Flathead National Forest Plan

Plant Species at Risk (MON-PLANT), Plant Species of Conservation Concern (MON-PLANT DIV), and Non-Native Invasive Plants (MON-NNIP) Monitoring Guide and Evaluation of Results

Point of Contact:

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Introduction

This document provides the instructions and information needed to address the forest plan monitoring items associated with the status of plant species at risk (water howellia and whitebark pine) and plant species of conservation concern on the FNF. Monitoring questions and indicators for non-native invasive plant species, which is a stressor in the terrestrial ecosystems of the FNF, are included within this document as well. The monitoring items included in this document are listed below:

Monitoring Item and Question (Chapter 5 of Flathead Forest Plan)
MON-PLANT-01: What is the status of water howellia in areas where disturbances (natural or human-caused) have occurred?
MON-PLANT-02: How are ecological conditions in the cold PVT affecting whitebark pine populations and habitats?
MON-PLANT-03: What management actions are contributing to the restoration of whitebark pine?
MON-PLANT DIV-01: What is the status of the known occurrences of plant species of conservation concern?
MON-NNIP-01: What is the status of plant communities at highest risk of negative impacts to their system functions from established or new invaders?
MON-NNIP-02: What management actions are contributing to coordination and cooperation with adjacent landowners and partners in managing non-native invasive weeds?

Purpose and Outline of this Document

Each individual monitoring item in the Forest Plan monitoring program (Chapter 5 of the Plan) has been addressed in a document such as this one, which is intended to serve as the primary location for information needed to conduct the monitoring and to record the results. It is designed to aid in the tracking and preservation of monitoring methods, data and results over the life of the plan. It is anticipated that these documents would be revisited and used as a guide to conduct the monitoring for each biennial reporting; to see past results and record new results; and updated where needed based on recommendations for change in the previous biennial report.

This document is NOT the final Biennial Monitoring Evaluation Report (MER), but it should contain most if not all the information needed to prepare that report, and functions as project record material for the biennial MER.

PLANT SPECIES AT RISK MONITORING (MON-PLANT)

MON-PLANT-01. What is the status of water howellia in areas where disturbances (natural or human-caused) have occurred?

Introduction

This question is important to assess forest management actions influence on water howellia, a federally listed species, and how actions may be contributing to the conservation of the species and maintaining habitat conditions that support the species. The plan component being monitored is the desired condition **FW-DC-PLANT-01** which states "Habitat conditions support the recovery or long-term persistence of plant species listed as threatened or endangered under the Endangered Species Act, which currently include Spalding's catchfly (*Silene spaldingii*) and water howellia (*Howellia aquatilis*)."

In addition, forest plan component **FW-GDL-PLANT-01** would be monitored for consistency under this monitoring question (a correction to the Forest Plan Chapter V tables). This guideline states: "Ground-disturbing vegetation treatments within 300 feet of ponds providing habitat for *Howellia aquatilis* should occur only if the vegetative, physical, and/or hydrological features required for long-term habitat conservation are maintained or improved. Treatments should develop vegetation conditions consistent with natural ecological processes and should sustain soil quality and functioning to support the long-term persistence of *Howellia aquatilis*."

Table 1. MON-PLANT-01 plan components, indicators, data source, data collection interval and point of contact

Plan Component(s)	Indicators	Data Source / Partner	Data Collection Interval	Point of Contact
FW-DC-PLANT-01	**IND-PLANT-01.** Presence/absence of water howellia in habitat that has been disturbed	Project Plans; Field surveys, MNHP database, Forest and regional databases (NRIS)	Surveys conducted as needed to assess habitat conditions	Forest Botanist

Methods

GIS layers are available that identify water howellia ponds. A review of project level activities and natural disturbance (i.e., fire) over the monitoring period (the two year period since the previous monitoring report) would be conducted to identify where harvest, thinning, temporary or permanent road construction, recreational infrastructure (e.g., trail construction), invasive plant control, or fire (prescribed or wildfire) have occurred within the 300 foot riparian management zone surrounding ponds that provide water howellia habitat (occupied or unoccupied). For all or a sample of these areas, a field review is conducted after activity is completed to assess water howellia habitat conditions and status.

Results

The vegetation mgmt. projects that have had decisions since adoption of the plan (decisions in 2019 or 2020) are the following: Taylor Hellroaring; Crystal Cedar; Salish Good, and Hellroaring Basin

Improvements Project (Whitefish Mountain ski area improvements). None of these projects are within the range of water howellia.

Two vegetation management projects had decisions prior to the new Forest Plan and have activities in progress in the range of water howellia in 2019 and 2020: Glacier Loon and Beaver Stew Stewardship. Beaver Stew Stewardship is part of the Beaver Creek NEPA project. Both projects are currently active; and both projects had NEPA decisions prior to adoption of the new Forest Plan. Both projects were designed to avoid ground disturbing activities in the 300 feet buffer around water howellia ponds, to be consistent with Forest Plan direction (and with the water howellia conservation strategy).

Table 2: Monitoring Evaluation Report – summary of data sources for MON-PLANT-01 – Status of Water howellia

Year of Report	Indicator	Date of Data Collection/Compilation	Data Confidence
2021	IND-Plant-01	MNHP database – updated annually/as needed Forest/Regional NRIS databases – updated annually/as needed	High level of confidence.
2021	IND-Plant-01	Field Surveys – conducted as needed, when potential for impact to water howellia habitat occurs	High level of confidence

Table 3: Monitoring results for MON-PLANT-01, Water howellia conditions in areas where management activities have occurred within 300 ft zone surrounding ponds

Indicator	Monitoring date and data results 2021	Monitoring date and data results 20XX	
IND-PLANT-01. Presence/absence of water howellia in habitat that has been disturbed	There have not been any ground disturbing activities in 2019 or 2020 w/in 300 feet of water howellia ponds		

Discussion of Results

- *Has there been a change in presence of water howellia in the disturbed habitats (i.e., a loss or an addition), as compared to the condition prior to disturbance? If so, what may have caused the change?*

The projects activities conducted in 2019 and 2020 were designed to avoid ground disturbing activities within 300 feet of occupied and unoccupied water howellia ponds. These projects are not yet completed, but when they are monitoring of the howellia habitat may occur to confirm that no disturbance has occurred.

Presence/absence of water howellia is likely more dependent on prior year precipitation and temperature than on disturbance (Pipp 2017). Pipp 2017 did not find evidence that disturbance was a major factor in the presence/absence of water howellia in ponds. However, there has not been much research as to what causes the presence/absence of water howellia from year to year. Howellia pond monitoring has shown trends of pond drying influencing seed germination, leading to presence or absence of water howellia in ponds in subsequent years. Disturbances that could possibly impact pond fluctuations leading to abnormal

presence/absence of water howellia may include the introduction of weeds that could impact local water levels. It is for this reason that preventing weeds from entering or completely infesting the buffered areas is so important.

Evaluation of Results for Adaptive Management Finding

The following findings and recommendations resulted from the evaluation of monitoring results as documented above.

Table 4. Summary of Findings for Monitoring Item MON-PLANT-01

1. Plan Monitoring Results: Does the monitoring question and indicator(s) provide the information necessary to understand the status of the associated plan component listed above?
YES –
Recommendations – *an additional plan component monitored under this monitoring question should be added to the forest plan monitoring program.*
2. Plan Implementation Status [1]: Do monitoring results demonstrate progress of the associated plan components for with this monitoring item?
YES – May be confirmed later by surveys, but based on contract design and maps, disturbance was avoided in the 300 ft zone around howellia ponds
Recommendation – None
3. Type of change under consideration [2]: If corrective action/change was indicated under either #1 or #2, where might that change might be needed?
Forest plan monitoring program: add FW-GDL-PLANT-01 as plan components being monitored

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain -** Availability of data or 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] **CHOICES for where change may be needed include**: Monitoring program, plan component, management activity, plan assessment, program strategy or approaches documents, public engagement strategy

MON-PLANT-02. How are ecological conditions in the cold PVT affecting whitebark pine populations and habitats?

MON-PLANT-03. What management actions are contributing to the restoration of whitebark pine?

Introduction

Whitebark pine is a proposed threatened species under ESA, and monitoring of ecological conditions in the habitats supporting whitebark pine and what restoration actions are being taken helps in assessing the potential for recovery of this species over time. Whitebark pine has historically played important, multiple ecological roles in upper elevation forest ecosystems. White pine blister rust, mountain pine beetle, and fire suppression and associated forest successional changes are primary reasons for the dramatic loss of whitebark pine species and forest types over the past few decades. Potential warming climatic conditions is likely to also influence the condition of whitebark pine, though at this point in time the science is inconclusive as to the potential changes the species may experience over time (refer to section 3.5 in the forest plan FEIS).

The plan component being monitored under MON-PLANT-02 is FW-DC-PLANT-03: Habitat conditions support the long-term persistence of whitebark pine (*Pinus albicaulis*), which is currently a candidate species under the Endangered Species Act. Ecological conditions and processes that sustain the habitats currently or potentially occupied by this species are retained or restored.

The plan component monitored under MON-PLANT-03 is FW-OBJ-PLANT-01: Treat 8,000 to 19,000 acres for the purpose of sustaining or restoring whitebark pine in the ecosystem and contributing to achieving desired conditions for the presence of this species across the landscape.

Table 5. MON-PLANT-02, plan components, indicators, data source, data collection interval and point of contact

Plan Component(s)	Indicators	Data Source / Partner	Data collection interval	Point of Contact
FW-DC-PLANT-03	**IND-PLANT-** 02. Proportion (percentage of total acres) forestwide, and by cold PVT for whitebark pine dominance type (i.e., cover type) 03. Proportion (percentage of total acres) forestwide,	R1 Restoration and Resilience Report R1 Summary Database Detailed information about the FIA program can be found at: http://fsweb.r1.fs.fed.us/forest/inv/fia_data/index.shtml	FIA plots across the Forest are remeasured on a scheduled basis, with individual plots remeasured every 10 years.	Forest Silviculturist

	and by cold PVT for whitebark pine species presence 04. Proportion (percentage of total acres) forestwide of forest size classes in the areas where whitebark pine is present.			

Table 6. MON-PLANT-03, plan components, indicators, data source, data collection interval and point of contact

Plan Component(s)	Indicators	Data Source / Partner	Data collection interval	Point of Contact
FW-OBJ-PLANT-01	**IND-PLANT-** 05. Acres treated for the purpose of sustaining or restoring whitebark pine. 06. Survival of planted whitebark pine seedlings	Forest Service Activity Tracking System (FACTS) Regional Restoration and Resilience Report	Annually	Forest Silviculturist

Methods

(SEE ALSO Monitoring item MON-WL-05 in the wildlife habitat monitoring section, which addresses the question: *What is the status of habitat conditions that support Clark's nutcrackers during the nesting season?* Additional indicators for whitebark pine are assessed there.

IND –PLANT-02: For the estimate of whitebark pine dominance type forestwide, see monitoring item MON-TE&V-01, indicator IND-TE&V-01 – dominance types forestwide. Since dominance types by PVT is NOT one of the indicators under the monitoring item MON-TE&V-01, you will have to go directly to the regionally produced BSMS reports to find this estimate. In the BSMS reports, the percent of whitebark pine dominance type within the Cold PVT is found in the Cover Type by Broad PVT table. Divide the acres in that table with the acres in the Cold PVT (also found in the BSMS reports, in the table "Broad PVT").

IND-PLANT-03: For the estimate of whitebark pine presence forestwide and by the Cold PVT, see monitoring item MON-TE&V-01, indicator IND-TE&V-02 – species presence.

IND-PLANT-04: It is recommended that this indicator be dropped for the following reasons:

This data is not provided in the regionally produced BSMS reports, and it is not anticipated to be provided in the future. The FNF would have to query the FIA database directly to access this information, which requires a skill set that may not always be present on the FNF. This would be a more complicated query.

Therefore, to improve efficiency of the biennial Forest Plan monitoring task by using available data, and because this indicator does not add substantially to the interpretation of whitebark pine conditions over time, it is recommended to drop this indicator. The other indicators will provide sufficient data for monitoring changes in whitebark pine conditions over time.

IND-PLANT-05: The *Northern Region Restoration and Resilience Report*, which is produced annually at the regional level, is the source of information for this indicator. The data source for the report is FACTS. The report summarizes vegetation treatments in nine main categories that have been identified by the region as key to the overall goal to restore and develop resilient vegetation at the regional level. Treatments that restore or benefit whitebark pine are identified in this report. More details about this report and output data is located at: https://www.fs.usda.gov/detail/r1/landmanagement/resourcemanagement/?cid=stelprdb5428177.

IND-PLANT-06: Reforestation surveys to monitor survival of seedlings after regeneration harvest activity is a requirement of NFMA and conducted in the first, third and fifth year after harvest. Stake rows that provide percent survival statistics are also established within a subset of planted units. Results are stored in FACTS. Access to this data would occur by querying the FACTS data base for stake row surveys in plantations where Whitebark pine was planted. Only areas that were planted since the FNF forest plan was adopted (November 2018) would be included within the monitoring dataset. Only stake rows surveys that occur in the two-year period since the previous monitoring report would be included.

Results

Table 7. Monitoring Evaluation Report – summary of data sources for MON-PLANT-02 and 03 – Whitebark pine conditions and treatments

Year of Report	Indicator	Date of Data Collection/Compilation	Data confidence
2021	IND-PLANT-02, 03, 04	Hybrid FIA 2015 summary database – data collected on FIA plots 2006-2015.	High level of confidence in data. Using standardized USFS datasets and procedures used for monitoring vegetation characteristics
2021	IND-PLANT-05, 06	Fiscal Year 2019 and 2020 acres accomplished in FACTS	High
2021	IND-PLANT- 05	R1 Restoration and Resiliency Report – data source from FACTS. Years 2019 and 2020 acres reported	High

Table 8. Monitoring Report Results for MON-PLANT-02– Whitebark pine conditions

Indicator	2018 Forest Plan Desired range (% area)	2018 Forest Plan Existing Condition (% area)	Monitoring date 2021 % area (CI 90%)	Monitoring date 20XX % area (CI 90%)	Monitoring date 20XX % area (CI 90%)
IND-PLANT-02: WBP dominance type					
Forestwide	0.5 – 5.0	2.4	1.9 (1.1 – 2.8)		

Indicator	2018 Forest Plan Desired range (% area)	2018 Forest Plan Existing Condition (% area)	Monitoring date 2021 % area (CI 90%)	Monitoring date 20XX % area (CI 90%)	Monitoring date 20XX % area (CI 90%)
Cold PVT (FIA Hybrid 2015 = 428,815 acs in Cold PVT)	na	8.76 (4.48-13.36)	7.2 (3.5 – 11.1)		
IND-PLANT-03: WBP presence					
Forestwide	13 - 20	11	11.25 (8.63-14.09)		
Cold PVT	55 - 85	38	37.96 (27.8-48.9)		

Table 9. Monitoring Report Results for MON-PLANT-03 – Whitebark pine treatments

Indicator	Monitoring date 2021	Monitoring date 20XX	Monitoring date 20XX
IND-PLANT-05: Acres treated for the purpose of improving WBP conditions	2019 = 96.6 acres (no data yet for 2020)		
IND-PLANT-06: Survival of planted WBP seedlings	1st yr stake row surveys (2) 2018-2020 94% and 100% survival		

Discussion of Results

Whitebark pine dominance type has decreased by 0.5% forestwide, though it is still within the desired range, at the low end. Dominance type has decreased also in the Cold PVT by 1.5%. These are not favorable trends and likely indicates continued decline/mortality in WBP due to blister rust and perhaps other natural factors (such as wildfire). Continued monitoring over the long term is needed to see if this trend is consistent over time.

Trends in whitebark pine presence are static, showing no change over the monitoring period.

The forest continues to conduct activities for the purpose of improving whitebark pine conditions across the landscape, primarily planting of seedlings.

Evaluation of Results for Adaptive Management Finding

The following findings and recommendations resulted from the evaluation of monitoring results as documented above.

Table 10. Summary of Findings for Monitoring Item MON-PLANT-02 and 03

1. Plan Monitoring Results: Does the monitoring question and indicator(s) provide the information necessary to understand the status of the associated plan component listed above?
YES with change recommended in one indicator under MON-PLANT-02
Recommendations – Drop indicator IND-PLANT-04, for efficiency in monitoring. See discussion under Methods section above.
2. Plan Implementation Status [1]: Do monitoring results demonstrate progress of the associated plan components for with this monitoring item?
MON-PLANT-02: (B) Uncertain - More time/data are needed to understand status or progress of the Plan Component(s)**;** specifically more time is needed to evaluate if implementation objectives are continuing to occur as the plan is implemented and even thought tree dominance is showing a decline, more time is needed to understand if this decline is persistent MONT-PLANT-03: YES
Recommendation –
3. Type of change under consideration [2]: If corrective action/change was indicated under either #1 or #2, where might that change might be needed?
Plan monitoring program. Drop indicator IND-PLANT-04, for efficiency in monitoring. See discussion under Methods section above.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain -** Availability of data or 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] **CHOICES for where change may be needed include**: Monitoring program, plan component, management activity, plan assessment, program strategy or approaches documents, public engagement strategy

PLANT DIVERSITY MONITORING (MON-PLANT-DIV)

MON-PLANT DIV-01. What is the status of the known occurrences of plant species of conservation concern?

Introduction

The forest plan desired condition (FW-DC-PLANT DIV-01) is "Ecological conditions provide for plant species diversity, including plant species of conservation concern, and ecological processes that sustain native plant communities are maintained or restored." Species of conservation concern are identified by the Regional Forester (refer to http://bit.ly/NorthernRegion-SCC for additional information).

Table 11. MON-PLANT DIV-01 plan components, indicators, data source, data collection interval and point of contact

Plan Component(s)	Indicators	Data Source / Partner	Data Collection Interval	Point of Contact
FW-DC-PLANT DIV-01	IND-PLANT DIV-01. Occurrences of plant species of conservation concern and associated habitats that are being monitored.	Field surveys, MNHP database, Forest and regional databases (NRIS)	Surveys conducted at project level as needed to assess post treatment conditions	Forest Botanist

Known locations of plant SCC are stored in forest and regional databases as well as in Montana Natural Heritage Program databases. Local survey data and locations are maintained by the Forest botanist. New SCC populations and monitored SCC populations have been entered into the NRM database at the end of each field season. Those data are sent to MNHP by the RO.

Methods

For project level decisions that have occurred since the previous monitoring report (i.e. the previous 2 year period), areas where ground disturbing activities were proposed AND were subsequently accomplished on the ground that had the potential to affect plant SCC are identified. Treatments are reviewed and field survey conducted if determined needed to ensure that measures were implemented and effected at protecting existing populations of SCC.

Results

The vegetation mgmt. projects that have had decisions since adoption of the plan (decisions in 2019 or 2020) are the following: GNA Taylor Hellroaring; Crystal Cedar; Salish Good, and Hellroaring Basin Improvements Project (Whitefish Mountain ski area improvements).

According to FACTS, sales have been awarded but those sales have not yet been fully completed, as in the case of Beaver Stew Stewardship (this was a decision signed prior to adoption of the plan) and Crystal Cedar. Known SCC populations such as *Epipactis gigantea* and *Dryopteris cristata* were designed to be avoided in Crystal Cedar project. Botanists attempted to relocate *Grindelia howellii* in Beaver Stew Stewardship sale prior to layout, however plants were not found. Reasons for the species not being found

are unknown. No field surveys have occurred yet that would confirm potential impacts on known plant SCC populations.

Table 12: Monitoring Evaluation Report – summary of data sources for MON-PLANT-DIV-01 – Status of known SCC

Year of Report	Indicator	Date of Data Collection/Compilation	Data confidence
2021	IND-Plant DIV-01	MNHP database – updated annually/as needed Forest/Regional NRM databases – updated annually/as needed	High level of confidence.
2021	IND-Plant-DIV-01	Field Surveys – conducted as needed, when potential for impact to SCC occurs	High level of confidence

Table 13: Monitoring results for MON-PLANT-DIV-01, Status of known occurrences of Plant Species of Conservation Concern

Indicator	Monitoring date and data results 2021	Monitoring date and data results 20XX	Monitoring date and data results 20XX
IND-PLANT DIV-01. Occurrences of plant species of conservation concern and associated habitats that are being monitored.	For activities that have occurred in 2019 and 2020: Projects were designed to avoid known plant SCC. Current status unknown, no post treatment surveys.		

Discussion of Results

- *Do survey records over time indicate that measures to protect plant SCC on the forest are effective?*

The ground disturbing projects that have been completed and that may have potential impact on known plant SCC have not yet been totally completed and no post treatment surveys for potential impact to SCC have occurred yet. Therefore, there is no data available for review in this monitoring cycle. It will take several monitoring cycles to determine whether measures to protect SCC are effective.

Evaluation of Results for Adaptive Management Finding

There is a known lack of time/funding to conduct needed monitoring of management activities for forest plan monitoring purposes. In future monitoring reports, it may be a recommendation to give higher priority to forest plan monitoring tasks and provide sufficient personnel/funding to conduct it. For this monitoring cycle, the following findings and recommendations resulted.

Table 14. Summary of Findings for Monitoring Item MON-PLANT DIV-01

1. Plan Monitoring Results: Does the monitoring question and indicator(s) provide the information necessary to understand the status of the associated plan component listed above?
YES –
Recommendations –
2. Plan Implementation Status [1]: Do monitoring results demonstrate progress of the associated plan components for with this monitoring item?
UNCERTAIN: (B) - More time/data are needed to understand status or progress of the Plan Component(s)**;** this will be better assessed upon project completion estimated in the next 5 years.
Recommendation –.
3. Type of change under consideration [2]: If corrective action/change was indicated under either #1 or #2, <u>where</u> might that change might be needed?
No immediate change needed – no projects are yet fully completed and in need of monitoring yet.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain -** Availability of data or 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] **CHOICES for <u>where</u> change may be needed include**: Monitoring program, plan component, management activity, plan assessment, program strategy or approaches documents, public engagement strategy

NON-NATIVE INVASIVE PLANTS MONITORING (MON-NNIP)

MON-NNIP-01. What is the status of plant communities at highest risk of negative impacts to their system functions from established or new invaders?

Introduction

Invasive plants are capable of successfully expanding their populations into new ecosystems beyond their natural range and can create lasting impacts to native plant communities. FW-DC-NNIP-01 states that "Native plant species and plant communities dominate the landscape, whereas invasive plant species are at low abundance or non-existent, especially in areas identified as high priority, including wilderness areas, native grassland plant communities, riparian areas (particularly those associated with water howellia ponds), research natural areas (management area 4a), around known populations of plant species of conservation concern, and in special areas (management area 3b)."

FW-DC-NNIP-02 also is being monitored under this item: "No new non-native invasive plant species become established in terrestrial or aquatic plant communities on the Forest."

FW-DC-NNIP-04 states: Invasive plant species are controlled with integrated pest management approaches in a strategic and adaptive manner. These approaches include an effective prevention and education program, combined with mechanical, biological, cultural, and chemical methods of weed control. Technological advances in weed treatments are capitalized on if they are shown to be equivalent to or more effective than existing treatments.

Table 15. MON-NNIP-01 plan components, indicators, data source, data collection interval and point of contact

Plan Component(s)	Indicators	Data Source / Partner	Data collection interval	Point of Contact
FW-DC-NNIP-01, 02, 04	IND-NNIP-01: Percent of invasive plant species cover within identified high-risk/high-priority areas. These would include such areas as forests of the warm-dry PVT, dry grassland plant communities, wilderness trailheads, and management area 3b (special areas)	Invasive species reports provided at regional level Field surveys, MNHP database, forest and regional databases (NRIS)	Periodic surveys, time period determined by botanist	Primary-Forest Botanist; Secondary-Invasive plant species coordinator

Methods

Invasive plant 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. Invasive species management data is analyzed via reports pulled from the NRM/FACTS database.

The Regional Office is developing reports of acres infested by invasive plant species and acres treated for invasive by Forest, under the Broad Scale Monitoring Strategy. These reports are not available at this time (2021), but they are anticipated to be the data source for this monitoring item in future forest plan

monitoring cycles. This will allow for more efficiency in the forest plan monitoring process and provide consistency in reporting/comparing results over time.

Results and Discussion

Table 16: Monitoring Evaluation Report – summary of data sources for MON-NNIP-01 – Invasive plant species status within high-risk/high-priority areas

Year of Report	Indicator	Date of Data Collection/Compilation	Data confidence
2021	IND-NNIP-01	MNHP database – updated annually/as needed Forest/Regional NRIS databases – updated annually/as needed TESP-IS data base This data is summarized in reports produced at the regional level under the Broad Scale Monitoring Reporting.	High level of confidence.

The Forest weeds program is not provided the funds to monitor invasive plants beyond monitoring of treatments and the minimum efficacy monitoring required by the national reporting standards to achieve targets. Monitoring of treatment efficacy occurs to meet mandatory minimum of 50 percent of acres treated to meet annual accomplishment targets but does not allow time for remeasurements. As projects are proposed in the future, and plant surveys may be conducted in these sites, and weed infestations may be remeasured, but currently this is not occurring.

In order to assess conditions of invasive plants over time for forest plan monitoring purposes, it is recommended that the forest plan monitoring question and indicator for invasive plants be modified to be consistent with reports that will be produced at the regional level under the Broad Scale Monitoring Strategy. These reports will include acres infested by invasive plant species and acres treated for invasives by Forest, using data sources at forest and regional level that are used to report this data (see table above). This will allow for the ability to track both quantity and trends over time for forest plan monitoring in a cost-efficient manner.

Recommended changes in plan monitoring program:

CHANGE wording of Monitoring question MON-NNIP-01 to: What is the status of acres infested on the Forest by non-native invasive plants, and the treatments of invasive plant infestations?

CHANGE wording of indicator IND-NNIP-01 to: Acres infested by invasive plant species.

ADD Indicator IND-NNIP-01a: Acres treated for invasive plants.

An additional forest plan component would be added to the list of those being monitored by this monitoring question as follows:

ADD forest plan component FW-OBJ-NNIP-01: Treat 12,000 to 16,000 acres to contain or reduce non-native invasive plant density, infestation area, and/or occurrence. Greatest attention will be given to treating potential invaders or new invaders most likely to negatively impact native plant communities and ecosystem integrity, especially in areas identified as high priority (see FW-DC-NNIP-01).

Evaluation of Results for Adaptive Management Finding

The following findings and recommendations resulted from the evaluation of monitoring results as documented above.

Table 17. Summary of Findings for Monitoring Item MON-NNIP-01

1. Plan Monitoring Results: Does the monitoring question and indicator(s) provide the information necessary to understand the status of the associated plan component listed above?
YES , with some edits to monitoring question and indicators
Recommendations – see changes below
2. Plan Implementation Status [1]: Do monitoring results demonstrate progress of the associated plan components for with this monitoring item?
UNCERTAIN (A) – No data currently available – Because the Broad Scale Monitoring Reports produced by the region are not yet available, there are no results to report for this monitoring cycle.
Recommendation –
3. Type of change under consideration [2]: If corrective action/change was indicated under either #1 or #2, where might that change might be needed?
Forest Plan monitoring program. CHANGE Monitoring question MON-NNIP-01 to: What is the status of acres infested on the Forest by non-native invasive plants, and the treatments of invasive plant infestations? CHANGE Indicator IND-NNIP-01 to: Acres infested by invasive plant species. ADD Indicator IND-NNIP-01a: Acres treated for invasive plants. ADD forest plan component FW-OBJ-NNIP-01 to the list of those being monitored by this monitoring item.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain -** Availability of data or 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] **CHOICES for where change may be needed include**: Monitoring program, plan component, management activity, plan assessment, program strategy or approaches documents, public engagement strategy

MON-NNIP-02. What management actions are contributing to coordination and cooperation with adjacent landowners and partners in managing non-native invasive weeds?

Introduction

The Forest works towards an all-lands approach to management, cooperating with other land managers, adjacent landowners and partners to accomplish mutual objectives. This includes management and mitigation of environmental stressors, such as invasive weeds. FW-DC-P&C-17 states that "Cooperation and coordination occurs with adjacent landowners to identify and manage non-native invasive weeds." The Forest partners, such as Bob Marshall Wilderness Foundation, Back-country horseman, Rocky Mountain Elk Foundation, and the counties (RAC) often contribute funds and/or labor/materials to control weeds on NF lands.

Table 18. MON-NNIP-02 plan components, indicators, data source, data collection interval and point of contact

Plan Component(s)	Indicators	Data Source / Partner	Data collection interval	Point of Contact
FW-DC-P&C-17	IND-NNIP-02: Number and type of weed management actions conducted involving coordination and cooperation with partners and adjacent landowners	Forest databases and USFS Accomplishment Reports	Annually	Primary-Forest Botanist; Secondary- Invasive plant species coordinator

Methods

These actions and this information would be a subset of the annual accomplishment report for areas/acres of invasive plant species treatments – data that is collected and consolidated in forest records managed by the Forest botanist (or invasive plant species coordinator). Data since the previous monitoring report (the previous 2 years) would be reported.

Results

The FNF is actively engaged in a variety of partnerships for the control of invasive species. The table below lists the partners and roughly estimates the number of acres treated because of each partnership. Not all acres are treated with herbicide. Some are treated with biological agents or by hand work.

Table 19: Monitoring results for MON-NNIP-02, Invasive Plant Management - Coordination with partners and adjacent landowners

Indicator	Monitoring date and data results 2021	Monitoring date and data results 20XX	Monitoring date and data results 20XX
IND-NNIP-02. Number and type of weed mgmt actions conducted involving coordination and cooperation with partners/adjacent landowners	Activities in 2019 and 2020:		
Partner			

Indicator	Monitoring date and data results 2021	Monitoring date and data results 20XX	Monitoring date and data results 20XX
Montana Dyer's Woad Task Force/Working Dogs for Conservation, University of Montana	10		
Montana Biological Control Coordinator	200		
Rocky Mountain Research Station	30		
Swan Ecosystem Center	10		
Master Gardeners	10		
Rocky Mountain Elk Foundation/MCC	50		
Bob Marshall Wilderness Foundation	20		
RAC/MCC/Backcountry Horsemen	200		
YCC	6		
Various local landowners	200		
TOTAL	**736**		

Discussion of Results

Narrative for activities that occurred in 2019 and 2020:

Note: This is the first monitoring report for MON-NNIP-02 since the Forest Plan was released (in December 2018). Because there is no previous reporting in this manner, and because the Forest Plan did not describe a desired range or threshold of existing condition, it may be tempting to use this report as a baseline. However, if future reports show a backward trend from the information shown here, that does not mean that the Flathead National Forest is experiencing a downward trend or backward status. Many factors may cause future reports to show positive or negative shifts from this one without describing a downward trend. For example, shifts in priorities, urgent needs, emphasis on low acreage but high priority activities, and changes in management strategies or science may all have profound effects on the amounts of results reported. Each report should be evaluated on its own merit and only compared with other reports if an accurate comparison can be made.

Discussion questions to consider:

- Is the Forest actively forming partnerships and coordinating with adjacent landowners where it can be effective in the management of invasive weeds?
- How many acres or miles were treated using partnerships?

Because this is the first report, no trend data or information is available. However, the number of partnerships shown and number of acres significantly contributed to the invasive species program. In addition, many of these partners provided services that are not measured in miles or acres. For example, assistance in determining the presence of biological control agents on the forest was a valuable service provided by the Montana Biological Control Coordinator.

Evaluation of Results for Adaptive Management Finding

The following findings and recommendations resulted from the evaluation of monitoring results as documented above.

Table 20. Summary of Findings for Monitoring Item MON-NNIP-02

1. Plan Monitoring Results: Does the monitoring question and indicator(s) provide the information necessary to understand the status of the associated plan component listed above?
YES, with minor correction in Forest Plan Chapter V Monitoring Program table
Recommendations - see below.
2. Plan Implementation Status [1]: Do monitoring results demonstrate progress of the associated plan components for with this monitoring item?
YES: (E) - Partnerships are progressing as expected.
Recommendation – *NA*
3. Type of change under consideration [2]: If corrective action/change was indicated under either #1 or #2, where might that change might be needed?
The Forest Plan monitoring program. - Minor editing correction for MON-NNIP-02. The DC that is being monitoring should be listed as FW-DC-P&C-17, not FW-DC-P&C-16.

[1] **PLAN IMPLEMENTATION STATUS: (A) Uncertain -** Availability of data or 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] **CHOICES for where change may be needed include**: Monitoring program, plan component, management activity, plan assessment, program strategy or approaches documents, public engagement strategy