

- 8 A mosaic of vegetation patches with varying vegetation densities is present, depending on site potential (as determined by TEUI or other appropriate ecological classification system). Densely vegetated areas provide cover for ground-nesting birds and pronghorn fawns. Bare areas are the result of natural processes such as freeze-thaw action, erosion, drought, or prairie dog burrowing.
- 9 Populations of big sacaton grass (*Sporobolus wrightii*) are reproducing sustainably and expanding on suitable habitat on the Red Rock Ranger District.

Objectives for Grassland ERUs⁶

FW-TerrERU-Grass-O

- 1 Restore or improve at least 3,500 acres of Semi-desert Grasslands during each 10-year period over the life of the plan.
- 2 Restore or improve 10,800 to 12,400 acres of Great Basin Grasslands during each 10-year period over the life of the plan.
- 3 Restore or improve 7,600 to 11,400 acres of Montane/Subalpine Grasslands during each 10-year period over the life of the plan.

Guidelines for Grassland ERUs

FW-TerrERU-Grass-G

- 1 On soils classified with clayey (Vertic) subgroups in Great Basin Grasslands, prescribed fire and resource objective fires should not be used until natural vegetative ground cover is near potential to promote satisfactory and functional soils.
- 2 Grassland composition, structure, and productivity and soil function should be protected and enhanced using methods such as fencing, aerating soil (decompacting soils), improved grazing strategies, or strategic location of constructed waters or of roads.

Management Approaches Grassland ERUs

Collaborate with partners and stakeholders on grassland identification and restoration (including historical grasslands), grassland connectivity, and education.

Coordinate with Arizona Game and Fish Department (AZGFD) and U.S. Fish and Wildlife Service on objectives for wildlife conservation, education, habitat restoration, and [improvements](#), particularly regarding pronghorn, prairie dogs, and black-footed ferrets.

Species-specific wildlife needs are addressed on a site-specific basis and considered during project-level planning and implementation. For example, where they occur, pronghorn typically benefit from grasses and shrubs greater than 11 inches in height to provide fawns protection from predators during the fawning season (AZGFD 2011). This habitat consideration is, however, dependent in large part on weather and site capability. Optimal fawning habitat conditions may not always be achievable due to variable environmental conditions (such as winter snowfall and spring precipitation). Project specialists work together to determine achievable conditions that

⁶ Objectives for Semi-desert Grasslands and Great Basin Grasslands maintain and improve habitat for pronghorn.

Table 15. Coconino NF plan monitoring questions

Question Number	Questions	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability
1	What is the contribution of forest management to air quality in the three smoke management units that overlap the Coconino NF (Colorado River airshed, Little Colorado River airshed, Verde River airshed) when there are exceedances of State of Arizona's air quality standards? Scale: Greater than forestwide	Metric: Various, depending on pollutant. Source: Data from any Arizona Department of Environmental Quality (ADEQ) air quality monitoring station in the three smoke management units that overlap the forest. Evaluation: Forest activities that relate to air quality on day of exceedance.	Information is collected by ADEQ daily.	A
2	What is the contribution of forest management to visibility within the Sycamore Wilderness and Mazatzal Wilderness Class I Areas when there are exceedances of the Regional Haze Implementation Plan? Scale: Greater than forestwide	Metric: Various, depending on pollutant. Source: Data from IMPROVE ¹ program (Environmental Protection Agency air quality monitoring stations at Ike's Backbone and Sycamore Canyon). Evaluation: forest activities that relate to visibility on day of exceedance.	Weekly	A
3	How much have management activities contributed to maintaining or making progress toward DCs related to vegetation structure for the Semi-desert Grassland, Pinyon Juniper with Grass, Great Basin Grassland, and Montane/Subalpine Grassland ERUs?	Metric: Acres of vegetation treated in each ERU. Source: Database of record such as FACTS ² database (Forest Activity Tracking System).	Annually	A
4	Are downed logs and snags falling within the ranges established in desired conditions for Ponderosa Pine and Mixed Conifer with Frequent Fire ERUs?	Metric: Frequency of snags and downed logs. Source: Field data and database of record such as FACTS.	3 to 5 years	A
5	Are tree densities within forested areas falling within the basal area ranges established in the desired conditions for Ponderosa Pine and Mixed Conifer with Frequent Fire ERUs?	Metric: Basal area. Source: Field data and database of record such as FACTS.	3 to 5 years	A
6	How much have management activities contributed to reducing the risk of uncharacteristic fire?	Metric: acres mechanically treated, acres of prescribed fire, acres of wildfire for resource objectives. Source: Database of record such as FACTS.	Annually	A

Question Number	Questions	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability
7	How much have management activities contributed to returning fire to fire-adapted ecosystems?	Metric: acres of prescribed fire and acres of wildfire managed for resource objectives that maintain or move towards desired conditions in the forest plan. Source: Database of record such as FACTS.	Annually	A
8	How much have management activities improved functional-at-risk or nonfunctional stream riparian areas and wetlands?	Metric: acres/miles of functional-at-risk or nonfunctional stream riparian areas improved and number and acres of functional-at-risk or nonfunctional wetlands improved. Source: Database of record such as WIT ³ database (Watershed Improvement Tracking).	Annually	A, B
9	How much have management activities contributed to the restoration of riparian function to springs not in proper functioning condition?	Metric: number of springs improved or restored. Source: Database of record such as WIT.	Annually	A
10	How many water rights have been procured or how many water rights filings have been done?	Metric: Number of water rights procured or filings completed Source: USDA Forest Service Water Rights and Uses (WRU) database and Arizona Department of Water Resources	Annually	A
11	What are surface water trends for Oak Creek, Wet Beaver Creek, and Fossil Creek?	Metric: Annual mean discharge and peak streamflow Source: U.S. Geological Survey Gaging Stations	Annually	A
12	How much have management activities contributed to reducing the incidence or abundance of aquatic invasive species?	Metric: miles of streams and acres of lakes, ponds, or wetlands with non-native species removal or are affected by a fish barrier or other structure. Number of new populations of aquatic invasive species. Source: surveys and reports, including from partner agencies and organizations (such as Fossil Creek native fish annual monitoring report); information from State and Federal agencies on new populations of aquatic invasive species.	Annually	A, B
13	How much have management activities contributed toward reducing the incidence or abundance of invasive plants?	Metric: Acres of invasive plants treated. Source: Database of record such as FACTS.	Annually	A
14	To what extent are undesirable outbreaks of insects and pathogens occurring on the forest? (1982 Planning Rule (sec. 219.12(k)(5)(iv))	Metric: acres of damage or mortality. Source: Forest Health and Condition Report, Southwestern Region.	Annually	A, B

Question Number	Questions	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability
15	How much have implemented projects and soil best management practices contributed to protecting soil, reducing accelerated erosion, reducing soil compaction, and maintaining soil and nutrient cycling thus maintaining long term soil productivity?	Metric: Acres of implemented projects that maintain or trend toward satisfactory soil condition. Acres and number of projects where BMP implementation was effective at protecting soil productivity. Source: Field data from a sample of implemented projects on the forest (soil condition and soil productivity), including implemented BMPs.	Every 3 to 5 yrs for soil condition assessments. Annually for BMP implementation.	B
16	Have management activities contributed to impairment of warm water or cold water streams based on aquatic macroinvertebrate metrics? Aquatic macroinvertebrates are an ecological indicator of water quality.	Metric: Streams added to or removed from ADEQ's impaired or non-attaining list. Source: ADEQ 305(b) reports.	Every 3 years.	A
17	Have management activities contributed to the delisting and improvement of impaired waters, or waters non-attaining Arizona water quality standards?	Metric: number of streams or lakes removed or added to ADEQ's impaired or non-attaining list. Source: ADEQ 305(b) reports.	Every 3 years	A
18	How much have management activities contributed to maintaining or moving towards desired conditions of functioning properly for priority 6th code watersheds identified in the watershed condition assessment?	Metric: Acres of watershed maintenance or restoration activities and acres of vegetation treatments within priority 6th code watersheds. Name and number of 6th code watersheds that have moved to an improved class. Source: In forestwide WCATT (Watershed Condition Assessment Tracking Tool) and database of record such as FACTS.	Every 3 to 5 years	A

Question Number	Questions	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability
19	<p>A. How much have management activities improved habitat for aquatic and riparian-dependent threatened, endangered, or proposed species (related to question 8)?</p> <p>B. How much have management activities contributed to reducing the incidence or abundance of aquatic invasive species in habitat for threatened, endangered or proposed species (related to question 10)?</p>	<p>A. Metric: acres/miles of functional-at-risk or nonfunctional stream riparian areas improved and number and acres of functional-at-risk or nonfunctional wetlands improved as related to threatened, endangered, and proposed species habitat. A. Source: Database of record such as WIT database.</p> <p>B. Metric: miles of streams and acres of lakes, ponds, or wetlands with non-native species removal or are affected by a fish barrier or other structure. B. Source: project files for structures completed.</p> <p>B. Metric: Number of new populations of aquatic invasive species. B. Source: surveys and reports, including from partner agencies and organizations (such as Fossil Creek native fish annual monitoring report); information from State and Federal agencies on new populations of aquatic invasive species.</p>	Annually	B
20	What is the status of the three songbirds identified as focal species (Grace's warbler, black-throated gray warbler, and juniper titmouse)?	<p>Metric: Trends in occupancy (proportion of grid cells occupied across the forest) and density (birds per square kilometer) for each species. To monitor local populations and infer changes from restoration treatments, changes in cells/routes that had restoration treatments could be compared to untreated cells.</p> <p>Source: Bird Conservatory of the Rockies (BCOR) Integrated Monitoring in Bird Conservation Regions (IMBCR) data; state bird monitoring and long-standing bird monitoring data sets such as the Christmas Bird Count and Breeding Bird Surveys.</p>	3 to 5 years	A

Question Number	Questions	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability
21	<p>A. How much have management activities contributed to returning fire to Ponderosa Pine, Mixed Conifer with Frequent Fire, and Mixed Conifer with Infrequent Fire ERUs?</p> <p>B. Are plan components guiding fuels reduction and forest restoration activities maintaining the suite of late-seral ecological conditions within mixed conifer and pine-oak habitats that contribute to stable or increasing MSO populations?</p>	<p>A. Metric: Acres mechanically treated, acres of prescribed fire, acres of wildfire for resource objectives.</p> <p>B. Metric: Acres of change in late seral mixed conifer and pine-oak habitats.</p> <p>A. Source: Field data and database of record such as FACTS.</p> <p>B. Source: Best available remote sensing data (satellite, land cover databases) to measure change in acres. Results from Monitoring Questions 4, 5, and 6.</p>	5 to 10 years	A, B
22	How much have management activities contributed to maintaining or moving toward desired conditions for aspen? Aspen is an ecological indicator of habitat diversity, and early seral stages in the following ERUs: Mixed Conifer with Infrequent Fire, Mixed Conifer with Frequent Fire, Spruce-Fir, and in localized areas in Ponderosa Pine.	<p>Metric: Acres of aspen protected or maintained.</p> <p>Source: Database of record such as FACTS database.</p>	Annually	A
23	Have areas classified as unsuited for timber production become suitable? (sec. 219.12(k)(5)(ii))	<p>Metric: Acres of suitable timber. Method: Reapply timber suitability criteria and process.</p> <p>Source: TimCo (Timber code) Forest Service database</p>	Every 10 years	A
24	Are forests and woodlands adequately restocked within 5 years of final harvest treatment when openings are created for the purpose of regeneration? (sec. 219.12(k)(5)(i))	<p>Metric: Percentage of area adequately restocked.</p> <p>Source: Review annual reforestation needs report, stocking certifications, silvicultural prescriptions, and FACTS database.</p>	1 to 5 years	A, B
25	Should maximum size limits of 40 acres for even-aged management harvest areas be continued? (sec. 219.12(k)(5)(iii)), 219.27 (d)(2)	<p>Metric: Percentage of harvest units that exceed 40 acres for even-aged management.</p> <p>Source: FACTS database.</p>	1 to 5 years	A, B
26	How many new recreation opportunities have been added to the system?	<p>Metric: Number of new facilities. Number of miles and type of new trails provided.</p> <p>Source: INFRA⁴ database</p>	Every 5 years	A

Question Number	Questions	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability
27	How many recreation sites or locations have been improved, relocated, or decommissioned in response to known resource damage?	Metric: Number of facilities or dispersed sites. Source: INFRA database, PALS (Planning, Appeals, Litigation System) Forest Service database	Every 5 years	A
28	How much have management activities contributed to progress toward scenic integrity desired conditions in areas identified as needing rehabilitation?	Metric: Percentage of acres that have been thinned <u>and</u> burned and that improved (by at least one level) areas identified as needing rehabilitation. Source: FACTS database, Scenery Management – Scenic Integrity Objectives Rehabilitation Map (map14) included with the plan, and other areas identified by scenery resource specialists as needing rehabilitation.	Annually	A, B
29	Have there been changes that have resulted in unforeseen issues requiring plan amendments? (sec. 219.12(k))	Metric: Number, type, and content of plan amendments. Source: database of record for number, type, and content of plan amendments.	Annually	B
30	How do actual accomplishments compare with plan objectives? (sec. 219.12(k)(1))	Metric: Various, as described in plan objectives. Source: database of record for the various accomplishments, such as: FACTS, INFRA, PALS, and WIT databases.	Annually	B

¹The Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring program was established in 1985 to aid the creation of Federal and State implementation plans for the protection of visibility in Class I areas (156 national parks and wilderness areas) as stipulated in the 1977 amendments to the Clean Air Act.

²FACTS refers to the Forest Activity Tracking System database that is part of the Natural Resource Manager's (NRM) system of database tools for managing agency data across the Forest Service. It is an activity tracking application for all levels of the Forest Service. The application allows tracking and monitoring of National Environmental Policy Act (NEPA) decisions as well as the ability to create and manage Knutson-Vandenberg (KV) trust fund plans at the timber sale level.

³WIT refers to the Watershed Improvement Tracking database that is part of the NRM system of database tools for managing agency data across the Forest Service. 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.

⁴INFRA refers to the Infrastructure database that is part of the NRM system of database tools for managing agency data across the Forest Service.

