United States Department of Agriculture
Forest Service

# 2020 Biennial Monitoring and Evaluation Report

## Toiyabe National Forest Land and Resource Management Plan

May 2020

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Crater lake Meadow Carson Ranger District, C. Howell.

# Summary of Findings and Results

The following table summarizes the results and recommendations of the 2020 Biennial Monitoring information provided in this report. Recommended changes to the management of NFS lands, and implementation of best management practices associated with forest projects will be implemented during the next monitoring cycle. Recommended changes to the Monitoring program, either changes to the monitoring questions or the indicators, will require an administrate change to the Forest Plan monitoring program. The proposed changes are included in the findings for the Monitoring Questions in the main body of the report. Table 1 identifies which monitoring items require a change. For more detail see the Monitoring item in the body of this report.

Table 1. Summary of findings

| Monitoring Item | Do monitoring results demonstrate intended progress or trend toward Plan targets? | Based on the evaluation of monitoring results, may changes be warranted? | If a change may be warranted, where may the change be needed?[2] |
|---|---|---|---|
| MON-WTRSHD-01) How is watershed condition changing? | No | Yes | There is a need to conduct an assessment to determine the causes and potential response to the high number of watersheds across the Forest that fall into the Function at Risk or non-function class. |
| (MON-AQH-01) What water bodies are not meeting desired water quality conditions? | No | No | N/A |
| (MON-SOIL-01) How are characteristics of soil health and productivity changing? | No | Yes | BMP Monitoring indicates a need to change management practices and implementation. |
| (MON-SOIL-02) How are management activities affecting soil health and productivity? | No | Yes | BMP Monitoring indicates a need to change management practices and implementation. |

| Monitoring Item | Do monitoring results demonstrate intended progress or trend toward Plan targets? | Based on the evaluation of monitoring results, may changes be warranted? | If a change may be warranted, where may the change be needed?[2] |
|---|---|---|---|
| (MON-VEG-COND-01) What changes have occurred to landscape scale vegetative community types? | Uncertain (B) | Yes | Projects are currently under way to provide more accurate data for Cheatgrass and Medusahead. Need to incorporate this data in next monitoring report and change to include all annual invasive grasses. |
| (MON-VEG-COND-02) How are current allotment management strategies effective in meeting or moving toward desired conditions? | Yes | No | N/A |
| (MON-FOCAL-SPECIES-01) How is the abundance and distribution of Populus tremuloides (aspen) changing over time? | Yes | No | N/A |
| (MON-FOCAL-SPECIES-02) What do aquatic macroinvertebrate communities indicate about stream ecosystem integrity? | Yes | No | N/A |
| (MON-FOCAL-SPECIES-03) How is the abundance and distribution of invasive annual grasses (e.g. Bromus tectorum (cheatgrass)) changing over time? | Uncertain (B) | No | N/A |

| Monitoring Item | Do monitoring results demonstrate intended progress or trend toward Plan targets? | Based on the evaluation of monitoring results, may changes be warranted? | If a change may be warranted, where may the change be needed?[2] |
|---|---|---|---|
| (MON-T&E-01) Are forest management activities affecting recovery of T and E species? | Yes | Yes | There is a need to conduct an assessment to determine the causes and potential response to the high number of watersheds across the Forest that fall into the Function at Risk or non-function class. |
| (MON-REC-01) Is the Forest's developed recreation program meeting visitor needs and providing for public health and safety at Forest facilities? | Uncertain (A) | No | N/A |
| (MON-REC-02) Is the Forest's dispersed recreation program meeting visitor needs? | Uncertain (A) | Yes | Need to modify the indicator #5 it is redundant with indicator #4. |
| (MON-REC-03) Do visitors have safe and sufficient access to recreational opportunities and other areas of interest around the Forest? | Uncertain (A) | No | N/A |

| Monitoring Item | Do monitoring results demonstrate intended progress or trend toward Plan targets? | Based on the evaluation of monitoring results, may changes be warranted? | If a change may be warranted, where may the change be needed?[2] |
|---|---|---|---|
| (MON-WILD-01) How is wilderness character being preserved on wilderness areas across the Forest? Is fire being allowed to maintain its natural role as an ecosystem component within wilderness? | Uncertain (A) | No | N/A |
| (MON-CULT-01) Is there active enhancement and interpretation of historic properties eligible for the National Register of Historic Places that will encourage public interest? | Uncertain (A) | No | N/A |
| (MON-CULT-02) Are significant properties being evaluated for eligibility to the National Register and nominated to the register if eligible? Are these resources being protected? | Uncertain (A) | No | N/A |
| (MON-CULT-03) What is the Forest's progress in achieving a forest-wide cultural resource inventory? | Uncertain (A) | No | N/A |

| Monitoring Item | Do monitoring results demonstrate intended progress or trend toward Plan targets? | Based on the evaluation of monitoring results, may changes be warranted? | If a change may be warranted, where may the change be needed?[2] |
|---|---|---|---|
| (MON-CLIM-01) How is climate change altering patterns of recreational activities and visitor use on the Forest? | Yes | Yes | Need to change Indicator #1 to remove components where data is unavailable. |
| (MON-CLIM-02) How do recent temperature and precipitation trends (1-5 years) compare to long term averages (30+ years)? | Yes | No | N/A |
| (MON-CLIM-03) How do recent stream discharge trends (1-5 years) compare to long term averages (30+ years)? | Yes | No | N/A |
| (MON-WHB-01) What are the actual or estimated numbers of wild horses and burros (compared to AML where set)? | No | Yes | Suggests need for future management of wild horse herds. |
| (MON-MULTI-01) What are the economic conditions in local communities that could affect the impact of forest contributions to local economies? | Yes | No | N/A |

| Monitoring Item | Do monitoring results demonstrate intended progress or trend toward Plan targets? | Based on the evaluation of monitoring results, may changes be warranted? | If a change may be warranted, where may the change be needed?[2] |
|---|---|---|---|
| (MON-MULTI-02) What economic contributions are forest-based recreation, forest products, mining and grazing making to local communities? | Yes | No | N/A |
| (MON-MULTI-03) Are forest boundary adjusted to consolidate ownership and improve public access? | Yes | No | N/A |
| (MON-Fire -01) How is fire and fuels management being used for resource benefit? | Yes | No | N/A |
| (MON-FIRE-02) Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the wildland-urban interface (WUI) and non-WUI)? | No | Yes | Need to remove Monitoring question from Monitoring Program. |

[1]Interval of data collection is beyond this reporting cycle (A); or more time/data are needed to understand status or progress of the plan component (B); or methods/results are inadequate to answer monitoring question (C).
[2] see body of the report for more details regarding any specific recommendations/opportunities for change.

Based on results of the monitoring program the Toiyabe National Forest Plan is working as intended. This monitoring report indicates a need to make minor changes to the Monitoring Program. There is no intention at this time to make the changes prior to Forest Plan Revision which begins in 2021. Problems arise during project planning resulting from the age of the plan and absence of measurable plan level desired conditions and objectives. These issues will be

addressed during plan revision which will begin in 2021. While the report provides some data for the Cultural Resource Monitoring questions a transition of data from one platform to another resulted in the inability to provide accurate or current data for some questions. The data transfer should be complete in time for full responses in the 2020 biennial report. Wilderness monitoring item indicators related to the use and management of wildfires in wilderness were not provided in this report. A transition in fire staff left the Fire Planning Staff position vacant during a period this report was being prepared. This position has now been filled and the 2020 biennial report should be complete.

# Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred through Fiscal Year 2020 on the Toiyabe National Forest. Monitoring on some topics is long-term and evaluation of those data will occur later in time.

I have evaluated the monitoring and evaluation results presented in this report. I have examind the rcommended changs to the 1986 Land Management Plan, as amended at this time. As a result of my review I consider the 1986 Land Management Plan sufficient to continue to guide land and resource management of the Toiyabe National Forest for the near future and plan a deeper examination of the recommended changes through engagement with resource specialists and the public. Information about public engagement sessions will be posted on the H-T website when available

WILLIAM DUNKELBERGER

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**William A. Dunkelberger** **DAte**
**Forest Supervisor**
**Humboldt-Toiyabe National Forest**

# Contents

# INTRODUCTION

## Purpose

The purpose of the biennial monitoring evaluation report is to help the responsible official determine whether a change is needed in forest plan direction, such as plan components or other plan content that guide management of resources in the plan area. The biennial monitoring evaluation report represents one part of the Forest Service's overall monitoring program for this national forest unit. 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. In April of 2016 the Toiyabe National Forest Land and Resource Management Plans Monitoring Program (Chapter 5) was modified to meet the requirements of the 2012 planning rule by May 2016. This modified monitoring program is presented below in this biennial monitoring report.

Monitoring and evaluation are continuous learning tools that form the backbone of adaptive management. For this reason, we will produce an evaluation report every two years. This is our first written report of this evaluation since the Toiyabe National Forest Plan Monitoring program was finalized in 2016. This report indicates whether a change to the forest plan, management activities, monitoring program or forest assessment may be needed based on the new information. The 2018 biennial monitoring reports for the Humboldt-Toiyabe National Forest is available at https://www.fs.usda.gov/main/htnf/landmanagement/planning.

Our Monitoring covers these eight topics required under FSH 109.12, in addition to social, economic, and cultural sustainability. You'll find each of these topics addressed in the report.

1. The status of select watershed conditions.
2. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. The status of focal species to assess the ecological conditions required under § 219.9.
4. The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.
5. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
6. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)). (36 CFR 219.12(a))

## Objectives

There are several objectives for this report, including:

- Make information obtained from monitoring available to the public in a form that is readily understandable.

- 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 and Resource Management Plan components.
- Assess the current condition (i.e., status) and trend of selected forest resources.
- Evaluate relevant assumptions, changed conditions, management effectiveness, and progress towards achieving the selected desired conditions, objectives, and goals described in the Forest Plan.
- Present recommended change opportunities to the responsible official.

# How Our Plan Monitoring Program Works

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 Toiyabe National Forest monitoring program was updated in *April 2016* for consistency with the 2012 planning regulations [36 CFR 219.12 (c)(1)]. The Toiyabe National Forest Plan was administratively changed to include the updated monitoring program (Chapter 5). For a copy of the current monitoring program go to https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd541249.pdf. 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)]. See the Plan Monitoring Program for discussion on how the monitoring questions were selected to be consistent with the 2012 planning regulations 36 CFR 219.12.

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

# Monitoring Objectives

The objectives of our plan monitoring plan include:

- Assess the current condition and trend of selected forest resources.
- Document implementation of the Plan monitoring Program
- 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 & evaluation reports.
- Document scheduled monitoring actions that have not been completed and the reasons and rationale why.
- Present any new information not outlined in the current plan monitoring program that is relevant to the evaluation of the selected monitoring questions.
- Present recommended change opportunities to the responsible official.

# How to Use this Report

This report is a tool and a resource for the Humboldt-Toiyabe National Forest to assess the condition of forest resources in relation to Forest Plan direction and management actions. It is also a tool and a resource for the public to learn more about how the Forest Service is managing forest resources.

This monitoring report, along with the biennial monitoring report prepared for the Humboldt National Forest will be used to identify where the forest needs to take or change management practices to improve the conditions of the natural, physical or social resources found on the Forest. The monitoring reports will be used as the forest begin the Forest Plan revision process in 2021 to provide information regarding the need for change and supporting information for the plan assessment process.

The biennial monitoring evaluation report is designed to help the public, as well as Federal, State, local government, and Tribal entities anticipate key steps in the overall monitoring program. The biennial monitoring evaluation report is also intended to help people better understand reported results in relation to past monitoring reports, future monitoring reports and the broader-scale monitoring strategy that is issued at the Forest Service Regional level.

# MONITORING EVALUATION

# Water

## MON-WTRSHD-01: How is watershed condition changing?

### Indicator 1: Watershed condition indicators (Class) from the Watershed Condition Framework.

Data source: Data were retrieved from the US Forest Service Watershed Condition Assessment Tracking Tool (WCATT) database.

### Indicator 2: Essential projects completed.

Data source: Data were identified by personal knowledge of the Forest Hydrologist, John McCann, of projects completed on the Forest. 2016 Macroinvertebrate Report prepared by BLM/USU National Aquatic Monitoring Center, Logan, Utah.

### Monitoring Result

**Indicator 1:** Monitoring Result: Data show 17 sub-watersheds are in a Functional condition, 246 sub-watersheds are in a Functional-at-Risk condition, and 16 sub-watersheds are in a Non-Functional condition. Most watersheds were rated for functionality in 2011 during a rapid assessment which was based on available spatial data and professional judgement of resource specialists with on-the-ground knowledge of certain watershed condition considerations. A few watershed condition class ratings have been updated in the intervening years as new or better data became available. The two most common indicators rated individually as Non-Functional were Aquatic Habitat and Riparian/ Wetland Vegetation with 71% and 67% of watersheds being rated as Non-Functional for these indicators, respectively. No changes to any watershed conditions have been recorded since the last report.

**Indicator 2:** There are two priority watersheds on the Toiyabe NF Indian Creek and Harris Springs Creek. Two projects were fully completed in the Harris Springs Creek watershed, channel treatments and closure of unauthorized roads. Weeds treatments were also conducted but are not yet finished.

Macroinvertebrate collections were collected in 2016 from Silver King Creek and tributaries within the East Fork Carson River Watershed. Number of EPT taxa as well as number of intolerant taxa present indicate that water quality for macroinvertebrates is meeting desired conditions in that watershed. The Hilsenhoff Biotic Index averaged 2.9 which is indicative of good water quality conditions. The average number of Ephemeroptera, Plecoptera Trichoptera (EPT) taxa was 16 which also indicated good water quality. No other water bodies were sampled.

### Finding:

**Indicator 1:** Because the watershed classification data which are available to inform Indicator #1 were primarily developed in 2011 during a rapid assessment, it would benefit the Forest if a more current and comprehensive assessment were completed of watershed condition. It is expected that additional targeted watershed condition assessments will occur in 2021 and that all watersheds will be reassessed in 2026 based on recent discussions. While current watershed condition data (i.e., 88% of watersheds rated as Functional-at-Risk and 6% rated as Non-Functional) seem to indicate a need for changing either the Toiyabe National Forest Plan or management within the planning area, such Plan or management changes should not be made unless improved assessment data show the same need.

**Indicator 2** Monitoring does not indicate a need for change of the Toiyabe National Forest Plan.

## MON-AQH-01: What water bodies are not meeting desired water quality conditions?

### Indicator 1: Miles of impaired 303(d) streams.

Data source: Data were retrieved from spatial Integrated Water Quality Report data from both California (data collected in 2012) and Nevada (data collected in 2014).

### Indicator 2: Aquatic macroinvertebrate metrics (where sampled).

Data source: 2016 Macroinvertebrate Report prepared by BLM/USU National Aquatic Monitoring Center, Logan, Utah.

### Monitoring Result

**Indicator 1:** Data show 90 miles of impaired streams (21 segments) and 0.01 acres of lakes/ reservoirs (one location) in Nevada and 100 miles of impaired streams (eight segments) and 80 acres of impaired lakes/ reservoirs (two locations) in California. No new impaired water reports are available from the state of Nevada or California which would indicate any additions to the impaired water previously reported.

**Indicator 2:**

Macroinvertebrate collections were collected in 2018 from Silver King Creek and tributaries within the East Fork Carson River Watershed. Number of EPT taxa as well as number of intolerant taxa present indicate that stream ecosystem integrity is meeting desired conditions in that watershed. The Hilsenhoff Biotic Index averaged 2.7 which is indicative of a healthy stream ecosystem. The average number of EPT taxa was 16 which also indicated that the stream ecosystem integrity was excellent. No other water bodies were sampled.

### Finding

**Indicator 1:** Does not indicate a need for changing the Toiyabe National Forest Plan. However, several streams, lakes, and reservoirs are listed as not attaining water quality standards for identified beneficial uses. Generally, management under the Forest Plan is intended to preserve, conserve, or improve water quality. In some cases, altered management may lead to an improvement in or in some cases more rapid improvement of water quality.

**Indicator 2:** Monitoring has not indicated a need for change of the Toiyabe National Forest Plan.

# Soil

## MON-SOIL-01: How are characteristics of soil health and productivity changing?

### Indicator 1: Change in surface organic matter (litter).

### Indicator 2: Soil temperature trends at select locations.

### Indicator 3: Depth to water at select locations.

### Indicator 4: Soil stability: Erosion and sedimentation.

### Indicator 5: BMP implementation and effectiveness monitoring.

### Indicator 6: Burn severity (any management activity that uses fire as a tool).

Data source: Ecological condition monitoring plots, climate station data, BMP monitoring reports. Indicator #5 data were retrieved from the USFS R04 BMP Monitoring database.

### Monitoring Results

**Indicator 1:** Long term monitoring plots on uplands are showing slight increases in litter, basal area, overstory cover, and corresponding decreases in bare soil. Some of the more heavily used rangelands are seeing increases in cheatgrass, lowering soil productivity.

**Indicator 2:** Soil temperature is being measured by a variety of SnoTel, SCAN, and other micrometeorological stations. Efforts are currently ongoing to compile this data to start developing trends to determine if any long-term changes in soil climate is occurring. There are currently 27 various stations currently collecting climate data on the Toiyabe portion of the H-T NF. Bridgeport RD (6 stations), Carson RD (11), Austin-Tonopah (1), SMNRA (9)

Note: While the SNOTEL stations have been collecting atmospheric climate data for up to 40 years, soil temperature and soil moisture sensors were only installed in the past 15 years. Ideally, we would need 30 continuous years of data to start developing quality trend data.

**Indicator 3:** Water quality BMP monitoring has been in initiated on selected projects for different activities.

**Indicator 4:** Physical impacts such as soil compaction, and changes in vegetative composition from wetland to upland species is indicative of a loss of upward capillary movement of water in the soil thereby lowering of the water table. On the uplands, over population of wild horses on the have resulted in low amounts of vegetative ground cover, compacted soils, high amounts of bare soil resulting in reduced soil productivity.

Wild horse use is impacting uplands, springs, and streams at lower elevations particularly on the West side of the Austin-Tonopah RD and the North end of the Spring Mountains.

**Indicator 5:** BMP monitoring occurred on the SMNRA at McWilliams CG in FY19. Results of the monitoring has showed increased sheet erosion and deposition from a Monsoon event. Channel culverts installed are beginning to flood. Continued monitoring is recommended.

**Indicator #**6 – No known prescribed fires had any burn severity conducted on them. One wildfire in 2018 on Austin – Tonopah RD, Broad Fire, was allowed to burn for resource benefit due to ruggedness of terrain. A burn severity map was developed and showed predominantly moderate severity. Increased runoff and erosion have occurred. The 7,000-acre Boot fire on the Bridgeport district was mapped as predominantly low and moderate burn severity.

### Finding

**Indicators 1/3/4:** Soil health and productivity across the Toiyabe portion of the forest is for the most part stable. Localized impacts from wildfire, cattle, sheep, and wild horses has reduced soil health and productivity due to loss of surface organic matter, increased soil compaction, high amounts of bare soil, and accelerated erosion and sedimentation.

This is particularly the case on the West side of Austin-Tonopah district, and portions of the SMNRA that have been affected by wildfire and wild horse grazing.

Riparian plots surveyed on the Bridgeport RD has have predominately shown stable to improved soil health. Vegetative ground cover and composition is high, soil compaction is localized around water developments, bare soil is low. Water tables support riparian vegetation.

## MON-SOIL-02: How are management activities affecting soil health and productivity?

### Indicator 1: Change in surface organic matter (litter).

### Indicator 2: Soil stability: Erosion and sedimentation.

### Indicator 3: BMP implementation and effectiveness monitoring.

### Indicator 4: Burn severity (any management activity that uses fire as a tool).

Data source: Ecological condition monitoring plots, BMP monitoring reports.
Indicator #5 data were retrieved from the USFS R04 BMP Monitoring database.

### Monitoring Results

**Indicator 1:** Ecological monitoring plots on uplands are showing increases in litter, basal area, overstory cover, and corresponding decreases in bare soil. Some of the more heavily used

rangelands are seeing increases in cheatgrass and bare soil, lowering soil productivity.

**Indicator 2:** Wild horse use is detrimentally impacting uplands, springs and streams at lower elevations on the Austin/Tonopah Ranger district and SMNRA. Physical impacts such as increased soil compaction, bare soil, and accelerated erosion is resulting in changes in vegetative composition from wetland to upland species. This is indicative of a loss of upward capillary movement of water in the soil thereby lowering of the water table.

**Indicator 3:** A BMP monitoring occurred on the McWilliams CG on the SMNRA in FY 2019. Results of the monitoring has showed increased sheet erosion and deposition from a Monsoon event. Recently installed channel culverts are beginning to flood. Continued monitoring of channel is recommended.

**Indicator 4:** No known prescribe fires were monitored for burn severity during the reporting period.

### Finding

Soil health and productivity across the Toiyabe portion of the forest is for the most part stable. Localized impacts from prescribed burning, cattle, sheep, and wild horse grazing, recreation management has reduced soil health and productivity due to loss of surface organic matter, compaction and accelerated erosion.

Projects to convert pinyon-juniper woodlands back to sagebrush ecosystems are, for the most part, improving the soil function in those area. These projects will result in higher vegetative ground cover to effectively reduce erosion and sedimentation. A few of those areas have seen an increase in annual brome (cheatgrass) that are negatively affecting the health of those soils by outcompeting the establishment of native vegetation.

Watershed, and site-specific restoration projects are being implemented to reduce erosion on uplands, and improve riparian soil function, along streams and spring systems.

# Vegetation

## MON-VEG-COND-01: What changes have occurred to landscape scale vegetative community types?

### Indicator 1 Invasive and noxious species, sagebrush, pinyon-juniper, white bark pine, bristlecone, wet-to-dry meadows and riparian zones, aspen, and fir encroachment.

Data source: Ecological Condition Monitoring Plots

### Indicator 2 Fire risk assessment, fire regime condition class, and wildfire

Data source: Corporate Data Warehouse – FACTS, Interagency Fire Dispatch Center/GIS

## Monitoring results:

**Indicator 1:** Twenty plots were established or reread on the Carson and Bridgeport District is 2018 and 2019. Two of these plots were located on the Bridgeport District, and eighteen were in

meadows on the Carson District. Five of the plots are repeated readings of long term established plots.

One riparian and one sagebrush plot were established on the Bridgeport Ranger District in 2018. The sagebrush plot is in a burned area, and monitoring data indicates the site is recovering. Grasses and shrubs are re-sprouting and re-populating the site. This site has some invasive annual forbs and one noxious weed (*Salsola kali*) present. A plot was read in a riparian meadow on the Bridgeport District, and an old, non-functional trough was identified as needing to be moved out of the meadow to help the site recover and to better distribute livestock.

Five monitoring plots were repeated on the Carson District in 2018 and 2019. Three of the high elevation meadow sites were in moderate condition with a stable trend, one was in good condition with a stable trend and one was in good condition with a slight downward trend.

Fourteen new plots were established on the Carson District in 2018 and 2019. One plot was in poor condition, ten plots were in moderate condition and one plot was in poor condition.

The following table contains acreages for community types listed in indicator #1 on a forest-wide scale.

| Species | Acres |
|---|---|
| Cheatgrass | 3,110 |
| Medusa Head | 3,299 |
| Aspen | 195,260 |
| Fir | 703,848 |
| Pinyon Juniper | 2,345,959 |
| Meadow Ecosystems (Wet & Dry) | 116,640 |

**Indicator 2:** Invasive weeds continue to move and expand into disturbed meadow sites but have declined in meadows on the Bridgeport District that have been rested from grazing for several years. Invasives present in meadows on the Bridgeport and Carson Districts are cheatgrass (*Bromus tectorum*), wild iris (*Iris missouriensis*), dandelion (*Taraxacum officinale*), owl clover (*Orthocarpos* spp.), goosefoot (*Chenopodium* spp.), plantain (*Plantago* spp.), curly dock (*Rumex crispus*), tumblemustard (*Sisymbrium altissimum*), false dandelion (*Tragopogon dubius*), shepardspurse (*Capsella bursa-pastoris*), wild rose (*Rosa woodsii*) and grey rabbitbrush (*Ericameria nauseosa*).

No noxious weeds were found in any of the plots in 2018 and 2019.

Fire risk was reduced, and fire regime condition class moved towards improved conditions as a result of forest vegetation and fuels reduction treatments. In 2018 and 2019 forest fuels treatments totaled 33,626 acres (18,422 and 15,204 acres respectively). These treatments represent the higher range for treatments on the forest over the last 5 years.

## Finding

**Indicator 1:** Changes in wetland vegetative communities where wild horses and burros (WHB) are present in active grazing allotments indicate a need to change monitoring protocols. Increasing the number of monitoring plots and how often data is collected in a) areas where WHB and livestock grazing occur, b) where WHB exists without livestock grazing, and c) where WHB do not exist in active grazing allotments and analyzing for differences in changes to riparian and

other wetland vegetative community types will provide a better understanding for need for change in management activities.

**Indicator 2:** Noxious weeds are being treated and there are positive signs of success in treatments, but infestations of new species are occurring, and few restoration projects have resulted in a reduction of invasive species. Some community types have proven to be less than reliable as indicators of management action and planning. For example, a loss of 5,000 acres of sagebrush community may not register a significant change if monitoring accounts for millions of acres. Secondly, evaluating the expansion or loss of bristlecone acres are particularly challenging and less useful for managers as those communities change at extremely slow rates. Additionally, as whitebark and limber pine share ecological parameters, geographic range, and a similar reflective index, there exists a low confidence level in being able to discern between the two communities from a landscape scale. Therefore, there is a need to remove sagebrush, whitebark and bristlecone pine from monitoring as they are poor indicators of management action or the need for change in strategies. The analysis for changes in the remaining habitat types are based upon differences in acreages as GIS information is updated in databases described in the project record.

# MON-VEG-COND-02: How are current allotment management strategies effective in meeting or moving toward desired conditions?

## Indicator 1: Ground cover, invasive species, Aspen, species composition, water quality, soil productivity to determine satisfactory condition.

Data source: Ecological Condition Monitoring Plots

## Monitoring Results

**Indicator 1:** In riparian meadows noxious weed occurrences have remained fairly stable, with areas being treated almost equaling areas being inhabited. Invasive weeds continue to move and expand into disturbed meadow sites, but can ebb with positive management changes. In mesic to wet sites with disturbance Musk thistle (*Caardus nutans*), Canada thistle (*Circium arvense*) and Scotch cotton thistle (*Onopardum acanthium*) continue to be a problem. Medusahead (*Tainiatherum caput-medusae*) was found in a dry graminoid meadow community on the Santa Rosa District. Most sagebrush sites are in functional condition and stable. However, some Wyoming big sagebrush and low sagebrush sites have converted to a predominance of invasive species cheatgrass (*Bromus tectorum*) and annual forbs such as tumblemustard (*Sisymbrium altissimum*) with recent fires. Several species such as littlepod false flax (*Camelina macrocarpa*), desert madwort (*Alyssum desertorum*), and several annual brome grasses (*Bromus species*) have been added to forest plan monitoring since the 2018 report.

Broadly categorized, populations of species such as Cheatgrass (*Bromus tectorum*), Medusahead (*Tainiatherum caput-medusae*), Barbed Goat Grass (*Aegilops triuncialis*), Jointed Goat Grass (*Aegilops cylindrical*), North Africa Grass (*Ventenata dubia*), and many others result from similar ecological conditions. As these species are increasing in occurrences and densities they can be used as indicators for the need for change in management practices.

Project partners at the University of Nevada Reno, Rocky Mountain Research Station, and program partners at Intermountain Regional Office are currently implementing low and high

elevation data collection with the use of unmanned aerial vehicles (UAVs) and existing satellite networks. These efforts are expected to yield additional protocols and more accurate data for mapping and monitoring infestations of several annual invasive grass species. As they develop, these data sets and monitoring protocols will be evaluated over the next monitoring period for appropriateness and efficiency in forest plan monitoring.

| Annual Invasive Grass Species on Toiyabe National Forest as of 2019 | Species Code | Acres |
|---|---|---|
| Barbed Goat Grass | AETR | 35.02 |
| Cheatgrass | BRTE | 753.8 |
| Japanese Brome | | |
| Jointed Goat grass | AECY | |
| Medusahead | TACA8 | 1713.3 |
| North Africa Grass (Ventenata) | VEDU | |
| Red Brome | BRRU2 | 10.9 |
| Ripgut Brome | BRDI3 | 30.4 |
| **Total** | | **2543.5** |

### Finding

**Indicator 1:** Although many grazing allotments are functioning at risk, the monitoring data indicated that work by Forest staff with ranchers/permittees has resulted in grazing management changes that are leading the Forest toward better vegetation and soil condition scores across much of the area sampled. Continued grazing management in line with the Forest Plan directives, should benefit ecological condition on grazing areas across the Forest. There is a need to incorporate monitoring the effects of elk on aspen stands and in elk wintering areas.

# Focal Species

## MON-FOCAL-SPECIES-01: How is the abundance and distribution of Populus tremuloides (aspen) changing over time?

### Indicator 1: Spatial extent (acres), regeneration, disease, age classes, and understory, (soil temperatures - climate change).

Data source: Ecological Condition Monitoring Plots, NRCS SNOTEL climate station data.

### Monitoring Results

**Indicator 1:** Two aspen plots were re-sampled on the Bridgeport Ranger District in 2017. One of the aspen stands had a slight upward trend, and the other stand had a downward trend. The aspen stand with the downward trend appeared to be suffering from a loss of regeneration and understory structure. There were very few aspen suckers or saplings on the 2017 reading of this transect, when compared to the 2011 monitoring results. On the Tonopah District where wild horse and elk use overlaps, some aspen stands are impacted by elk rubbing and chewing the bark.

One sagebrush plot was sampled on the Bridgeport Ranger District in 2018. This sagebrush plot was at high elevation in a rested area of the District and indicated the ecosystem was in functioning condition with a slight upward trend.

Some of the SNOTEL stations collecting soil temperature data are located in aspen communities. Efforts are currently ongoing to compile this data to start developing trends to determine if any long-term changes in soil climate is occurring.

### Finding

**Indicator 1:** Some aspen decline is occurring in the Bridgeport District, however, these are small isolated incidents, and the general trend is upward. In the Austin-Tonopah District, there is aspen decline at higher elevations, where elk are feeding and rubbing on trees. There is not clear indication that plan, or management direction needs to change.

While the SNOTEL stations have been collecting atmospheric climate data for up to 40 years, soil temperature and soil moisture sensors were only installed in the past 15 years. You would need 30 years of data to start developing quality trend data. At some of the longer functioning SNOTEL stations, we may be able to start seeing changes in air temperature and precipitation data. Warmer temperatures and lower precipitation add stress to the aspen at the lower elevational boundaries opening them up to disease.

## MON-FOCAL-SPECIES-02: What do aquatic macroinvertebrate communities indicate about stream ecosystem integrity?

Indicator 1: Diversity; species composition; and other indices of macroinvertebrate response to current conditions (e.g., index

### of biotic integrity [IBI], Ephemeroptera, Plecoptera Trichoptera index [EPT]).

Data source: 2016 Macroinvertebrate Report prepared by BLM/USU National Aquatic Monitoring Center, Logan, Utah.

### Monitoring Results

**Indicator 1**: Macroinvertebrate collections were collected in 2018 from Silver King Creek and tributaries within the East Fork Carson River Watershed. Number of EPT taxa as well as number of intolerant taxa present indicate that stream ecosystem integrity is meeting desired conditions in that watershed. The Hilsenhoff Biotic Index averaged 2.7 which is indicative of a healthy stream

ecosystem. The average number of EPT taxa was 16 which also indicated that the stream ecosystem integrity was excellent. No other water bodies were sampled.

### Finding

**Indicator 1:** Monitoring has not indicated a need for change of the Toiyabe National Forest Plan.

## MON-FOCAL-SPECIES-03: How is the abundance and distribution of invasive annual grasses (e.g. Bromus tectorum (cheatgrass)) changing over time?

### Indicator 1: Spatial extent (acres) and cover (%).

Data source: Ecological Condition Monitoring Plots

### Monitoring Results

**Indicator 1:** Invasive weeds have declined in meadows on the Bridgeport District that have been rested from grazing for several years. Annual invasive plants present in meadows on the Bridgeport, Austin and Tonopah Districts include cheatgrass (*Bromus tectorum*), owl clover (*Orthocarpos spp.*), goosefoot (Chenopodium spp.), tumblemustard (*Sisymbrium altissimum*), false dandelion (*Tragopogon dubius*), and shepardspurse (*Capsella bursa-pastoris*). Cheatgrass (*Bromus tectorum*) averages less than 1% cover in all plots surveyed.

One noxious plant species was found among locations monitored on the Toiyabe National Forest in 2016 and 2017. Bull thistle (Circium vulgare) is located in a mesic meadow community in the Tonopah District.

Invasive weeds continue to move and expand into disturbed meadow sites but have declined in meadows on the Bridgeport District that have been rested from grazing for several years. Invasives present in meadows on the Bridgeport, Austin and Tonopah Districts include cheatgrass (*Bromus tectorum*), wild iris (*Iris missouriensis*), dandelion (*Taraxacum officinale*), owl clover (*Orthocarpos* spp.), goosefoot (*Chenopodium* spp.), plantain (*Plantago* spp.), curly dock (*Rumex crispus*), tumblemustard (*Sisymbrium altissimum*), false dandelion (*Tragopogon dubius*), shepardspurse (*Capsella bursa-pastoris*), wild rose (*Rosa woodsii*) and grey rabbitbrush (*Ericameria nauseosa*).

About 90 acres of mountain big sagebrush burned in 2019 on the Bridgeport Ranger District. Monitoring in this area post fire showed bare soil at 75% and litter at 14%. Russian thistle, a noxious weed, was growing in this site, which is of concern for the health of this area in the next few years. The Bridgeport District has one spring area that has low rooting depths and poor vegetative cover. There is a need to remove an existing trough out of this meadow and provide for seasonal rest in the spring source, meadow and surrounding area.

### Finding

**Indicator 1:** No changes are needed. Although weed infestations are increasing on parts of the Toiyabe Planning Area, the Forest has been making efforts to control invasive plants.

There is not enough information to determine changes in abundance or distribution of invasive annual grass cover.

# Threatened and Endangered

## MON-T&E-01: Are forest management activities affecting recovery of T and E species?

### Indicator 1: Host plant (Spatial extent - acres)

Data source: Forest GIS layers of surveyed habitat, designated Critical Habitat layers. Ecological Condition Monitoring Plots

### Indicator 2: Proximity to disease vector.

Data source: GPS locations of collared Sierra Nevada bighorn sheep (SNBS) provided by California Department of Fish and Wildlife in combination with Forest GIS layers of permitted sheep and goat allotments. Term grazing permits for allotments at a higher risk of contact are also reviewed.

### Indicator 3: Watershed Restoration Action Plan and associated projects completed.

Data source: Data were identified by personal knowledge of the Forest Hydrologist, John McCann, of projects completed on the Forest.

### Indicator 4: Watershed condition indicators (Class) from the Watershed Condition Framework.

Data source: Data were retrieved from the US Forest Service Watershed Condition Assessment Tracking Tool (WCATT) database.

### Indicator 5: Essential projects completed

Data source: Internal reports; Biological Assessment for the Enhancement of Operations and Training at MCMWTC Bridgeport, California; Concurrence and Biological Opinion for Continued Rangeland Management on the Carson and Bridgeport Ranger Districts, Alpine and Mono Counties, California; Concurrence and Biological Opinion for the CA/NV Integrated Weed Management Plan.

## Monitoring Results

**Indicator 1:** The Mount Charleston blue butterfly (MCBB) is listed as an endangered species under the Endangered Species Act. Surveys and monitoring of suitable habitat for the species enables a relative assessment of the potential for presence of MCBB. Suitable habitat is composed of plants that serve as host plants for larvae development and as nectar plants for adult feeding. Two species of milkvetch and mountain oxytrope are known to serve as host plants. Currently approximately 5,200 acres are identified as Critical Habitat. Each year surveys are conducted in areas where habitat may be affected. In 2018, 16.2 acres were surveyed, and in 2019, 24.4 acres were surveyed. No substantial decreases in the spatial extent of host plants were noted and the extent appears stable.

**Indicator 2:** There is a need to assess and monitor the likelihood of contact between domestic sheep (and goats) and Sierra Nevada bighorn sheep (SNBS), a federally endangered species. The likelihood of contact plays a role in the risk of transmitting diseases to SNBS from domestic

sheep in the Sierra Nevada. Contact may result in the possible introduction of new pathogens to SNBS that may cause pneumonia. There is concern that this could lead to the loss of entire bighorn sheep herds in the Sierra Nevada. By monitoring the implementation of the terms and conditions of sheep grazing permits in conjunction with tracking where SNBS occur, we can monitor relative risk of contact. No SNBS have been sighted in the Green Creek or Twin Lakes SNBS herd units, or north of a "trigger line". The trigger line is a topographic boundary north of which, in consultation with US Fish and Wildlife Service, it has been determined that risk of contact between domestic sheep and SNBS is elevated and adjusted management actions may need to occur. Recent observations and GPS tracking of SNBS have shown that currently the Green Creek and Twin Lake herd units are considered unoccupied by SNBS. The closest known SNBS sighting to the trigger line is approximately two miles south. These sightings are associated with the Mount Warren Herd Unit.

**Indicator 3/5:** There are two priority watersheds on the Toiyabe NF Indian Creek and Harris Springs Creek. Two projects were fully completed in the Harris Springs Creek watershed, channel treatments and closure of unauthorized roads. Weeds treatments were also conducted but are not yet finished.

**Indicator 4:** Data show 17 sub-watersheds are in a Functional condition, 246 sub-watersheds are in a Functional-at-Risk condition, and 16 sub-watersheds are in a Non-Functional condition. Most watersheds were rated for functionality in 2011 during a rapid assessment which was based on available spatial data and professional judgement of resource specialists with on-the-ground knowledge of certain watershed condition considerations. A few watershed condition class ratings have been updated in the intervening years as new or better data became available. The two most common indicators rated individually as Non-Functional were Aquatic Habitat and Riparian/ Wetland Vegetation with 71% and 67% of watersheds being rated as Non-Functional for these indicators, respectively. No changes to any watershed conditions have been recorded since the last report.

**Indicator 5:** The Forest completed Endangered Species Act consultation for Leviathan Loope range project for LCT. The determination was that these actions may affect but not adversely affect LCT. The Forest completed ESA consultation for livestock grazing activities occurring on the Austin-Tonopah Ranger District for LCT. The determination was that these actions would adversely affect LCT if livestock grazing was permitted consistent with plan direction. To reduce adverse effects of livestock grazing on LCT the Forest is limiting utilization in riparian areas to 45 percent, this is 10 percent less than is allowed in the Plan. The Forest completed ESA consultation of the Sardine- Cloudburst Meadow Restoration project. The determination was that this action would adversely affect Yosemite toad in the short term but offer a long term of improved meadow function in the long term.

Specific recovery efforts are ongoing to recover T and E species. These include: eDNA collection within Paiute cutthroat trout (PCT) habitat, and reintroduction of PCT into their historic range; non-native trout removal from Silver Creek; mark and recapture studies of Yosemite toad; non-native trout removal from the Sister Lakes for recovery of Sierra Nevada yellow-legged frog; and restoration of two Yosemite toad breeding meadows.

## Finding

**Indicator 1 and 2:** No changes are needed. Mount Charleston blue butterfly host plant extent does not appear to be decreasing and areas of higher relative risk of contact are not occupied by Sierra Nevada bighorn sheep.

**Indicator 3:** Does not indicate a need for change of the Toiyabe National Forest Plan.

**Indicator 4:** Because the watershed classification data which are available to inform MON-WTRSHD-01 Indicator #1 were primarily developed in 2011 during a rapid assessment, it would benefit the Forest if a more current and comprehensive assessment were completed of watershed condition. It is expected that additional targeted watershed condition assessments will occur in 2021 and that all watersheds will be reassessed in 2026 based on recent discussions. While current watershed condition data (i.e., 88% of watersheds rated as Functional-at-Risk and 6% rated as Non-Functional) seem to indicate a need for changing either the Toiyabe National Forest Plan or management within the planning area, such Plan or management changes should not be made unless improved assessment data show the same need.

**Indicator 5:** Monitoring has not indicated a need for change of the Toiyabe National Forest Plan.

# Recreation

## MON-REC-01: Is the Forest's developed recreation program meeting visitor needs and providing for public health and safety at Forest facilities?

### Indicator 1: Percent Meets Expectations in Developed Sites for developed facilities, access, services and perception of safety

### Indicator 2: Percent Participation in recreation activities in developed facilities or in developed sites/acres

Data Source: National Visitor Use Monitoring, Frequency: 5 years

### Indicator 3: Number of passing and failing tests per water system

Data Source: Infra/NRM, District Files, https://ndwis.ndep.nv.gov/DWW/, https://sdwis.waterboards.ca.gov/PDWW/ Frequency: 1 year

### Indicator 4: Number of public water systems (ex. campground, picnic site) decommissioned/removed

Data Source: Infra/NRM, Frequency: 1 year

### Indicator 5: Number of annual skier days

### Indicator 6: Annual percent occupied sites in concessionaire campgrounds and picnic areas

Data Source: Special Use Permit Files, Frequency: 1 year

### Monitoring Result

**Indicator 1:** National Visitor Use Monitoring (NVUM) data is collected and reported on a five-year cycle. Data is not broken down by the Humboldt National Forest (Humboldt NF) and the Toiyabe National Forest (Toiyabe NF); rather, data is shown either for the Spring Mountains

National Recreation Area (SMNRA), or for the rest of the Humboldt-Toiyabe National Forest (HTNF) outside of the SMNRA.

Based on FY2016 NVUM data, Forest visitors both on the SMNRA and the rest of the HTNF report that developed recreation sites meet their expectations to a very high degree. Recreation users have between 87.8 and 98.3 percent satisfaction rate with developed facilities, access, services, and feeling of safety at the Forest's developed sites.

**Indicator 2:** At developed sites on the SMNRA in FY2016, visitors participated most in Nature Center Activities (15.0 percent) and Picnicking (15.6 percent), and least in Resort Use (2.2 percent). On the rest of the HTNF, visitors participated most in Downhill Skiing (21.1 percent) in developed sites and least in Visiting Historic Sites (0.5 percent).

**Indicator 3:** On the Toiyabe NF in CY2018, pass/fail data was available for 13 of 18 water systems (72.2 percent). There were 85 passing tests (79.43 percent) and 22 (20.6 percent) failing tests (total coliform present).

In 2019 on the Toiyabe NF, full year pass/fail data was available for 12 of 18 water systems (66.7 percent). There were 102 (86.4 percent) passing tests and 16 (13.6 percent) failing tests (total coliform present).

**Indicator 4:** In 2000, there were 23 active water systems on the Toiyabe NF. There were 18 water systems managed on the Toiyabe NF as of the last monitoring report in 2018. No changes to the number of water systems occurred in 2018 or 2019, and no water systems were decommissioned during this monitoring period.

**Indicator 5:** According to Special Use Permit files Mt. Rose Ski Area on the Carson Ranger District reported 253,502 skier days for the 2017/2018 winter season and 239,175 skier days for the 2018/2019 winter season. Skier days for 2019/2020 at Mt. Rose were not available at this time. Lee Canyon Ski Area on the SMNRA reported 73,149 skier days and 7,320 tubing visits in 2018/2019 winter and 54,969 skier days and 3,370 tubing visits during the 2019/2020 winter.

**Indicator 6:** According to Special Use Permit files there was no substantive change in the occupation rates at concessionaire operated campgrounds and picnic areas from 2018 to 2019. This indicates that the Forest's developed recreation program's ability to meet visitor needs and provide for public health and safety at Forest facilities has not changed during this brief time.

### Finding

Monitoring has not indicated a need to change the forest plan, to change management activities, to change the monitoring program, or to conduct an assessment to determine preliminary need to change the plan. This monitoring question and its indicators are designed to assess trends over time and compare data reported with a one-year frequency, with National Visitor Use Monitoring data reported on a five-year frequency. The next monitoring cycle for this Monitoring Question will occur in 2021 with the data available for reporting in the 2022 Monitoring report.

## MON-REC-02: Is the Forest's dispersed recreation program meeting visitor needs?

### Indicator 1: Percent Meets Expectations in Undeveloped Areas (General Forest Areas, GFAs) for developed facilities, access, services and perception of safety

Data Source: National Visitor Use Monitoring, Frequency: 5 years

## Indicator 2: Percent Participation in recreation activities outside of developed facilities

Data Source: National Visitor Use Monitoring, Frequency: 5 years

## Indicator 3: Trail miles maintained to standard

Data Source: Infra/NRM, Frequency: 1 year

## Indicator 4: Trail miles improved to standard

Data Source: Infra/NRM, Frequency: 1 year

## Indicator 5: Miles of new trail constructed

Data Source: Infra/NRM, Frequency: 1 year

Indicator #5 is recommended for removal from the monitoring program. Miles of trail constructed is a component of Trail miles improved to standard in annual accomplishment reporting in the Trails Infra module of NRM.

## Indicator 6: Trail miles meeting standard

Data Source: Infra/NRM, Frequency: 1 year

## Monitoring Result

**Indicator 1:** National Visitor Use Monitoring (NVUM) data is collected and reported on a five-year cycle. Data is not broken down by the Humboldt National Forest (Humboldt NF) and the Toiyabe National Forest (Toiyabe NF); rather, data is shown either for the Spring Mountains National Recreation Area (SMNRA), or for the rest of the Humboldt-Toiyabe National Forest (HTNF) outside of the SMNRA.

Based on FY2016 NVUM data, visitors to undeveloped areas on the SMNRA feel that access, services, and feeling of safety met their expectations relatively well (between 82.6 and 88.2 percent). However, visitors to undeveloped areas are disappointed with developed facilities, with only a 26.7 percent rate of expectations met. Across the HTNF, visitors to undeveloped areas feel that developed facilities, access, services, and feeling of safety meet their expectations relatively well, between 83.9 percent for developed facilities and 99.9 percent for feeling of safety.

**Indicator 2:** Outside of developed facilities across the Forest, the activities that people participate in the most are as follows:

| Activity | SMNRA | HTNF outside SMNRA |
|---|---|---|
| Hiking/Walking | 62.5% | 58.7% |
| Viewing Natural Features | 48.7% | 28.5% |
| Viewing Wildlife | 42.1% | 21.1% |
| Relaxing | 31.4% | 12.4% |

| Activity | SMNRA | HTNF outside SMNRA |
|---|---|---|
| Driving for Pleasure | 25.3% | 10.8% |

**Indicator 3:** In FY2018, one district on the Toiyabe NF reported having completed trail maintenance totaling 148.7 miles maintained to standard. In FY2019, one district reported having completed trail maintenance to standard on 208.75 miles of trail.

**Indicator 4:** In FY2018, one district on the Toiyabe NF reported having completed trail improvements to standard on 7.6 miles of trail. In FY2019, one district reported having completed trail improvements to standard on 25.3 miles of trail.

**Indicator 5:** This indicator is recommended for removal from the monitoring program. This indicator is redundant with Indicator 4 “Trail miles improved to standard” in annual accomplishment reporting in the Trails Infra module of NRM.

**Indicator 6:** In FY2018, one district on the Toiyabe NF reported having trail miles meeting standard, at 147.6 miles. In FY2019, three districts on the TNF reported having 197.3 trail miles meeting standard.

### Finding

Monitoring has not indicated a need to change the forest plan, to change management activities, or to conduct an assessment to determine preliminary need to change the plan. This monitoring question and its indicators are designed to assess trends over time and

compare data reported with a one-year frequency with National Visitor Use Monitoring data reported on a five-year frequency. The next monitoring cycle for this Monitoring Question will occur in 2021 with the data available for reporting in the 2022 Monitoring report.

Monitoring has indicated a need to change the monitoring program. Indicator #5 (MON-REC-02-05: Miles of new trail constructed) should be removed from the monitoring program. Indicator #4 (MON-REC-02-04: Trail miles improved to standard), in its format for annual accomplishment reporting in the Trails Infra NRM module, incorporates miles of new construction into the definition of miles improved. Indicator #5 is redundant.

## MON-REC-03: Do visitors have safe and sufficient access to recreational opportunities and other areas of interest around the Forest?

### Indicator 1: Percent Meets Expectations in Developed Sites, Undeveloped Areas (GFAs) and Designated Wilderness for Access

Data Source: National Visitor Use Monitoring, Frequency: 5 years

### Indicator 2: Miles of system or non-system roads decommissioned

Data Source: Infra/NRM (gPAS), Frequency: 1 year

## Indicator 3: Miles of high clearance road maintained

Data Source: Infra/NRM (gPAS), Frequency: 1 year

## Indicator 4: Miles of high clearance road improved, constructed or reconstructed

Data Source: Infra/NRM (gPAS), Frequency: 1 year

## Indicator 5: Miles of passenger car road maintained

Data Source: Infra/NRM (gPAS), Frequency: 1 year

## Indicator 6: Miles of passenger car road improved, constructed or reconstructed

Data Source: Infra/NRM (gPAS), Frequency: 1 year

## Monitoring Result:

**Indicator 1:** National Visitor Use Monitoring (NVUM) data is collected and reported on a five-year cycle. Data is not broken down by the Humboldt National Forest (Humboldt NF) and the Toiyabe National Forest (Toiyabe NF); rather, data is shown either for the Spring Mountains National Recreation Area (SMNRA), or for the rest of the Humboldt-Toiyabe National Forest (HTNF) outside of the SMNRA.

Based on FY2016 NVUM data, visitors felt that access to developed sites, undeveloped areas and designated wilderness met their expectations relatively well, from 82.7 to 90.6 percent on the SMNRA and from 88.9 to 94.2 percent on the rest of the HTNF.

**Indicator 2:** There were no miles of road reported as having been decommissioned in FY2018 and FY2019 on the Toiyabe NF.

**Indicator 3:** In FY2018, 43.5 miles of high clearance road were reported as having been maintained on the Toiyabe NF. In FY 2019, 56.2 miles of high clearance road were reported as having been maintained on the Toiyabe NF.

**Indicator 4:** No miles of high clearance road were reported as having been improved, constructed, or reconstructed on the Toiyabe NF in FY2018 and FY2019.

**Indicator 5:** In FY2018, 81.2 miles of passenger car road were reported as having been maintained on the Toiyabe NF. In FY2019, 110.1 miles of passenger car road were reported as having been maintained on the Toiyabe NF.

**Indicator 6:** In FY2018, no miles of passenger car road were reported as having been improved, constructed or reconstructed on the Toiyabe NF. In FY2019, 0.2 miles of passenger car road were reported as having been improved, constructed or reconstructed on the Toiyabe NF.

## Finding

Monitoring has not indicated a need to change the forest plan, to change management activities, to change the monitoring program, or to conduct an assessment to determine preliminary need to change the plan. This monitoring question and its indicators are designed to assess trends over time and compare data reported with a one-year frequency with National Visitor Use Monitoring

data reported on a five-year frequency. The next monitoring cycle for this Monitoring Question will occur in 2021. With the data available for reporting in the 2022 Monitoring report.

# Wilderness

## MON-WILD-01: How is wilderness character being preserved on wilderness areas across the Forest? Is fire being allowed to maintain its natural role as an ecosystem component within wilderness?

### Indicator 1: Percent Meets Expectations in Designated Wilderness for developed facilities, access, services and perception of safety

Data Source: National Visitor Use Monitoring, Frequency: 5 years

### Indicator 2: Scores on Wilderness Stewardship Performance per wilderness, per element

Data Source: Infra/NRM, Frequency: 1 year

### Indicator 3: Number of authorized (emergency vs. planned with MRDG) and known unauthorized motorized/mechanized incursions

Data Source: Infra/NRM, Frequency: 1 year

### Indicator 4: Number and acres of wildland fires in wilderness managed at less than full suppression to achieve land and resource management objectives (demonstrating an increasing trend over time of allowing wildland fires in wilderness to be managed as opposed to being fully suppressed)

Data for this indicator is not available for the 2018 Biennial Monitoring reports because of vacancies the Fire Planning Staff Position.

### Indicator 5: Number and acres treated by managing wildland fires in wilderness at less than full suppression to achieve land and resource management objectives (demonstrating an increasing trend over time of allowing wildland fires in wilderness to be managed as opposed to being fully suppressed)

Data for this indicator is not available for the 2018 Biennial Monitoring reports because of vacancies the Fire Planning Staff Position.

### Monitoring Result

**Indicator 1:** National Visitor Use Monitoring (NVUM) data is collected and reported on a five-year cycle. Data is provided for the Spring Mountains National Recreation Area (SMNRA), or for the rest of the Humboldt-Toiyabe National Forest (HTNF) outside of the SMNRA.

Based on FY2016 NVUM data, visitors to designated wilderness on the SMNRA are moderately satisfied with the developed facilities, access, services, and feeling of safety they experience, ranging from developed facilities that meet their expectations at 64.9 percent to feeling of safety meeting expectations at 89.4 percent. Visitors to designated wilderness on the rest of the HTNF are more satisfied than those on the SMNRA, with a range of developed facilities meeting their expectations at 68.8 percent to feeling of safety that meets their expectations at 97.0 percent.

**Indicator 2:** INFRA/NRM data Wilderness Stewardship Performance Scores have remained constant between FY 2018 and FY 2019. Out of the 110 points possible, the average Wilderness Stewardship Performance Score for the 24 wilderness areas on the HTNF was 23.8 in and 24.3.

**Indicator 3:** According to INFRA/NRM data, there were 124 emergency incursions into wilderness in 2018 and 4 emergency incursions and 6 administrative incursions into wilderness in 2019. This data represents incursions into wilderness across the entire HTNF. The emergency incursions were primarily related to wildfire response.

**Indicator 4:** In 2018, there were two fires managed at less than full suppression within wilderness, totaling approximately 12 acres, on the Toiyabe NF. Two fires managed at less than full suppression, totaling 97 acres, occurred within wilderness on the Toiyabe NF in 2019.

**Indicator 5:** The management of wildland fires at less than full suppression was not used on the Toiyabe NF during this monitoring period.

### Finding

Monitoring has not indicated a need to change the forest plan, to change management activities, to change the monitoring program, or to conduct an assessment to determine preliminary need to change the plan. This monitoring question and its indicators are designed to assess trends over time and compare data reported with a one-year frequency with National Visitor Use Monitoring data reported on a five-year frequency. The next monitoring cycle for this Monitoring Question will occur in 2021. With the data available for reporting in the 2022 Monitoring report.

# Cultural Resources

## MON-CULT-01: Is there active enhancement and interpretation of historic properties eligible for the National Register of Historic Places that will encourage public interest?

### Indicator 1: Number of Register-eligible sites interpreted (e.g. graphics, tours, etc.)

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

### Indicator 2: Number of Register-eligible sites enhanced (adaptive reuse or sustainable use of eligible properties).

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

### Monitoring Results

**Indicator 1 and 2:** The available data lacks the accuracy to produce valid monitoring currently. The 2022 Monitoring report will be able to provide information related to this Monitoring question.

### Finding

Available data not valid for monitoring purposes. The 2020 Monitoring report will include data relevant to this monitoring question.

## MON-CULT-02: Are significant properties being evaluated for eligibility to the National Register and nominated to the register if eligible? Are these resources being protected?

### Indicator 1: Number of significant properties evaluated to the National Register?

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

### Indicator 2: Number of eligible significant properties being adversely impacted by federal undertakings, looting, environmental disturbance, and other actions.

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

### Monitoring Results

**Indicator 1 and 2:** The available data lacks the accuracy to produce valid monitoring at this time. The 2022 Monitoring report will include data relevant to this monitoring question.

### Finding

Available data not valid for monitoring purposes. The 2022 Monitoring report will include data relevant to this monitoring question.

## MON-CULT-03: What is the Forest's progress in achieving a forest-wide cultural resource inventory?

### Indicator 1: Number of acres previously not inventoried, and number of newly discovered historic properties recorded.

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

### Monitoring Results

Five newly discovered historic properties recorded. 15,9 percent of the Forest was subject to varying levels of cultural resource inventory.

### Finding

This measure provides a baseline to compare future monitoring results to. With only one data point there is insufficient information to base a finding. 15.9 percent of the Forest was subject to varying levels of cultural resource inventory. The inconsistencies between the Humboldt NF and the Toiyabe NF Cultural Resources Monitoring Programs there is a need to change the two monitoring programs to make them consistent.

# Climate

## MON-CLIM-01: How is climate change altering patterns of recreational activities and visitor use on the Forest?

### Indicator 1: Number of open/operational days at winter recreation sites and services (i.e. Ruby Mountains Heli-Ski, ski resorts, SMNRA winter use/snow play permit).

Data Source: District records, internet search, Frequency: 1 year

### Indicator 2: NRCS Basin Index (Percent Median) monthly snowpack for each basin in Nevada for each winter season (October through May)

Data source: data were retrieved from the NRCS Snow Survey Program's online database.

### Monitoring Results

**Indicator 1:** On the Toiyabe NF, operational days for the Foxtail Snowplay recreation special use permit is recommended for removal from the monitoring program. The holder's permit does not include a requirement of reporting number of operational days to the Forest Service.

Data was not available for the Bridgeport Winter Recreation Area.

Data for the open/operational period for the Lee Canyon and Mt. Rose ski resorts is provided below. Note that the 2019/2020 closing date for both ski areas of March 15, 2020, was due to health and safety reasons in light of the global COVID-19 pandemic.

| Area Name | Winter Season 2018/2019 | Winter Season 2019/2020 |
|---|---|---|
| **Bridgeport Winter Recreation Area** | No Data | No Data |
| **Lee Canyon Ski Area** | 128 | 92 |

| Area Name | Winter Season 2018/2019 | Winter Season 2019/2020 |
|---|---|---|
| | (12/7/18 – 4/14/19) | (12/14/19 – 3/15/20) |
| **Mt. Rose Ski Area** | 190 (10/20/18 – 4/28/19) | 142 (10/25/19 – 3/15/20) |

**Indicator 2:** Water year 2018 (October 1, 2017 – September 30, 2018) was well below median snowpacks throughout the planning area until a series of storms in March added to the existing snowpack. April snowpack throughout the area was still around 60 percent long term medians. Water year 2019 (October 1, 2018 – September 30, 2019) was another record setting season with nearly double the median snowpack throughout the sierras. Note: The snow monitoring sites collected enough long-term data to begin reporting percent median snowpack on March 1, 2020.

### Finding

Monitoring has indicated a need to change the monitoring program. Components of **Indicator 1: Number of open/operational days at winter recreation sites and services**, should be removed from the monitoring program. On the Toiyabe NF, permittee reporting at the end of their season for the Foxtail Snowplay recreation special use permit does not include a requirement of reporting number of operational days to the Forest Service.

**Indicator 2:** Does not indicate a need for change of the Toiyabe National Forest Plan.

## MON-CLIM-02: How do recent temperature and precipitation trends (1-5 years) compare to long term averages (30+ years)?

### Indicator 1: Monthly/ annual precipitation totals, max snow water equivalent, number of days with snow cover, meltout date, monthly/ annual temperature statistics.

Data source: data were retrieved from Desert Research Institute's online database (for precipitation and temperature) and the NRCS online SNOTEL database (for snow data).

### Monitoring Results

**Indicator 1:** In water year 2018, annual flows were slightly above average along the Sierra Front (105-110%) and well below average in the central part of the state (50%). Water year 2019 brought well above average flows to the whole planning area (135-150% of normal). Except for Kingston Creek in 2018, the last four years have been around or well above average flow years, but 2020 is currently shaping up to deliver below average flows. Preparation for drought-like conditions may be prudent.

### Finding

**Indicator 1:** Does not indicate a need for change of the Toiyabe National Forest Plan.

## MON-CLIM-03: How do recent stream discharge trends (1-5 years) compare to long term averages (30+ years)?

### Indicator 1: Total annual discharge data from USGS gaging stations.

Data source: data were retrieved from the National Water Inventory System online database maintained by the USGS.

## Monitoring Results

**Indicator 1:** Data show that annual total discharge was much greater (two to three times greater) than average in the western part of the planning area while flows in the central part of the state were a little below average.

### Finding

**Indicator 1:** Does not indicate a need for change of the Toiyabe National Forest Plan

# Wild Horse and Burro

## MON-WHB-01: What are the actual or estimated numbers of wild horses and burros (compared to AML where set)?

### Indicator 1: Census or modeled data for population size.

Data source:

**Spring Mountains Complex (Johnnie, Red Rock and Spring Mountain WHBTs):** 2019 data comes from population growth estimates entered in the INFRA Range Database based on the October 2015 statistical analysis of May 2015 aerial census data for Spring Mountains Complex. Spring Mountain WHBT population accounts for horses removed during the 2018 Cold Creek emergency gather.

**Powell Mountain WHT:** 2019 population data comes from estimates of population growth entered in the INFRA Range Database based on data from June 2016 statistical analysis of November 2015 aerial census data for Bi-State sage-grouse area.

**Central Nevada:** 2019 population data comes from preliminary results of March-April 2017 census flights. These data have not been statistically analyzed and animal locations on FS and BLM lands have not been differentiated.

| Wild Horse and Burro Territory | AML | 2019 |
|---|---|---|
| BUTLER BASIN | 60-100 Horses | 162 Horses |

| Wild Horse and Burro Territory | AML | 2019 |
|---|---|---|
| DOBBIN SUMMIT | 1-3 Horses* | 100 Horses |
| HICKISON | 16 Burros | 80 Burros |
| JOHNNIE | 0-3 Horses<br>14-34 Burros | 166 Horses<br>143 Burros |
| KELLY CREEK | 8-16 Horses* | 50 Horses |
| LITTLE FISH LAKE | 80-93 Horses* | 162 Horses |
| MONITOR | 51-90 Horses* | 223 Horses |
| NORTHUMBERLAND | 12 Horses | 40 Horses |
| POWELL MOUNTAIN | 29 Horses | 52 Horses |
| RED ROCK | 0-3 Horses<br>0-3 Burros | 160 Horses<br>1 Burro |
| SEVEN MILE | 1-3 Horses* | 20 Horses |
| SPRING MOUNTAIN | 47-66 Horses<br>20-35 Burros | 149 Horses<br>17 Burros |
| STONE CABIN | 1-3 Horses* | 1 Horse |
| TOQUIMA | 15-30 Horses* | 85 Horses |
| *No AML Established. # presented here is estimate of proper number | | |

## Monitoring Results

Spring Mountains Complex (Johnnie, Red Rock and Spring Mountain WHBTs): 2019 data comes from population growth estimates entered in the INFRA Range Database based on the October 2015 statistical analysis of May 2015 aerial census data for Spring Mountains Complex. Spring Mountain WHBT population accounts for horses removed during the 2018 Cold Creek emergency gather.

Powell Mountain WHT: 2019 population data comes from estimates of population growth entered in the INFRA Range Database based on data from June 2016 statistical analysis of November 2015 aerial census data for Bi-State sage-grouse area.

Central Nevada: 2019 population data comes from preliminary results of March-April 2017 census flights. These data have not been statistically analyzed and animal locations on FS and BLM lands have not been differentiated.

### Finding

Toiyabe National Forest WHBTs are 285% over maximum AML. Within the Red Rock and Spring Mountain WHBTs, burro populations are within the established AML range. Horse populations within these 2 WHBTs are over AML. Horse population in Stone Cabin WHBT is reported as within AML due to the fact that the very small size of the WHT and rugged terrain prevents any significant use of the territory by horses. The adjacent BLM Stone Cabin HMA is over AML. Horse and burro populations in all other WHBTs are over AML.

# Multiple Use

## MON-MULTI-01: What are the economic conditions in local communities that could affect the impact of forest contributions to local economies?

### Indicator 1: Economic health: unemployment (%); household earnings; per-capita income; and source of income (%).

### exploration and mining permitting, leasing and mineral material permitting.

### Indicator 3: Economic diversity: employment diversity index; employment projections by occupation (% change); number of local businesses, employees, and average salaries in forest related sectors.

Data source: https://headwaterseconomics.org/ **Socioeconomic report**

### Monitoring Results

Economic conditions improved between 2015 and 2018 across all counties

Given that this is the second year of monitoring, recommend no changes to the forest plan, forest management and re-evaluate once several more years of data is available.

### Finding

Unemployment was down across all counties between 2018 through August 2019. The lowest monthly unemployment was in April 2019. Per capita income and household earnings saw an increase in 2018. Douglas County, NV had the highest per capita income. Exploration and mining employment (permitting, leasing material permitting) was up by 66,078 jobs between 2014 and 2018, with the highest increase in Clark County. The

### Indicator 2: Number of employed personnel resulting from number of local self-employed proprietors in timber saw

**declines across all counties between 2014 and 2017, except for Clark County, NV which had only a slight increase.**

# MON-MULTI-02: What economic contributions are forest-based recreation, forest products, mining and grazing making to local communities?

## Indicator 1: Conditions in forest-based sectors: forest-related sector employment (jobs); forest-related sector wages (annual salary); and employment and earnings from travel and tourism (by county).

Data source: https://headwaterseconomics.org/ Tourism, Mining, Timber Report

### Monitoring Results

Public lands can play a key role in stimulating local employment by providing opportunities for recreation. Communities adjacent to public lands can benefit economically from visitors who spend money in hotels, restaurants, ski resorts, gift shops, and elsewhere. While the information in this report is not an exact measure of the size of the travel and tourism sectors, and it does not measure the type and amount of recreation on public lands, it can be used to understand whether travel and tourism-related economic activity is present, how it has changed over time, and whether there are differences between geographies.

### Finding

Percent of private employment timber jobs remained relatively unchanged between 2014 and 2017, with a slight decrease in Nevada County. The percent private employment in mining increased significantly with the highest percentage increase being in Eureka and Clark Counties. The percent of private employment in travel and tourism saw slight decreases across most counties between 2014 and 2017 with the exception of Alpine County which saw an approximately 5% increase between 2015 and 2017.

# MON-MULTI-03: Are forest boundary adjusted to consolidate ownership and improve public access?

## Indicator 1: Acres of acquired land or miles of right of way acquired

Data source: Lands adjustments database (LADS).

### Monitoring Results

The forest did not acquire any parcels during the 2018-2020 monitoring period. Jacks Valley Ranch was the only acquisition during this period. It was a partial interest acquisition for a conservation easement. No rights-of-way were acquired during the monitoring period.

### Finding

No change in Plan direction is indicated at this time.

# Fire

## MON-Fire -01: How is fire and fuels management being used for resource benefit?

### Indicator 1: Acres of hazardous fuels reduction in WUI and non-WUI, Change in seral state, Changes in FRCC

Data source: Corporate Data Warehouse – FACTS

### Monitoring Results

In 2018 and 2019 forest fuels treatments totaled 33,626 acres (18,422 and 15,204 acres respectively). Of this amount approximately 3/4 of the treatments were conducted outside of the WUI, while 1/4 was done in the WUI. These values were attributed to treatments within pinyon/juniper types for sage brush ecosystem management. In addition, approximately 1,100 acres were treated using prescribed fire, which accounts for ~3% of the treatment accomplished. Fuels treatments across the forest contributed towards an improvement in FRCC as reported in the FACTS database. Treatment amounts over 2018 and 2019 are towards the higher end of the forest 5-year range of acres treated annually while prescribed burning amounts were within the median values for burning.

### Finding

Fire and fuels management is occurring within the WUI and outside of the WUI in order to meet multiple resource objectives. Landscape treatments meet fuels reduction goals across multiple land allocations.

## MON-FIRE-02: Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the wildland-urban interface (WUI) and non-WUI)? Is the management of wildland fires accomplishing protection objectives for important Values at Risk (VAR)?

### Indicator 1: Acres of hazardous fuels reduction in WUI and non-WUI.

Data source: Corporate Data Warehouse – FACTS

### Monitoring Results

There were 60 wildland fires reported from 2016 to 2017 in the WFDSS database. Of this amount 37 were natural 23 were human caused. These totaled 2,232 acres burned broken down by 744 acres of natural ignitions and 1,488 acres of fire caused by humans. All wildland fires that burned past initial attack phase identified VARs according to the WFDSS process. Protection objectives, resource objectives or a combination of both would be identified according to the physical setting

of the wildland fire and the corresponding forest plan direction (eg wilderness or non-wilderness). In addition, the suppression strategy would vary on all fires which is consistent with the WFDSS decision making process for managing all wildland fires.

### Finding:

It is recommended that this monitoring question be dropped from the monitoring plan because all wildland fires are managed to meet identified objectives from the WFDSS. The forest plan identifies areas across the landscape where values at risk occur. Based on the uncertainty of where and when wildfires would occur in any given year it would be difficult to identify a trend in loss to VARs as well as how suppression strategies vary from year to year. Therefore, the Forest Service will continue to follow policy under the forest plan, WFDSS, and Forest Service Handbook direction for managing wildfires for multiple objectives while protecting VARs.

# DETERMINATIONS FROM THE BIENNIAL EVALUATION

Based on evaluations that were conducted, the following are the determinations for adaptive management, per 36 CFR 219.12(d)(2):

## Need for Changing the Forest Plan

**MON-SOIL-01, Indicator 5:** Seems to indicate a need for changing management within the planning area. In FY17, the BMP implementation and effectiveness of two activities with the potential to impact soil resources were monitored. Both resulted in a “Poor” composite score. Unchanged from 2018 Monitoring Report.

## Need for Changing the Monitoring Program

Monitoring has indicated a need for to change several of the monitoring questions/indicators to provide better monitoring data.

**Mon-Veg-Cond-01: What changes have occurred to landscape scale vegetative community types?** Need to change the number and frequency of monitoring plots. This can be done outside the administrative process. There is a need to remove sagebrush, whitebark and bristlecone pine from the list of indicators to be monitored. These species are poor indicators of management action or the need for change in strategies. This need has not changed since the 2018 report.

**MON-REC-02, Indicator 5:** Miles of new trail constructed) should be removed from the monitoring program. **Indicator #4: Trail miles improved to standard**, in its format for annual accomplishment reporting in the Trails Infra NRM module, incorporates miles of new construction into the definition of miles improved. Indicator #5 is redundant. Unchanged from 2018 Monitoring Report.

**MON-CLIM-01, Indicator 1: Number of open/operational days at winter recreation sites and services,** should be removed from the monitoring program. On the TNF, permittee reporting at the end of their season for the Foxtail Snowplay recreation special use permit does not include a requirement of reporting number of operational days to the Forest Service. Unchanged from 2018 Monitoring Report.

**MON-FIRE-02: Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the wildland-urban interface (WUI) and non-WUI)? Is the management of wildland fires accomplishing protection objectives for important Values at Risk (VAR)?** It is recommended that this monitoring question be dropped from the monitoring plan because all wildland fires are managed to meet identified objectives from the WFDSS. Based on the uncertainty of where and when wildfires would occur in any given year it would be difficult to identify a trend in loss to VARs as well as how suppression strategies vary from year to year. Unchanged from 2018 Monitoring Report.

# Need for Changing Management Activities

**Mon-Soil-01, Indicator 5:** Seems to indicate a need for changing management within the planning area. In FY17, the BMP implementation and effectiveness of two activities with the potential to impact soil resources were monitored. Both resulted in a "Poor"

composite score. **In 2020** BMP monitoring at the McWilliams CG on the SMNRA showed increased sheet erosion and deposition from a monsoon event. Recently installed channel culverts are beginning to flood. Continued monitoring of the channel is recommended.

**Mon-Soil-02, Indicator #3:** In the 2018 monitoring report data indicated that grazing BMPs in the North Murphy area of the Bridgeport Ranger District were mostly implemented, but not effective and that construction or maintenance BMPs at the Cathedral Rock Picnic Area (SMNRA) parking lot were not implemented and not effective. This indicates that the implementation of BMPs needed to be improved so that all BMPS are implemented as planned and effective. Unchanged from 2018 Monitoring Report.

# Need for Conducting an Assessment to Determine Preliminary Need to Change the Plan

**Mon-WTRSHD-01: Indicator 1:** Because the watershed classification data which are available to inform Indicator #1 were primarily developed in 2011 during a rapid assessment, it would benefit the Forest if a more current and comprehensive assessment were completed of watershed condition. It is expected that additional targeted watershed condition assessments will occur in 2021 and that all watersheds will be reassessed in 2026 based on recent discussions. While current watershed condition data (i.e., 88% of watersheds rated as Functional-at-Risk and 6% rated as Non-Functional) seem to indicate a need for changing either the Toiyabe National Forest Plan or management within the planning area, such Plan or management changes should not be made unless improved assessment data show the same need. (This also applies to **Mon-TES-01, Indicator 4**)

# About Our Forest Plan Monitoring Program

# Roles and Responsibilities

The Forest Plan Monitoring Program requires a coordinated effort of many people, from the people who collect the data, to the people outside the Forest Service who provide feedback and assistance, to the decision maker.

Forest Supervisor William A. Dunkelberger is the responsible official for the forest plan and this report will be provided to him for his decision on the proposed changes, and changes to

management direction to address deficiencies that are identified in the plan area. The monitoring report was prepared by the following Forest Employees.

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# How Our Plan Monitoring Program Works

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 Toiyabe National Forest monitoring program was updated in April 2016 for consistency with the 2012 planning regulations [36 CFR 219.12 (c)(1)]. The Toiyabe National Forest Plan was administratively changed to include the updated monitoring

program (Chapter 5). For a copy of the current monitoring program go to https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd541251.pdf. 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 protocol (monitoring protocol) 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 protocol is not part of the plan decision

and is subject to change as new science and methods emerge. The Toiyabe National Forest monitoring guide is available at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd541251.pdf.

Providing timely, accurate monitoring information to the responsible official and the public is a key requirement of the plan monitoring program. This summary, along with the full 2018 biennial monitoring evaluation report for the Toiyabe National Forest is the vehicle for disseminating this information.

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

- Are we implementing the Forest Plan implemented properly? Are we meeting 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)

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 accurate?)

# NATIONAL DATABASES USED

The monitoring questions found in chapter five of the Toiyabe National Forest Land and Resource Management Plan have been updated in compliance with the 2012 Planning Rule. Tracking and monitoring results for most of these questions has now moved to National Databases.

# Introduction - Natural Resource Manager

Natural Resource Manager (NRM) is a national Forest Service organization that is responsible for coordinating software development activities for four application groups whose data are accessible through the NRM platform or the Enterprise Data Center (EDC):

- Forest Service Activity Tracking System (FACTS)
- Infra
- Natural Resource Information System (NRIS)
- Timber Information Manager (TIM)

These applications often intersect in how they collect and share data and in how they develop software and use technology. NRM finds ways to manage and grow these applications efficiently and has already begun to standardize the processes used to develop an integrated program of work. NRM also will be looking for effective ways to use resources to reduce duplication of effort and to maximize technology investments. There are future plans to provide a public-facing interface for some of the national datasets housed in NRM.

## FACTS

The Forest Service Activity Tracking System (FACTS) is an activity tracking system for all levels of the Forest Service. It supports timber sales in conjunction with TIM Contracts and Permits; tracks and monitors NEPA decisions; tracks KV trust fund plans at the timber sale level, reporting at the National level; and, it generates National, Regional, Forest, and/or District Reports.

## INFRA

Infra is a collection of Web-based data entry forms, reporting tools, and GIS tools that enable Forests to manage and report accurate information about their inventory of constructed features and land units as well as the permits sold to the general public and to partners. This information is used by Forest supervisors for the effective management of their Forests and also by visitors, partners, and Congress. Infra is a valuable tool for:

- Forest-level management
- Forest analysis, planning, and budgeting
- Implementing core data layers such as trails, roads, cultural properties, recreation, and range allotments
- Monitoring financial accountability; capitalization, depreciation and deferred maintenance
- Collecting partnerships information such as grants, agreements, and leases
- Collecting information to be made available to the public; data warehouse, Wilderness use permits, e-government
- Administering Forest permits and billings, such as Range and Special Uses

Infra also interfaces with several external systems to meet data sharing and financial reporting goals. Infra transmits daily feeds of permit billing and grant and agreement financial information to the Foundation Financial Information System (FFIS). Infra also transmits real property information to the UDSA's Corporate Property Automated Information System (CPAIS).

## NRIS

The Natural Resource Information System (NRIS) combines a series of standard corporate databases and computer applications designed to support field-level users. NRIS databases contain basic natural resource and socio-economic data in standard formats built to run within the Forest Service computing environment. Some of the products available in NRIS include:

- Air Quality Information (AIR)
- Aquatic Surveys (AqS)
- FSVeg (Common Stand Exam, includes a geospatial component)
- Inventory and Mapping (Geology, Soils, etc.)
- National Visitor Use Monitoring (NVUM)
- Rangeland Inventory and Monitoring
- Threatened, Endangered, and Sensitive Plants
- Invasive Species

- Water Rights and Uses (WRU)
- Watershed Classification and Assessment Tracking Tool
- Watershed Improvement Tracking (WIT)
- Wildlife

## Air

The Air application helps air resource managers analyze the effects of air pollutants on natural, cultural, and social resources on lands managed by the Forest Service.

## Aquatic Surveys (AqS)

Aquatic Surveys (AqS) supports ecological and physical stream variables for three hierarchical levels of the riverine system on NFS) lands: valley segments, stream reaches and channel units. Data collected about aquatic fauna communities (fish, invertebrates, macroinvertebrates, amphibians, reptiles) in streams, lakes and spring environments are supported.

## Field Sampled Vegetation Spatial (FSVeg Spatial)

FSVeg Spatial manages spatial and tabular vegetation data in one place, at one time. It contains three types of data:

- • The vegetation polygon feature class (required to use FSVeg Spatial),
- • The vegetation point feature class, and
- • Non-stand-exam vegetation data associated with the polygon feature class.

NRM is working with units to move vegetation data from forests into the FSVeg Spatial application.

## National Visitor Use Monitoring (NVUM)

National Visitor Use Monitoring (NVUM) software manages information gathered from on-site surveys of recreation visitors to lands managed by the Forest Service. For information about NVUM's statistical methodology, visit Recreation, Heritage & Wilderness Programs National Visitor Use Monitoring Program. Data collection is based on a stratified random sample methodology to develop sound estimates of visitor use, characteristics, satisfaction, and spending information for each national forest.

The NVUM Results software is now available to the public on the Internet. It delivers NVUM statistics at the national, regional and forest scales using 70 pre-defined reports and maps. Results from individual forests can be combined using the Results software to access multiple-forests, regional, and national estimates of the numbers and types of recreation visits. Reports are available for all years beginning with fiscal year 2005 (October 1, 2004 to September 31, 2005).

## Rangeland Inventory and Monitoring

Rangeland Inventory and Monitoring supports national protocols for vegetation and ground cover sampling, general site characterization and detailed soil pedon descriptions. The application supports site characterization, interpretations and classifications; it also accommodates casual point observations with basic attributes.

National vegetation sampling protocols supported by the application include: Tree/Snag, Ocular Macroplot, Line Intercept, Cover Frequency, Nested Rooted Frequency, Robel Pole, Density, Paced Transect, Macroplot, Riparian Greenline–Winward, Riparian Cross Section–Winward, and Riparian Woody Regeneration–Winward. Rangeland Inventory and Monitoring is a spatial application intended for defined projects with formal protocol- or program-driven inventories.

## Threatened, Endangered, and Sensitive Plants, and Invasive Species (TESP/IS)

***TESP/***IS support national data collection standards for combined TESP and invasive species surveys, TESP element-occurrences, and Invasive Species Inventories.

## Water Rights and Uses (WRU)

Water Rights and Uses (WRU) tracks state and federally recognized water uses and related information regarding the water source, beneficial uses, quantity, and periods of water use. The application also tracks core information about water rights that may be associated to the water use and the legal and administrative actions that occur. Data collected during site visits to water use system components includes descriptions and dimensions of the water use system as well as site maps, reports and digital photographs. Integration with other Forest Service corporate applications including Automated Lands Project (ALP) and Infra are also supported to provide for a variety of integrated reports.

## Watershed Classification and Assessment Tracking Tool (WCATT)

NRM developed the Watershed Classification and Assessment Tracking Tool (WCATT) application in support of the Watershed Condition Framework (WCF) to provide a nationally consistent approach for classifying watershed condition. The tool supports the entering, editing and reporting of classification and assessment data for watersheds that contain U.S. Forest Service lands. WCATT provides a Geographic Information System (GIS) approach to data input for tracking Watershed Classification by 12-digit hydrologic units by year. The Watershed, Fish, Wildlife, Air, and Rare Plants Directors area sponsor it.

## WIT

Watershed Improvement Tracking (WIT) manages data, observations and planning details about sites that need to be (or have been) restored or improved with the intent of benefiting watershed and aquatic ecosystem health and function. The application is a watershed restoration activity tracker that addresses site conditions, administrative plans and actions, and outcomes. The primary users of WIT are biologists and hydrologists; however, the reporting products deliver raw or summarized information valuable for project leaders, program managers, and public relations staff.

## Wildlife

Wildlife supports terrestrial animal observations and site inventories.

### TIM

The Timber Information Manager (TIM) supports the business of managing Timber Sales, Salvage Sales, Stewardship Contracts, and Forest Products Permits on National Forest lands. While TIM is used to complete the resource job at the field-level, it simultaneously captures information for service-wide reporting needs. TIM is integrated with other national systems, such as FACTS and PALS for project data, National Cruise applications (for timber volume), FMMI for contacts and billing information, and ATSA for payments, interest, penalties, and contract bonding.

Reports for many of these metrics are available upon request.

### Project Level Monitoring

The Forest Monitoring Team did not complete any project monitoring in FY 2015-2018. However, Forest-wide and district level project monitoring was conducted for most resources, including watershed, wildlife, and fire. Reports are available upon request.

## MONITORING AND EVALUATION REPORT TIMING

The 2020 Monitoring and Evaluation report documents and discloses monitoring results from fiscal years 2018 through 2019. Each Forest Plan Monitoring and Evaluation report is intended to be a “living” document, meaning information displayed in the 2018 and 2020 report will be considered part of the 2022 report. Much of what is learned from monitoring and evaluation is based on how things evolve from year to year, rather than what is learned at a single point in time.