monitoring results, may changes be warranted?*	No change warranted
<u>MANAGEMENT FRAMEWORK</u> *If a change may be warranted, where may the change be needed?[2]*	N/A

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired.

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

Monitoring Item SOC-02 – Cost of Implementing the Forest Plan

Table 188. Monitoring Item Summary

Monitoring Question	Plan Component(s)	Indicators	Data collection interval	Data Source / Partner	Point of Contact
MON-SOC-02: Is the cost of implementing the Forest Plan consistent with that predicted in the FEIS?	36 CFR 219.12(k)(3)	**MON-SOC-02-01:** Forest annual budget	Annual	Forest budget	Forest Planner

Table 189. Monitoring Item SOC-02 - Monitoring Collection Summary

For monitoring item SOC-02:	Year
Data was last collected or compiled in:	2020
Next scheduled data collection/compilation:	2021
Last MER evaluation for this monitoring item:	2020
Next scheduled MER evaluation of this monitoring item:	2022

Referenced Plan Components:

36 CFR 219.12(k)(3): Documentation of costs associated with carrying out the planned management prescriptions as compared with costs estimated in the forest plan.

The 2015 forest plan was developed utilizing the requirements of the 1982 planning regulations. The 1982 planning regulations included a monitoring requirement to document the costs associated with carrying out the planned management prescriptions as compared with costs estimated in the forest plan (36 CFR 219.12(k)(3).

Results and Discussion

Methods

The IPNF Monitoring Guide does not contain a description of data gathering methodology, steps for data collection, or analysis methods for this monitoring question. In addition, the forest plan FEIS does not provide a dollar cost amount/range for implementing the forest plan. Therefore, to address this question the forest budget amounts for fiscal years 2012, 2013 and 2014 were averaged to serve as a baseline for comparison with subsequent fiscal year (2015, 2016, 2017, 2018, 2019 and 2020) allocations to track over the life of the forest plan the budget trend for the forest, adjusted for inflation. Data for the fiscal year 2015 - 2020 forest budgets was obtained from the Regional budget advice provided to the Forest for those fiscal years.
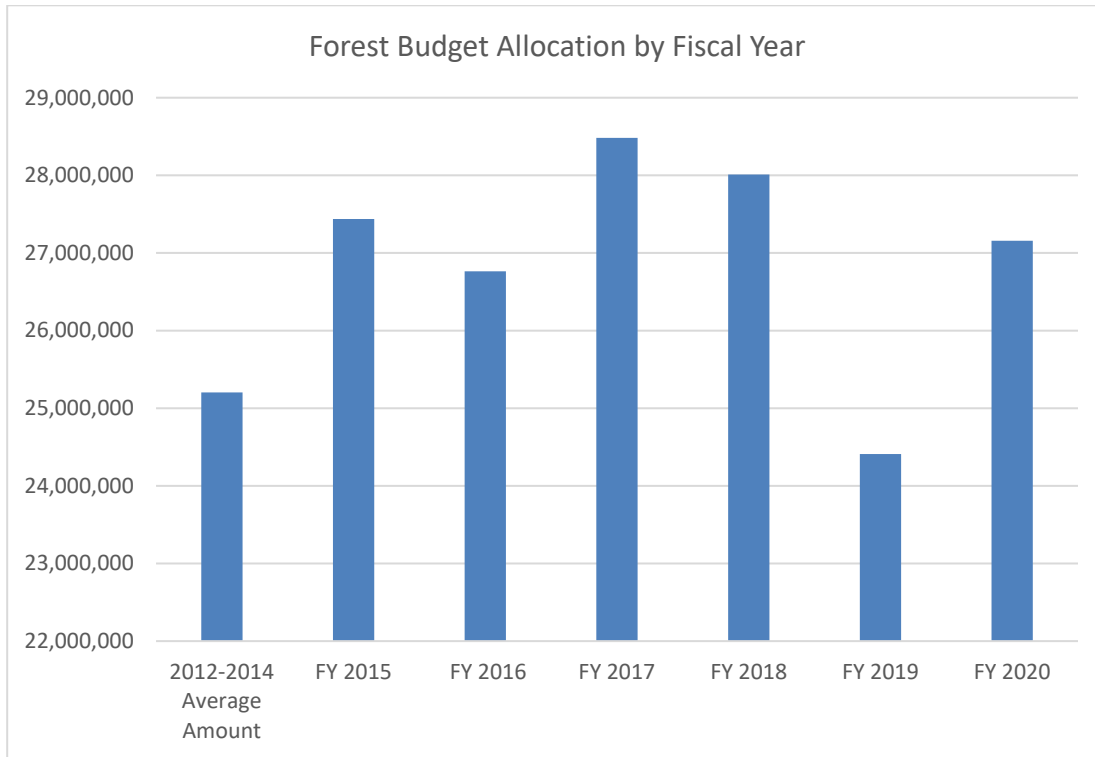
Results

Data

Figure 46. Forest Budget Allocation by Fiscal Year

Discussion

For fiscal years 2015 through 2020, forest budget amounts were $27,437,000, $26,764,000, 28,483,000, 28,011,000, 24,409,000, and 27,157,000, respectively. The three-year budget amount for fiscal years 2012 to 2014 averaged about $25,203,500. The consumer price index, a broad inflation measure rose about 11 percent from 2014 through 2020. For the cost of implementing the forest plan to remain constant with the 2012-2014 baseline dollar amount, the budget would have needed to rise to about $27,683,300 by fiscal year 2020. The actual allocated budget amount for fiscal year 2020 ($27,157,000) was approximately in line with the projected inflation-based amount.

Evaluation of Results for Adaptive Management Finding

Table 190. Summary of findings for Plan Monitoring Item MON-SOC-02

	FINDINGS
PLAN IMPLEMENTATION STATUS[1] Do monitoring results demonstrate intended progress (i.e., maintaining, trending, or advancing) of the associated plan components listed with this monitoring item?	(E) YES - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired. Based upon the selected methodology described above (Methods), the Forest implementation budget appears to be consistent.
<u>**RECOMMENDATION**</u> *Based on the evaluation of monitoring results, may changes be warranted?*	No change warranted
<u>**MANAGEMENT FRAMEWORK**</u> *If a change may be warranted, where may the change be needed?*[2]	N/A

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain** - Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated); **(B) Uncertain** - More time/data are needed to understand status or progress of the Plan Component(s); **(C) Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). **(D) NO** - Implementation of Plan Component(s) ARE NOT trending, progressing, and/or conducted as desired; **(E) YES** - Implementation of Plan Component(s) ARE trending, progressing, and/or conducted as desired

[2] [36 CFR 219.12(d)(2)] - The monitoring evaluation report must indicate whether or not a change to the (1) plan, (2) management activities, (3) the monitoring program, or a (4) new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area

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Appendices

Appendix A. MON-VEG-01: Desired Vegetation Conditions

Methods

This monitoring evaluation analyzes what extent are management activities implemented and natural disturbance processes occurring on the Idaho Panhandle National Forests (IPNF) are trending the forest toward desired conditions for vegetation composition, structure, and pattern for vegetation dominance types and size, old growth, down wood, snags, fire-killed forest, and insect- and disease-infested forest. These conditions are shown in the FEIS to increase resistance and resilience to disturbance, including climate change.

Data Source:

The national Forest Inventory and Analysis (FIA) program provides a congressionally mandated, statistically based, continuous inventory of the forest resources of the United States. The FIA inventory design is based on a spatially balanced sample of inventory plots. Data about trees, and associated characteristics, are collected on all forested portions of the plots, throughout the United States, regardless of ownership. The FIA sampling frame uniformly covers all forested lands, regardless of management emphasis. Therefore, wilderness areas, roadless areas, and actively managed lands all have the same probability of being sampled. Data collection standards are strictly controlled by FIA protocols. The sample design and data collection methods are scientifically designed, publicly disclosed, and repeatable. Data collection protocols are available on the internet (http://www.fia.fs.fed.us/). There are also stringent quality control standards and procedures, carried out by FIA personnel of the Rocky Mountain Research Station (RMRS), which oversee the FIA data collection for Region 1 (R1). All of this is designed to assure that data is collected consistently throughout the United States, and that stated accuracy standards are met by field crews. The plots are monumented and the trees are tagged. This allows for accurate remeasurement of the plots over time. Currently, the plots in Region 1 are remeasured on a 10-year cycle. This allows for monitoring trends in vegetation over time.

Although, FIA is funded to collect information on "forested conditions," since 2004, R1 has been collaborating with RMRS to sample the entire inventory plot, regardless if it meets FIA's definition of "forested." Therefore, all FIA plots that have been measured in R1, since 2004, have the entire plot is sampled.

An "FIA Analysis Dataset" is a set of FIA plots available for analysis using R1 analysis tools such as the R1 FIA Summary Database Estimator Form. An Analysis Dataset contains the most recent available measurement of each plot across the Region. A new analysis dataset is created each time a new set of FIA inventory data are brought into FSVeg and made available to the Region. The Hybrid FIA 2015 Analysis Dataset is the most complete set of FIA data currently available for R1. It is comprised of the most recent FIA measurement for the IPNF.

Analysis Methods:

The R1 FIA Summary Database and Analysis Tools were used for the estimates derived in this report and the baseline estimates in the IPNF Forest Plan. The R1 FIA Summary Database is an R1 application developed and maintained by the R1 Inventory and Analysis staff to summarize FIA plot data (Bush and Reyes, 2020). This database warehouses derived attributes or classifications consistent

with the Region 1 Classification System (Barber and others). Based on the measured data, a suite of standardized R1classification algorithms populates attributes of interest.

The R1 Estimator Form is a stand-alone application that derives estimates and confidence intervals for data based on the Analysis Dataset that is selected (Bush and Reyes, 2020). Reports were generated that include the mean, 90% confidence intervals, and the number of plots and subplots included in the estimate.

R1 Habitat Type Groups were collapsed into the KIPZ Biophysical settings as follows:

KIPZ Biophysical Setting	r1 hab type groups
Subalpine	Timberline
	Cold
	Cool Mod Dry to Moist
	Cool Moist
	Cool Wet
Warm/Moist	Mod Cool Moist to Wet
	Mod Warm Moist
Warm/Dry	Mod Warm Dry
	Mod Warm Mod Dry
	Hot Dry
Sparse	Sparse

Psuedocode is:
If R1_HABITAT_TYPE_GROUP in (Timberline, Cold, Cool Mod Dry to Moist, Cool Moist, Cool Wet) then KIPZ_BPS = Subalpine
Elseif R1_HABITAT_TYPE_GROUP in (Mod Cool Moist to Wet, Mod Warm Moist) then KIPZ_BPS=Warm/Moist
Elseif R1_HABITAT_TYPE_GROUP in (Mod Warm Dry, Mod Warm Mod Dry, Hot Dry) then KIPZ_BPS = Warm/Dry
Elseif R1_HABITAT_TYPE_GROUP then KIPZ_BPS=Sparse
Else KIPZ_BPS is null

Reporting Methods:

Unless otherwise specified, KIPZ reports will be run based on the Hybrid 15 FIA Analysis Dataset.

Table 191. MON-VEG-01 Indicators: How Evaluated and Analysis Methods

INDICATOR	HOW EVALUATED	ANALYSIS METHODS
MON-VEG-01-01: Acres treated to meet FW-OBJ-VEG-01	The number of acres that are treated to meet FW-OBJ-VEG-01 would be evaluated to determine how the Forest is progressing over time towards meeting the objectives noted in FW-OBJ-VEG-01. The desire is that over the life of the plan, at least the numbers of acres noted in FW-OBJ-VEG-01 are treated.	Query FACTS for acres of appropriate treatment types that were accomplished.
MON-VEG-01-02: Acres burned	As articulated in FW-DC-FIRE-03, the desire is to increase the number of acres that are burned on the Forest in recognition that fire plays critical ecological functions and that not enough burning has occurred on the Forest in the recent past. Acres burned (both planned and unplanned) should be depicted over time and the desire is to see a trend of increased acres burned. In addition to reporting acres that burned via planned and unplanned ignitions, a qualitative discussion should address the effectiveness of these burned areas in helping to trend the forest vegetation towards desired conditions.	Query FACTS for acres of appropriate treatment types that were accomplished and run a report for acres burned via unplanned ignitions (wildfires).
MON-VEG-01-03: Acres of forest by dominance type and size class compared to the desired condition	The number of acres of forested vegetation by dominance type and size class should be illustrated and compared to the desired amounts and the trends noted. The desire is that over time, the acres within each dominance type and the acres within each size class will trend towards the desired conditions articulated in the Plan. As was done in the Plan, the information should be displayed in two ways; for the Forest as a whole, and for each of the biophysical settings.	Derive estimates using R1 FIA Summary Database and Estimator form: Acres by KIPZ Dominance Type Groups by Forest, Acres by Size Class by Forest, Acres by KIPZ Dominance Type Groups by KIPZ Biophysical Setting by Forest, Acres by KIPZ Biophysical Setting by Size Class by Forest.
MON-VEG-01-04: Acres meeting the old growth definition as determined by the FIA program	Via the FIA protocol, the number of acres that meet the definition for old growth on the Forest as well as the number of acres meeting the old growth in each Geographic Area (GA) should be displayed. The goal is that the amount will increase over time at both the Forest and GA scales.	Derive estimates using R1 FIA Summary Database and Estimator form: Acres of Old Growth by Forest, Acres of Old Growth by GA by Forest.
MON-VEG-01-05: Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures	Via the Forests' stand inventory and mapping procedures, the number of acres meeting the definition of old growth, and the number of acres that have been identified as recruitment potential old growth, would be displayed. The desire over time is to see the acres of both old growth and recruitment potential old growth to increase relative to existing amounts.	FSVeg Spatial and Common Stand exam protocols along with Green et al. 1992 (errata corrected 12/11). Compare forest-wide layer and data to earlier version(s) and summarize increased/decreased acres by old growth and recruitment potential old growth.
MON-VEG-01-06: Acres of old growth treated	In the Plan and FEIS there is an acknowledgement that some types of old growth require disturbances to maintain their structure, composition, and function. Relative to current levels, the desire is to see more stands and	A query of FACTS and FSVeg would provide the information.

INDICATOR	HOW EVALUATED	ANALYSIS METHODS
	acres treated of old growth (in appropriate circumstances) over time to maintain them.	
MON-VEG-01-07: Snags per acre forest-wide	Using FIA plot data, the number of snags per acre in three size classes (>10", >15", and >20" DBH) that occur on the Forest would be reported by biophysical setting and dominance group. Over time, the desire is to see the number of these larger snags per acre increase.	Regionally provided Snag and Large-tree Assessments will provide snag quantities by diameter classes and Snag Analysis Groups. Those numbers would be compared to the numbers at the beginning of the Forest Plan implementation period to determine trends.
MON-VEG-01-08: Number of acres influenced by insects and disease	Using Aerial Detention Surveys, the number of acres of insect and diseases would be reported for key agents. The desire is that over time, the acres being impacted by root disease fungi, bark beetles and defoliators will decrease.	Regionally provided Forest Health Protection attribute data for key insect and diseases estimate insect hazard and root disease severity class ratings by acres. Those numbers will be used to track trends over time to determine if impacts from those agents are generally going down as desired.

PERFORMANCE INDICATOR 1: Acres treated towards achieving FW-OBJ-VEG-01

The measure and analysis of this indicator is actual acres treated on the forest to increase forest resistance and resiliency. The Monitoring Guide (pp. 10-11) notes the Forest Service Activity Tracking System (FACTS) as the database standard with the information to do the data collection and analysis for this indicator. Reports for corresponding data are in Table 5 through Table 8 and Figure 1 through Figure 4 are in the Corporate Data Warehouse (CDW) Default Dashboard section of the Natural Resource Manager (NRM): NRM CDW Dashboard >> FACTS >> Reports. For this analysis, only the Reports in the corresponding tab were run; future analyses may use the User Views tab for further detailed information on relevant activities or treatments (Monitoring Guide, pp. 11-12).

Information on FACTS is on the R1 FACTS SharePoint, the FACTS Program Area Business Documents and FACTS Support (Documentation Tab) of the Natural Resource Manager (NRM) Forest Service Intranet, and the public NRM site which also includes information on Field Sampled Vegetation (FSVeg) and FSVeg Spatial.

Table 192. Data Collection for FW-OBJ-01

TREATMENT	ACTIVITIES	CDW ALMANAC FACTS REPORT/DATA SOURCE	COMMENTS
Timber Harvest	Regeneration & Intermediate Harvest	CDW >> Almanac Reports >> Reports >> REF/TSI Report App. A Table 20 - Regen and Intermediate Harvest Acres (selected by Forest, 01 Northern Region >> 0104 Idaho Panhandle >> Snapshot Period by Year/4th Quarter for 2015-2020	For this analysis, only used Regen & Intermediate harvest acres as these harvest types comprise most treatment acres and best fit the treatments meeting FW-OBJ-VEG-01
Reforestation	Planting	CDW >> Almanac Reports >> REF/TSI Report App. A Table 9 - Planting >> Snapshot Period by Year/4th Quarter for 2015-2020	Included all planting acres in both metrics (Acres Increasing Early Seral Representation and Acres Maintaining/ Improving Forest Resilience) as most tree species planted are early seral
	Site Prep for Natural Regen	CDW >> Almanac Reports >> REF/TSI Report App. A Table 11 - Site Preparation for Natural Regeneration for 2015-2020	

TREATMENT	ACTIVITIES	CDW ALMANAC FACTS REPORT/DATA SOURCE	COMMENTS
	Natural Regen w/o Site Prep	CDW >> Almanac Reports >> REF/TSI Report App. A Table 11a - Natural Regeneration without Site Preparation for 2015-2020	
Stand Improvement	Precommercial Thinning (PCT)	CDW >> Almanac Reports >> REF/TSI Report App. A Table 14 - Precommercial Thinning	Not included in total of the second metric (Acres Maintaining/ Improving Forest Resilience) as it is also included in "Mechanical Fuel Treatments - Fuels Thinning" acres
	Release & Weeding	CDW >> Almanac Reports >> REF/TSI Report App. A Table 13 - Release and Weeding	
	White Pine Blister Rust Pruning	CDW >> Almanac Reports >> REF/TSI Report App. A Table 15 - Pruning	Included pruning in both metrics (Acres Increasing Early Seral Representation and Acres Maintaining/ Improving Forest Resilience) as most pruning is in early seral western white pine stands
Fire Management	Natural, Unplanned Ignitions	Numbers from MON-WL-01 Wildlife Report by IPNF Forest Wildlife Program Manager (Diane Probasco) via IPNF Forest Fire Planner (Dan Muir, MON-FIRE-02 Fire Report)	
	Planned Ignitions - Broadcast Burn	FP_FUELS_ALL_12_09_2020_2016to2020 spreadsheet in the Fuels BSMS SharePoint folder: R1 BSMS Fire Reports	Used for consistency across resource reports
	Planned Ignitions - Fire Use		
	Planned Ignitions - Machine Pile Burn		
	Mechanical Fuel Treatments - Biomass Removal		
	Mechanical Fuel Treatments - Crushing		
	Mechanical Fuel Treatments - Lop & Scatter		
	Mechanical Fuel Treatments - Machine Pile		
	Mechanical Fuel Treatments - Fuels Thinning		
	Mechanical Fuel Treatments - Other		
Re-Vegetation W/Native Species	Seeding	CDW >> Almanac Reports >> >> REF/TSI Report App. A Table 10 - Seeding >> Snapshot Period by Year/4th Quarter for 2015-2020	

TREATMENT	ACTIVITIES	CDW ALMANAC FACTS REPORT/DATA SOURCE	COMMENTS
Integrated Tree Improvement Activities	Seed Sources (Selective Breeding, Seed Orchards, Select Trees, Seed Production Areas, Seed Zones, Other, Vegetative Material Collections)	CDW >> Almanac Reports >> REF/TSI Report App. A Table 7 – Seed Sources >> Snapshot Period by Year/4th Quarter for 2015-2020	Ponderosa pine, white pine, western larch, whitebark pine, and hardwoods included in first metric (Acres Increasing Early Seral Representation); all species included in second metric (Acres Maintaining/ Improving Forest Resilience)
Non-Native Invasive Plant Treatments	Sites Treated & Restored	Numbers from MON-VEG-02 Invasive Species Report Table 1 by IPNF Forest Range/Weeds Specialist (Jeremy Kleinsmith)	Used "Restored Acres" as defined in the MON-VEG-02 Invasive Species Report

PERFORMANCE INDICATOR 2: Acres Burned

The measure and analysis of this indicator is acres burned by planned and unplanned ignitions across the forest as described in FW-DC-FIRE-0 (use of wildland fire, Forest Plan, p. 22). Planned ignitions are those set intentionally for management purposes. Unplanned ignitions are wildfires from an unplanned event such as lightning or accidental human caused. For planned ignitions, the intent is to include the acres of broadcast burning and under-burning as part of this indicator, rather than include burn activities such as grapple piling or hand-pile burning (Monitoring Guide, pp. 12-13).
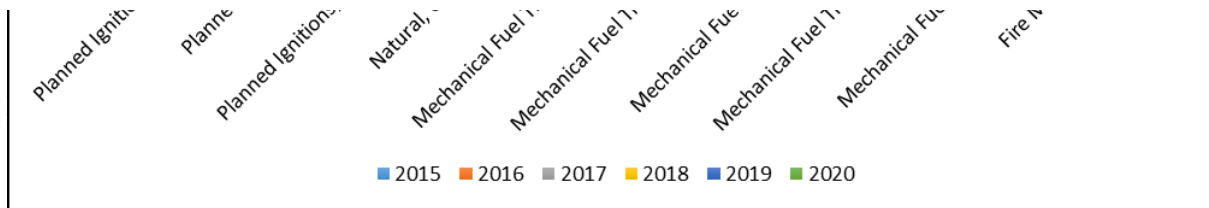

Figure 5 and

Figure 6 for this analysis.

PERFORMANCE INDICATOR 3: Acres of forest by dominance type and size class compared to the desired condition

The measure and analysis of this indicator is the acres of forest by KIPZ Dominance Type Groups and size classes as shown in FW-DC-VEG-01 (forest composition) and FW-DC-VEG-02 (forest structure) (Forest Plan, pp. 11-12). Dominance Type Groups describe the tree species composition within a stand. The existing dominant tree species or species groups are aggregated for the forest by KIPZ Biophysical Setting. Size class defines the average diameter at breast height (DBH) of trees within a stand and are grouped into four categories or ranges of diameters: seedling/sapling (0-4.6 inch DBH), small (5.0-9.0 inch DBH), medium (10.0-14.9 inch DBH), and large (15.0+ inch DBH). Size class is also aggregated for the forest by biophysical setting (Monitoring Guide, p. 13).

Estimates are derived using R1 FIA Summary Database and Estimator form: Acres by KIPZ Dominance Type Groups by Forest, Acres by Size Class by Forest, Acres by KIPZ Dominance Type Groups by KIPZ Biophysical Setting by Forest, Acres by KIPZ Biophysical Setting by Size Class by Forest. The acre estimates and 90 percent confidence intervals of forested vegetation by KIPZ Dominance Type Groups and size class will be derived and compared to the desired amounts and the trends noted. The desire is that over time, the acres within each dominance type group and the acres

within each size class will trend towards the desired conditions articulated in the Plan. As was done in the Plan, the information is displayed in two ways; for the Forest as a whole, and for each of the biophysical settings (Monitoring Guide, p. 13).

Baseline forest composition condition for the Forest Plan was analyzed in the FEIS (pp. 66-68) and for size class (FEIS, pp. 72-73). Both components are discussed by Biophysical Setting (FEIS, pp. 91-97, 99-113) and in the context of resiliency (FEIS, pp. 88-90). In the Forest Plan FEIS Appendix B Table 1. HRV Mean Value for Dominance Type on the IPNF (FP FEIS Appendices, pp. 12) was used to develop the Dominance Type Groups. Analysis methods and results for composition and size class in the Forest Plan are on pages 11-13 and 36-37.

For consistency in analysis, interpretation, and reporting across multiple forests in the Northern Region, this analysis was completed with data provided by Regional Office staff compiled in the R1 BSMS Forested Vegetation Hybrid Reports Pinyon Box site. "R1 Broad Scale Monitoring FIA Estimates" on the Northern Region Inventory and Analysis SharePoint site provides additional information and links to the reports. The document "KIPZ_LUT_BPS_Dom_Grp" provides a crosswalk to align the R1 Habitat Type Groups collapsed into the IPNF Biophysical Settings with the R1 Broad PVT groups. The KIPZ Dominance Type Groups are defined here based on Dom Grp 6040. "IPNF_Specific_Reports_Hyb15" provides corresponding composition and structure analysis for this report in Table 10 through Table 18 and Figure 7 through Figure 16.

PERFORMANCE INDICATOR 4: *Acres meeting the old growth definition as determined by the FIA program*

The measure and analysis of this indicator is the total forested old growth acres on the Forest and in the geographic areas (GAs) across the Forest using Green et al. 1992 (errata corrected 12/2011) for the definition and criteria for old growth. Region One has an established analysis protocol using FIA plots to determine the acres of old growth on each National Forest in the Region. Old growth forests are considered ecosystems distinguished by old trees and related structural attributes. They encompass the later stages of stand development, typically differing from earlier stages in characteristics such as tree age, tree size, number of large trees per acre, and basal area (Monitoring Guide, pp. 13-14). Old growth analysis conducted for the 2015 forest plan revision is explained in the FEIS (pp. 75-80).

Data in the "IPNF_Specific_Reports_Hyb15" provided estimates of old growth acres and percent with 90 percent confidence intervals by Forest and Geographic Area (as well as Zones and Landscapes) for the analysis in Table 19 through Table 22 and Figure 17 and Figure 18. The Northern Region Inventory and Analysis SharePoint site provides additional information R1 Old Growth Classification information and general R1 Analysis Using FIA Data background and methods and R1 Broad Scale Monitoring FIA Estimates.

PERFORMANCE INDICATOR 5: *Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures*

The measure and analysis of this indicator is acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures. Recruitment potential old growth (RPOG) is defined in the glossary to the Forest Plan and the glossary in the Forest Plan FEIS. The Forest Vegetation section in the FEIS contains an old growth section (pp. 75-82) providing more information on the Forests' stand inventory and mapping procedures. Field Sampled Vegetation (FSVeg) and R1 Common Stand Exam (CSE) and Inventory & Monitoring Protocols are used for identifying old growth, and IPNF protocols for recruitment potential old growth stands. GIS coverage

of old growth and recruitment potential old growth stands on the forest will be maintained based on field validation and project reconnaissance and data collection. The Northern Region Inventory and Analysis SharePoint site provides additional information for R1 Old Growth Classification and that regarding general R1 FSVeg Spatial background and methods, including old growth.

The protocol for downloading data from the FSVeg Spatial database and displaying in ArcGIS NRM (Citrix) for current old growth status is in "Geospatial Interface Content: FSVeg and FSVeg Spatial" (Bush and Kirkeminde, 2020; pp. 3-11). Subsequent attribute tables were exported to Excel and filtered to the relevant data for this analysis. Analysis for corresponding old growth and recruitment potential old growth acreage estimates are in Table 23 and Figure 19 and Figure 20.

The forest has been in the process of updating the "2015 Forest Plan Old Growth Inventory and Monitoring DRAFT" in the "OldGrowth" Pinyon Box folder. This plan has been delayed due to the federal government shutdown and furlough in 2019, and the ongoing COVID-19 pandemic. When finished, it will facilitate an improved process for accurate old growth and recruitment potential old growth data collection and timely entry into the FSVeg database and FSVeg Spatial and ArcGIS layers. We continue to work with the RO to develop a short forest process checklist and work with district GIS coordinators to make the FSVeg Spatial updates from project work and any others needed to the forest-wide old growth layer (T:\FS\Reference\GIS\r01_ipnf\LayerFile_ArcGIS10\Vegetation\OldGrowth.lyr). When finalized and approved, this process may provide:

- Forest Plan direction specific to old growth resources
- Forest-wide old growth spatial data information
  - ♦ Including the process and tracking forms for making changes to the forest-wide old growth spatial data
- Old growth management (any management activity that could change old growth or recruitment potential old growth characteristics such as burning, slashing, thinning, etc.)
  - ♦ Including required documentation for approving vegetation management activities in old growth or recruitment potential old growth, and monitoring of effects of treatments.
- Information for documenting old growth in project level analyses

PERFORMANCE INDICATOR 6: Acres of old growth treated

The measure and analysis of this indicator is the actual acres of old growth treated on the Forest by vegetation management, including planned ignitions and mechanical means. Old growth stands may be treated with a management activity such as harvest, and/or burning. Some examples of treatments that may be used in old growth stands for the purpose of trending stands towards the desired conditions are included in the [Forest Plan FEIS](#) (pp. 81-82). Old growth status is tracked in FSVeg Spatial. (Monitoring Guide, p. 15).

PERFORMANCE INDICATOR 7: Snags per acre forest-wide

The measure and analysis of this indicator is estimates of snags per acre forestwide. This indicator utilizes FIA plot data to determine the number of snags per acre 10" DBH and larger, 15" DBH and larger, and 20" DBH and larger by Snag Analysis Groups. Regional reports of snag estimates are produced periodically. The previous analysis displayed in Bollenbacher et.al. 2009 was based on data collected on the IPNF from 2000-2002. These estimates have been updated using the Hybrid 2011 FIA

Dataset, Bush and Reyes 2020[1], as reported in 2017. This document contains estimates of snag densities (and live trees), consistent with the previous reports using the most recent FIA data available for the Region. This analysis enables the Forests of Region 1 to monitor snags and live trees over time at the broad-level and adaptively manage project-level considerations, such as snag density and distribution changes over time.

In order to quantify and otherwise describe snag density on the IPNF, Table 12 in Bollenbacher et al. (2009) provides a summary of the estimated average number and size distribution of snags per acre that occur across the forested areas of the IPNF. The information is separated by Dominance Group, Habitat Type Group, and three snag sizes (diameter class). The three Habitat Type Groups correspond very closely to the Biophysical Settings (warm/dry, warm/moist, and subalpine). The Lodgepole Pine Dominance Group was separated from the other Dominance Groups in the analysis since lodgepole pine trees do not grow as large as the other common tree species because of their growth form and high stocking levels, and typically do not contain as many large snags (Forest Plan FEIS, p. 83).

Final groups, for snag analysis are consistent with the 2008/2009 papers, including Bollenbacher et al. (2009). All plots, regardless of Broad PVT Group, that have a Dominance Group 40 percent plurality label of MX-PICO, are analyzed in the PICO Snag Analysis Group. All other FIA plots are analyzed according to their Broad PVT Groups defined in Table 1 in Bush & Reyes, 2020:

Table 193. Crosswalk of labels used for biophysical groups in 2008 and 2009 analyses compared to R1 Broad PVT Groups.

Zone	2008/2009 Snag Analysis Document	R1 Broad PVT Group	Snag Analysis Group label in output tables
NID	Dry	Warm-dry	NI_warmdry
NID	Low-mid elevation	Warm-moist	NI_warmmoist
NID	Subalpine	Cool-moist and Cold	NI_cold_coolmoist

The "R1 BSMS Report for Forested Vegetation" report includes an overview of FIA data used in the analysis, a summary of the dataset, the classifications used in the reports, analysis techniques (methods), and links to reports used in analysis of this indicator (Bush and Reyes 2020). Estimates of snag densities by Pod and Forest on the Northern Region Inventory and Analysis SharePoint site provides:

- Reports derived in 2017 using "FIA Hybrid 11 Analysis Data for Northern Idaho Forests: Estimates of Snag and Live-Tree Densities for North Idaho Forests in the Northern Region based on FIA Hybrid 2011 Analysis Dataset" (including detailed explanation of the FIA sampling frame and dataset).
- Snag density estimates from 2008-2009 using FIA data for Northern Idaho Forests ("Estimates of Snag Densities for Northern Idaho Forests in the Northern Region" – Bollenbacher et al. 2009) were the previous standard as referenced in the Monitoring Guide. These are included in the 2017 FIA Hybrid 11 analysis and report which is the current standard.

Analysis for corresponding snag density per acre are in Table 24 and Table 25. For consistency in analysis, interpretation, and reporting across multiple forests in the Northern Region, this analysis was completed with data provided by Regional Office staff. The Northern Region Inventory and Analysis

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[1] Bush, Renate, and Brian Reyes. 2020. Estimates of Snag and Live-Tree Densities for North Idaho Forests in the Northern Region Based on FIA Hybrid 2011 Analysis Dataset. Region One Vegetation Classification, Mapping, Inventory and Analysis Report 20-03 v. 1.0. USDA Forest Service Region 1, Missoula, MT. October 16, 2020.

SharePoint site provides additional information regarding general R1 Analysis Using FIA Data and R1 Broad Scale Monitoring FIA Estimates.

PERFORMANCE INDICATOR 8: Number of acres influenced by insects and disease

The measure and analysis of this indicator is number of acres influenced by insects and disease. The Forest Health Protection (FHP) division of the State and Private Forestry branch of the Forest Service conducts annual Aerial Detection Surveys (ADS) of key forest insects and diseases. The FHP summarizes the annual survey information by acres and causal agent by county and has standards and established protocols for ADS with stored maps and GIS data (Monitoring Guide, pp. 16-17), although estimates of acres by hazard rating as ADS surveys are not comprehensive across a forest. The Northern Region Inventory and Analysis SharePoint site provides additional information regarding R1 Insect Hazard Ratings as well as general R1 Analysis Using FIA Data and R1 FSVeg Spatial background and methods.

For consistency in analysis, interpretation, and reporting across multiple forests in the Northern Region, this analysis was completed with data compiled, summarized by acreage and causal agent, and provided by FHP staff via the R1 BSMS Forested Vegetation Hybrid Reports Pinyon Box site:

- FHP_Attributes_Table
- FHP_Output_Table

These reports were compiled from data using the R1 Broad PVT groups which are different than the KIPZ Biophysical Settings used for other indicators in this analysis. Both are based on R1 Habitat Types, but they are grouped slightly differently.

Analysis for corresponding acres influenced by insects and disease are in Tables 24-28 and Graphs 21-23. The 2019 Revised R1 Forest Insect Hazard Rating System User Guide for use with Inventory Data Stored in FSVeg and/or Analyzed with the Forest Vegetation Simulator (FVS) explains FHP protocols. The R1 Broad Scale Monitoring FIA Estimates on the Northern Region Inventory and Analysis SharePoint site provides additional information and links to the reports, including the "R1 BSMS Report for Forested Vegetation." This report includes an overview of FIA data used in the analysis, a summary of the dataset, the classifications used in the reports, analysis techniques (methods), and links to reports used in analysis of this indicator.

Appendix B. MON-TBR-02: Size of Harvest Opening

Methods

This monitoring evaluation analyzes the number of regeneration harvest units creating openings exceeding 40 acres from calendar years 2015–2020 based on requirements in NFMA, planning regulations, Manual direction, and the Forest Plan. Because Regional Forester approval is required for these openings (taking public comment into consideration), the best data source is the authorization letters in response to Forest letters requesting to exceed the maximum size opening limit by project. In recent years, projects include multiple timber sales and the requests and approvals are done by project. For projects where analysis, public comment, request packages, and authorization letters occur in in different fiscal and/or calendar years, this analysis and tracking data use the calendar year of the Regional Forester authorization letter signature. These letters best measure the indicator because opening sizes and numbers can and do change during project analysis (sometimes based on public comment), and implementation of harvest treatments can also occur over a span of multiple years (or sometimes not at all). Letters are filed by project in Pinyon Box Silviculture folder "forest 40-acre opening requests" as the database of record. This folder contains all RO letters authorizing the forest to create openings exceeding 40 acres by project.

FACTS was not used for this analysis, as suggested in the monitoring guide (pp. 96-97). While it does indeed have standards for entering harvest units and tracks size and harvest type, data is not always entered or updated correctly or on time. It may also capture units not intended as part of this analysis for a variety of reasons (e.g., misclassification of harvest type, a change in unit size, or an incorrect database query). The authorization letters also track opening size and the corresponding request packages document harvest type and rationale; these are part of the project record. The letters are the most exact data source to measure this indicator and are easily accessible and interpretable by anyone; they don't require the permissions or training needed to access FACTS and run database queries.

Analysis methods were based on data transferred into Excel from authorization and request letters and summarized graphically to show results and trends. For projects from 2015-2020, data was tracked by projects per calendar year, number of project openings (consisting of units), opening size in acres, and reasons for exceeding the 40-acre opening size (Table 2). Analysis was done for average opening size, maximum opening size, and number of openings for each project (Figure 41 and Figure 42).

To better see and understand potential trends, additional tracking and analysis was done on projects for which there were authorization and/or request letters from 1998-2014. Data was tracked by projects or timber sales per calendar year, number of project openings, total project opening acres, average project opening size, and maximum project opening size. Analysis for these prior projects and those done to date in 2021 were part of an "All Years" analysis which also includes those from 2015-2020 (Figure 43). This analysis was done for average opening size, maximum opening size, and number of openings for each project or timber sale. Data for projects in 2021 was tracked the same way as for the 2015-2020 projects but the analysis was part of the overall data set (1998-2021).

Data was compiled and analyzed by the Point of Contact for this Monitoring Question.

Appendix C. MON-TBR-03: Restocking Success

Methods

This monitoring evaluation analyzes restocking results of regeneration harvest units from fiscal years 2015–2020. For this monitoring question and indicator, it means the data for each reporting year will be from 5 years prior to correspond to the post-harvest restocking 5-year timeframe; therefore, restocking regeneration harvest unit status in fiscal years 2010-2015.

The R1 Reforestation Timeframe Report via the R1 Depot displays satisfactory restocking and certification of regeneration harvest units based on data reported in FACTS by forest database managers, silviculturists, culturists, and others with database training and permissions. It provides the basis for assuring restocking when planning regeneration harvest. Stocking rates for each unit come from detailed silvicultural prescriptions. Restocking surveys stand certifications utilize the silvicultural reforestation requirements and are the source of the data entered in FACTS for this report (R1 Reforestation Timeframe Report Narrative).

Forest FACTS data management follows national and regional protocols for inventorying and entering data on restocking stands by harvest unit. See also the "Reforestation Needs Reporting Business Rules" under **Silviculture Business Documents** towards the bottom of FACTS Program Area Business Documents. The national and regional protocols are in Forest Service Manual Timber Management issuances FSM 2472 – Reforestation, and FSM 2496 – Silvicultural Practices. Activities are generally updated within 90 days of completion of work or contract award. Data are audited annually at the end of the calendar year; additional corrections are made throughout the year as they are known.

Parameters for the Regeneration Timeframe reports run through the R1 Depot User Interface were specified to display the records achieving restocking within 5 years of final harvest for evaluating timeliness of restocking. The Reforestation Timeframe Forest Summary Report provides a fiscal year summary by units, acres, and percentage for regeneration harvests that are: satisfactorily stocked (progressing or certified within 5 years), progressing or certified now, or certified now, and those not stocked (not certified or progressing now). The Regeneration Timeframe Details Report shows the harvest activity units meeting criteria for each restocking category, allowing silviculturists to determine trends or causes of successful or delayed regeneration. These reports are filed with the information, direction, and data for this analysis.

The reports display number of acres with adequate restocking and number of acres with inadequate restocking 5 years after regeneration harvest. Restocking rates are based on the silvicultural prescriptions, using progressing or certified harvest units/acres as a proxy. All regeneration harvests were included in the report parameters for analysis. These include all types of clearcut harvests, seed tree harvests, shelterwood harvests, and group selection harvests. Acres defined as satisfactorily restocked (certified or progressing within 5 years) were compared to acres not adequately restocked (not certified or progressing) to generate a percentage (R1 Reforestation Timeframe Report Narrative). Total percent certified or progressing was also included which comprises that percentage stocked in 5 years and additional certification or progression past the 5-year timeframe. This dataset begins in 1976, so data in these categories were also analyzed to show overall restocking trends in addition to and compared with the data from 2010-2015.

Regeneration examination protocols are in the Forest Service Handbook issuance FSH 2409.26b and R-1 FSH 2409.21e for maintaining data for reports, and FSM 2496, and is required under the National

Forest Management Act. Reforestation treatments are certified as stocked when there are acceptable levels of live seedlings at the time of the survey as defined in the prescription and land management objectives, considering species composition, density and distribution and future management in the determination. Regeneration examinations consist of:

- Stocking Surveys – Conducted after the first and third growing seasons at a minimum following reforestation treatment and the fifth year for naturally regenerating stands until adequate stocking is achieved and the stand can be certified as satisfactorily stocked. The intent is to determine density, species composition and distribution of seedlings. Areas failing to meet stocking standards shall be scheduled for further stocking surveys or retreatment as prescribed in the silvicultural prescription. Consider the financial feasibility as well as land management objectives and reforestation requirements.

- Plantation Survival – Use a row of staked sample trees to determine mortality causes and to estimate seedling survival after planting. Return after the first and third growing seasons to determine survival and causes of mortality. Determine reason(s) for plantation failure and take corrective action before retreating an unsuccessful area.

Data was compiled and analyzed by the Point of Contact for this Monitoring Question.

R1 Depot Regeneration Timeframes – Report parameters used for analysis:

- **Forest**: Idaho Panhandle
- **District**: All Districts
- **FACTS IDs**: All FACTS IDs (all qualifying SUIDs)
- **Management Area**: No Restriction (includes all management areas)
- **Land Suitability Class**: Filter: Min = 500 (Suitable Forest Land); Max = 600 (Land Suitable for Timber Production)
- **Elevation**: No Restriction
- **Aspect**: No Restriction
- **Stand Regen**: No Restriction (no limits based on regeneration method; includes units with accomplished planting, natural regeneration, or seeding; activity units with no regeneration planned or accomplished are also included if they meet the other criteria for harvest and other parameters.)
- **Harvest Activities**: All Regeneration Harvests (clearcut, seed tree, shelterwood, selection)
- **Acres Reported**: Activity Acres ("Activity Acres" to use the acres of accomplished harvest activity
- **Reports**: Forest Summary (PDF report with reforestation status by harvest year; results are summed for the forest; this report is only available when "All Districts" is selected in the parameters; the report parameters selected for the report are displayed in the report header), Details (spreadsheet of all activity units included in the district or forest report; it is best used in conjunction with the district or forest reports; this output is in spreadsheet format to allow the user to sort by activity units or filter for various criteria)