



Humboldt-Toiyabe National Forest

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Toiyabe National Forest Plan Monitoring Program

Introduction

The 2012 planning rule, which is found at 36 Code of Federal Regulations (CFR) 219, guides forest plan monitoring across the Forest Service. The planning rules at 36 CFR 219.12 (c) (1) requires the responsible official to modify the monitoring program to meet the requirements of the 2012 planning rule by May 2016. The Humboldt-Toiyabe National Forest conformance strategy focuses on addressing the purpose of the forest plan monitoring program as described in 36 CFR 219.12(a)(1), which includes the need for monitoring information that enables the responsible official to determine if a change in plan components or other plan content that guide management of resources in the plan area may be needed.

In addition, each forest plan monitoring program must contain one or more monitoring questions and associated indicators addressing each of the following eight requirements, which are noted at 36 CFR 219.12(a)(5):

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

Types of Monitoring

The monitoring identified in this forest plan is not all of the monitoring conducted on the national forest. Other forms of monitoring, which address other laws, policies, and site-specific decisions are also ongoing. Three categories of monitoring (see Forest Service Manual 1925.21) comprise both forest plan and individual project monitoring:

- Implementation Monitoring – Used to determine if plans, prescriptions, projects, and activities were implemented as designed and in compliance with the forest plan;
- Effectiveness Monitoring – Used to determine if plans, prescriptions, projects, and activities are effective in accomplishing Plan goals, and objectives, and moving toward desired conditions; and
- Validation Monitoring – Used in cases of uncertainty to determine if initial data, assumptions, and coefficients used to predict outcomes in the development of the Plan are correct.

Most monitoring at the national forest level is in the first two categories.

Forest Plan Monitoring and Evaluation

The preliminary draft monitoring program for the Toiyabe National Forest Land and Resource Management Plan (1986 as amended) is presented below, generally monitoring questions and indicators are grouped in the order of the eight required items listed above. In table 1 each row represents a single monitoring question and associated indicators. Rows begin with selected desired conditions or objectives (with forest plan page references). Next, the monitoring question and associated indicators are listed. The desired conditions are generally complex statements that cannot be fully monitored. Therefore, the monitoring questions and indicators focus on some core aspect of the desired condition related to the required monitoring item that the forest is capable of monitoring.

Some monitoring questions and indicators may address more than one of the eight required topics from 36 CFR 219.12(a)(5). Questions and indicators are based on one or more desired conditions, objectives, or other components in the plan, but not every plan component has a corresponding monitoring question.

The monitoring questions and associated indicators are intended to inform the management of resources on the plan area, including by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining the plan's desired conditions or objectives. Both the questions and indicators use the best available science to provide relevant information regarding the conditions across the national forest and for individual resources. The entire monitoring program must be within the financial and technical capability of the forest, augmented by broader-scale monitoring by the Region and other monitoring with partners.

Over time there may be swings in relative emphasis tied to current issues but the forest expects to be able to monitor and evaluate some movement toward goals and objectives in each focus area. The forest also expects that partnerships can be developed to accomplish more in monitoring and evaluation. Details of the plan monitoring program, including monitoring and analysis protocols, will be part of a separate monitoring guide.

Proposed Administrative Change

The proposed administrative change will replace the monitoring program in chapter V of the Toiyabe LRMP (pages V-2 to V-4; V-6 to V-17).

[Replaces Monitoring and Evaluation section on pages V-2 to V-4]

Monitoring and Evaluation

The purpose of forest plan monitoring and evaluation is to evaluate, document, and report how well the forest is implementing the forest plan, how well the forest plan is working, and if the forest plan purpose and direction remain appropriate. Monitoring determines actual conditions and circumstances and compares them with assumptions and expected or desired results. Monitoring information should enable the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed.

In compliance with 36 CFR 219.12(d) the Forest will conduct biennial evaluations of the monitoring information gathered through the monitoring program. A report of the evaluation will be issued and made available to the public. The report will indicate whether or not a change to the plan, management activities, or monitoring program, or a new assessment, may be warranted based on the new information.

[Replaces all of pages V-6 to V-17]

Table 1: Toiyabe National Forest Monitoring Program

Current Plan Components	Monitoring Question	Monitoring Indicator
Greater emphasis on environmental quality will have had positive effect on the soil and water resources (IV-6).	What water bodies are not meeting desired water quality conditions? How is watershed condition changing?	Miles of impaired 303d streams; aquatic macroinvertebrate metrics (where sampled) Watershed condition indicators (Class) from the Watershed Condition Framework. Essential projects completed.
A balanced habitat will have resulted in an	What changes have occurred to	Invasive and noxious species, sagebrush,

Current Plan Components	Monitoring Question	Monitoring Indicator
overall net gain of many wildlife species inhabiting the Forest (IV-5-6).	landscape scale vegetative community types?	pinyon-juniper, white bark pine, wet-to-dry meadows and riparian zones, aspen, and fir encroachment. Fire risk assessment, fire regime condition class, and wildfire
<p>Rangelands will be in satisfactory condition or better (IV-4).</p> <p>Management plans will have been approved for all grazing allotments and wild and free-roaming horse and burro territories. Livestock and wild horse/burro use will have been maintained at pre-existing levels (IV-4).</p> <p>Specific riparian area standards and guidelines, and greater emphasis on rangeland management will have significantly benefited riparian area-dependent resources (IV-6).</p>	How are current allotment management strategies effective in meeting or moving toward desired conditions?	Ground cover, invasive species, Aspen, species composition, water quality, soil productivity.
<p>Prescribed burning will have been used in wildlife and range management practices resulting in improved vegetative conditions (IV-4).</p> <p>Prescribed burning will be planned to meet management objectives, including fuels reduction and habitat type conversion, in a safe and efficient manner (IV-4).</p>	How is fire and fuels management being used for resource benefit?	<p>Acres of hazardous fuels reduction in WUI and non-WUI.</p> <p>Change in seral state.</p> <p>Changes in FRCC</p>

Current Plan Components	Monitoring Question	Monitoring Indicator
A balanced habitat will have resulted in an overall net gain of many wildlife species inhabiting the Forest (IV-5-6).	How is the abundance and distribution of <i>Populus tremuloides</i> (aspen) changing over time?	Spatial extent (acres) regeneration, disease, age classes, and understory. (soil temperatures - climate change)
	Do aquatic macroinvertebrate communities indicate stream ecosystem integrity is being maintained?	Diversity; species composition; and other indices of macroinvertebrate response to current conditions (e.g., index of biotic integrity [IBI], Ephemeroptera Plecoptera Trichoptera index [EPT]).
	How is the abundance and distribution of invasive annual grasses (e.g. <i>Bromus tectorum</i> (cheatgrass)) changing over time?	Spatial extent (acres) and cover (%).
Threatened, endangered, and sensitive species will be recognized and protected through habitat management and coordination with state wildlife agencies (IV-6). Sensitive plant species will be protected (IV-7).	Are forest management activities effective in meeting recovery objectives for T and E species?	Host plant (Spatial extent - acres) Proximity to disease vector. Watershed Restoration Action Plan and associated projects completed. Watershed condition indicators (Class) from the Watershed Condition Framework. Essential projects completed.
The Toiyabe will increase the quality and quantity of developed and dispersed	Is the Forest's developed recreation program meeting visitor needs and	Percent Meets Expectations in Developed Sites for developed facilities, access, services

Current Plan Components	Monitoring Question	Monitoring Indicator
<p>recreation opportunities with particular emphasis in the Sierra Nevada and the Spring Mountains of southern Nevada (IV-1).</p> <p>The Forest will offer a variety of opportunities for developed and dispersed recreational experiences (IV-1).</p> <p>Existing and newly developed sites will operate to Forest Plan standards and guidelines (IV-1).</p> <p>Facility maintenance will have been increased and all developed recreation improvements will be maintained at a safe and healthy standard (IV-2).</p> <p>Issuance of special use permits will be limited to those cases which serve the public need and which cannot reasonably be met on private lands (IV-9).</p>	<p>providing for public health and safety at Forest facilities?</p>	<p>and perception of safety.</p> <p>Percent Participation in recreation activities in developed facilities or in developed sites/areas.</p> <p>Number of passing and failing tests per water system.</p> <p>Number of public water systems (ex. campground, picnic site) decommissioned/removed.</p> <p>Number of annual skier day.</p> <p>Annual percent occupied sites in concessionaire campgrounds and picnic areas.</p>
<p>The Toiyabe will increase the quality and quantity of developed and dispersed recreation opportunities with particular emphasis in the Sierra Nevada and the Spring Mountains of southern Nevada (IV-1).</p> <p>The Forest will offer a variety of opportunities for developed and dispersed</p>	<p>Is the Forest's dispersed recreation program meeting visitor needs?</p>	<p>Percent Meets Expectations in Undeveloped Areas (GFAs) for developed facilities, access, services and perception of safety.</p> <p>Percent Participation in recreation activities outside of developed facilities.</p> <p>Trail miles maintained to standard.</p>

Current Plan Components	Monitoring Question	Monitoring Indicator
<p>recreational experiences (IV-1).</p> <p>ORV use will be allowed where such is not incompatible with other resource programmed (IV-2).</p> <p>Generally, the Forest will be open to ORVs (IV-2)</p> <p>Issuance of special use permits will be limited to those cases which serve the public need and which cannot reasonably be met on private lands (IV-9).</p>		<p>Trail miles improved to standard.</p> <p>Miles of new trail constructed.</p> <p>Trail miles meeting standard.</p>
<p>Existing and recommended wilderness will be designated and managed to protect wilderness values (IV-5).</p> <p>Quality wilderness experiences will be provided for the public (IV-5).</p> <p>The additions at Arc Dome and Mount Jefferson in central Nevada, Mount Charleston in southern Nevada and Mt. Rose in the Carson Range will have provided opportunities for wilderness experiences in parts of the state where none previously existed (IV-5).</p>	<p>Is wilderness character being preserved on wilderness areas across the Forest?</p> <p>Is fire being allowed to maintain its natural role as an ecosystem component within wilderness?</p>	<p>Percent Meets Expectations in Designated Wilderness for developed facilities, access, services and perception of safety.</p> <p>Scores on Wilderness Stewardship Performance per wilderness, per element.</p> <p>Number of authorized (emergency vs. planned with MRDG) and known unauthorized motorized/mechanized incursions.</p> <p>Number 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).</p>

Current Plan Components	Monitoring Question	Monitoring Indicator
		Number of 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).
A safe and efficient transportation network will be provided for resource protection, management, and public use of National Forest System Lands (IV-9).	Do visitors have safe and sufficient access to recreational opportunities and other areas of interest around the Forest?	<p>Percent Meets Expectations in Developed Sites, Undeveloped Areas (GFAs) and Designated Wilderness for access.</p> <p>Miles of system or non-system roads decommissioned.</p> <p>Miles of high clearance road maintained.</p> <p>Miles of high clearance road improved, constructed or reconstructed.</p> <p>Miles of passenger car road maintained.</p> <p>Miles of passenger car road improved, constructed or reconstructed.</p>
Enhancement and interpretation of National Register of Historic Places-eligible properties to encourage public interest. (IV-8)	Is there active enhancement and interpretation of historic properties eligible for the National Register of Historic Places that will encourage public interest?	Number of Register-eligible sites interpreted (e.g. graphics, tours, etc.) and number of Register-eligible sites enhanced (adaptive reuse or sustainable use of eligible properties).

Current Plan Components	Monitoring Question	Monitoring Indicator
The Toiyabe will increase the quality and quantity of developed and dispersed recreation opportunities with particular emphasis in the Sierra Nevada and Spring Mountains of Southern Nevada (IV-1).	How is a climate change altering pattern of recreational activities and visitor use on the Forest?	<p>Number of open/operational days at winter recreation sites and services, including the Mt. Rose Ski Tahoe Ski Resort, Bridgeport Winter Recreation Area, Las Vegas (Lee Canyon) Ski and Snowboard Resort, and Ruby Mountains Heli-Ski.</p> <p>NRCS Basin Index (Percent Median) monthly snowpack for each basin in Nevada for each winter season (October through May).</p>
Management plans will have been approved for all grazing allotments and wild and free-roaming horse and burro territories (IV-4).	What are the actual or estimated numbers of wild horses and burros (compared to AML where set)?	Census or modeled data.
Instream flows will protect riparian area-dependent resources against incompatible water resource development (IV-6).	How do recent temperature and precipitation trends (1-5 years) compare to long term averages (30+ years)?	Monthly/ annual precipitation totals, max snow water equivalent, number of days with snow cover, meltout date, monthly/ annual temperature statistics.
Greater emphasis on environmental quality will have had positive effect on the soil and water resources (IV-6).	How are characteristics of soil health and productivity changing?	<p>Change in surface organic matter (litter).</p> <p>Soil temperature trends at select locations.</p> <p>Depth to water at select locations.</p> <p>Soil stability: Erosion and sedimentation.</p> <p>BMP implementation and effectiveness</p>

Current Plan Components	Monitoring Question	Monitoring Indicator
		monitoring. Burn severity (any management activity that uses fire as a tool).
Water yields will not have increased on the Forest (IV-6).	How do recent stream discharge trends (1-5 years) compare to long term averages (30+ years)?	Gaging station data from USGS.
Completion of a Forest-wide cultural resource inventory (IV-8 #1)	What is the Forest's progress in achieving a forest-wide cultural resource inventory?	Number of acres previously not inventoried and number of newly discovered historic properties recorded.
Identification, nomination and protection of significant properties to the National Register of Historic Places (IV-8 #2)	Are significant properties being evaluated for eligibility to the National Register and nominated to the register if eligible? Are these resources being protected?	Number of significant properties evaluated for the Register, number determined eligible and number of eligible properties nominated. Number of eligible significant properties being adversely impacted by federal undertakings, looting, environmental disturbance and other actions.
The Toiyabe will manage these resources for the benefit of all American people both locally and nationally (IV-1).	What are the economic conditions in local communities that could affect the impact of forest contributions to local economies?	Economic health: unemployment (%); household earnings; per-capita income; and source of income (%). Number of employed personnel resulting from exploration and mining permitting, leasing and mineral material permitting.

Current Plan Components	Monitoring Question	Monitoring Indicator
		Economic diversity: employment diversity index; employment projections by occupation (% change); number of local businesses, employees, and average salaries in forest related sectors.
In all its activities the Forest will strive to manage productivity and resource values for current and future generations. (IV-1).	What economic contributions are forest-based recreation, forest products, mining and grazing making to local communities?	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).
Land consolidation will have minimized or eliminated ownership patterns which require rights-of-way across private lands for public access and resource management (IV-8-9).	Are forest boundary adjusted to consolidate ownership and improve public access?	Acres of acquired land or miles of right of way acquired.
Prescribed burning will be planned to meet management objectives, including fuels reduction, and habitat type conversion, in a safe and efficient manner (IV-4).	<p>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)?</p> <p>Is the management of wildland fires accomplishing protection objectives for important Values at Risk (VAR)?</p>	<p>Acres of hazardous fuels reduction in WUI and non-WUI.</p> <p>The trend in loss or damage to important VARs is remaining stable or is decreasing.</p>
Greater emphasis on environmental quality will have had positive effect on the soil and	How are management activities affecting	Change in surface organic matter (litter).

Current Plan Components	Monitoring Question	Monitoring Indicator
water resources (IV-6).	soil health and productivity?	Soil stability: Erosion and sedimentation. BMP implementation and effectiveness monitoring. Burn severity