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Biennial Monitoring Evaluation Report for the Coconino National Forest Fiscal Years 2023-2024

Forest Service

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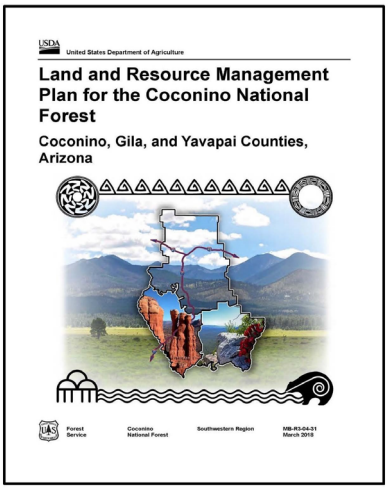
About the Coconino's Plan Monitoring Program

Purpose

The purpose of this Biennial Monitoring Evaluation Report is to inform the public, partners, stakeholders, other government agencies, and tribes of the completed and ongoing monitoring of forest plan implementation activities in the Coconino National Forest. The monitoring results presented in this report help the Forest Supervisor determine whether a change is needed in forest plan direction, plan components, or other plan content that guide management of resources in the Coconino National Forest. The Biennial Monitoring Evaluation Report represents one part of the Forest Service's overall monitoring program for this national forest. It is not a decision document. It evaluates monitoring questions and indicators presented in Chapter 5, Monitoring Strategy, of the revised Coconino Forest Plan (2018), and reports on the results of monitoring of management actions carried out in the forest.



The Coconino monitoring plan addresses the following topics. The specific monitoring questions for these topics are in Table 1 below (Coconino NF Plan Monitoring Questions).

- Air quality
- Visibility in Class I Areas
- Grasslands
- Reducing uncharacteristic fire in fire-adapted ecosystems
- Improving stream riparian areas and wetlands
- Restoring riparian function to springs
- Water rights, surface water
- Incidence/abundance of aquatic invasive species and invasive plants
- Extent of insect and pathogen outbreaks
- Water quality, priority watersheds
- Long-term soil productivity
- Threatened, endangered, or proposed species
- Focal species (songbirds)
- Habitat diversity (early seral (aspen))
- Recreation opportunities, scenic integrity
- Changes causing issues and requiring plan amendments
- Progress toward meeting plan objectives
- Monitoring partnerships

Objectives

- Monitor how the forest plan is applied with project activities.
- Evaluate monitoring data for indicators of trends of or effects on forest resources, and how well plan implementation is moving forest resources toward desired conditions.
- Document and report the results of completed forest plan implementation, monitoring, and evaluation (this monitoring evaluation report).
- Document scheduled monitoring that has not been completed and the reasons and rationale why.
- Present recommended change opportunities to the responsible official.
- Through a management review of the monitoring evaluation report by the Forest Supervisor, determine if any changes are needed in monitoring indicators or methods, management actions, or forest plan management direction.

Table 1. Coconino NF Plan Monitoring Questions (Revised Coconino Forest Plan, pp. 203-208)

Question Number	Question	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability[1]
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[2] 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[3] 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

Question Number	Question	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability[1]
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
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[4] 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

Question Number	Question	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability[1]
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
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

Question Number	Question	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability[1]
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
19	A. How much have management activities improved habitat for aquatic and riparian-dependent threatened, endangered, or proposed species (related to question 8)? 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)?	**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. **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. **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	Annually	B

Question Number	Question	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability[1]
		report); information from State and Federal agencies on new populations of aquatic invasive species.		
20	What is the status of the six songbirds identified as focal species (Grace's warbler, pygmy nuthatch, black-throated gray warbler, juniper titmouse, ashthroated flycatcher, and song sparrow)?	**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. **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.	3 to 5 years	A
21	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? 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?	**A. Metric:** Acres mechanically treated, acres of prescribed fire, acres of wildfire for resource objectives. **A. Source:** Field data and database of record such as FACTS. **B. Metric:** Acres of change in late seral mixed conifer and pine-oak habitats. **B. Source:** Best available remote sensing data (satellite, land cover databases) to measure change in acres. Results from Monitoring Questions 4, 5, and 6.	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	**Metric:** Acres of aspen protected or maintained. **Source:** Database of record such as FACTS database.	Annually	A

Question Number	Question	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability[1]
	following ERUs: Mixed Conifer with Infrequent Fire, Mixed Conifer with Frequent Fire, Spruce-Fir, and in localized areas in Ponderosa Pine.			
23	Have areas classified as unsuited for timber production become suitable? (sec. 219.12(k)(5)(ii))	**Metric:** Acres of suitable timber. Method: Reapply timber suitability criteria and process. **Source:** TimCo (Timber code) Forest Service database	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)	**Metric:** Percentage of area adequately restocked. **Source:** Review annual reforestation needs report, stocking certifications, silvicultural prescriptions, and FACTS database.	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)	**Metric:** Percentage of harvest units that exceed 40 acres for even-aged management. **Source:** FACTS database.	1 to 5 years	A, B
26	How many new recreation opportunities have been added to the system?	**Metric:** Number of new facilities. Number of miles and type of new trails provided. **Source:** INFRA[5] database	Every 5 years	A
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 and 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	Annually	A, B

Question Number	Question	Metric and Data Source	Monitoring Frequency	Data Precision and Reliability[1]
		plan, and other areas identified by scenery resource specialists as needing rehabilitation.		
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

[1] Data Precision and Reliability: An indication of how rigorous the information used to evaluate the monitoring question is with respect to repeatability, reliability, accuracy, and precision. Two categories of precision and reliability are appropriate at the plan scale, and because of varying methods and data sources used to evaluate the monitoring question, both classes may be indicated. Classes of precision and reliability, however, are not meant to identify which methods and data sources may be most appropriate to answer the monitoring question.

- Class A: Methods that are generally well-accepted for modeling or quantitative measurement. Results have a high degree of repeatability, reliability, accuracy, and precision.
- Class B: Methods or measurements that are based on project records, personal communications, ocular estimates, pace transects, informal visitor surveys, and similar types of assessments. The degree of repeatability, reliability, accuracy, and precision are not as high as Class A methods, but they still provide valuable information.

[2] The 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.

[3] FACTS 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.

[4] WIT 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.

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

Summary

Monitoring was completed in 2023 and 2024 to address the following topics in the Coconino's Monitoring Plan, covering 29 of the 30 monitoring questions. The results and recommendations from this monitoring are described in this 2025 Biennial Monitoring Evaluation Report for the Coconino National Forest. This report documents recommendations as to whether a change to the Forest Plan or a change to the monitoring program is warranted based on new information, whether a new assessment may be needed, or whether there is no need for change at this time.

- Air quality (Monitoring Question 1)
- Visibility in Class I Areas (Monitoring Question 2)
- Grasslands (Monitoring Question 3)
- Downed logs, snags, tree densities in Frequent Fire ERUs (Monitoring Questions 4 and 5)
- Reducing uncharacteristic fire in fire-adapted ecosystems (Monitoring Questions 6 and 7)
- Improving stream riparian areas and wetlands (Monitoring Question 8)
- Restoring riparian function to springs (Monitoring Question 9)
- Water rights, surface water (Monitoring Questions 10 and 11)
- Incidence/abundance of aquatic invasive species and invasive plants (Monitoring Questions 12 and 13)
- Extent of insect and pathogen outbreaks (Monitoring Question 14)
- Long-term soil productivity (Monitoring Question 15a)
- Protecting soil productivity (Monitoring Question 15b)
- Water quality, priority watersheds (Monitoring Questions 16, 17, and 18)
- Aquatic and riparian-dependent threatened, endangered, or proposed species (Monitoring Question 19)
- Focal species (Monitoring Question 20)
- Habitat diversity (late seral) (Monitoring Question 21.B.)
- Habitat diversity (early seral (aspen)) (Monitoring Question 22)
- Adequate regeneration (Monitoring Question 24)
- Maximum size of even-aged management (Monitoring Question 25)
- Recreation opportunities (Monitoring Questions 26 and 27)
- Scenic integrity (Monitoring Question 28)
- Changes causing issues and requiring plan amendments (Monitoring Question 29)
- Progress toward meeting plan objectives (Monitoring Question 30)

Monitoring for the following topic/monitoring question will be reported in the 2027 or later Biennial Monitoring Evaluation Report for the Coconino, as it's monitoring frequency is 10 years and the forest does not yet have monitoring results for it.

- Suitability for timber production (Monitoring Question 23)

Monitoring results show that, in general, project activities implemented per the revised forest plan have moved forest resources toward desired conditions for those resources. As of this reporting, there are no resource areas monitored for which a Forest Plan amendment needs to be considered to change the existing management direction or the monitoring strategy.

Since the 2023 BMER, a forest plan amendment was completed to incorporate the new management direction for the Fossil Creek Designated Wild and Scenic River Special Area, as well as to make the boundary adjustments to that special area and the Designated Fossil Springs Botanical Area. That amendment was analyzed and approved in the Fossil Creek Comprehensive River Management Plan (CRMP) Final Environmental Impact Statement and Record of Decision.

Two other forest plan amendments are foreseen in the years to come: an amendment to finalize the list of species of conservation concern for the Coconino, and a separate amendment to evaluate adding management direction for the San Francisco Peaks Traditional Cultural Property.

Of the 23 plan objectives reported in the BMER, 15 have already been met in this first seven years of the initial 10-year planning period for our revised Forest Plan. There are eight (8) objectives which have not been fully met: namely for grasslands, pinyon-juniper with grass, ponderosa pine, mixed conifer, springs, and soils. Management activities may need to be increased or concentrated in these resource areas to fully meet forest plan objectives. Forest plan objectives, to the extent they were met in the first seven years of the current 10-year planning period, and recommendations to meet them for these resources, are listed in the Amendments and Objectives section.

Table 2 summarizes the results of evaluating the monitoring questions covered in this report. It displays if the monitoring metrics gathered are in accord with forest plan direction and if changes to plan direction, management activities, or the plan monitoring program should be considered.

Table 2. Number of Evaluated Monitoring Questions Resulting in Adaptive Management Recommendations

	Yes	Unsure	No
Forest Plan direction met	29	0	0
Change to Forest Plan warranted	0	0	29
Additional management activities recommended	7	0	22
Additional monitoring recommended	5	0	24
Change to Plan monitoring program warranted	0	0	29

Table 3 summarizes the findings of this report for each of the plan monitoring questions evaluated in the resource sections.

Table 3. Summary of Findings by Plan Monitoring Question

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
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	**Yes.** No notices of exceedance were sent to the forest during the 2023 and 2024 fiscal years. None of the forest management activities, including prescribed burns and unplanned ignitions, resulted in concerns for the air quality in the three local airsheds monitored.	None	Continue to coordinate with the Arizona Department of Environmental Quality (ADEQ) in the monitoring of the Colorado River, Little Colorado River, and Verde River airsheds.
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	**Yes.** None of the forest management activities, including prescribed burns and unplanned ignitions, resulted in concerns for visibility in the Sycamore Wilderness and Mazatzal Wilderness Class I Areas monitored.	None	Continue to coordinate with the Environmental Protection Agency in the IMPROVE monitoring program stations at Ike's Backbone and Sycamore Canyon.

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
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?	**Yes.** Mechanical and prescribed fire treatments implemented, as well as the wildfire occurring, in these grassland ERUs have maintained or made progress toward desired conditions.	Increase management activities.	Continue to implement mechanical, fire, and invasives treatments to restore and improve grasslands, and consider ways to successfully treat more Great Basin and Montane/Subalpine grasslands. Restore or improve about 6,000 acres of Great Basin Grasslands, and 1,690 acres of Montane/Subalpine Grasslands in FYs 2025 to 2028, the remaining three years of this planning period. Continue to work with the 4FRI MPMB and Northern Arizona University to design treatments to benefit pronghorn in grassland ERUs. Continue to plan and implement a forest-wide grassland restoration project to revitalize grasslands throughout the forest.

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
4. Are downed logs and snags falling within the ranges established in desired conditions for Ponderosa Pine and Mixed Conifer with Frequent Fire ERUs?	**Yes.** Snags, downed logs, and coarse woody debris are generally maintained and representative of the species within each ERU. Follow-up prescribed burns often create additional snags and future downed logs. Coarse woody debris, including downed logs, generally range from 3 to 10 tons per acre.	Improve monitoring.	The data for Monitoring Question 4 need to be gathered and analyzed in a coordinated way in order to respond to this forest plan monitoring question more precisely.
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?	**Yes.** Thinning prescriptions specify basal area targets that are well within the desired conditions as described in the Forest Plan. Tree density within forested areas is generally reduced to range from 22 to 89 square feet of basal area per acre in the ponderosa pine ERU.	Improve monitoring.	The data for Monitoring Question 5 need to be gathered and analyzed in a coordinated way in order to respond to this forest plan monitoring question more precisely.
6. How much have management activities contributed to reducing the risk of uncharacteristic fire?	**Yes.** The mechanical and prescribed fire treatments implemented, as well as wildfires managed to meet resource objectives, in all forest ERUs during these two fiscal years have reduced the risk of uncharacteristic fire by: Reducing fuel loads and tree densities on over 91,510 acres of the forest. Using prescribed fire after mechanical treatments. Managing wildfires for resource objectives and restoring fire return intervals.	Increase management activities.	Use prescribed fire on about 41,090 acres of the Ponderosa Pine ERU and about 6,790 acres of the Mixed Conifer ERUs in the remaining three years of this planning period (FYs 2025 to 2028).

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
7. How much have management activities contributed to returning fire to fire-adapted ecosystems?	**Yes.** The mechanical and prescribed fire treatments implemented, as well as wildfires managed to meet resource objectives, in all forest ERUs during these two fiscal years have helped return fire to these fire-adapted ecosystems by: • Increasing fire treatments to achieve and/or maintain composition, structure, and function of fire-adapted ERUs. • Using prescribed fire after mechanical treatments. • Managing wildfires for resource objectives and restoring fire return intervals	Increase management activities.	Use prescribed fire on about 41,090 acres of the Ponderosa Pine ERU and about 6,790 acres of the Mixed Conifer ERUs in the remaining three years of this planning period (FYs 2025 to 2028).

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
8. How much have management activities improved functional-at-risk or nonfunctional stream riparian areas and wetlands?	**Yes.** Implemented management activities have improved functional-at-risk or nonfunctional stream riparian areas and wetlands by: • Stabilizing active headcuts using loose rock structures. • Improving soil water infiltration and storage. • Addressing channel incision with gully stabilization treatments. • Improving vegetation establishment and robustness along streambanks and around springs. • Increasing the wetted area with stabilization treatments. • Fencing to protect springs, their sources, and their cultural values from degradation. • Reducing invasive plants (see Invasives, Insects, and Disease section). • Meeting forest plan objectives for Riparian Forest Types and Wetlands (see the Plan Amendments/Objectives section).	None	Continue to work with partners to implement additional phases of restoration in meadows and wetlands in the remaining three years of this planning period (FYs 2025 to 2028).

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
9. How much have management activities contributed to the restoration of riparian function to springs not in proper functioning condition?	**Yes.** Implemented management activities have contributed to the restoration of riparian function to springs not in proper functioning condition by: • Maintaining or improving native riparian vegetation around springs. • Protecting springs, their sources, and their cultural values from degradation. • Reducing invasive plants. • In riparian and spring areas treated, protective vegetative ground cover is increasing, and soil productivity and function is improving.	Increase management activities.	Restore the riparian function of 3 additional springs in FYs 2025 to 2028.
10. How many water rights have been procured or how many water rights filings have been done?	**Yes.** No new water rights were procured; however, approximately 500 new surface water rights claims were filed in the Verde River Basin. The Coconino employed a 3-person American Conservation Experience (ACE) crew to complete field verification and data collection on water rights, including stock tanks, springs, and water systems requiring new surface water claims. The crew visited approximately 150 sites in 2024 to prepare for new surface water claims and statements of claimants in the Verde Water Rights Adjudication.	None	N/A

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
11. What are surface water trends for Oak Creek, Wet Beaver Creek, and Fossil Creek?	**Yes.** In these two fiscal years, the average annual discharges measured ranged from wetter than 70% of the previous 15 years of record to the highest annual average discharge within the 15-year period of record for Fossil Creek; and from drier than 72% of the years in the 83-year record to higher than 94% of the years in the 60-year record for Oak and Wet Beaver Creeks.	None	N/A
12. How much have management activities contributed to reducing the incidence or abundance of aquatic invasive species?	**Yes.** The management activities implemented in streams, lakes, ponds, or wetlands have contributed to reducing the incidence or abundance of aquatic invasive species. The number of new populations of aquatic invasive species remained very low (only one) in FYs 2023 and 2024. These management activities, as well as continued monitoring of non-native fish populations, have reduced aquatic invasive species.	None	N/A

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
13. How much have management activities contributed toward reducing the incidence or abundance of invasive plants?	**Yes.** An integrated approach to treating identified populations of invasive plants has moved forest ERUs toward their desired conditions. The number of new populations of invasive species remained low to moderate in FYs 2023 and 2024. These invasive populations were identified, inventoried, and referenced with the Coconino's Invasive Plant List, which categorizes species based on abundance and aggressiveness of spread. and treatments were designed and implemented to stop their spread and eliminate them.	None	N/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))	**Yes.** Overall, there were far fewer acres impacted by beetles in FYs 2023 and 2024 than in FYs 2021 and 2022..	None.	During project planning each year, address those forest stands affected by insect and disease outbreaks.
15. How much have implemented projects and soil best management practices [BMPs] contributed to protecting soil, reducing accelerated erosion, reducing soil compaction, and maintaining soil and nutrient cycling thus maintaining long term soil productivity (soil condition assessments)?	**Yes.** In FYs 2023 to 2024, the watershed program completed BMP monitoring at 9 sites. In riparian areas treated, protective vegetative ground cover is increasing, and soil productivity and function is improving. Compaction and erosion is reduced.	Increase soil condition assessments, BMP monitoring.	The Watershed Program is committed to additional BMP monitoring in FYs 2025 to 2028. The Coconino recognizes the need to conduct soil condition assessments, as no soil quality monitoring occurred in FYs 2023 and 2024.
16. Have management activities contributed to impairment of warm water or cold water streams based on aquatic macroinvertebrate metrics?	**Yes.** Macroinvertebrate surveys and metrics do not show impairment of water quality in streams. Sections of Spring Creek, the Verde River, and Oak Creek are not attaining	None	Continue annual macroinvertebrate sampling and analysis. Continue to manage recreation in Fossil Creek and

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
Aquatic macroinvertebrates are an ecological indicator of water quality.	desired conditions due to Escherichia coli (E. coli) pollution. Fossil Creek is considered "provisionally delisted" by ADEQ and is expected to be officially approved as delisted for E. coli by the Environmental Protection Agency in the 202 305(b) Report. No forest streams have been added to ADEQ's impaired or non-attaining list.		to partner with ADEQ and Friends of the Forests to monitor water quality.
17. Have management activities contributed to the delisting and improvement of impaired waters, or waters non-attaining Arizona water quality standards?	**Yes.** Upper and Lower Lake Mary, Soldier Lake and Annex, and Long Lake are impaired for mercury. ADEQ and the Forest Service work together under an MOU to implement and monitor Total Maximum Daily Loads (TMDLs), with a strong focus of restoration along Oak Creek. No forest lakes or streams have been removed from or added to ADEQ's impaired or non- attaining list.	None	Continue to manage recreation in Fossil Creek and to partner with ADEQ and Friends of the Forests to monitor water quality.
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?	**Yes.** The Coconino identified priority projects and prepared draft watershed restoration actions plans to prepare to designate the Upper and Lower Lake Mary-Walnut Creek subwatersheds (Lake Mary Watershed), and the East Clear Creek-Blue Ridge Reservoir, Miller Canyon, and Bear Canyon subwatersheds (CC Cragin Watershed) as priority watersheds in the Watershed Condition Framework (WCF).	None	N/A

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
19. A. How much have management activities improved habitat for aquatic and riparian-dependent threatened, endangered, or proposed species (related to question 8)?	**Yes.** Management activities implemented have improved habitat for aquatic and riparian-dependent threatened, endangered, or proposed species by: • Maintaining or improving native riparian vegetation along stream banks and around springs. • Reducing riparian fragmentation, the threat of excessive sedimentation, soil compaction, water quality concerns, and vegetation damage from dispersed recreation. • Reducing the threat of uncharacteristic wildfire. • Reducing invasive plants. • Protecting springs and their sources from degradation. • Making progress in meeting forest plan objectives for Riparian Forest Types, Wetlands, and Springs. • In riparian and spring areas treated, protective vegetative ground cover is increasing.	None	N/A

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
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)?	The number of new populations of aquatic invasive species remained very low (only one) in FYs 2023 and 2024. Management activities, as well as continued monitoring of non-native fish populations, have reduced aquatic invasive species by: • Removing non-native fish to improve the survival and success of reintroduced populations of native fish. • Reducing predation and competition from aquatic invasive species, and threats to the sustainability of listed species such as the Chiricahua leopard frog.		
20. What is the status of the six songbirds identified as focal species (Grace's warbler, pygmy nuthatch, black-throated gray warbler, juniper titmouse, ashthroated flycatcher, and song sparrow)?	**Yes.** BCOR survey results reflect an increase in abundance between 2022 and 2023 for four of the five focal species.	None	Data will become more relevant and show trends over time as more survey years are added. Continue pre-treatment/base-line monitoring. Investigate ways to better address the comparisons between treated and untreated survey areas.

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
21A. How much have management activities contributed to returning fire to Ponderosa Pine, Mixed Conifer with Frequent Fire, and Mixed Conifer with Infrequent Fire ERUs?	**Yes.** The mechanical and prescribed fire treatments implemented, as well as wildfires managed to meet resource objectives, in all forest ERUs during these two fiscal years have helped return fire to these fire-adapted ecosystems by: • Increasing fire treatments to achieve and/or maintain composition, structure, and function of fire-adapted ERUs. • Using prescribed fire after mechanical treatments. • Managing wildfires for resource objectives and restoring fire return intervals	Increase management activities.	Use prescribed fire on about 41,090 acres of the Ponderosa Pine ERU and about 6,790 acres of the Mixed Conifer ERUs in the remaining three years of this planning period (FYs 2025 to 2028).
21B. 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?	**Yes.** With this limited data, the trend appears to be a slight decrease in late seral habitat from 2018 to 2025. This is most likely due to the wildfires that have burned in mixed conifer stands.	None	N/A

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
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.	**Yes.** The management activities implemented to restore, protect, and maintain aspen have contributed to habitat diversity and early seral stages in forest ERUs. 280-292 acres of aspen were protected with exclosure fencing or maintained with conifer weeding in FYs 2023 and 2024. Aspen restoration in the Coconino National Forest has met the Aspen and Maple objective for this first 10-year planning period.	None	Continue the progress being made to restore aspen on the forest in FYs 2025 to 2028.
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)	**Yes.** On the Coconino, ponderosa pine cone crops and associated regeneration events are very cyclical, with large-scale regeneration events typically only occurring every seven to 15 years. Therefore, it is unlikely there will be enough regeneration of sufficient size five years after thinning to be able to certify. It is more likely that regeneration will be sufficient 10 years after thinning.	Increase monitoring.	Increase certification of natural regeneration on wildfire acres and post-harvest areas.
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)	**No.** the Coconino has not practiced even-aged management for quite a while on the forest. Therefore there are no harvest units that exceed 40 acres for even-aged management. Only uneven-aged management is used to restore more resilient multi-aged stands.	None.	N/A

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
26. How many new recreation opportunities have been added to the system?	**Yes.** In FYs 2023 and 2024, the Coconino constructed two new trailheads; rehabilitated eight recreation sites damaged by wildfire and one damaged by flooding; made numerous infrastructure improvements at campgrounds, day-use sites, and trailheads; temporarily closed a day-use site for public health and safety; constructed extensive infrastructure to mitigate damage from unauthorized OHV use; and constructed 25 new miles of trail.	Increase monitoring.	The forest should continue existing monitoring efforts and consider expanding the monitoring of OHV usage. This could include standardized monitoring of motorized and non-motorized trails, wilderness management, developed and dispersed recreation sites, and winter sports.
27. How many recreation sites or locations have been improved, relocated, or decommissioned in response to known resource damage?	**Yes.** The Coconino improved, relocated, or temporarily closed 27 recreational facilities.	None	The forest will continue to provide recreational opportunities that do not damage other forest resources. Additional improvements of campgrounds, day-use sites, and trail systems across the Coconino in FYs 2025 and 2026.
28. How much have management activities contributed to progress toward scenic integrity desired conditions in areas identified as needing rehabilitation?	**Yes.** The Coconino has rehabilitated about 47,890 acres of the three SIO Rehabilitation Levels in the first seven years of this 10-year period for the Forest Plan, far exceeding the number of acres to be restored in the Scenic Resources objective.	None	N/A

Monitoring Question (covered in this biennial report)	Progress toward Desired Conditions Using Plan Direction?	Type of Change Recommended	Recommendation
29. Have there been changes that have resulted in unforeseen issues requiring plan amendments? (sec. 219.12(k))	**Yes.** One plan amendment has been completed to add the specific management direction for the Fossil Creek Wild and Scenic River. Another plan amendment is foreseen in the years to come to evaluate adding management direction for the San Francisco Peaks Traditional Cultural Property.	None	N/A
30. How do actual accomplishments compare with plan objectives? (sec. 219.12(k)(1))	**Yes.** The Coconino has made progress in meeting plan objectives. See Recommendations in the Plan Amendments, Objectives section.	Increase management activities.	Eight (8) recommendations are made to fully meet plan objectives in the first 10-year planning period. See the Recommendation by Monitoring Question in this table, and those in the Plan Amendments, Objectives section.

Forest Supervisor's Certification

This report documents the results of monitoring activities in Fiscal Year (FY) 2023 and FY 2024 on the Coconino National Forest. In this 2025 report, all but one of the forest plan monitoring questions in the revised Forest Plan are responded to and evaluated. This lends a thorough look at all of the management direction currently used, as well as the progress made by the Coconino National Forest in fulfilling its responsibilities for the stewardship of the forest and meeting the needs of the American people. Evaluation of monitoring data for the remaining monitoring question (MQ #23 re: suitable timber acres, with a monitoring frequency of every 10 years) will be included in later editions of this biennial report.

The Coconino National Forest recognizes the value of citizen science in engaging stakeholders and augmenting monitoring and existing data collection programs. Monitoring and data collection and analysis by partners is extensive and adds a great deal to the Coconino's community of knowledge about ecosystem restoration. With the help of engaged tribes, other agencies, partners, and stakeholders, the Coconino continues to share data and monitor forest resources per the forest monitoring plan. Monitoring by partners is included in this report by resource section.

I have evaluated the monitoring and evaluation results presented in this report and endorse them. I have found that there are no recommended changes to the management direction or monitoring strategy in the 2018 Revised Coconino Forest Plan at this time. There are, however, some recommendations as a result of these findings that management activities increase for some of the resources identified in the plan monitoring questions. There is also a need to increase monitoring of some resources to better respond to those questions. I therefore consider the Coconino Forest Plan sufficient to continue to guide land and resource management of the Coconino National Forest for the foreseeable future, and plan a deeper examination of any recommended changes with forest leadership and resource specialists. This Biennial Monitoring Evaluation Report is posted on the forest website and available for public review here: https://www.fs.usda.gov/r03/coconino/planning.

May 14, 2026

Aaron Mayville
Forest Supervisor
Coconino National Forest

Date

Air Quality and Visibility

The first two monitoring questions in the Coconino Forest Plan require monitoring for air quality and visibility.

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?

21. 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?

Air Quality

There are three smoke management units that overlap the Coconino National Forest, the Colorado River, Little Colorado River, and Verde River airsheds. Air quality data are collected daily by Arizona Department of Environmental Quality (ADEQ) air quality monitoring stations in these airsheds and determine if there are any exceedances of State of Arizona's air quality standards for any pollutant measured. Forest managers receive notice of any exceedance and evaluate if it is related to any forest management activities being implemented on the forest.

Results: No notices of exceedance were sent to the Coconino National Forest during the 2023 or 2024 fiscal years. This reflects that none of the forest's management activities, including prescribed burns and unplanned ignitions, resulted in concerns for the air quality in the three local airsheds monitored.

Partners in Air Quality Monitoring

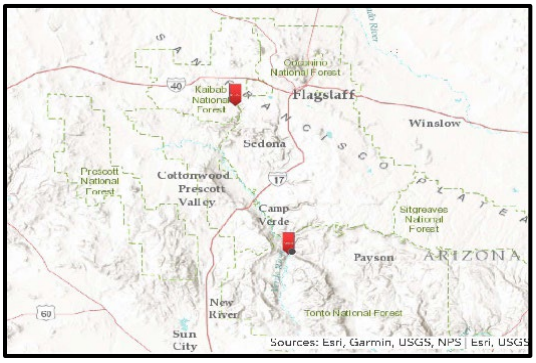
- Friends of the Forest – reading air quality monitors.

Visibility

The 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. The Environmental Protection Agency's air quality monitoring stations at Ike's Backbone and Sycamore Canyon are part of the IMPROVE monitoring program. These stations collect data within

the Sycamore Wilderness and Mazatzal Wilderness Class I Areas and determine when there are exceedances of the Regional Haze Implementation Plan (ADEQ State Implementation Plan Revision: Regional Haze Program (2018-2028)).

The Regional Haze Program relies upon the haze index to track two different trends: visibility on the haziest days annually and on the clearest days annually. The haziest days are also compared to a national visibility goal of no manmade impairment by 2064:



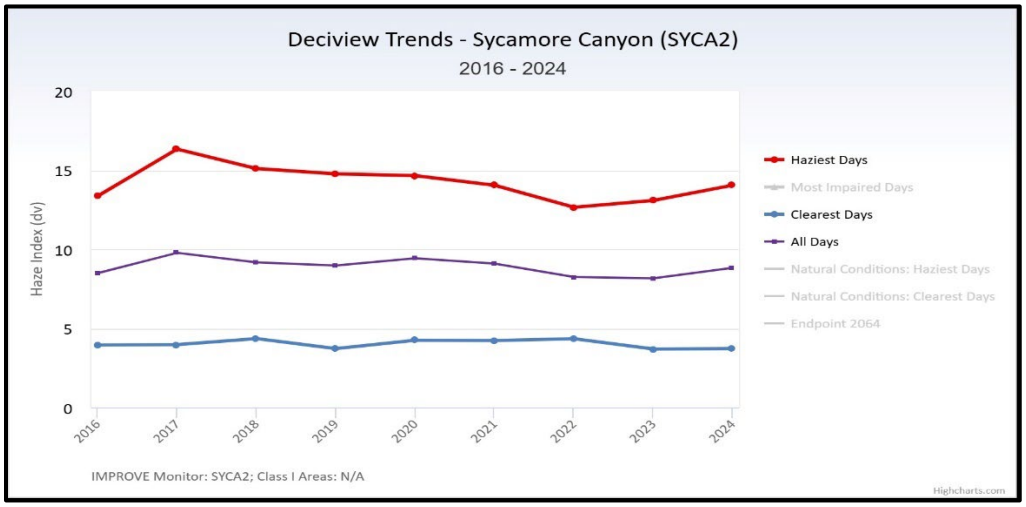
Location of the Sycamore Canyon and Ike's Backbone IMPROVE Monitors

> The prevention of any future, and the remedying of any existing impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution. (Section 169A) (ADEQ State Implementation Plan Revision: Regional Haze Program (2018-2028), page 1).

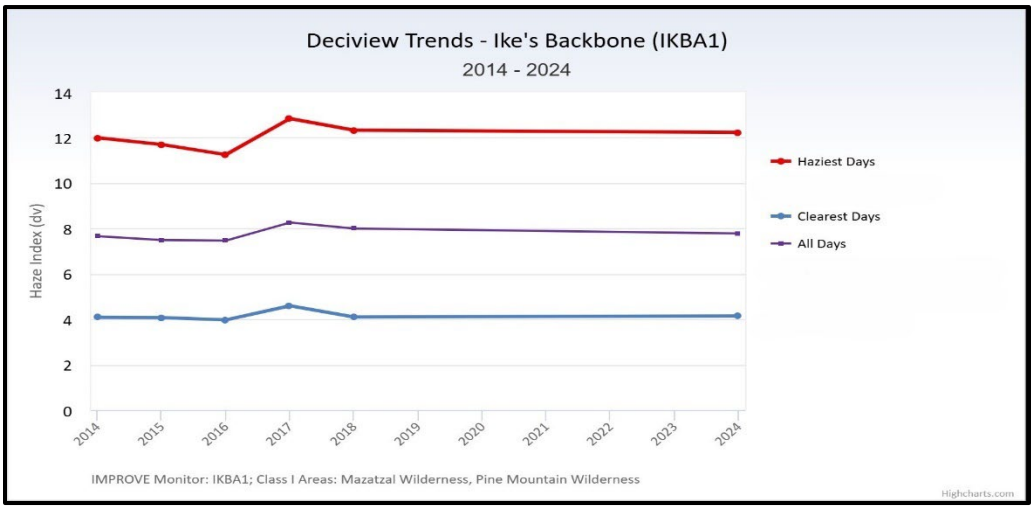
Sections 169A and 169B of the Clean Air Act were promulgated by Congress in the 1990 Clean Air Act Amendments with the intent of preventing any future, and remedying any existing, impairment of visibility caused by manmade sources in 156 mandatory Class I areas. Through this requirement, Congress set the goal of achieving natural visibility conditions in the Class I areas by 2064. In the interim, States are required to make reasonable progress towards the achievement of this national goal (ibid., page 9).

Results: The following graphs show the trends in visibility over the last eight to ten years, from 2016 through 2024, and 2014 through 2024, respectively, as measured by the Sycamore Canyon and Ike's Backbone IMPROVE monitors. The haze index has a unit of measure called a deciview and a one unit change in deciview may be noticeable under certain conditions. Higher deciview values correspond to hazier scenes.

The annual average haze index value collected by the Sycamore Canyon IMPROVE monitor on the haziest days from 2016 to 2024 ranged from a maximum of approximately 16.3 in 2017 to a minimum of approximately 12.7 in 2022. This same value collected on the clearest days at the Sycamore Canyon IMPROVE monitor ranged from a maximum of 4.3 in both 2018 and 2022 to a minimum of 3.7 in 2019, 2023, and 2024.



The annual average haze index value collected by the Ike's Backbone IMPROVE monitor on the haziest days from 2014 to 2024 (no data available for 2019 to 2024 on website) ranged from a minimum of 11.3 in 2016 to a maximum of 12.8 in 2017. This same value collected on the clearest days at the Ike's Backbone IMPROVE monitor ranged from a minimum of 4.0 in 2016 to a maximum of 4.6 in 2017.



The trend for visibility for the last eight to ten years of collection has been slightly downward on the haziest days for Sycamore Canyon (0.08 dv/yr), as well as for Ike's Backbone (0.02 dv/yr), neither considered a significant trend. The trend for visibility has been slightly downward on the clearest days for Sycamore Canyon (0.03 dv/yr) and flat for Ike's Backbone.

Forest managers receive notice of any exceedance and evaluate if it is related to any forest management activities being implemented on the forest. No notices of exceedance were sent to the Coconino National Forest during the 2023 or 2024 fiscal years. This reflects that none of the forest management activities, including prescribed burns and unplanned ignitions, resulted in concerns for visibility in the Sycamore Wilderness and Mazatzal Wilderness Class I Areas monitored.

Recommendations

Based on these results, the Coconino is not considering any changes to the direction for Air Quality or Visibility in the revised Coconino Forest plan. The forest will continue to coordinate with the Arizona Department of Environmental Quality (ADEQ) in the monitoring of the Colorado River, Little Colorado River, and Verde River airsheds, and continue to coordinate with the Environmental Protection Agency in the IMPROVE monitoring program stations at Ike's Backbone and Sycamore Canyon.

Grasslands

The purpose of Monitoring Question 3 is to determine the status and trend of the grassland ecological restoration units (ERUs) found on the Coconino National Forest: Semi-desert Grassland, Pinyon Juniper with Grass, Great Basin Grassland, and Montane/Subalpine Grassland.

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?

Management activities in these grasslands are designed to maintain or make progress toward the desired conditions (DCs) related to vegetation structure for these grasslands, and are reported in the Forest Activity Tracking System (FACTS) database.

Monitoring Results

The acres of treatments implemented in these grasslands in FYs 2023 and 2024 are listed in Table 5 by fiscal year. The mechanical treatments implemented in these three fiscal years include group selection harvest, precommercial and commercial thinning, and chipping of fuels. The fire treatments implemented include prescribed broadcast burning, burning of piled material, and jackpot burning, as well as wildfire (natural ignition). The treatments to reduce invasives include pesticide application, mechanical/physical removal, and biocontrol methods.

Table 5. Acres of Management Activities in Grassland ERUs in FYs2023 and 2024

Grassland ERU Treatments	FY2023	FY2024	2-year Total for ERU
Semi-Desert Grassland			
Mechanical	0	1	**1**
Rx Fire	0	0	**0**
Wildfire (Natural Ignition)	0	0	**0**
Invasives	2	1	**3**

Grassland ERU Treatments	FY2023	FY2024	2-year Total for ERU
Pinyon Juniper with Grass			
Mechanical	5	0	**5**
Rx Fire	186	0	**186**
Wildfire (Natural Ignition)	0	0	**0**
Invasives	77	20	**97**
Great Basin Grassland			
Mechanical	254	0	**254**
Rx Fire	338	0	**338**
Wildfire (Natural Ignition)	0	0	**0**
Invasives	4	0	**4**
Montane/Subalpine Grassland			
Mechanical	37	79	**116**
Rx Fire	314	1,396	**1,710**
Wildfire (Natural Ignition)	93	502	**595**
Invasives	78	18	**96**
Total for FY	1,790	2,151	3,941

*Acre totals account for overlapping treatments in some areas (multiple treatments on the same acres).

Partners in Grasslands Monitoring

Partners with the Coconino in monitoring grasslands include the Friends of the Forest for pronghorn and game inventories, and the Four Forest Restoration Initiative Multi-party Monitoring Board (4FRI MPMB) for pronghorn habitat connectivity modeling.

4FRI MPMB

Pronghorn habitat connectivity modeling has been conducted to answer the question of how restoration treatments affect habitat connectivity for grassland species. The 4FRI MPMB and Forest Service partnered with Northern Arizona University in 2019 in using pronghorn collar data from 1995 to 2017 to model pre-treatment habitat quality and landscape migration permeability. Among other findings, the study identified certain constrictive “pinch points” or bottleneck areas that exhibit high pronghorn movement among high quality habitat areas and that would be good candidates for treatments to reduce tree cover and improve near-ground visibility for pronghorn (Anderson and Dickson 2019). And that treatments in areas of high topographic diversity may have less benefit to pronghorn than similar treatments in flat areas. This can help the forest prioritize where to implement grassland treatments.

The mechanical and prescribed fire treatments implemented, as well as the wildfire occurring, in these grassland ERUs have maintained or made progress toward desired conditions by:

- Reducing the canopy cover of trees and shrubs to less than 10%.
- Increasing the regeneration of native grasses, forbs, and annuals.
- Increasing the diversity of vegetation that provides food and cover for invertebrates and wildlife.

Recommendations

Based on these results, the Coconino is not considering any changes to the direction for Grassland ERUs in the revised Coconino Forest Plan. The forest will continue to implement mechanical, fire, and invasives treatments to restore and improve grasslands, and consider ways to successfully treat more Great Basin and Montane/Subalpine grasslands. Though restoration work is planned each year, seasonal and scheduled grazing, clearance from specialists, and workforce limitations can hinder implementation. Suppression activities for large wildfires can be and have been used to aid implementation of restoration treatments. For example, fire lines used in suppressing wildfires can be left in place to help with future prescribed burn treatments.

Forest Service wildlife biologists will continue to work with the 4FRI MPMB and Northern Arizona University to design treatments in grassland ERUs that will benefit pronghorn and other grassland species.

Fire-adapted Ecosystems

Monitoring Questions 6, 7, 21.A., 24, and 25 address reducing the amount of uncharacteristic fire in fire-adapted ecosystems, returning fire to fire-adapted ecosystems, adequate restocking of forests and woodlands, and even-aged management.

6. How much have management activities contributed to reducing the risk of uncharacteristic fire?
7. How much have management activities contributed to returning fire to fire-adapted ecosystems?

21. 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?
24. Are forests and woodlands adequately restocked within 5 years of final harvest treatment when openings are created for the purpose of regeneration?
25. Should maximum size limits of 40 acres for even-aged management harvest areas be continued?

The acres of prescribed fire and acres of wildfire managed for resource objectives that are implemented to maintain or move towards desired conditions in these ecosystems are reported in the Forest Activity Tracking System (FACTS) database.

Monitoring Results

The following table summarizes the mechanical, prescribed fire, and wildfire treatments that were completed in fiscal years (FYs) 2023 and 2024. The different types of these treatments are reported in the FACTS database as listed. Both “Wildfire – Natural Ignition” and “Planned Treatment Burned in Wildfire” reported in the FACTS database represent acres of wildfire that moved the vegetation toward desired conditions.

Table 6. Acres of Mechanical and Fire Treatments Completed in FYs 2023 and 2024

Treatment	FY 2023	FY 2024	2-year Total*
Commercial Thin	4,569	5,913	10,479
Precommercial Thin	2,100	3,520	5,619
Thinning for Hazardous Fuels Reduction	37	0	37
Chipping, Piling, Removal of Fuels	4,463	4,998	9,458
Total Acres Mechanically Treated*	5,366	8,622	13,789
Broadcast Burning	9,881	27,247	37,128
Burning of Piled Material	1,023	3,731	4,754
Total Acres Prescribed Fire	10,904	30,978	41,882
Wildfire (Natural Ignition) for Resource Objectives	0	902	902
Planned Treatment Burned in Wildfire	13,116	21,822	34,938
Total Acres Wildfire	13,116	22,724	35,840
Total Acres of Fire	24,020	53,702	77,722
Total Acres of Treatments*	29,386	62,324	91,511

* Acre totals account for overlapping treatments in some areas (multiple treatments on the same acres).

Adequate Regeneration

On the Coconino, ponderosa pine cone crops and associated regeneration events are very cyclical, with large-scale regeneration events typically only occurring every seven to 15 years (**Monitoring Question 24**). Therefore, it is unlikely there will be enough regeneration of sufficient size five years after thinning to be able to certify. Initial surveys are attempted five years after harvest; only five to 10 acres can be certified at a time. It is more likely that regeneration will be sufficient 10 years after thinning.

Even-aged Management

In response to **Monitoring Question 25**, the Coconino has not practiced even-aged management on the forest for quite a while. Therefore there are no harvest units that exceed 40 acres for even-aged management. Only uneven-aged management is used to restore more resilient multi-aged stands.

Partners in Fire-adapted Ecosystems Monitoring

Partners with the Coconino in monitoring fire-adapted ecosystems are many and include:

- The Landscape Conservation Initiative/Center for Adaptable Western Landscapes – rapid plot pre- and post-treatment surveys.
- The Nature Conservancy (TNC) – pre-treatment rapid plots, data
- Institute for Applied Ecology – designated species seed collection sites (survey, document), seed development and collection
- 4FRI MPMB – effects from vegetation and fire treatments

4FRI MPMB

Member organizations of the 4FRI MPMB are engaged in monitoring the effects from vegetation and fire treatments in the fire-adapted ecosystems of the Coconino National Forest:

Rapid plots: The 4FRI MPMB has partnered with Northern Arizona University (NAU) to conduct rapid plot monitoring across the 4FRI landscape since 2016. Researchers from NAU's Center for Adaptable Western Landscapes (CAWL) coordinate, collect, manage, analyze, and report on rapid plot monitoring data. From 2016 through 2021, pre-treatment data were collected in 21 4FRI treatment areas in the Coconino and Kaibab National Forests and selected based on areas where mechanical thinning treatments were scheduled or expected to occur. This monitoring includes plots to establish the pre-treatment diameter distributions of trees, number of trees per acre, ground cover types, and existing regeneration.

Two areas have since been treated and revisited for post-treatment data collection: Chimney Springs and Parks West. The final report of February 2022 by CAWL, 4FRI Rapid Plot Monitoring: Implementation & Analysis (Sample et al. 2022) analyzed the outcomes of restoration treatment in the Chimney Springs treatment area. It relays that trees per acre was reduced, there were more larger trees, and basal areas were reduced by 50%. As the report summarizes:

Significant differences detected between data collected before and after treatment generally conform with the goals of forest restoration (Reynolds et al. 2013). Across the treatment unit, we observed lower tree density and more distribution across diameter classes (but overall increase in average tree size). We also documented some increased evidence of disturbance (e.g., soil compaction, invasive species), and mixed responses in understory vegetation and ground cover.

A subsequent interim report of the same name (4FRI Rapid Plot Monitoring: Implementation & Analysis (Sample et al. 2025)), reports on monitoring conducted from 2021 to 2023, and evaluates the effects of forest restoration treatment on all indicators assessed in the Parks West treatment area. Conclusions from this analysis include:

Analyses comparing pre- and post- treatment data from Parks West provide insight into the outcomes of thinning treatment on a broad suite of indicators related to forest structure, composition, and function. Significant differences detected between data collected before and after treatment generally conform with the goals of forest restoration (Reynolds et al. 2013, McCusker et al. 2015). Across the treatment unit, we observed lower tree density and more distribution across diameter classes (but overall increase in average tree size) after treatment. We also documented some increased evidence of disturbance (e.g., soil compaction, invasive species), and mixed responses in understory vegetation and ground cover (Conclusions & Recommendations, page 31).

Summary

The mechanical and prescribed fire treatments implemented, as well as wildfires managed to meet resource objectives, in all forest ERUs during these two fiscal years have moved ecosystems toward their desired conditions. They have both contributed to reducing the risk of uncharacteristic fire and helped return fire to these fire-adapted ecosystems by:

- Reducing fuel loads and tree densities on over 91,511 acres of the forest.
- Managing wildfires for resource objectives and restoring fire return intervals.
- Increasing fire treatments to achieve and/or maintain composition, structure, and function of fire-adapted ERUs.
- Emphasizing treatments in the wildland-urban interface (WUI).
- Using prescribed fire after mechanical treatments.
- Reducing invasive plants (see Invasives, Insects, and Disease section).
- Meeting forest plan objectives for Semi-Desert Grasslands, Riparian Forest Types, and Scenic Resources in the Coconino's fire-adapted ecosystems (see the Plan Amendments/Objectives section).

Recommendations

Based on the results of monitoring the mechanical, prescribed fire, and wildfire treatments completed in FYs 2023 and 2024, the Coconino is not considering any changes to the management direction for the fire-adapted Ecological Restoration Units (ERUs) in the revised Coconino Forest Plan.

The Coconino National Forest will continue to move more of the landscape toward a more open condition, reducing the risk of uncharacteristic wildfire and promoting resilient ecosystems. In addition, the forest will continue to improve the contracting process for harvesting operations, specifically when using Designation by Prescription (D x P). More attention is needed on the timing of maintenance treatments following mechanical thinning that opens the canopy. In several isolated instances where an overabundance of natural regeneration occurred, more expensive maintenance treatments were required to keep tree densities within desired conditions.

Increase certification of natural regeneration on wildfire acres and post-harvest areas.

The data for Monitoring Question 23 related to timber suitability need to be gathered and analyzed to respond to this forest plan monitoring question in the next BMER.

Watershed and Soil Resources

Monitoring Questions 8, 9, 10, 11, 15, 16, 17, and 18 address improving stream riparian areas and wetlands, restoring riparian function to springs, water rights, surface water, long-term soil productivity, water quality, and priority watersheds.

8. How much have management activities improved functional-at-risk or nonfunctional stream riparian areas and wetlands?
9. How much have management activities contributed to the restoration of riparian function to springs not in proper functioning condition?
10. How many water rights have been procured or how many water rights filings have been done?
11. What are surface water trends for Oak Creek, Wet Beaver Creek, and Fossil Creek?
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 (soil condition assessments, BMP monitoring)?
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.
17. Have management activities contributed to the delisting and improvement of impaired waters, or waters non-attaining Arizona water quality standards?
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?

The Watershed Improvement Tracking (WIT) database is used to collect and report acres and miles of improvement for **Monitoring Questions 8 and 9**. 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.

Water rights activities for **Monitoring Question 10** are tracked by the Forest Service Water Rights and Uses (WRU) database and the Arizona Department of Water Resources. Surface water trends (**Monitoring Question 11**) are monitored with U.S. Geological Survey (USGS) gauging stations for Oak Creek, Wet Beaver Creek, and Fossil Creek. There are also recently installed USGS gauging stations at Sycamore Creek and West Fork Oak Creek; flow summaries from these gauges are not included in this report.

Monitoring Question 15 looks at the maintenance of long-term soil productivity, assessing the effects on soils, and erosion and sedimentation from implemented projects every three to five years. The implementation and effectiveness of soil best management practices (BMPs) are to be monitored annually for implemented projects. The national BMP database is used to track BMP implementation and effectiveness monitoring.

Monitoring Question 16 uses macroinvertebrate sampling and presence/abundance data as a proxy for water quality.

Monitoring Question 17 refers to the streams or lakes removed or added to the Arizona Department of Environmental Quality's (ADEQ) Water Quality Assessment, referred to as the 305(b) report. The 2024 Water Quality Assessment covers a 5-year period from 2017-2022; results are reported in the 2023 section of this report.

Watershed condition using the Watershed Condition Classification (WCC), a 12-indicator model to assess the condition (functioning, functioning at risk, not functioning) of all subwatersheds on the forest, is used to respond to **Monitoring Question 18**. The Coconino assessed condition using the WCC in 2011, and reassessed the conditions of eight subwatersheds as part of a national pilot program for a forthcoming updated WCC. A full re-assessment of watershed condition of all subwatersheds across the forest has not occurred since 2011. The WCC is part of the larger National Watershed Condition Framework (WCF) which includes assessment of conditions, prioritization of watersheds for restoration, development of Watershed Restoration Action Plans, implementation of projects, and monitoring. The goal of the WCF is to improve tracking and accountability of watershed restoration, and to focus restoration in priority watersheds to improve watershed conditions through targeted restoration in five to seven years.

The Coconino currently has three priority watersheds: Fossil Creek, and Middle and Lower Oak Creek. During this monitoring cycle, the forest identified priority projects and prepared draft watershed restoration actions plans to prepare to designate the Upper and Lower Lake Mary-Walnut Creek subwatersheds (Lake Mary Watershed), and the East Clear Creek-Blue Ridge Reservoir, Miller Canyon, and Bear Canyon subwatersheds (CC Cragin Watershed) as priority watersheds in the WCF. The Watershed Condition Assessment Tracking Tool (WCATT) is used to track watershed conditions and document progress toward improving watershed conditions in priority watersheds. The Watershed Improvement Tracking (WIT) database is used to plan and track watershed improvement activities in priority watersheds.

The 2011 WCC assessment found that approximately 28 percent of the stream system riparian areas on the Coconino National Forest are in functional-at-risk condition, and approximately five percent are in nonfunctional condition. Wetland riparian conditions range from fair to good on the 78 wetlands identified on the forest. There are at least 300 springs on the Coconino National Forest in varied condition, depending on the degree of modification and degree of protection (revised Coconino Forest Plan Final Environmental Impact Statement, Volume I, pages 90-99). And it is estimated that approximately 21 percent of the soils across forest Ecological Restoration Units (ERUs) is in an impaired condition (revised Coconino Forest Plan Final Environmental Impact Statement, Volume I, Table 11, page 113).

The revised forest plan requires implementation of best management practices (BMPs) to prevent soil erosion and adverse effects to water quality; avoiding wetlands, springs, seasonally wet meadows, and montane meadows; and avoiding soils that are unstable and highly erodible where connected to streamcourses (revised Coconino Forest Plan, FW-RdsFac-G-5, page 99). BMPs are specified in project planning documents.

Monitoring Results

In fiscal year (FY) 2023:

- A total of 148.7 acres of stream, meadow, and riparian habitat was improved –
    - Huntley Tank, 5.8 acres. Roadside pullout improvement to eliminate vehicle access, reduce erosion and sedimentation, and improve soil productivity. Work was completed by the Greater Sedona Recreation Collaborative.
    - Mason Lane Ditch improvement, 15.5 acres. Ditch upgrade to reduce erosion and sedimentation, and reduce water loss completed in partnership with The Nature Conservancy.
    - Buck Springs channel stabilization, 1.2 acres. Installation of energy dissipation structures by Grand Canyon Trust volunteers to improve hydrologic and riparian function.
    - Clark Meadow restoration, 2 acres. Installation of energy dissipation structures by Grand Canyon Trust volunteers to improve hydrologic and riparian function.
    - Hoxworth Meadow restoration, 1.3 acres. Installation of energy dissipation structures by Grand Canyon Trust volunteers to improve hydrologic and riparian function and protect an aging tank.
    - Hoxworth road decommission, 2 acres. Road ripping, and installation of drainage structures and slash on a haul route through Hoxworth Meadow.
- Coconino County, in partnership with the Forest Service, completed approximately 95 acres of alluvial fan restoration in the Pipeline Fire burned area. Work was completed on the Lennox, Paintbrush, Lower Thames, and Upper Copeland Fans to stabilize alluvial fans, dissipate flows, and trap sediment to protect downslope communities and infrastructure.
- Exclosure fencing was repaired at Cottonwood, Mesquite, Foster, and Hance Springs. Fossil Springs was treated both mechanically and with herbicide to remove invasive blackberry.

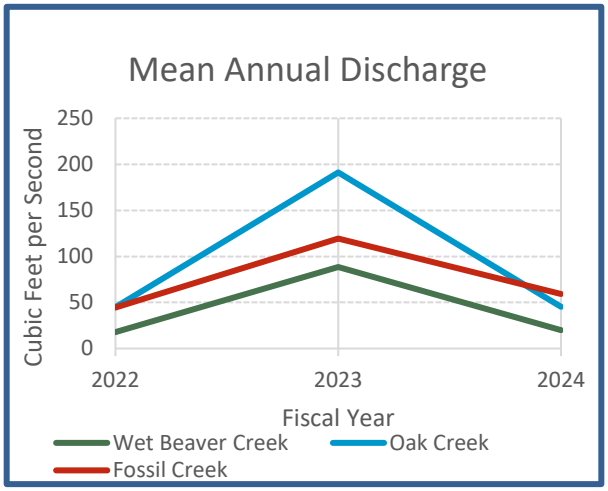
- Approximately 500 new surface water rights claims were filed in the Verde River Basin. These were primarily for stock tanks for the purpose of livestock and wildlife watering as part of ongoing water rights adjudication efforts in the Gila River.
- 2023 was an above-average water year across the forest. The average annual discharge in Oak Creek at the gauge near Cornville was 191.2 cubic feet per second (cfs). This was higher than 92 percent of the years in the 83-year record. The average annual discharge in Wet Beaver Creek was 88.5 cfs, which was higher than 94 percent of the years in the 60-year record. The average annual discharge in Fossil Creek was 119.4 cfs, the highest annual average discharge within the 15-year period of record.
- Best Management Practices (BMP) implementation and effectiveness were monitored at four(4) sites: Fossil Springs herbicide treatment, Indian Gardens dispersed recreation site, and range BMP monitoring in the Beaver Creek and Windmill West Allotments. See the Coconino National Forest BMP Monitoring Report FY2023-2024 for additional details.

In FY 2024:

- A total of 138.6 acres of stream, meadow, and riparian habitat was improved:
    - Crescent Moon bank armoring, 0.2 acres. Bank armoring on Oak Creek to discourage foot traffic, decrease erosion and sedimentation, and encourage riparian vegetation at a popular recreation fee site.
    - Blind Lake Tank improvement. The Arizona Elk Society and boy scouts constructed a log-worm fence to protect 2.4 acres from vehicle damage.
    - 29 Mile Tank fencing. The Arizona Elk Society and boy scouts constructed a log-worm fence to protect 38 acres from vehicle damage.
    - Leonard Canyon fence. The Arizona Elk Society constructed a pipe-rail fence to protect a 1.8-acre aspen stand.
    - Buck Springs fence. Arizona Elk Society volunteers completed a pipe-rail fence in upper Buck Springs Meadow to protect 5.7 acres of perennial stream and encourage riparian vegetation growth.
    - Chavez Pass channel stabilization. Conservation Legacy completed 26 acres of channel stabilization with the construction of loose rock and Zuni bowl structures and juniper removal.
    - Houston Draw channel restoration. The Arizona Elk Society hired a contractor to complete 29 acres of meadow restoration, including construction of rock structures to stabilize the channel and raise the meadow water table.
    - Oak Creek social trails rehabilitation, 3 acres. Social trail stabilization and closure in Oak Creek Canyon was completed by numerous partners. This work took place over multiple years but was completed in FY24.
    - Coconino County, in partnership with the Forest Service, completed approximately 33 acres of alluvial fan restoration in the Pipeline Fire burned area. Work was completed on the Government Tank and Copeland Fans to stabilize alluvial fans, dissipate flows, and trap sediment to protect downslope communities and infrastructure. Work was also completed on the Girls Ranch berm to protect downslope infrastructure from potential failure.

- Exclosure fencing was repaired at Hackberry, Willow, and Wesley Dam Springs. Fossil Springs was treated both mechanically and with herbicide to remove invasive blackberry.
- The Coconino employed a three-person American Conservation Experience (ACE) crew to complete field verification and data collection on water rights, including stock tanks, springs, and water systems requiring new surface water claims. The crew visited approximately 150 sites in FY24 to prepare for new surface water claims and statements of claimants in the Verde Water Rights Adjudication.
- 2024 was a below-average water year across the forest. The mean annual discharge in Oak Creek was 45.2 cfs, drier than 72 percent of the years in the 83-year record. The mean annual discharge in Wet Beaver Creek was 20 cfs, drier than 54 percent of the years in the 60-year record. The mean annual discharge in Fossil Creek was 59.2 cfs, wetter than 70 percent of the previous 15 years of record.
- Best Management Practices (BMP) implementation and effectiveness were monitored at five (5) sites: dispersed recreation at the West Sedona dispersed camping corridor Site 9, decommissioning on Forest Road 132B, Bonita Timber Sale, Frog Tank Timber Sale, and the Big Leroux Spring Hotshot Ranch water system. See the Coconino National Forest BMP Monitoring Report FY2023-2024 for additional details.
- In 2024, aquatic macroinvertebrates were sampled 1) near Fossil Springs; 2) Tonto Bench; 3) Bouder Canyon; 4) Sally May; 5) Purple Mountain and 6) Mazatzal on the Red Rock Ranger District.
- Watershed restoration work continued in the Coconino's three existing priority watersheds designated in the National WCF: Fossil Creek, and Middle and Lower Oak Creek, with the goal of improving watershed conditions. Work outlined in the Watershed Restoration Action Plans (WRAPs) for these projects is ongoing and includes:
    a. Work in Fossil Creek centered around recreation management to reduce impacts on water quality from human and animal waste, erosion, and sedimentation. Effects on Fossil Creek from the 2021 Backbone Fire are minimal following initial high levels of sediment input, as vegetation recovery has progressed.
    b. Essential projects in the Oak Creek Watershed Restoration Action Plan were funded in the Middle and Lower Oak Creek subwatersheds through the Collaborative Aquatic Landscape Restoration Program in the Bipartisan Infrastructure Law. The Coconino received 1.8 million dollars for a five-year program of restoration work, with partners providing substantial additional matching funds. Work centered on social trail rehabilitation and dispersed site improvement in Oak Creek Canyon, with 359 segments of social trail closed, 80 social trails improved to maintain public access, and approximately one mile of log-worm fence installed to delineate parking areas and trails. In addition, 37 pet waste stations were maintained by the Oak Creek Watershed Council.
    c. The Cave Springs Bank Stabilization project along Upper Oak Creek was completed in the fall of 2024, stabilizing 500 feet of the bank along the road to the Cave Springs Campground.

In Wet Beaver Creek, mean annual discharge has varied significantly over the 66-year period of record (1961-present), from a high of 102.9 cfs (1973) to a low of 6.8 cfs (2006). The Oak Creek gauge has an 83-year period of record (1940-present) and mean annual discharge has varied a full order of magnitude, from a high of 256.1 cfs (1993), to a low of 25.9 cfs (1996). The Fossil Creek gauge site was established in 2010, and mean annual discharge has not varied as significantly as in Oak and Wet Beaver Creeks. The highest mean discharge was 119.4 cfs in 2023, and the lowest was 40.7 in 2021.



Streams

Sections of Spring Creek, the Verde River, and 37.2 miles of Oak Creek are not attaining desired conditions due to Escherichia coli (E. coli) pollution. The Arizona Department of Environmental Quality (ADEQ) and the Coconino developed a Total Maximum Daily Load (TMDL), or clean water plan, which outlines activities to work toward attainment of desired conditions. A 12.6 mile reach of Oak Creek downstream from the confluence with Spring Creek is also impaired by E. coli; however a TMDL has not been prepared for these streams.

Fossil Creek is considered "provisionally delisted" by ADEQ and is expected to be officially approved as delisted for E. coli by the Environmental Protection Agency in the 2024 305(b) Report. This provisional delisting is due in large part to the Forest Service's efforts to manage recreation in Fossil Creek, and ADEQ's and Friends of the Forests' efforts to monitor water quality at several locations in the watershed.

While the 303(d) listing status of Oak Creek has not changed, significant progress has been made through a multi-stakeholder effort to address the root causes of elevated E. coli levels on National Forest System lands along Oak Creek. Based on continued monitoring, efforts including the closure of social trails and roadside parking, the installation and operation of 37 pet waste stations, multi-lingual Leave-No-Trace messaging, and periodic trash pick-up have improved water quality in Oak Creek.

Lakes

Stoneman Lake is considered impaired for dissolved oxygen and potential of hydrogen (pH). Upper and Lower Lake Mary, Soldier Lake and Annex, and Long Lake are impaired for mercury. ADEQ and the Forest Service work together under a Memorandum of Understanding (MOU) to implement and monitor TMDLs, with a strong focus of restoration along Oak Creek.

Table 7. Streams and lakes with water quality impairments, and TMDL status

Water Body	Pollutant	Length or Area	Status	Change from 2021 303(d) List
Oak Creek	E. Coli	12.6 mi	Impaired, no TMDL	No change
Oak Creek	E. Coli	37.2 mi	Not attaining, TMDL complete	No change
Spring Creek	E. Coli	6.4 mi	Not attaining, TMDL complete	No change
Fossil Creek	E. Coli	9.4 mi	Impaired, no TMDL	No change
Verde River	E. Coli	5.9 mi	Impaired, no TMDL	No change
Stoneman Lake	Dissolved oxygen, pH	149 acres	Not attaining, TMDL complete	No change
Upper Lake Mary	Mercury	946 acres	Not attaining, TMDL complete	No change; TMDL in progress – expected completion 2026
Lower Lake Mary	Mercury	787 acres	Not attaining, TMDL complete	No change; TMDL in progress – expected completion 2026
Lower Long Lake	Mercury	345 acres	Not attaining, TMDL complete	No change; TMDL in progress – expected completion 2026
Soldier Lake	Mercury	36 acres	Not attaining, TMDL complete	No change; TMDL in progress – expected completion 2026
Soldier Lake Annex	Mercury	149 acres	Not attaining, TMDL complete	No change; TMDL in progress – expected completion 2026

Table 8. Acres and Numbers of Watershed Resource Activities Completed in FYs 2023 and 2024

Watershed Resource Activity	FY 2023	FY 2024	2-year Total
Acres of functional-at-risk or nonfunctional stream riparian areas and wetlands improved (Q 8).*	149 acres	139 acres	**288 acres**
Number of springs improved or restored (Q 9).	5 springs	4 springs	**9 springs**
Number of water rights procured or filings completed (Q 10).	500 claims only	0	**500 claims**
Annual mean discharge and peak streamflow (Q 11).	Oak Creek: 191.2 cfs Wet Beaver Crk: 88.5 cfs Fossil Creek: 119.4 cfs	Oak Creek: 45.2 cfs Wet Beaver Crk: 20.0 cfs Fossil Creek: 59.2 cfs	**N/A**
Acres of implemented projects that maintain or trend toward satisfactory soil condition (Q 15a).	0 acres	0 acres	**0 acres**
Number of projects where BMP implementation was effective at protecting soil productivity (Q 15b).	4	5	**9**
Streams added to or removed from ADEQ's impaired or non-attaining list due to water quality (Q16).	0	0	**0**
Number of streams or lakes removed or added to ADEQ's impaired or non-attaining list (Q17).	0	0	**0**
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 (Q18).	20 acres 0 subwatersheds	35 acres 0 subwatersheds	**55 acres**

*All acres are approximate and based on the most recent WIT and GIS data available.

Partners in Watershed and Soil Monitoring

- Spring Stewardship Institute of the Museum of Northern Arizona – the health and condition of springs across the 4FRI footprint.
- Grand Canyon Trust and Trout Unlimited – snowtography, the condition of various streams and springs across 4FRI, Buck Springs channel stabilization, Clark and Hoxworth Meadows restoration.
- Salt River Project – surface water flow, snowtography.
- U.S. Geological Survey (USGS) – stream gauge maintenance and data collection.
- AZ Water Science Center – Unmanned Aircraft System (UAS) aerial surveys, canopy/forest pattern data collection and monitoring, post-fire erosion, and sedimentation monitoring.
- Arizona Geological Survey (AZGS) – post-fire debris flow monitoring in watersheds affected by the Museum, Tunnel, and Pipeline Fires.
- Friends of the Forest – water quality sampling, water rights and uses surveys.
- Arizona Department of Environmental Quality (ADEQ) – water quality, aquatic macroinvertebrates surveys.
- Oak Creek Watershed Council – BMPs analysis.
- Arizona Elk Society – meadow restoration and fence conditions.
- Rocky Mountain Research Station (RMRS) (with multiple collaborating researchers from various universities) – flow, soil moisture, riparian condition, aquatic and riparian plant and animal species, to support federal reserve water right claims in wilderness streams and the Verde Wild and Scenic River.
- City of Flagstaff – Surface water and groundwater flow.
- Greater Sedona Recreation Collaborative – roadside pullout improvement at Huntley Tank.
- The Nature Conservancy – Mason Lane Ditch improvement.
- Coconino County – alluvial fan restoration.
- Arizona Game and Fish Department (AZGFD) – snowtography.

4FRI MPMB

Member organizations of the 4FRI MPMB are engaged in the following monitoring of watershed resources in the Coconino National Forest:

Springs: The 4FRI MPMB has worked with the Grand Canyon Trust and the Forest Service since 2018 to monitor the site-level effects from spring restoration on aquatic and emergent vegetation, using pre- and post-restoration vegetation transects at select sites. These partners are also working together to refine and improve spring monitoring protocols.

In 2018 the 4FRI MPMB and Forest Service partnered with the Springs Stewardship Institute (SSI) at the Museum of Northern Arizona to develop a landscape-scale

monitoring protocol that will detect ecosystem changes at springs resulting from upland thinning and burning treatments (Schenk et al. 2019).

In 2019 the MPMB and Forest Service funded a five-year agreement with SSI to implement the monitoring protocol at 56 springs across the Kaibab and Coconino National Forests. The purpose of the 4FRI Spring Health Monitoring Program is to document hydrologic and ecological changes that occur at springs as a result of 4FRI restoration actions. SSI hosts the database of completed spring condition surveys which supports restoration of selected springs and monitoring of those springs. Also in 2019, the 4FRI MPMB and Forest Service entered into an agreement with Northern Arizona University to place instruments and continuously monitor flows at four springs on the Kaibab and Coconino National Forests.

In 2019, SSI completed the data collection on the 56 4FRI springs selected. Those data serve as the baseline against which annual changes in discharge, spring area, spring invertebrates, and habitat conditions were monitored through 2023. In 2020 and 2021, SSI completed hydrologic monitoring, recorded springs habitat changes, and revised sketchmaps. This hydrologic and habitat monitoring was repeated in 2022.

As of the April 2022 report, the study did not yet include any forest treatments near or at any of the 56 monitoring sites, so the results to date provide only baseline information. The statistically significant drop in springs discharge between monitoring years indicates that the springs monitoring network reflects and is responsive to rapid climate changes and groundwater infiltration. This suggests that the effects from forest treatments will likely be noticeable at springs in this monitoring network in a relatively short (decadal or less) time period. At the conclusion of the study in 2023, all sites were fully re-inventoried, and changes in those and additional variables were reported.

Four springs in the 4FRI footprint have been set up to observe their responses to forest treatments once implementation rolls through these catchments. Long-term hydrologic monitoring at these springs continues to capture their responses to changes in climate and other disturbances, including measurement of spring flow duration and discharge timing, and groundwater flow in karst landscapes.

Stream and Riparian Health: In March 2023, the 4FRI MPMB completed a Stream and Riparian Health Monitoring Plan, designed to guide riparian and stream monitoring in the 4FRI Rim Country project area. Identified priority stream and riparian restoration areas will be measured in one representative site for water quality (if perennial), flow (if relevant), and continuous measurements (soil moisture, water temperature). The statistical analysis for site-specific restoration activities will be focused on difference testing for pre- and post- restoration. Both site and landscape scale monitoring can rely on existing environmental thresholds for determining adverse impacts from a restoration treatment or on trends between pre- and post-treatment.

Snowtography: Biweekly sampling of snow depth and density at the Parks West snowtography station was conducted in the winter of 2022/2023, monitoring to learn

about vegetation treatment effects on snowpack, in partnership with the Salt River Project, Grand Canyon Trust, and Arizona Game and Fish Department (AZGFD).

Summary

The restoration and improvement treatments implemented in stream riparian areas, wetlands, and at springs during these two fiscal years are helping to move watershed resources toward their desired conditions. These management activities, conducted with the appropriate BMPs, as well as dispersed recreation management, are helping to improve functional-at-risk or nonfunctional stream riparian areas and wetlands, and contributing to the restoration of riparian function to springs not in proper functioning condition. Restoration techniques that improve overall watershed processes and improve function and resiliency include:

- Stabilizing active headcuts using loose rock structures.
- Increasing the wetted area with channel and spring stabilization treatments.
- Improving soil water infiltration and storage.
- Improving vegetation establishment and robustness within meadows, along streambanks, and around springs.
- Fencing to protect meadows and springs, their sources, and their cultural values from degradation.
- Reducing invasive plants (see Invasives, Insects, and Disease section).
- Making progress in meeting forest plan objectives for Riparian Forest Types, Wetlands, Springs, and Soils (see the Plan Amendments/Objectives section).

In riparian and spring areas treated, compaction and erosion is reduced, protective vegetative ground cover is increasing, and soil productivity and function is improving.

A plan to re-assess watershed condition in priority watersheds was recommended in the 2023 BMER. This reassessment was completed as a pilot for the new Watershed Condition Classification (WCC 2.0) in FYs 2023 and 2024. The forest made progress in better prioritization of watershed restoration work in priority watersheds, and integration into the forest program of work.

In FYs 2023 to 2024, the watershed program completed BMP monitoring at nine sites, and plans to monitor 14 sites in FYs 2025 and 2026. BMP implementation and monitoring is foundational to meeting Forest Plan objectives for watershed and soils. Interdisciplinary discussions during this monitoring are key to a shared understanding of the importance of BMPs in mitigating effects on watershed function, soil productivity, and water quality.

Recommendations

Based on the ongoing restoration work and monitoring results for these two fiscal years, the Coconino is not considering any changes to the management direction for Watershed and Soil Resources in the revised Coconino Forest Plan.

Additional implementation guidance is needed to help field practitioners interpret Forest Plan direction for Aquatic Management Zones (AMZs). The current Forest Plan guidelines include one for AMZ widths based on soil stability: interpretation of this guideline is challenging. Since the last monitoring cycle, the watershed program has worked across program areas to provide a better interpretation of AMZ widths to apply to project implementation. This interpretation will continue into the next monitoring cycle and will improve management and protection of AMZs to help achieve desired conditions.

The Coconino recognizes the need to conduct soil condition assessments, as no soil quality monitoring occurred in FYs 2023 and 2024. In addition, the Watershed Program is committed to additional BMP monitoring in the FY 2025 to 2028 monitoring cycles.

Continue annual macroinvertebrate surveys, sampling, and eDNA analysis as capacity and funding allow.

Continue to manage recreation in Fossil Creek and to partner with ADEQ and Friends of the Forests to monitor water quality.

Invasives, Insects, and Disease

Monitoring Questions 12, 13, and 14 address the incidence and abundance of aquatic invasive species and invasive plants, and the extent of insect and pathogen outbreaks.

Monitoring Question 19.B. looks at how much management activities have contributed to reducing the incidence or abundance of aquatic invasive species in habitat for threatened, endangered or proposed species. One of its metrics is similar to that for Monitoring Question 12; its other metric is the number of new populations of aquatic invasives.

12. How much have management activities contributed to reducing the incidence or abundance of aquatic invasive species?
13. How much have management activities contributed toward reducing the incidence or abundance of invasive plants?
14. To what extent are undesirable outbreaks of insects and pathogens occurring on the forest? (1982 Planning Rule (sec. 219.12(k)(5)(iv))
19. 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)?

Monitoring Results

In fiscal year (FY) 2023:

- Approximately 171 acres of invasive plants were manually removed, and 343 acres of invasive plants were chemically treated. Biocontrol releases were conducted in four specific post-burn areas for Dalmatian toadflax and in 10 specific areas for diffuse knapweed, for a total of 530 acres. There were 62 releases of Mecinus ianthiniformis for Damaltian toadflax, 24 Larinus minutus releases for diffuse knapweed, and 16 releases of Cyphocleonus Achates for diffuse knapweed. There are roughly 105 insects in a typical biological control agent release.
- Bark beetles caused 442 acres of mortality in Ponderosa pine and one acre in pinyon-juniper forest, fir engraver beetles caused white fir mortality across 373 acres, and Douglas-fir beetles caused 80 acres of mortality in mixed conifer forest. Total acres of

mortality from insects was 896 acres across ecological restoration units (ERUs).

In FY 2024:

- Non-native aquatic invasives monitoring completed in Soldier Mesa, Sandrock Draw, Meadow, Section Five, Canyon, Meadow Canyon Trail, Sandrock, Apron, Mack's, Contractor's, Bow Ribbons West, Harris, Unnamed Bow Ribbons 2, Middle, Divide, and Lucky Waterlot Tanks resulted in no new populations. However, green sunfish were confirmed in Bow Ribbons Tank West, Lucky Waterlot, Harris, and Meadow Canyon Trail Tanks.
- Approximately 609 acres of invasive plants were manually removed, and 7 acres of invasive plants were chemically treated. Biocontrol releases were conducted in five specific post-burn areas for Dalmatian toadflax, for a total of 410 acres. There were 72 releases of Mecinus janthiniformis for Dalmation toadflax, 50 Larinus minutus releases for diffuse knapweed, and 30 releases of Cyphocleonus Achates for diffuse knapweed. There are roughly 105 insects in a typical biological control agent release.
- Bark beetles caused mortality across 2,233 acres of Ponderosa pine and two acres of pinyon-juniper forest, drought caused 65 acres of juniper dieback, fir engraver beetles caused white fir mortality on eight acres, and Douglas-fir beetles caused 30 acres of mortality in mixed conifer forest. Total acres of mortality was 2,338 acres across ecological restoration units (ERUs).

Table 9. Amount of Invasives Treatments and Insect and Disease Damage in FYs 2023 and 2024

Treatments/Damage*	FY 2023	FY 2024	2-year Total
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 (Qs 12, 19B).	13 miles (3 mi Spring Creek; 10 mi Fossil Creek)	13 miles (3 mi Spring Creek; 10 mi Fossil Creek)	13 miles (3 mi Spring Creek; 10 mi Fossil Creek)
Total acres of invasive plants treated (biocontrol acres) (Q 13).	1,044 (530)	1,046 (410)	2,090 (940) acres
Acres of damage or mortality from insects and disease (Q 14).	896	2,338	3,234 acres
Number of new populations of aquatic invasive species (Q 19B).	0 new populations	0 new populations	0 new populations

*All miles and acres are approximate and based on the most recent FACTS and GIS data available.

Partners in Invasives Monitoring

- The Nature Conservancy – invasive plant populations in pre- & post-4FRI fuel reduction treatments (survey and map)
- Friends of the Verde River (FVR) – survey, inventory, mapping, and treatment of priority invasive plant species in the Verde River watershed.

- Wild Arizona (WildAZ) – Survey, inventory, and mapping of invasive plant populations in wilderness areas in the Red Rock Ranger District, providing baseline data and updates to previous survey data.
- American Conservation Experience (ACE) – survey, mapping, and treatment of invasive plant populations before and after 4FRI fuel reduction treatments; survey and mapping of sensitive and rare plants in 4FRI project areas; treatment of invasive plants in 4FRI, Fossil Creek, and other forest priority projects.
- National Park Service (NPS) Invasive Plant Management Team (IPMT) – survey, mapping, and treatment of invasive plant populations; Early Detection, Rapid Response (EDRR) on invasive populations requiring immediate action and treatment.
- Animal and Plant Health Inspection Service (APHIS) – monitoring of overwintering biological control agent (insect) populations on the forest; survey and monitoring of invasive plant populations and potential insect release sites; implement insect releases; professional expertise and capacity.
- AZGFD – monitoring for native and non-native fish.

4FRI MPMB

Partnerships comprised of the 4FRI MPMB, Nature Conservancy, American Conservation Experience (ACE), and Arizona Conservation Corps (AZCC) have added to the Forest Service's capacity to conduct pre- and post-treatment monitoring of invasive species. The Nature Conservancy and ACE began monitoring for invasive and noxious weeds following restoration thinning near A-1 Mountain.

AZCC monitored for invasive and noxious weeds both prior to and after thinning operations in multiple 4FRI treatment areas. They collected data on these invasive populations with the Invasive Species Mobile (ISM) application, and these data were used to plan and prioritize invasive populations for integrated treatment.

Summary

An integrated approach to treating identified populations of invasive plants has moved forest ERUs toward their desired conditions. This combination of mechanical, biological, cultural, and chemical controls has helped forest managers to manage different species that vary based on phenology, location, growth type, and population size. To maintain desired conditions in these ERUs, monitoring and treatments were prioritized for invasive plant populations that previously received an initial treatment, are perennial, are aggressively spreading, or are found in low abundance on the forest. Observation of species presence, as well as regular monitoring of invasive plant population size, have been integral in responding to invasive plant threats.

These management activities, as well as continued monitoring of non-native fish and plant populations, have maintained, restored, and improved habitat by:

- Using integrated management approaches including mechanical, biological, cultural and chemical treatments to control and manage invasive species.

- Removing non-native fish to improve the survival and success of reintroduced populations of native fish.
- Reducing predation and competition from aquatic invasive species, and threats to the sustainability of listed species such as the Chiricahua leopard frog.
- Designing prescribed fire treatments to protect listed species habitat and reducing the threat of uncharacteristic wildfire.

The number of new populations of aquatic invasive species remained low in FYs 2023 and 2024, with only one population found.

The number of new populations of invasive plants remained low to moderate in FYs 2023 and 2024. These invasive populations were identified, inventoried, and referenced with the annually-updated Coconino Invasive Plant List, which categorizes species based on concern for ecological damage and aggressiveness of spread. Treatments will be designed and implemented specific to each invasive species to minimize dispersal, to limit populations from expanding, and to rapidly respond to new invasive species threats. Invasive plant species that are not found with frequency on the forest will be prioritized for Early Detection, Rapid Response (EDRR) survey and treatment.

Overall, far fewer acres were impacted by beetles in FYs 2023 to 2024 than in FYs 2021 and 2022. This was likely due to the additional acres of treatments (thinning and fire) throughout the forest.

Recommendations

Based on these results, the Coconino is not considering any changes to the direction for Invasives, Insects, & Disease in the revised Coconino Forest Plan.

During project planning each year, address those forest stands affected by insect and disease outbreaks.

Continue to monitor for new or expanding invasive plant populations. Monitor efficacy of invasive plant treatments and adjust/adapt treatments as necessary. Monitor and document overwintering populations of biological control agents (insects) used for Dalmatian toadflax and diffuse knapweed. Overwintering biological control agents are indicative of sustainable insect populations that are critical for successful control of invasive plant populations.

Threatened, Endangered, and Proposed Species; Habitat Diversity

Monitoring Questions 4 and 5 look at how management activities are moving the frequency of snags and downed logs, and the basal area/densities of Ponderosa pine and mixed conifer forest toward desired conditions.

Monitoring Question 19.A. addresses the status and trend of ecological conditions needed for aquatic and riparian-dependent threatened, endangered, and proposed species.

Monitoring Question 20 looks at the trend in occupancy and density for each of the three songbird focal species.

Monitoring Question 21.B. looks at treated forest stands to determine contributions to maintaining late-seral mixed conifer and pine-oak habitats.

Monitoring Question 22 looks at how management activities have helped maintain or moved toward desired conditions for aspen, an ecological indicator of habitat diversity and early seral stages.

4. Are downed logs and snags falling within the ranges established in desired conditions for Ponderosa Pine and Mixed Conifer with Frequent Fire ERUs?
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?

19. A. How much have management activities improved habitat for aquatic and riparian-dependent threatened, endangered, or proposed species (related to question 8)?
20. What is the status of the six songbirds identified as focal species (Grace's warbler, pygmy nuthatch, black-throated gray warbler, juniper titmouse, ash-throated flycatcher, and song sparrow)?
21. 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? How much

have management activities contributed to returning fire to Ponderosa Pine, Mixed Conifer with Frequent Fire, and Mixed Conifer with Infrequent Fire ERUs?

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.

Monitoring Question 9, addressing the restoration of riparian function to springs, is included in this section as well as in the previous Watershed and Soils Resources section.

Monitoring Results

Downed Logs and Snags

Snags, downed logs, and coarse woody debris (**Monitoring Question 4**) are generally maintained and representative of the species within each ERU. Prescriptions aim to maintain 1 to 2 ponderosa pine snags >18 inches diameter. In the Gambel oak subtype, large oak snags (greater than 10 inches) are maintained where present. Downed logs (greater than 12-inch diameter at mid-point, greater than 8 feet long) average 3 logs per acre within the forested area of the landscape where available. Follow-up prescribed burns often create additional snags and future downed logs. Coarse woody debris, including downed logs, generally range from 3 to 10 tons per acre. In frequent fire mixed conifer stands, coarse woody debris (greater than 3-inch diameter), including down logs, is managed higher and generally ranges from 5 to 15 tons per acres to maintain long-term soil productivity and provide wildlife habitat.

Tree Densities

Thinning prescriptions specify basal area targets that are well within the desired conditions as described in the Forest Plan (**Monitoring Question 5**). Tree density within forested areas are generally reduced to ranges from 22 to 89 square feet of basal area per acre in the ponderosa pine ERU. Forest conditions exceed these densities in some areas, such as on steep slopes and in canyons. In addition, the density of larger trees and canopy cover is left higher in areas managed for Mexican spotted owl habitat. In mixed conifer stands, tree density within forested areas is left higher than ponderosa pine and generally range from 30 to 100 square feet basal area per acre. Forest conditions exceed these densities in some areas, such as on steep slopes and in canyons, where mechanical operations are not feasible.

Aquatic and Riparian-dependent TEP Habitat (Monitoring Question 19.A.)

In fiscal year (FY) 2023:

- Repair of the Spring Creek barrier was completed to stabilize erosion adjacent to the concrete structure.
- Exclosure fencing was repaired at Cottonwood, Mesquite, Foster, and Hance Springs. Fossil Springs was treated both mechanically and with herbicide to remove invasive blackberry.

- The Buck Springs channel stabilization, 1.2 acres (approx. 0.25 miles), with the installation of energy dissipation structures to improve hydrologic and riparian function (Grand Canyon Trust volunteers).
- Clark Meadow restoration, 2 acres (approx.. 0.25 miles). Installation of energy dissipation structures to improve hydrologic and riparian function (Grand Canyon Trust volunteers).
- Hoxworth Meadow restoration, 1.3 acres (approx.. 0.25 miles). Installation of energy dissipation structures to improve hydrologic and riparian function, and repair an aging tank (Grand Canyon Trust volunteers).
- Gila topminnow fish health assessment was completed on 30 fish from Sheepshead Canyon (AZGFD) – all were found to be pathogen free.
- Gila topminnow stocking of nearly 500 individuals was completed in Spring Creek upstream of the fish barrier by Red Tank Draw (RRRD, AZGFD).
- Spikedace were monitored in one fixed and two randomly selected 100-meter reaches of Spring Creek (AZGFD). Spikedace, roundtail chub, desert sucker, longfin dace, and speckled dace were captured and, although abundance remains low, the presence of juvenile fish suggests an upward trajectory.
- 280 acres of aspen were protected with exclosure fencing or maintained with conifer weeding.

In FY 2024:

- Buck Springs fencing. A pipe-rail fence was completed in upper Buck Springs Meadow to protect 5.7 acres (approx.. 0.3 miles) along the perennial stream and encourage riparian vegetation growth (Arizona Elk Society volunteers).
- Houston Draw channel and meadow restoration, 29 acres (approx. 1.0 mile). Rock structures were constructed to stabilize the channel and raise the meadow water table (Arizona Elk Society contractor).
- Exclosure fencing was repaired at Hackberry, Willow, and Wesley Dam Springs. Fossil Springs was treated both mechanically and with herbicide to remove invasive blackberry.
- Fence exclosures protecting Wesley Spring, Big Willow Spring, Hackberry Spring, and Doren’s Defeat Spring were improved after the Backbone Fire. Exclosures at Hance, Cottonwood, Mesquite, and Foster Springs were maintained to improve spring function. Invasive blackberry was removed with mechanical and chemical treatments at Fossil Springs. These treatments improved and maintained spring condition, protecting these features from the effects of livestock and native ungulates.
- Oak Creek social trails rehabilitation, 3 acres (about 0.5 miles). Social trail stabilization and closure in Oak Creek Canyon was completed by numerous partners. This work took place over multiple years but was completed in FY24.
- Monitoring of translocated populations of Gila topminnow and roundtail chub in Rarick Canyon resulted in the capture of 43 roundtail chub and 33 fathead minnow. No Gila topminnow were observed or captured. Capture of young of year chub indicates that fish are spawning.

- Spikedace monitoring was completed in Spring Creek: desert sucker, Gila topminnow, longfin dace, roundtail chub, speckled dace, and spikedace were captured.
- 290 acres of aspen were protected with exclosure fencing or maintained with conifer weeding.
- The Arizona Elk Society constructed a pipe-rail fence to protect a 1.8-acre aspen stand in Leonard Canyon.

Focal Species

On the Coconino, there are now seven focal species (**Monitoring Question 20**): the Mexican spotted owl (MSO) as an indicator of mature late-seral mixed conifer and ponderosa pine-Gambel oak forests; Grace's warbler and pygmy nuthatch for open, park-like, mature stands of pure ponderosa pine, and in pine-oak habitats; the black-throated gray warbler for the mature pinyon component of pinyon-juniper habitats; the juniper titmouse and ash-throated flycatcher for late seral pinyon-juniper habitats, particularly the snag component; and the song sparrow for riparian habitats, primarily the health of the understory vegetation in the riparian gallery.

The 2012 revised MSO Recovery Plan recommended that the population be monitored by estimating the rate of site occupancy for a period of 10 years. The Regional Office contracted with Bird Conservancy of the Rockies (BCOR, formerly Rocky Mountain Bird Observatory or RMBO) to conduct a 2014 pilot study implementing the monitoring protocol from the Recovery Plan. Based on the results of the pilot study, a random subsample of 200 sites was selected on National Forest System lands in Arizona and New Mexico, to monitor for the duration of the study. Sixteen of these sites occur on the Coconino NF.

To measure the trends for five of the six songbird focal species (excluding the song sparrow), occupancy (proportion of grid cells occupied across the forest) and density (birds per square kilometer) for each species is derived from Bird Conservatory of the Rockies (BCOR) Integrated Monitoring in Bird Conservation Regions (IMBCR) data collected annually across the Coconino. This data allows the forest to monitor local populations over time and infer changes resulting from restoration treatments. This is done by comparing surveyed areas that had restoration treatments to untreated areas.

The intensity of IMBCR surveys changed in 2024. In 2023, 34 grid cells were monitored on the Coconino. In 2024, the regional office funded surveys for all 11 forests in the region, but only nine to 11 grid cells for each forest, including the Coconino. Prior to this shift, only four forests across the region were monitoring focal species. The expansion of surveys allows for broader inference of the monitoring questions and hence a better depiction of forest health on a landscape level. BCOR believes that the lower intensity will still be statistically viable, but confidence levels will be slightly lower. The surveys will still be able to measure trends, which is the goal of focal species monitoring.

Two years of surveys have been conducted by BCOR since the songbird focal species were added to in 2023. Surveys for song sparrow are conducted internally and started in 2024. Focal species data from the years 2022, 2023, and 2024 was compiled in "Focal Species Summary 2022-24." Since the number of grid cells surveyed varied each of the three years, the summary used weighted averages to flatten out the data. In addition, in-house song sparrow surveys were added to the forest focal species surveys in 2024, therefore only one year of data is available for that species. According to the "Focal Species Summary 2022-24." survey results reflect an increase in abundance between 2022 and 2023 for four of the five focal species, but little can be inferred from just three years of data. Data will become more relevant over time.

Late-seral Ecological Conditions in MSO Habitat

Plan components are helping to maintain late-seral ecological conditions (**Monitoring Question 21.B.**), but it is too early to tell if those guiding components will contribute to a stable or increasing MSO population. The Coconino is currently implementing forest restoration treatments and monitoring in MSO Protected Activity Centers (PACs) in both mixed conifer and pine-oak stands. In the coming years, annual monitoring surveys will reveal what effects the treatments have on MSO population trends. To promote late-seral ecological conditions that maintain or contribute to mature forest conditions, preference is generally given to the retention of pre-settlement trees, often the largest, oldest, and tallest trees onsite. All mixed conifer stands are considered owl habitat, so the forest manages all mixed conifer for MSO.

An analysis of available Forest Service vegetation (FSVeg) data on vegetation seral stage (VSS) between 2018 (when the Forest Plan was revised) and 2025 produced the following results:

- 54,117 acres of late seral stage habitat (vegetation seral stage = VSS) remained in a late seral stage; 24,792 acres of late seral stage habitat changed to a mid-seral stage.
- 42,572 acres of mid-seral stage habitat changed to a late seral stage; 87,236 acres of mid-seral stage remained in mid-seral stage.
- 96,689 acres of mid- and late-seral habitat changed to or remained as late-seral habitat; 112,028 acres of mid- and late-seral habitat changed to or remained as mid-seral habitat.
- There was no data for either year for 303,458 acres (out of 952, 854 total acres for the forest). With this limited data, the trend appears to be a slight decrease in late seral habitat from 2018 to 2025. This is likely due to the wildfires that burned in mixed conifer stands.

The U.S. Fish and Wildlife Service (USFWS) is working with the Coconino to implement the 4FRI MSO management experiment. In 2023, owls were detected in four of the eight PACs monitored. MSO produced young in three of the PACs, and one MSO pair was detected in the fourth.

Twenty-six additional PACs in the 4FRI footprint were informally monitored in 2023, with one to four visits to each PAC. MSO successfully fledged young in five of the

PACs, nesting attempts by MSO failed in four of the PACs, and the MSO were confirmed to be non-nesting in one PAC. Surveys detected MSO pairs in four PACs and a male MSO in one PAC. No MSO were detected in the other eleven PACs visited.

Aspen (Monitoring Question 22)
Two aspen enclosures were removed, one in 2023 (36 acres) and the other in 2024 (26 acres). Aspen release was conducted in 2023 as part of the Hart Prairie Restoration Project, and in an existing enclosure and as part of the Snowbowl Road Phase 2 Project in 2024.

Table 10. Activities for Habitat Improvement by Fiscal Year

Management Activity*	FY2023	FY2024	2-year Total
Number of springs improved or restored (Q 9).	5 springs	4 springs	**9 springs**
Miles of functional at-risk or nonfunctional stream riparian areas improved with threatened, endangered, and proposed species habitat (Q 19A).	0.8 miles	1.3 miles	**2.1 miles**
Acres mechanically treated, acres of prescribed fire, acres of wildfire for resource objectives (Q 21A).	16,270	40,502	**56,772 acres**
Acres of aspen protected or maintained (Q 22).	280	292	**N/A**
Acres of aspen protected by exclosure fencing	239	214	**N/A**
Acres of aspen planted	0	0	**0**
Acres of oystershell scale treatments	0	0	**0**
Acres of aspen release (conifer weeding, maintenance treatments)	41	77	**118**

*Acre totals are approximate due to overlapping treatments in some areas (multiple treatments on the same acres).

Partners in Species and Habitat Monitoring

- Bird Conservancy of the Rockies (BCOR) – songbird focal species, Mexican spotted owl
- Arizona Department of Game and Fish (AZGFD) – riparian birds, bald and golden eagle flights, Fossil springsnail, native fish and habitat improvement, ranid frogs program (lowland leopard frog), marsh birds
- Friends of the Forest – sensitive agaves, fungi, lichens; kestrel, peregrine falcons, nightjars, roosting bats, colonial nesting birds, amphibians, arundo wasps, monarch and milkweeds, land and aquatic snails, riparian exclosures, photo monitoring of vegetative changes, and annual butterfly counts
- Bureau of Reclamation – fish barrier inspections
- U.S. Fish and Wildlife Service (FWS) – Mexican spotted owl, native fish, western yellow-billed cuckoo, southwestern willow flycatcher, Chiricahua leopard frog, listed species

- Northern Arizona Grotto Association – cave and karst features, bat guano DNA analysis, bat roosting and hibernating information
- Northern Arizona University (NAU) – narrow-headed gartersnake, black-hawk, western yellow-billed cuckoo, southwestern willow flycatcher, Chiricahua leopard frogs, springsnails
- Bat Conservation International (BCI) – acoustic monitoring recording echolocations
- Friends of the Verde River (FOVR) – southwestern willow flycatcher
- Desert Botanical Garden – Sensitive and domesticated Verde Valley agave species
- Northern Arizona Audubon Society - Christmas bird count, e-bird, Pinyon Jay, and rare bird sightings
- Friends of Northern Arizona Forests (FoNAF) – aspen exclosures, aspen browsing resistance
- Arizona Elk Society (AES) – spring restoration via fence exclosures and plantings
- The Nature Conservancy (TNC) – mesquite bosque inventory.
- Flora Finders – sensitive and locally rare endemic plant species monitoring
- American Conservation Experience (ACE) and Arizona Conservation Corps (AZCC) – sensitive plant monitoring

4FRI MPMB

Member organizations of the 4FRI MPMB are engaged in the following monitoring of wildlife resources in the Coconino National Forest:

Songbirds: The 4FRI MPMB, in particular the Rocky Mountain Research Station (RMRS), has contracted with the Bird Conservancy of the Rockies (BOCR) since 2015 to conduct avian monitoring as part of the Integrated Monitoring in Bird Conservation Regions (IMBCR) program: a large, multi-scale avian monitoring program with a statistically rigorous sampling design (Pavlacky et al. 2017). BCOR monitors avian density and occupancy, and estimates trends for native bird populations in different types of habitat, conducting surveys in both pre- and post-treatment areas.

In the 2023 field season, BCOR conducted bird surveys in three pre-treatment areas and one previously surveyed area in the Coconino and Kaibab National Forests. In these areas, they counted 6,508 individuals of 100 avian species. Four of the Coconino's six songbird focal species – Grace's warbler, pygmy nuthatch, black-throated gray warbler, and ash-throated flycatcher – were identified.

Other Wildlife and Plant Monitoring

In addition to that required annually by the revised Coconino Forest Plan, the following wildlife and plant monitoring was completed.

In fiscal year (FY) 2023:

- Mexican spotted owl – surveys of 61 Protected Activity Centers (PACs) (forest-wide) and recovery habitat (Flagstaff and Mogollon Rim RDs)
- Narrow-headed garter snake – surveys, disease testing, captive breeding program with NAU (Red Rock RD)
- Chiricahua leopard frog – surveys (AZGFD, USFWS)
- Sonoran desert toad – detection survey (Red Rock RD)
- Federally listed and sensitive fish – creek surveys by AZGFD (Mogollon Rim and Red Rock RDs)
- Bald eagle – winter survey routes (forest-wide)
- Golden eagle – nest monitoring (Flagstaff RD)
- Northern goshawk – surveys of 22 Post-fledging Family Areas (PFAs) and potential habitat (Flagstaff & Mogollon Rim RDs)
- Peregrine falcon – nest monitoring (sites on Red Rock RD)
- Common black-hawk – surveys (Red Rock RD)
- NABat – acoustical monitoring of four cells (forest-wide)
- Bats – roost monitoring (Red Rock RD)
- Osprey – nest monitoring (Flagstaff RD)
- Nightjar – route surveys (Red Rock RD)
- Colonial waterbird – nest monitoring (Red Rock RD)
- Marshbird – surveys (Red Rock RD)
- Christmas Bird Count (forest-wide)
- Amphibians – call points and acoustic surveys (Red Rock RD?)
- Aquatic snails – inventory/surveys (Red Rock RD, AZGFD)
- Beaver – monitoring activity for locations (Red Rock RD, AZGFD)
- Fireflies – inventory surveys to detect Southwest spring firefly (petitioned for listing) (Red Rock RD)
- Cottonwood Butterfly Count (Red Rock RD)
- Arizona cliffrose – monitoring (Red Rock RD)
- San Francisco Peaks ragwort – surveys (Flagstaff RD)
- Special status agave – inventory (Red Rock RD)
- Lichen – inventory (Dr. Frank Bungartz, Red Rock RD)
- Milkweed (Red Rock RD)
- Emory oak (Red Rock RD)
- Four-nerve daisy – habitat monitoring (Red Rock RD)
- Arizona bugbane – monitoring (Flagstaff and Red Rock RDs, ACE, AZCC)
- FS Sensitive plants – project surveys/inventory (forest-wide)

In FY 2024:

- Mexican spotted owl – surveys of 73 PACs (forest-wide) and recovery habitat (Flagstaff and Mogollon Rim RDs) with USFWS, Bird Conservancy of the Rockies (BCOR)

- Western yellow-billed cuckoo – surveys by NAU (Red Rock RD)
- Narrow-headed garter snake – multiple surveys, disease testing, captive breeding program with NAU (Red Rock RD)
- Federally listed and sensitive fish – creek surveys by AZGFD (Mogollon Rim and Red Rock RDs)
- Bald eagle – winter survey routes (forest-wide)
- Golden eagle – nest monitoring (Flagstaff RD)
- Northern goshawk – surveys of 27 PFAs and potential habitat (Flagstaff & Mogollon Rim RDs)
- Peregrine falcon – nest monitoring (sites on Flagstaff & Red Rock RDs)
- Northern leopard frog – visual encounter surveys (Red Rock RD)
- Chiricahua leopard frog – surveys (Red Rock RD, USFWS)
- Lowland leopard frog – surveys (Red Rock RD)
- Common black-hawk – Fossil Creek surveys (Red Rock RD)
- Black-tailed prairie dog – town survey & mapping (Flagstaff and Mogollon Rim RDs)
- NABat – acoustical monitoring of four cells (Red Rock RD)
- Bats – roost monitoring, mist netting, roost loggers (Red Rock RD)
- Osprey – nest monitoring (Flagstaff RD)
- Nightjar – route surveys (Red Rock RD)
- Colonial waterbird – nest monitoring (Red Rock RD)
- Pinyon jay – surveys (Red Rock RD)
- Beaver – monitoring activity for locations (Red Rock RD, AZGFD)
- Fireflies – inventory surveys to detect Southwest spring firefly (petitioned for listing) (Red Rock RD)
- Cottonwood Butterfly Count (Red Rock RD)
- Arizona cliffrose – monitoring (Red Rock RD)
- San Francisco Peaks ragwort – surveys (Flagstaff RD)
- Special status agave – inventory (Red Rock RD)
- Lichen – inventory (Dr. Frank Bungartz, Red Rock RD)
- Milkweed (Red Rock RD)
- Emory oak (Red Rock RD)
- Four-nerve daisy – habitat monitoring (Red Rock RD)
- Fossil Creek fungi – inventory (Red Rock RD)
- Arizona bugbane – monitoring (Flagstaff and Red Rock RDs, ACE, AZCC)
- FS Sensitive plants – project surveys/inventory (forest-wide)

Summary

The management activities implemented in functional at-risk or nonfunctional stream riparian areas, the acres of aspen protected or maintained, and the springs improved or restored have moved these forest resources toward their desired conditions. They have

improved habitat for aquatic and riparian-dependent threatened, endangered, or proposed species, and contributed to habitat diversity and early seral stages in forest ERUs by:

- Maintaining or improving native riparian vegetation along streambanks and around springs.
- Reducing riparian fragmentation, the threat of excessive sedimentation, soil compaction, water quality concerns, and vegetation damage from dispersed recreation.
- Reducing the threat of uncharacteristic wildfire.
- Reducing invasive plants (see Invasives, Insects, and Disease section).
- Protecting springs, their sources, and their cultural values from degradation.
- Protecting aspen with fencing, planting aspen, releasing aspen with conifer weeding and maintenance treatments, and treating for oystershell scale.
- Making progress in meeting forest plan objectives for Riparian Forest Types, Wetlands, Springs, and Aspen and Maple (see the Plan Amendments/Objectives section).

In riparian and spring areas treated, protective vegetative ground cover is increasing, and soil productivity and function is improving. Compaction and erosion is reduced. Aspen restoration on the Flagstaff Ranger District is making great progress and on target to meet forest plan objectives.

Management and monitoring activities implemented by the wildlife program and other program areas such as watershed and silviculture/timber have led to improvements in habitat for wildlife. District wildlife biologists have been working closely with district silviculturists in developing prescriptions (i.e., tree densities) that benefit MSO so that thousands of acres will see improvement across the forest. The number of acres treated is expected to accelerate over the next two to five years as 4FRI projects are implemented. With MSO guidelines still in place, habitat in treated areas is expected to improve during this timeframe.

Two recent documents looked at threats and site occupancy for MSO (MSO 5-year Status Review 2023; MSO Site Occupancy, USFS Region 3, 2024). The five-year review states that the primary threat, stand-replacing fire, remains on a broad scale, but the report did not include a fine-scale assessment specifically for the Coconino. Occupancy trends are relatively flat over the past 10 years, so populations are at least remaining stable and not declining during this period. There were slight declines from 2015 to 2019, but a slight increase in 2023.

Considerable watershed restoration has been accomplished across the forest, with much effort by partners such as AZGFD, Arizona Elk Society, and Friends of the Verde River, as well as excellent volunteer work across the forest. These improvements not only help watershed and riparian area function but are highly beneficial to wildlife. This work is borne out in the list of “other” wildlife and plant monitoring listed in this report.

Recommendations

Based on these results, the Coconino is not considering any changes to the management direction for aquatic and riparian-dependent threatened, endangered, and proposed species habitat, including springs and aspen stands, in the revised Coconino Forest Plan. The forest is making progress on the wildlife, fish, and plant objectives in the Forest Plan, meeting or exceeding all but one of them in the first five years of this 10-year planning period.

The data for Monitoring Questions 4 and 5 related to snags, downed logs, and tree density need to be gathered and analyzed in a coordinated way in order to respond to these forest plan monitoring questions more precisely.

Recreation Opportunities

Monitoring Questions 26 and 27 look at additions and improvements to the recreation opportunities on the Coconino National Forest.

Monitoring looks at the number of new facilities, and the number of miles and types of new trails provided. It also looks at the number of facilities and dispersed recreation sites that have been improved, relocated, or decommissioned to protect forest resources.

26. How many new recreation opportunities have been added to the system?

Monitoring Question 26 looks at the number of new facilities and the number of miles and type of new trail provided, as recorded in the INFRA database.

27. How many recreation sites or locations have been improved, relocated, or decommissioned in response to known resource damage?

Monitoring Question 27 addresses the need to change recreation sites where resource damage is occurring. It looks at the number of facilities and dispersed sites that have been modified to protect forest resources, as recorded in the INFRA and Planning, Appeals, Litigation System (PALS) project databases.

Monitoring Results

The following table reflects the number of new facilities and the number of miles and type of new trail, as well as the number of recreation sites or dispersed recreation sites that were improved, relocated, or decommissioned in response to known resource damage, in FYs 2023 and 2024.

Table 11. Number and Miles of New or Modified Recreation Opportunities

Recreation Opportunities	FY2023	FY2024	2-year Total
Number of new facilities	2	0	**2**
New trails			
Non-motorized (miles)	12.3	12.7	**25.0**
Motorized (miles)	0	0	**0**
Number of facilities/dispersed sites			
Improved	21	4	**25**
Relocated	1	0	**1**
Temporarily Closed	1	0	**1**
Decommissioned	0	0	**0**

Table 12. Recreation Projects in FYs 2023 and 2024

Project Title	Description	Results
Fossil Creek Wild and Scenic River Infrastructure Recovery Post-Backbone Fire (Rec Site Improvement)	The Backbone Fire in 2021 heavily compromised infrastructure throughout the Fossil Creek permit area. Widespread damage to parking areas, signage, restroom facilities, roads, and trails required mitigation prior to re-establishment of the permit system. The recovery effort was completed prior to the 2023 permit season, and Fossil Creek was successfully re-opened to the public. A total of eight (8) recreation sites within the permit area corridor were restored.	These recovery actions enhanced the visitor experience, allowed for safe and effective permit administration, and enhanced Fossil Creek's Outstandingly Remarkable River Values. Restored restroom facilities reduced exposed human waste. Designated trail restoration enhanced visitor safety and reduced sedimentation. Restoration of signage, roads, and designated parking areas enhanced visitor experience, as well as safety for employees and the recreating public. These improvements were critical for the successful re-establishment of the Fossil Creek permit system.
Group Campground Bear-Proof Food Storage Locker Installations (Rec Site Improvement)	The Mogollon Rim Ranger District completed installation of dozens of bear-proof food storage lockers and trash cans at Knoll Lake and Moqui Group Campgrounds in 2023 and 2024.	Bear encounters are common in the rim country. Secure food storage infrastructure mitigates negative human interactions, wildlife habituation, and dependence on humans for food.
Bullpen Day Use Area Post-flooding Restoration (Rec Site Improvement)	Winter runoff in Spring 2024 pushed West Clear Creek into flood stage and inundated the Bullpen Day Use Area with several feet of running water. Extensive repairs were necessary to restore the road, signage, fences, and parking areas prior to the busy summer season.	Site restoration actions provided safe access to this popular recreation site, promoted orderly parking, enhanced visitor information and education, and prevented mechanized incursions into the adjacent West Clear Creek Wilderness.

Project Title	Description	Results
Banjo Bill Day Use Site (Temporarily Closed)	This site remained closed due to a rock fall hazard in the area. Large boulders dislodged from the adjacent hillside have caused damage at the site and have raised public health and safety concerns. It remains closed pending rock mitigation work needed to address the hazards.	Protection of public health and safety due to rock fall hazards.
Mount Elden/Dry Lake Trailhead Construction (New Sites/Relocation)	Two new trailheads were constructed to support Mount Elden/Dry Lake (MEDL) in 2023, including the new Oldham Trailhead on Elden Lookout Road and relocation of the Schultz Creek Trailhead after major flooding. All these sites have surfaced parking with barriers, new gates, and informational kiosks for the MEDL Trail System.	This construction work is part of a larger project to improve visitor experience, trail connectivity, and recreation opportunity sustainability in the Mt. Elden-Dry Lakes Area.
Lake Mary Area Fee Deferred Maintenance Projects and AFM Installation (Rec Site Improvement)	The Flagstaff RD took over management of Upper Lake Mary and the Narrows in 2023. Automated fee machines began collecting fees in 2024. Several site improvement projects were completed. • 400 feet of new metal fence installed near the dam. • All signage replaced. • Courtesy docks maintained. • New concrete pads installed for fee machines.	These projects addressed infrastructure improvements to mitigate resource damage, improve public information and education, streamline the payment process of day use fees, and enhance the overall visitor experience.
Resource Damage Mitigation from Unauthorized Off-Road Motorized Recreation (Dispersed Rec Site Improvement)	The Ward Camp Meadow Restoration Project was completed in collaboration with the National Forest Foundation (NFF) in 2023. Thousands of feet of log-worm fence barriers were installed. Additional barriers were erected in other problem areas including Slate Lake, FR 133A, FR 132, FR 414, FR 253, FR 237, FR 132A, FR 164B, and FR 552.	Physical barriers in areas with frequent unauthorized off-road vehicle incursions have significantly reduced the rate of resource degradation and promoted the re-vegetation of previously-impacted wildlands.
Dry Creek Trailhead Boulder Project (Rec Site Improvement)	Illegal parking, inadequate signage, and low-durability infrastructure at the Dry Creek Trailhead resulted in resource damage, public safety concerns, and unreasonable expense for infrastructure repair. In 2024, the fragile wooden posts that marked the site boundary were replaced with boulders, and a new sign was planned and installed.	The frequency of illegal parking at the Dry Creek Trailhead has noticeably decreased resource damage, particularly at the intersection of asphalt and native soil and asphalt. The cost of infrastructure repair at this site has been reduced by 75%.

Project Title	Description	Results
Fernow and Kendrick Rental Cabins Improvements (Rec Site Improvements)	A wide variety of facility improvements were completed in 2023, including water heater replacement, plumbing upgrades, solar system maintenance, kitchen upgrades, and structural improvements.	These deferred maintenance and facility improvements further enhance the outstanding recreational experience at these cabins, improve the safety of visitors, and ensure sustainable maintenance of these historic facilities into the future.
Post Fire Trail Rehabilitation (Trail Improvements)	In 2024, the Arizona Conservation Corps helped rehabilitate trails damaged by the 2022 Pipeline Fire. New and improved drains, rockwork, benching, and brushing repaired trails that had increased erosion throughout the Fort Valley system. Weatherford trail in the Kachina Peaks Wilderness was also largely impacted by the fire, where downed trees were cleared, brushing and bench work reestablished the trail, and large bench cuts were created to allow traversing of eroded drainages.	Post-wildfire recovery of these trails ensured the continuation of their recreational use, reduced hazards to public health and safety, and promoted long term sustainability.
New Trail Construction (Including Reroutes)	• Dipper / New Construction / 1 mi. / 2023 • Pluto / New Construction / 0.3 mi./ 2023 • Apollo / New Construction/ 0.8 mi. / 2023 • Meteoride / New Construction / 2 mi. / 2023 • Full Sail / New Construction / 3 mi. / 2023 • Broadside / New Construction / 3 mi. / 2023 • Schultz Creek / Reroute / 0.8 mi. / 2023 • Down Under / New Construction / 0.6 mi. / 2023 • Brookbank / Reroute / 0.3 mi / 2024 • Oldham / Reroute / 3 mi. / 2024 • Taawa / New Construction / 2 mi. / 2024 • AZT Schultz Pass / Reroute / 0.5 mi. / 2024 • Tonteel / New Construction / 0.5 mi. / 2024 • Little Elden / Reroute / 1.7 mi. / 2024 • Orbit / New Construction / 0.5 mi. / 2024 • Down Under / New Construction / 1.2 mi. / 2024 • Sunset/Reroute/0.8 mi./2024	New trail construction and trail reroutes to provide improved and sustainable trail design and layout, while enhancing the user experience. Reroutes addressed erosion and other resource concerns, such as moving trails out of intermittent waterways (e.g., Shultz Creek Trail reroute).

Partners in Recreation Monitoring

- Oak Creek Watershed Council – recreational trail photo points
- Greater Sedona Recreation Collaborative – OHV use monitoring
- Friends of the Forest PSAR Volunteers – Search and Rescue monitoring
- Friends of Northern Arizona PSAR Volunteers – Search and Rescue monitoring
- Diablo Trust/Tread Lightly OHV Volunteer Ambassadors – OHV use monitoring
- Friends of the Forest Graffiti Committee– Graffiti monitoring

Summary

In FYs 2023 and 2024, the Coconino constructed two new trailheads; rehabilitated eight recreation sites damaged by wildfire and one damaged by flooding; implemented numerous infrastructure improvements at campgrounds, day-use sites, and trailheads; temporarily closed a day-use site for public health and safety; constructed extensive infrastructure to mitigate damage from unauthorized OHV use; and constructed 25 new miles of trail.

These new recreation opportunities and improvements were funded with various grants and Great American Outdoors Act funds. The Coconino anticipates further improvements at campgrounds, day-use sites, and trail systems across the forest in FYs 2025 through 2026.

Recommendations

Based on these results, the Coconino is not considering any changes to the management direction for Recreation Management in the revised Coconino Forest Plan. The forest should continue existing monitoring efforts and consider expanding the monitoring of OHV usage. Further development of a robust recreation monitoring program would better inform future management decisions. This could include standardized monitoring of motorized and non-motorized trails, wilderness management, developed and dispersed recreation sites, and winter sports.

The forest will continue to provide recreational opportunities that do not adversely affect other forest resources. Additional improvements of campgrounds, day-use sites, and trail systems will be made across the Coconino in FYs 2025 and 2026.

Scenic Integrity

Monitoring Question 28 looks at the progress toward scenic integrity desired conditions in areas identified as needing rehabilitation.

Monitoring looks at the acres of fire and vegetation treatments in the Scenic Integrity Objectives rehabilitation areas, as well as the percentage of acres in them that have been thinned and burned and that improved by at least one level.

28. How much have management activities contributed to progress toward scenic integrity desired conditions in areas identified as needing rehabilitation?

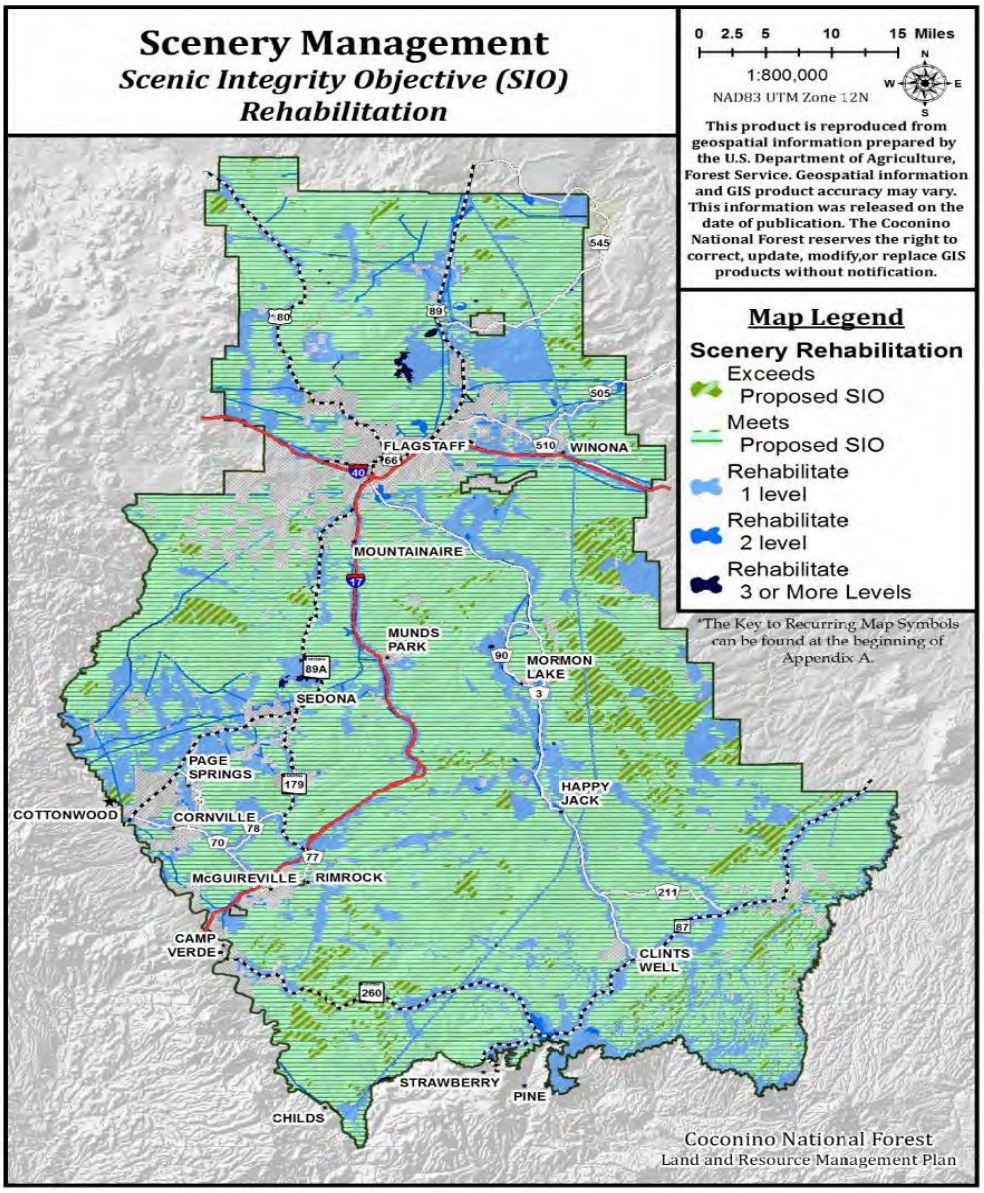
The Coconino NF is divided into four levels of desired scenic integrity: very high, high, moderate, and low. These levels set objectives for the amount of variation from the desired landscape character that is permissible within the scenic integrity level.

Table 54, Scenery Rehabilitation Acreage, in the Forest Plan's Final Environmental Impact Statement (FEIS, Vol. I, p. 305), and Table 13 here, show the acreage exceeding and meeting desired conditions for scenery and those acres identified for rehabilitation.

Table 13. Acres and Percent of Forest Exceeding or Meeting SIOs or Needing Rehabilitation

	Acres	Percent of Forest
Exceeds scenic integrity objective (desired condition)	188,109	6
Meets scenic integrity objective (desired condition)	1,322,194	72
Rehabilitate (1 level to meet scenic integrity objective)	352,810	19
Rehabilitate (2 levels to meet scenic integrity objective)	39,138	2
Rehabilitate (3 or more levels to meet scenic integrity objective)	4,065	<1

Map 14 in Appendix A (Maps) to the revised Coconino Forest Plan displays those areas identified as needing rehabilitation to meet proposed Scenic Integrity Objectives (SIOs). This map shows what areas on the forest already exceed or meet the proposed SIOs, as well as those areas that have been identified as needing one, tw39138o, or three or more levels of rehabilitation.



In areas identified for rehabilitation, existing visual impacts may be managed through site-specific projects, such as vegetation treatments, fuels reduction, prescribed fire, etc., to improve the scenic integrity in the long term. If any of the identified SIO rehabilitation areas are improved by one level, that area would meet the desired objective. SIO rehabilitation areas with desired objectives of two or more levels of rehabilitation would not meet the overall desired scenic integrity for several planning cycles.

For vegetation treatments, guidelines for all scenic resources include reducing the visibility of management-created debris such as slash, slash piles, and stumps. These guidelines, along with the proposed SIOs, would manage for natural-appearing scenery

and reduce negative effects from vegetation management activities on scenery viewed in concern level 1 and 2 travel corridors.

In regard to fire management, fire would play a more natural role on the landscape. By implementing the scenery management system, the effects from fire, burning in the natural disturbance regime of fire-adapted ecosystems, would be part of the desired condition of the landscape character. Typically, when fire burns with low intensity and severity or in a mosaic pattern, the valued landscape character attributes would be intact or mostly intact.

Monitoring Results

The following table reflects the acres of both fire and vegetation treatments completed in areas identified for SIO rehabilitation, as well as the percentage of acres in each SIO rehabilitation level that have been thinned and burned, in FYs 2021 and 2022.

Table 14. Acres of Treatments in Forest Plan SIO Rehabilitation Levels

SIO Rehabilitation Level[1]/ Management Activity*	FY2023	FY2024	2-year Total
Rehabilitate 1 Level			
Prescribed Fire	1,371	5,571	**6,942**
Wildfire for Resource Objectives	2,736	5,181	**7,917**
Mechanical Treatments	1,486	1,628	**3,112**
% of Rehabilitation Level	1.6%	3.5%	**5.1%**
Rehabilitate 2 Levels			
Prescribed Fire	127	1,165	**1,292**
Wildfire for Resource Objectives	1,191	0	**1,191**
Mechanical Treatments	222	373	**595**
% of Rehabilitation Level	3.9%	3.9%	**7.8%**
Rehabilitate 3 Levels			
Prescribed Fire	0	0	**0**
Wildfire for Resource Objectives	0	0	**0**
Mechanical Treatments	-	-	**-**
% of Rehabilitation Level	0	0	**0**
Total Acres by Year	**7,133**	**13,917**	**20,490**

*Acre totals are approximate due to overlapping treatments in some areas (multiple treatments on the same acres).
[1] SIO Rehabilitation Level = the number of levels of rehabilitation needed in an area to reach its des5red SIO.

In FYs 2023 and 2024, 5.1 percent of the acres needing one level of rehabilitation to meet the desired SIO objective were improved, and 7.8 percent of those acres needing two levels of rehabilitation were improved. None of the acres needing three levels of

rehabilitation were treated or improved. The management activities that had the most significant effects on SIO rehabilitation were prescribed fire and wildfire for resource objectives. Mechanical treatments in areas needing one rehabilitation level of improvement contributed to 17 percent of total treatment acres within a two-year timeframe. Prescribed fire and wildfire for resource objectives contributed to the remaining 83 percent of total treatment acres within the same timeframe. Additionally, mechanical treatments in areas needing two rehabilitation levels of improvement contributed to 19 percent of total treatment acres within a two-year timeframe. Prescribed fire and wildfire for resource objectives contributed to the remaining 81% of total treatment acres within the same timeframe.

The projects in which these mechanical treatments were implemented include the North Forest Grassland Restoration, Hart Prairie Fuels Reduction and Forest Health, Elk Park Fuels Reduction and Forest Health, Flagstaff Watershed Protection, Four Forest Restoration Initiative (4FRI), Wing Mountain Fuels Reduction and Forest Health, Cragin Watershed Protection, Woody Ridge Forest Health Restoration, Emory Oak Restoration, Munds Park Fuel Reduction, and Eastside Fuels Reduction and Forest Health Projects.

The fire treatments include those across the 4FRI project area.

Summary

These site-specific vegetation and fire treatments in the areas identified for rehabilitation were designed and implemented to maintain or move toward the desired SIOs. The standards and guidelines for scenic resources and design features and BMPs for visuals and scenery were followed per forest plan direction. Visual inspections were required to assess compliance with Forest Plan desired conditions. This is documented in contract administration documents, sale contract provisions, plan-in-hand documents, resource reviews of task orders, silvicultural prescriptions, and quality control plans in project stewardship agreements. Design features included “feathering” of mechanical treatments, using directional marking, retaining particular trees for scenic value, keeping stump heights to six inches or lower, requiring treatment of or removal of slash from mechanical treatments, and creating irregularly-shaped regeneration openings of small size (less than one acre).

In areas identified for rehabilitation, existing visual impacts were managed through these site-specific vegetation and fire treatments. These management activities, though adding to scenery impacts in the short term during and immediately after treatment, meet the objective of improving the scenic integrity objective by at least one level over the long term. Evidence of fire and vegetation treatments was removed and the treatment area restored in a timely manner, except where evidence of fire was within the natural range of variability. For example, pile burning removed the piles of slash from mechanical treatments. Stands treated with prescribed burning or wildfire for resource objectives looked burned and blackened for the short term, but reduced ground and ladder fuels will then prompt fresh new forb and grass growth in the next growing season. This not only

reduced the risk of uncharacteristic fire, but improved the healthy open park-like appearance of the treated stands.

Recommendations

Based on these results, the Coconino is not considering any changes to the direction for Scenery Management in the revised Coconino Forest Plan. The forest will continue treatments in those parts of the forest identified as needing rehabilitation to meet the desired SIO, monitoring the use of scenery standards and guidelines and BMPs.

Plan Amendments, Objectives

Monitoring Questions 29 and 30 look at any unforeseen issues that require plan amendments, and the progress made toward meeting the objectives laid out in the revised Coconino Forest Plan.

29. Have there been changes that have resulted in unforeseen issues requiring plan amendments? (sec. 219.12(k))

30. How do actual accomplishments compare with plan objectives? (sec. 219.12(k)(1))

Plan Amendments

In FYs 2023 and 2024, one amendment was made to the revised Forest Plan. Two other forest plan amendments are foreseen in the years to come: an amendment to finalize the list of species of conservation concern for the Coconino National Forest, and a separate amendment with new management direction for the San Francisco Peaks Traditional Cultural Property.

Plan Objectives

The revised Coconino Forest Plan includes the following objectives related to the monitoring questions addressed in this 2025 Biennial Monitoring Evaluation Report. The amount and percent of each of these objectives fulfilled in FYs 2023 and 2024 (in addition to the first five years of the planning period) is described as follows:

Objectives for Grassland ERUs

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.

In FYs 2023 and 2024, approximately 4 acres of Semi-desert Grasslands were treated mechanically or for invasive plant reduction; 600 acres of Great Basin Grasslands were treated mechanically, with fire, or for invasive plant reduction; and 2,520 acres of Montane/Subalpine Grasslands had mechanical, prescribed fire or wildfire, and invasive plants treatments. Adding the 5,200, 4,200, and 3,390 acres treated in these grassland ERUs, respectively, in the first five years of this 10-year planning period (FYs 2018-2022), the forest has met:

- more than 100% (>5,200 acres) of the objective for Semi-desert Grasslands.
- more than 44% (4,800 acres) of the objective for Great Basin Grasslands.
- more than 77% (5,910 acres) of the objective for Montane/Subalpine Grasslands.

In order to fully meet the objectives for these grasslands, approximately 6,000 acres of Great Basin Grasslands, and 1,690 acres of Montane/Subalpine Grasslands, need to be restored or improved in FYs 2025 to 2028, the remaining three years of this planning period.

Objectives for Pinyon Juniper ERUs

FW-TerrERU-PJ-O

1 Mechanically treat between 1,000 and 10,000 acres of Pinyon Juniper with Grass during each 10-year period over the life of the plan.

2 Use naturally ignited wildfires (lightning-caused fires that are managed for resource objectives) to treat at least 3,750 acres of Pinyon Juniper with Grass within the natural fire regime during each 10-year period over the life of the plan.

3 Use naturally ignited wildfires (lightning-caused fires that are managed for resource objectives) to treat at least 3,750 acres in Pinyon Juniper Evergreen Shrub within the natural fire regime during each 10-year period over the life of the plan.

Fewer than 10 acres of the Pinyon Juniper with Grass ERU were treated mechanically in FYs 2023 and 2024. Adding the 770 acres of this ERU mechanically treated in the first five years of this planning period, the forest has met close to 78% (780 acres) of the minimum acres and less than 8% of the maximum acres for the 1st Pinyon Juniper ERUs objective in this first seven years. In order to fully meet this objective, at least 220 acres of Pinyon Juniper with Grass need to be mechanically treated in FYs 2025 to 2028, the remaining three years of this planning period.

No naturally-ignited wildfires were managed for resource objectives in the Pinyon Juniper with Grass ERU in FYs 2023 and 2024. However, 8,400 acres of this ERU were treated with wildfire in the first five years of this planning period (not counting FYs2023 and 2024). Therefore the Coconino has already met more than 100% (over 8,400 acres) of the 2nd Pinyon Juniper ERUs objective for the current 10-year planning period of the Forest Plan.

Approximately 180 acres of naturally-ignited wildfire were managed for resource objectives in the Pinyon Juniper with Evergreen Shrub ERU in FYs 2023 and 2024. Adding 30,740 acres of this ERU that were treated with wildfire in the first five years of this planning period (30,920 acres), the forest has already far exceeded this 3rd Pinyon Juniper ERUs objective (3,750 acres) in the first seven years of this 10-year planning period.

Objective for Aspen and Maple

FW-TerrERU-AspMpl-O

1 Restore at least 1,000 acres of aspen and maple during each 10-year period over the life of the plan. Restoration could include, but is not limited to, activities that promote regeneration, remove competing vegetation, or remove disturbances that could negatively impact aspen or maple.

From 280 to 290 acres of aspen were protected or maintained in each of FYs 2023 and 2024 with fencing and aspen release treatments. Adding the 580 to 730 acres of aspen treated in the first five years of this planning period, the Coconino has already restored up to 1,020 acres, meeting the objective for aspen and maple for this first 10-year planning period.

Though silviculture prescriptions specify that maples are not to be damaged or cut, there is no record of any specific maple restoration activities taking place during these two fiscal years.

Although the Aspen and Maple objective has been met for this first planning period, restoration of these two tree species will continue to make progress on the Coconino.

Objectives for Ponderosa Pine

FW-TerrERU-PP-O

1 Use prescribed cutting to treat 50,000 to 260,500 acres of Ponderosa Pine during each 10-year period over the life of the plan.

2 Use prescribed fire to underburn 150,000 to 200,000 acres of Ponderosa Pine within the natural fire regime during each 10-year period over the life of the plan.

3 Use naturally ignited wildfires (lightning-caused fires that are managed for resource objectives) to treat at least 135,000 acres of Ponderosa Pine within the natural fire regime during each 10-year period over the life of the plan.

In FYs 2023 and 2024, approximately 13,790 acres of the Ponderosa Pine ERU were treated with some type of cutting. Adding the 25,980 acres treated in Ponderosa Pine in the first five years of this planning period (FYs 2018 to 2022), the forest has met almost 80% (39,770) of the minimum acres and more than 15% of the maximum acres for the 1st Ponderosa Pine ERU objective in this first seven years. In order to meet the minimum for

this objective, about 10,230 of the Ponderosa Pine ERU needs to be mechanically treated in FYs 2025 to 2028, the remaining three years of this planning period.

Approximately 41,880 acres were treated with prescribed fire, and 35,840 acres were burned with naturally-ignited wildfire, in FYs 2023 and 2024. Adding the 67,030 acres of prescribed fire and 30,620 acres of wildfire treatments in the previous five FYs, the Coconino has met almost 73% (108,910 acres) of the minimum acres for prescribed fire and more than 49% (66,460 acres) of the acres for naturally-ignited wildfire in the Ponderosa Pine ERU, for the current 10-year period of the Forest Plan. Meeting the objective for managing naturally-ignited wildfires for resource objectives will be dependent upon the occurrence of lightning-caused fires in the Ponderosa Pine ERU. All naturally-ignited fires are looked at for meeting resource objectives, but the forest considers current local and national preparedness levels along with adherence to current agency policy to make a final decision. In order to meet the objective for prescribed fire in this ERU, approximately 41,090 acres need to be underburned with prescribed fire in the remaining three years of this planning period (FYs 2025 to 2028).

Objectives for Mixed Conifer ERUs

FW-TerrERU-MC-MCFF-O

1 Use prescribed cutting to treat 2,900 to 15,000 acres of Mixed Conifer with Frequent Fire during each 10-year period over the life of the plan.

2 Use prescribed fire on at least 8,000 acres of Mixed Conifer with Frequent Fire within the natural fire regime during each 10-year period over the life of the plan.

3 Use naturally ignited wildfires (lightning-caused fires managed for resource objectives) to treat at least 7,500 acres of Mixed Conifer with Frequent Fire within the natural fire regime, during each 10-year period over the life of the plan.

Approximately 1,930 acres of mechanical treatments were completed in the Mixed Conifer with Frequent Fire ERU in FYs 2023 and 2024. With almost 1,810 acres treated with some type of cutting in FYs 2018 to 2022, the forest has met the minimum acres (3,740 acres) for the 1st Mixed Conifer ERUs objective in this first seven years of the 10-year planning period.

Approximately 490 acres of the Mixed Conifer with Frequent Fire ERU were treated with prescribed fire in FYs 2023 and 2024. None of this ERU was burned with naturally-ignited wildfire in these two fiscal years. Adding the 720 acres of prescribed fire and 4,780 acres of wildfire treatments in the previous five FYs, the Coconino has met more than 15% (1,210 acres) of the minimum acres for prescribed fire and still almost 64% (4,780 acres) of the acres for naturally-ignited wildfire in the ERU, for the current 10-year planning period of the Forest Plan. Meeting the objective for managing naturally-ignited wildfires for resource objectives will be dependent upon the occurrence of lightning-caused fires in the Mixed Conifer ERUs. All naturally-ignited fires are looked

at for meeting resource objectives, but the forest considers current local and national preparedness levels along with adherence to current agency policy to make a final decision. In order to meet the objective for prescribed fire in this ERU, approximately 6,790 acres need to be underburned with prescribed fire in the remaining three years of this planning period (FYs 2025 to 2028).

Objectives for Riparian Forest Types

FW-Rip-RipType-O

1 Restore the function of 200 to 500 acres of nonfunctioning and functioning-at-risk riparian areas during each 10-year period over the life of the plan, with emphasis on priority 6th code watersheds, so that they are in or moving toward proper functioning condition.

In FYs 2021 and 2022, approximately 15 acres of Montane Willow Riparian Forest had prescribed cutting, almost 1 acre of Montane Willow Riparian Forest was treated with prescribed fire, and about 560 acres of Cottonwood Willow and Mixed Broadleaf Montane Riparian Forest were treated with naturally-ignited wildfire for resource objectives.

As the Watershed Improvement Tracking (WIT) database reports, and as displayed in the Watershed and Soils Resources section above, almost 150 acres of functional-at-risk or nonfunctional stream riparian areas and wetlands were improved in FY2023, and close to 140 acres were improved in FY2024. Adding the 470 acres of prescribed treatments and wildfire conducted in FYs 2018 to 2022, the Coconino has met more than 100% (760 acres) of the maximum acres in this objective. These treatments to meet resource objectives were used to aid in restoring the function of riparian areas.

Objective for Scenic Resources

FW-Scenic-O

1 Rehabilitate[12] at least 25,000 acres that do not meet the desired SIO by at least one level within 10 years of plan approval.

[12] In the context of scenery management, rehabilitation is a short-term management action used to return a landscape to a desired level of scenic quality formerly found in the natural landscape. While the rehabilitation action may be completed in the short term, the scenic rehabilitation may only be achievable in the long term as a result of the short-term management action.

Approximately 17,971 acres (4.2%) of Rehabilitate 1 Level, and 3,080 acres (5.9%) of Rehabilitate 2 Levels identified for the forest received treatments in FYs 2023 and 2024. No acres in the Rehabilitate 3 Level were treated in these two years. The total acres treated in these SIO Rehabilitation Levels during the first five years (FYs 2018 to 2022) of this first planning period was approximately 26,840 acres. The total number of acres in the first seven years of this 10-year period for the Forest Plan (47,890 acres) far exceeds the number of acres to be restored in this objective.

Objectives for Wetlands

FW-Rip-Wtlnds-O

1 Restore 5 to 10 wetlands currently not in proper functioning condition so that they are in, or are trending toward, proper functioning condition during each 10-year period over the life of the plan.

In FYs 2018 to 2020, almost 90 acres of wetland or cienega were treated with prescribed fire, about 10 acres were treated with naturally-ignited wildfire for resource objectives, and three acres with prescribed cutting in Long Valley and Houston Draw.

In FY 2021, 10 acres of functional-at-risk or nonfunctional stream riparian areas and wetlands were improved, and in FY 2022 close to 160 acres were improved in Lockwood Draw, Long Valley, and Houston Draw. These treatments effectively increased the wetted area adjacent to the stream channels.

In FYs 2023 and 2024, meadow restoration was completed in Buck Springs with the installation of energy dissipation structures, fencing, and willows. Energy dissipation structures were also constructed in Hoxworth Meadow and Clark Meadow, where additional meadow restoration work is planned in subsequent years. In FY2024, meadow restoration was completed in Houston Draw, with work continuing in this meadow over the next few years. These treatments effectively increased the wetted area adjacent to the stream channels and incrementally improved meadow function.

This work in six forest wetlands in the first seven years of the current 10-year period for the Forest Plan meets the number of wetlands to be restored in this plan objective. All meadow restoration projects are phased with multiple years of effort as required to improve and maintain conditions. The Coconino will continue to work with partners to implement additional phases of restoration in these meadows, and anticipates completing work in the remaining three years of this planning period (FYs 2025 to 2028).

Objective for Springs

FW-Rip-Spr-O

1 Restore riparian function to at least 25 springs identified as not in proper functioning condition to provide water quantity and aquatic habitat for the recovery of plant and animal species during each 10-year period during the life of the plan.

Nine springs identified as not in proper functioning condition were improved or restored in FYs 2023 and 2024 (as displayed in the Watershed and Soils section above). Adding the 13 springs restored in FYs 2018 to 2022, the Coconino has now restored 22 springs (88%) in the first seven years of the current 10-year planning period for the Forest Plan. In order to meet this objective fully during this period, three additional springs need to have their riparian function restored in FYs 2025 to 2028.

Objective for Soils

FW-Soil-O

1 Maintain satisfactory soil conditions and/or improve impaired and unsatisfactory soil conditions on 100,000 to 350,000 acres during each 10-year period over the life of the plan. Maintenance and improvement would occur as a result of some management actions in other resources. For example, re-locating a road in a grassland could improve impaired soil conditions.

Monitoring Question 15 looks at the maintenance of long-term soil productivity. Soil condition assessments, looking at the effects on soils from implemented projects, are intended to be conducted every three to five years. No soil condition assessments were completed in FYs 2023 or 2024.

In FYs 2023 to 2024, the watershed program completed BMP monitoring at nine sites. The Watershed Program is committed to additional BMP monitoring in FYs 2025 to 2028.

Objectives for Wildlife, Fish, and Plants

FW-WFP-O

1 Implement at least 20 activities that contribute to the recovery for federally listed species during each 10-year period over the life of the plan. An example of an activity could be thinning a Mexican spotted owl protected activity center to reduce the risk of uncharacteristic fire and to improve habitat conditions for prey species.

2 Implement at least 10 activities to benefit sensitive species that contribute to positive trends to avoid the need for listing during each 10-year period over the life of the plan.

3 Restore or enhance at least 60,000 acres of terrestrial wildlife habitat during each 10-year period over the life of the plan.

4 Restore or enhance at least 70 miles of stream habitat during each 10-year period over the life of the plan.

5 Complete at least 30 products or activities that educate the public about wildlife, fish, and plant resources during each 10-year period over the life of the plan. Examples of products include educational signs and brochures, website pages, species checklists, presentations, and field trips.

The number of activities (27) implemented in FYs 2018 to 2020 contributing to the recovery of federally-listed species already exceeded that needed to meet this first plan objective for wildlife, fish, and plants. Eight additional activities were completed in both FY 2021 and FY 2022, as well as nine activities in FYs 2023 and 2024, bringing the total in the first seven years of this 10-year planning period to 44 activities.

The number of activities (15) implemented in FYs 2018 to 2020 to benefit sensitive species that contribute to positive trends to avoid the need for listing already exceeded that needed to meet this second plan objective for wildlife, fish, and plants. Four additional activities were completed in FY 2021, six in FY 2022, four in FY2023, and six

in FY2024, bringing the total in the first seven years of this 10-year planning period to 35 activities.

The number of acres (152,260 acres) of terrestrial wildlife habitat restored or enhanced in FYs 2018 to 2020 already far exceeded that needed to meet this third plan objective for wildlife, fish, and plants. In FYs 2021 and 2022, almost 43,410 additional acres of terrestrial habitat were improved and, in FYs 2023 and 2024, another 56,770 acres were improved, bringing the total in the first seven years of this 10-year planning period to almost 252,440 acres.

Approximately 2.1 miles of streams and 288 acres of stream riparian areas were improved in FYs 2023 and 2024. Adding the 68 miles and 250 acres of stream habitat improved in FYs 2018 to 2022, the Coconino has fully met the miles of stream habitat (70 miles) to be restored or enhanced in this fourth plan objective for wildlife, fish, and plants during this 10-year planning period.

The number of activities (53) conducted in FYs 2018 to 2022 to educate the public about wildlife, fish, and plant resources already met the number needed to meet this fifth plan objective for wildlife, fish, and plants. In FYs 2023 and 2024, another 42 of these activities were conducted (18 in FY2023 and 24 in FY2024), bringing the total in the first seven years of this 10-year planning period to 95.

Recommendations

Amendments

San Francisco Peaks Traditional Cultural Property

The Coconino reinitiated consultation with Tribes and concurring signatories under Section 106 of the National Historic Preservation Act to develop a Memorandum of Agreement (MOA) addressing adverse effects on the San Francisco Peaks Traditional Cultural Property (SFTCP). These effects are disclosed in the Record of Decision for the 2005 Final Environmental Impact Statement for Arizona Snowbowl Facilities Improvements. By engaging in multi-tribal government-to-government consultations to discuss future management of the San Francisco Peaks, the forest has begun updating documentation for the SFTCP. The SFTCP was determined eligible for the National Register of Historic Places in 2000, because of its association with events making a significant contribution to the broad patterns of American history. The SFTCP is associated with the cultural practices and beliefs of Native American communities that are rooted in their history and are important in maintaining the continuing cultural identity of their community.

Informed by updated SFTCP documentation, continued engagement with Tribal nations, and broad public engagement, a plan amendment will continue to be evaluated to refine the desired conditions and management direction (standards and guidelines) for the area

in the Coconino Forest Plan. As conversations continue with Tribal nations, a proposed action for amending the revised Forest Plan will be developed through this community engagement.

Species of Conservation Concern

In order to complete the 2012 Planning Rule substantive requirements in the Coconino Forest Plan, regional and forest biologists and botanists are identifying and evaluating wildlife and plant species to be considered species of conservation concern for the forest. Species of conservation concern are species other than federally recognized species (36 CFR 219.9 (c)) that are known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area.

A forest plan amendment will need to be completed and approved to finalize the list of species of conservation concern for the Coconino.

Objectives

Based on the current progress toward meeting plan objectives, the Coconino is not considering any changes to the objectives currently in the revised Coconino Forest Plan. However, in order to fully meet plan objectives in the first 10-year planning period, we need to consider the following:

- In order to fully meet the objectives for grasslands, approximately 6,000 acres of Great Basin Grasslands and 1,690 acres of Montane/Subalpine Grasslands need to be restored or improved in FYs 2025 to 2028, the remaining three years of this planning period.
- In order to fully meet the objectives for Pinyon Juniper ERUs, at least 220 acres of Pinyon Juniper with Grass need to be mechanically treated in FYs 2025 to 2028, the remaining three years of this planning period.
- In order to meet the minimum objective for prescribed cutting in the Ponderosa Pine ERU, about 10,230 of the Ponderosa Pine ERU needs to be mechanically treated in FYs 2025 to 2028, the remaining three years of this planning period.
- In order to meet the objective for prescribed fire in the Ponderosa Pine ERU, approximately 41,090 acres need to be underburned with prescribed fire in the remaining three years of this planning period (FYs 2025 to 2028).
- In order to meet the objective for prescribed fire in Mixed Conifer ERUs, approximately 6,790 acres need to be underburned with prescribed fire in the remaining three years of this planning period (FYs 2025 to 2028).
- In order to fully meet the objective for Springs, three (3) additional springs need to have their riparian function restored in FYs 2025 to 2028.
- The Coconino Watershed Program is committed to additional BMP monitoring in the FY 2025 to 2028 monitoring cycles.