



United States
Department
of Agriculture

Forest
Service

Southwestern
Region



Prescott National Forest

Forest Plan Monitoring and Evaluation Report Fiscal Year 2010



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Section 1: Introduction

What is Forest Plan monitoring?

Forest Plan monitoring is an ongoing process that assesses the response of the forest environment to management activities undertaken to move the Prescott National Forest (PNF) from an existing condition to a desired condition, as described in the 1987 Prescott National Forest Land and Resource Management Plan ("Forest Plan," as amended, and as republished in December, 2004). As required by the 1982 planning rule, national forests must monitor and evaluate how well their forest plans are being implemented. This process includes opportunities for modifying the forest plan to respond to monitoring results.

What is the purpose of monitoring?

The purpose of monitoring and evaluating the implementation of the Forest Plan is to inform the decision maker of the progress that has been made toward achieving the goals and objectives and following standards and guidelines.

This report documents and evaluates the results of the monitoring that occurred during fiscal year (FY) 2010 (October 2009 through September 2010) and describes the rationale for any changes to the Forest Plan recommended by the monitoring team.

It also meets the intent of chapter 5 of the Forest Plan to "analyze and evaluate the significance of the results of the monitoring

action plan" (p.73)¹. Monitoring requirements included in the Forest Plan specify the effect(s) to be monitored, the measurement technique(s) to be used, and the expected future condition(s) to be met for each activity or project. They also establish a frequency for measuring and reporting the monitored item and the expected precision and reliability of that measurement. These monitoring requirements are available on the PNF website².

Lastly, it provides an important communication link with the public and within the agency. By disclosing the effectiveness of the Forest Plan, the PNF is able to better identify future research needs and to shift monitoring activities to more effectively measure overall forest health. In general, monitoring determines:

- If the PNF is achieving its objectives.
- If standards are being followed.
- If management prescriptions are responsive to public issues and management concerns.
- If management prescriptions are applied as directed.
- If the effects of implementing the Forest Plan are as predicted.
- If management practices on adjacent or intermingled non-national forest lands are affecting goals and objectives.

How are monitoring results used?

¹ References to Forest Plan page numbers are for the 2004 republished version of the 1987 Forest Plan, as amended (version 1.1), available at: <http://www.fs.fed.us/r3/prescott/plan-revision/forestplan.shtml>.

² <http://www.fs.fed.us/r3/prescott/plan-revision/forestplan.shtml>

Based on the evaluation of the monitoring results, the monitoring team makes recommendations to the forest supervisor. These can include:

- **No action is needed.**
Monitoring indicates goals and objectives are being reasonably achieved and standards are being followed.
- **Make a recommended action.**
Refer recommended action to the appropriate line officer(s) for improvement or application of management prescriptions.
- **Make a Forest Plan amendment.**
Modify the management prescription or assignment of a prescription as a Forest Plan amendment.
- **Revise the Projected Schedule of outputs.**
- **Identify research needs.**

It is important to note that this is not a monitoring report on individual projects; however, results of some individual projects have been considered in the preparation of this report.

Section 2: Monitoring Summary

Fire Management

Fire Preparedness

Periodic inspections and readiness reviews were used during FY2010 to validate that the fire management organization could function in a safe and effective manner.

Ground Conditions

Fall 2009 was about average for moisture, but winter 2010 was well above average for moisture and provided ground moisture that carried well into the dry spring. This supported good initial growth of all types of plant life including grasses, shrubs, and trees but discontinued when precipitation diminished and spring temperatures began to rise.

The PNF implemented Stage 1 campfire and smoking restrictions on June 23, 2010. Timely and abundant monsoon moistures permitted restrictions to be lifted on July 21. Moisture amounts and the lack of heavy lightning during the summer monsoon season was enough to restrict potential wildfire starts and spread. As a result, suppression efforts were successful for most wildfires after the start of the monsoon period. There were no complete closures on any area on the PNF during FY2010 due to fire danger levels.

Moisture Levels

Above average winter moisture (January through March) helped to moderate wildfire indices even with a dry spring. Energy Released Components (ERC) remained in the average range until the summer monsoons began in early July. By the latter part of July, the average to above average monsoon moisture levels carried the ERCs to well below average until September (Figure 1). This resulted in a below average wildfire season in both the number of starts and acres burned.

Large wildfire activity throughout the Nation was light during most of the summer. Activity picked up slightly in the Southwestern Region during the early onset of the monsoons, with increased lightning and erratic weather conditions. This situation moderated significantly when monsoon moistures set in and average daily relative humidity began to

rise. Tables 1 and 2 show moisture amounts received at various weather stations across the PNF during the course of FY2009 and FY2010.

Monsoon activity resulted in 15 lightning-caused wildfires (Table 3). Although moisture amounts overall were below normal, they occurred periodically which supported low-intensity fire behaviors throughout most of the summer months.

Resource Objectives

There were no opportunities to manage wildfires for resource objectives other than full suppression. This was due to a lack of ignitions (lightning) where and when suitable conditions existed. During FY2009, periodic moisture and moderate fire behaviors supported decisions to manage two lightning-caused fires (Hyde and Woodchute) with objectives other than full suppression. These wildfires successfully accomplished resource benefit objectives and functioned in a manner similar to pre-European settlement wildfires.

Tables 3 and 4 display the number, size, and cause of wildfires that occurred during FY 2009 and FY 2010. The majority were less than one acre in size.

Fire Assignments

The number of wildfire assignments not on the PNF for the Prescott Hotshots and most wildfire-fighting resources were at or slightly below normal. Many of the trips were for the purpose of staging in areas experiencing elevated levels of risk and did not involve firefighting activities.

Mechanical Treatments and Prescribed Fire

Both mechanical and prescribed fire treatments were used to reduce fuel loadings.

Mechanical treatments were conducted in stands of ponderosa pine, chaparral, and the

woodland vegetation type to manage brush species, improve the condition class, enhance the ecosystem, and construct fuelbreaks to support future prescribed fire activities. Approximately 5,868 acres of mechanical treatments were completed.

Prescribed fire was used on approximately 14,000 acres. Prescribed fire was applied to 6,400 acres in areas of ponderosa pine and chaparral within the wildland-urban interface (WUI). There was also 7,600 acres of prescribed fire in areas considered non-WUI. The objectives for all prescribed fire treatments included maintenance or restoration of fire as a natural agent within fire-adapted ecosystems. Within the WUI areas, objectives also included reducing the risk of wildfire to life and property.



Figure 1. Grapevine Prescribed Burn November 2009 (FY 2010)

Tables 5 and 6 display the number of acres treated by year and vegetation type since the PNF Forest Plan was approved.

Fuels Crew

All fuels management treatments on the PNF are monitored for before and after conditions. The PNF Fuels Crew established pre-treatment plots in areas proposed for prescribed burning and mechanical treatments. These plots included live and dead fuel loadings and pictures from the plot in each of the primary

directions (north, east, west, and south). These same plots were re-measured and re-pictured immediately following the treatment and will

be done again one year later. This information is stored in each of the project's records.

Table 1. Moisture levels recorded at the PNF weather stations during FY 2009

Weather Station	2008		2009		Totals
	Oct 1-Dec 31	Jan 1–Mar 31	Apr 1-Jun 30	Jul 1-Sep 30	
Iron Springs	5.46"	2.02"	2.78"	4.97"	15.23"
Crown King	9.38"	2.23"	3.27"	4.96"	19.84"
Verde	3.95"	2.22"	1.08"	1.88"	9.13"
Cherry	5.48"	2.49"	1.86"	5.54"	15.37"

Table 2. Moisture levels recorded at the PNF weather stations during FY 2010

Weather Station	2009		2010		Totals
	Oct 1-Dec 31	Jan 1–Mar 31	Apr 1-Jun 30	Jul 1-Sep 30	
Iron Springs	2.72"	8.55"	0.48"	2.79"	14.54"
Crown King	3.2"	16.46"	0.92"	7.97"	28.55"
Verde	1.39"	8.28"	0.10"	5.68"	15.45"
Cherry	3.26"	11.39"	0.23"	6.55"	21.43"

Table 3. Wildfires on the PNF during FY 2009 and FY 2010

Wildfire size in acres	2009		2010		Totals
	Human caused	Lightning caused	Human caused	Lightning caused	
< 1 acre	20	23	32	15	90
1 – 100 acres	2	8	0	0	10
> 100 acres	0	2	0	0	2
Totals	22	33	32	15	102

Table 4. Wildfires greater than 100 acres on the PNF during FY 2009 and FY 2010

Year	Name	Size	Cause
2009	Hyde	255 acres	Lightning
	Woodchute	779 acres	Lightning
2010	- None -	0 acres	N/A

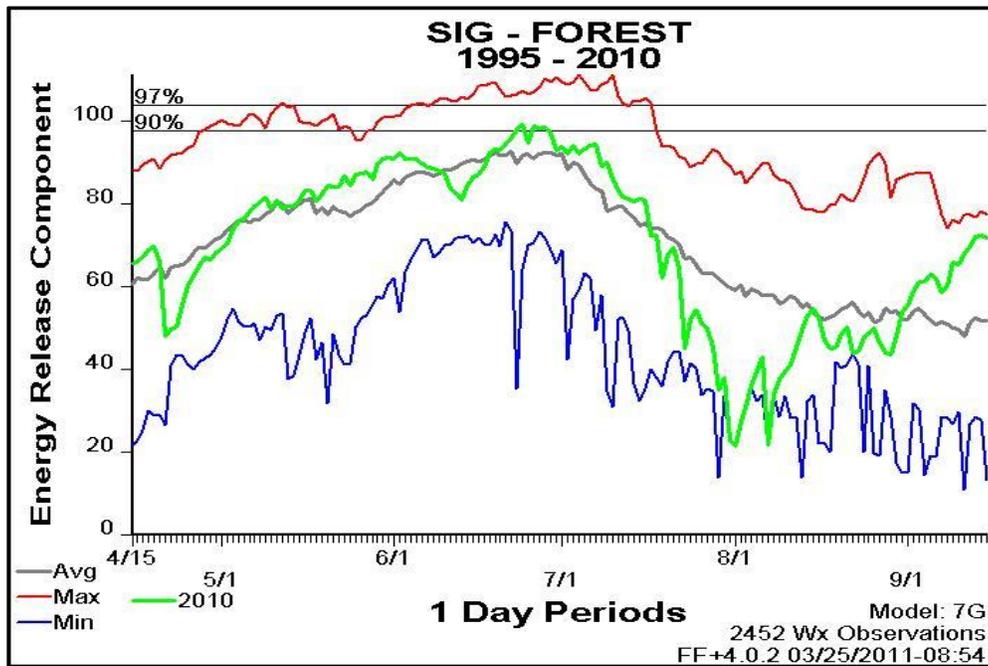
Table 5. Annual acres treated by vegetation type 1987-1998

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Grass	5,000	3,500	6,000	3,500	2,344	2,500	2,000	1,500	3,200	0	0	0
Chaparral	11,930	9,358	1,000	0	1,800	0	1,200	4,800	2,100	1,200	3,492	6,000
Pine	0	984	910	1,150	0	75	96	150	110	241	768	0
Woodland	0	0	152	270	410	1,176	0	0	0	0	0	0

Table 6. Annual acres treated by vegetation type 1999-2010

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Grass	0	3,000	6,000	0	0	0	0	0	0	0	0	0
Chaparral	7,500	2,500	8,000	300	7150	4071	5,483	4,300	3,866	5,885	6,383	9,700
Pine	0	1,100	100	288	500	1800	667	5,500	4,518	7,236	3,016	3,800
Woodland	0	0	1,000	0	0	0	0	0	0	0	301	500

Figure 2. FY 2009 Energy Release Component for the PNF



Heritage Resources

National Register Sites

The PNF manages 36 sites that are listed on the National Register. Since a number of these are actively used for Forest Service administrative activities, heritage managers visit many of these sites throughout the year. National Register sites that are not used on a day-to-day basis are visited less regularly. The less-visited sites are customarily checked as the opportunity arises, which usually occurs every few years. All 36 sites experienced little overall change from year to year.

Since most of these sites are historic, the primary activity that takes place on them is routine maintenance of the historic buildings. Forest maintenance funds for such structures are stretched thinly to cover these sites; however, continuously occupied sites are given more attention. Prehistoric sites that are listed

on the National Register seem to be more affected by natural processes than direct acts of vandalism, and they remain in fairly stable condition with no major impacts having altered their historic integrity.

Heritage Projects/Reports

There were 58 heritage projects/reports completed: 23 on the Bradshaw Ranger District; 18 on the Chino Valley Ranger District; and 16 on the Verde Ranger District. Of the 58 projects/reports that were completed, 24 did not have archaeological properties and 34 did. Of these 34, 19 projects were in or directly adjacent to archaeological sites where consultation with the State Historic Preservation Office (SHPO) resulted in a “no adverse effect.”

Thirty-five new archaeological properties were recorded. Many sites were monitored as part of project activities. There were 46 previously recorded sites accounted for FY2010 proposed

projects. Any pre-project monitoring that was done consisted of: (1) assuring that sites were properly identified and marked for avoidance and (2) checking the sites and removing identification boundary markers once the project was completed. It is common to visit sites more than once during the life of a project to ensure that they are protected. On occasion, pre-project work simply involved making sure that project managers were aware that archaeological sites existed in the project area.

Natural Deterioration and Vandalism

Monitoring also consisted of checking about 50 sites during non-project-related fieldwork for signs of natural deterioration and vandalism. These sites are located throughout the PNF and consist of a variety of site-types.

The first issue affecting site integrity, natural deterioration, is caused by environmental factor—typically related to weather events. Rain in the form of "downpours" creates sheet and rill erosion, causing artifacts to be displaced and archaeological features to be compromised. Although no quantitative data exist as to the seriousness of this problem, sites are being impacted when heavy rains occur.

The second issue is direct and indirect vandalism. During FY2010 there were about 28 acts of vandalism reported by the Site Stewards for the PNF. Vandalism was represented by digging in pueblos, moving rock walls, removing rock art, camping and building campfires on sites, and various other acts. Vandalism is documented and filed with the PNF archaeological site data and with the State as part of the Arizona Site Steward Program.

Two damage assessments were completed by PNF personnel. One involved 2 archaeological sites where illegal occupants (squatters) were camping on them. The other damage

assessment concerned bulldozing along the edge of a road for several miles without a prior archaeological survey. Fortunately no sites were found to be affected.

Other Projects

In addition to monitoring sites on the National Register, monitoring efforts included checking a number of archaeological sites that fell within timber and fuelwood harvesting areas, brush crush units, and Arizona Public Service line maintenance vegetation clearing. This work included relocating and reflagging archaeological sites for avoidance.

Monitoring occurred on several smaller projects as well, including those for trails, road improvements, mining, historic site improvements, and others. Some monitoring efforts did not get reported because they involved quick "spot checks" of known heritage resources when the opportunity arose. Overall, monitoring has been effective and helpful in continuing efforts to protect prehistoric and historic resources.

Insects and Disease

Desired Condition

The PNF monitors insect and disease conditions annually in order to better predict future impacts. The desired condition is that insect and disease problems will not have serious adverse effects on the PNF due to an appropriate mix of silvicultural activities, treatment of slash, and various other control methods.

Ips Beetle

The PNF and adjacent State and private forested lands were surveyed for insect activity on August 23, 24, and 25, 2010. Bark beetle activity increased from 86 acres recorded in 2009 to 1,130 acres in 2010. Ponderosa *Ips* activity was mapped on 1,070 acres followed by

40 acres of Douglas-fir beetle, 10 acres of western pine beetle, and 10 acres of piñon *Ips* activity. Bark beetle activity increased regionwide in 2010 and was most commonly associated with areas showing drought stress and areas recently burned.

Lands

No rights-of-way were acquired in FY 2010.

Noxious Weeds

Surveys

Noxious and invasive weed species surveys are conducted yearlong across the PNF by trained personnel from various resource programs. Once these species are located, they are plotted and identified by GPS and added to the PNF's Weed Atlas and GIS noxious weed layer. This data is loaded into the Weed Atlas and is shared statewide in Arizona.

Many developed and dispersed camping sites, day-use areas, dispersed recreational activity areas, and old mining claims were surveyed.

Treatments

The PNF accomplished 950 acres of noxious weed treatment in FY 2010. Monitoring and inventory of noxious weeds on 12 miles of the upper Verde River in FY 2010 resulted in priority treatment of 200 acres, an effort which will help protect the integrity of this important riparian habitat and critical habitat for threatened and endangered wildlife and fish species.

Community Involvement

The PNF continues to be involved in the Southwestern Vegetation Management Association and Yavapai Weed Management Areas. Participation in these weed management programs provides a networking of information on noxious weed species presence and

eradication treatments with other Federal and State agencies and private entities.

Range Management

Drought Conditions

Forest research and range scientists have documented for years that climatic cycles of drought and wet periods often have more effect on vegetative ground cover than resource management (i.e., livestock grazing). The monitoring assessment noted that the climatic drought conditions in the last 15 years have reduced the frequency and density of vegetation particularly in the graminoids (grass-like vegetation). In 2010, the PNF was dryer than normal, with moderate drought indicators again present in its southern and western portions.



Figure 3. Range monitoring for vegetation on the Bald Hill Allotment August 2010

Livestock Numbers

Permitted numbers of grazing livestock on the PNF's range allotments have continued to decrease from previous years. The livestock numbers authorized in FY 2010 was 60 percent (72,500 head months) of the total allowable permitted numbers (120,311 head months) within the ten-year term grazing permits. This

decrease in authorized numbers is in response to the detrimental effects of the prolonged drought conditions experienced across the PNF from 1996 to 2010.

Range NEPA

Two range National Environmental Policy Act (NEPA) decisions, Sycamore and Bottle Range Allotments, were completed.

Grazing Capacity

Grazing capacity for livestock is monitored in numerous ways:

- **Parker Three-Step Clusters.**
This process, established on the PNF in the late 1950s and early 1960s, uses a collection of repeatable data points to compare herbaceous frequency and density. Soil stability indicators are also used to determine long-term trends for each allotment.
- **Annual range allotment inspections.**
These determine the short-term needs for adjusting the authorized livestock numbers stocked within each allotment.
- **NEPA decisions.**
The analysis of rangeland resources is supplemented by data collected via numerous monitoring methods for the assessment of grazing use within allotments as required by NEPA.

The Parker Three-Step Clusters were re-read and evaluated for trend and condition of rangeland resources on the Yavapai and West Bear/Del Rio Allotments (Table 7).

Range permit compliance monitoring for range allotments “administered to standard” evaluated a total of 203,500 acres of rangeland. This monitoring included: accounting for the

authorized/actual use livestock on the allotment; monitoring the livestock use on forage vegetation; ensuring pasture rotations were timely and followed; monitoring the maintenance of structural range improvements.

Table 7. Re-analysis of Parker Three Step Clusters

Allotment name	Acres analyzed
Yavapai	57,966
West Bear/Del Rio	71,751

Recreation

Camping

Campground use was divided in 2010. About 50 percent of the campgrounds showed an increase of use and the other 50 percent showed a decrease of use. This is probably due to the weak national and world economies, the housing market, as well as other major factors. Lynx Campground continues to be the most popular recreation site on the PNF with a 67.6 percent occupancy rate in FY 2010. This is an increase of about 4 percent from FY 2009.

Concentrated developed recreation usage occurs on weekends during the spring, summer, and early fall. In FY 2010 there were approximately 70,382 overnight camping visits, including group sites, and 103,637 day-use visits. In 2010, the recreation visitor day (RVD)³ total was 120,654. Currently, the Forest Plan provides 380,000 RVDs or 52 percent of the demand. During the peak recreation summer months, campground occupancy can average 80 to 100 percent on weekends, but occupancy

³ The overall recreation visitor day (RVD) is based on a RVD multiplier of 6 for an average 2-day camping stay.

over the entire seven month season was considerably less (Table 8).

Table 8. 2010 Campground Occupancy Rates

Campground	Occupancy
Groom Creek Horsecamp	23.3 %
Hilltop	48.2 %
Yavapai	16.0 %
Lower Wolf Creek	21.8 %
Lynx Lake	67.6 %
Mingus Mountain	38.2 %

“Approximately 20,109 camping days, including group campsite days were used in 2010. Recreation statistics use 3.5 people/overnight visits in developed campsites.”—Monte Richardson, Developed Recreation Program Manager

Designated Dispersed Camping

There are 109 designated dispersed campsites within the Prescott Basin. These sites do not have any facilities (e.g., trash, toilets, water) and no fee is required. Forestwide dispersed site monitoring is conducted from April through October each year during patrols by fire prevention technicians, forest protection officers, and recreation technicians. Prior to April and after October, there are little or no patrols of dispersed camping sites.

Volunteers are assigned the responsibility of inventorying, monitoring, and maintaining each site throughout the year. When PNF personnel patrol and monitor these sites, they concentrate on fire prevention, camping limits/compliance, and education. Volunteers

clean and maintain these sites and report anything they feel is unusual about the use of dispersed campsites and the condition of the specific area.

Off-Highway Vehicle Use

The PNF has two developed off-highway vehicle (OHV) areas: Alto Pit (near Prescott) and Hayfield Draw (near Camp Verde). Based on an analysis of fees collected, visits for both OHV areas totaled about 5,575.

Shooting Areas

Conditions at dispersed shooting areas are observed annually by PNF personnel, volunteers, and visitors. Some dispersed shooting sites are lightly used while others are heavily used and are very popular with shooting enthusiasts. Often in the more popular sites, trash is dumped and used for target shooting. Heavily impacted dispersed shooting sites are monitored and serviced by the Community Forest Trust, a sponsored volunteer non-profit organization that assists the PNF with litter cleanup operations.

Verde Wild and Scenic River

The PNF manages 41 miles of the Verde Wild and Scenic River in cooperation with the Coconino and Tonto National Forests. Fourteen litter patrol trips were conducted along the River in FY 2010.

Trails and Wilderness

In 2010, Forest Service personnel, the Community Forest Trust, and volunteer groups and individuals worked on projects and Adopt-A-Trail programs to maintain approximately 165 miles of trail to Forest Service standards on general forest lands and wilderness.

Table 10 displays the approximate number of visitors to the PNF’s eight wilderness areas during FY 2009 and FY 2010.

Wilderness is categorized as “Primitive” in the Recreation Opportunity Spectrum rating. Only visits recorded at a trailhead register are included in these totals. This likely underestimates actual use because:

- Some visitors do not register.

- There is not a register at every trailhead.
- There are gaps in the data.
- Emergency situations (e.g., fires and illegal activities) prohibit visitation on some or all trails in wilderness.

Table 9. 2010 Verde Wild and Scenic River Patrol

Days on the river	Visitor contacts	Trash removed	Work days	Other work
67	240	44 bags of trash and 17 tires totaling 1,890 lbs.	315 work days accomplished by staff and partners 122 work days contributed by volunteers	Invasive weed treatments and re-treatment Removed debris from river channel to restore river's flow Removed trees that were damaged in a winter storm and were stuck in the river and the river trail

Table 10. Approximate wilderness visitation

Wilderness	2009	2010
Apache Creek	N/A	N/A
Castle Creek	154	355
Cedar Bench	N/A	N/A
Granite Mountain	2,572	4,185
Juniper Mesa	260	265
Pine Mountain	265	424

Sycamore Canyon	34	32
Woodchute	2,035	1,869
Totals	5,320	7,130

Roads and Facilities

Road Improvements

Thirty-three miles of existing National Forest System (NFS) roads were reconstructed to improve access and improve watershed conditions, 165 miles of NFS roads received reoccurring maintenance to the desired maintenance standard, and 3 miles of roads were decommissioned. Efforts continued to implement the Travel Management Rule, by inventorying and signing NFS roads and installing signs to prohibit cross country motorized travel.

Facility Improvements

The PNF decommissioned the 20-year old sewer system at the Crown King Administrative Site and constructed a new state-of-the-art sewer treatment facility in its place.

Soil and Water

Administrative Monitoring

Monitoring of soil and water resources was predominantly connected with project work that was not necessarily affiliated with watershed targets.

Administrative monitoring of best management practices affiliated with mining operations, prescribed fire and fuel management, range allotment NEPA, rangeland management, timber harvests, roads, and recreation sites continue to be implemented. Findings from this monitoring are ongoing and are used to make

adjustments to ensure the protection of the watershed resources.

Soil Condition

Soil condition monitoring occurred on approximately 11,618 acres. Approximately 25 miles of stream/riparian corridor and 7 acres of emergent riparian/wetland resources were assessed. This occurred during the soil and watershed resource analysis for NEPA decisions involving range allotments.

Burned Area Emergency Response

No wildland fires greater than 500 acres occurred on the PNF; thus, no Burned Area Emergency Response (BAER) activities were conducted.

Water Quality/Quantity

Instream flow measurements continued through 2010 on four perennial stream reaches. These streams include Apache Creek and Walnut Creek in the Verde River sub-basin and Big Bug Creek and Cienega Creek in the Agua Fria sub-basin.

Watershed Based Community Partnerships

The PNF continued to participate in a number of federal, municipal, and local watershed working groups and partnerships which focus on watershed management and water quality/quantity issues.

Timber

Timber Harvest

The acreages of intermediate harvest, regeneration harvest, and removal harvest is monitored to measure the attainment of treatment prescriptions and the effects of implementation. The desired condition is a more balanced age-class distribution, appropriate growing stock levels, and provision for wildlife habitat needs. All harvesting that occurred in both the ponderosa pine and piñon-juniper vegetation types in FY 2010 were considered intermediate harvests. The number of harvested acres for pine and piñon-juniper vegetation type from FY 1987 through FY 2010 is depicted in Tables 11 through 14.

Sawtimber and Fuelwood

Federal regulation requires the Forest Service to annually measure and report the amount of sawtimber offered for sale. In FY 2010, the PNF offered and sold approximately 2,712 CCF (CCF =100 cubic feet) of sawtimber and 6,137 CCF of fuelwood. Sawtimber sales allowed for reduced stand densities and improved forest health on 279 acres. The Forest Plan identifies that the amount of fuelwood made available each year will be reported every five years (Table 15).

Table 11. Harvest history in pine vegetation types FY 1987-1998

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Regeneration Harvest (acres)	0	8	256	42	0	0	12	20	0	0	92	0
Intermediate Harvest (acres)	116	604	931	570	146	304	0	92	0	0	478	0

Table 12. Harvest history in pine vegetation types FY 1999-2010

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Regeneration Harvest (acres)	0	162	0	0	0	0	5	13	0	0	0	0
Intermediate Harvest (acres)	0	1,082	530	0	0	613	738	451	504	1,065	328	279

Table 13. Harvest history in piñon-juniper vegetation types FY 1987-1998

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Regeneration Harvest (acres)	0	0	32	0	0	0	0	0	0	0	0	0
Intermediate Harvest (acres)	0	0	47	166	0	0	0	0	0	0	0	0
Removal Harvest (acres)	0	239	211	44	70	202	240	120	212	247	256	256

Table 14. Harvest history in piñon-juniper vegetation types FY 1999-2010

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Regeneration Harvest (acres)	0	0	0	0	0	0	0	0	0	0	0	0
Intermediate Harvest (acres)	0	0	0	0	0	0	0	0	45	120	80	314
Removal Harvest (acres)	256	250	255	250	55	55	40	67	0	0	0	0

Table 15. Fuelwood sold on the PNF FY 2006-2010

	2006	2007	2008	2009	2010	Total
Fuelwood sold (cords)	5,307	7,811	6,568	7,644	7,768	35,098

Wildlife

Bald Eagle

In January 2010, PNF employees and volunteers monitored bald eagle winter roosts in the Prescott area, including one site on the PNF and three sites on surrounding areas. A nesting pair

was seen near Lynx Lake, one adult eagle was seen at Willow Lake, four eagles were seen at Watson Lake, and six bald eagles were seen at Goldwater Lake. For breeding bald eagles in FY 2010, two separate, but simultaneous, efforts occurred to monitor nesting bald eagles on different parts of the PNF.

The PNF continued with their annual Challenge Cost Share Agreement with the Arizona Game and Fish Department to implement seasonal closures around the bald eagle breeding areas on the Verde River and to monitor their progress. In FY 2010, no eagles were fledged from the Ladders and Towers nest sites due to failed nesting attempts. The Perkinsville territory fledged one offspring.

In FY 2010, breeding bald eagles near Lynx Lake successfully hatched and fledged one young eagle from the nest.

Mexican Spotted Owl

The PNF did not survey any Mexican spotted owl restricted habitat or protected activity centers.

Northern Goshawk

The PNF did not monitor any goshawk habitat or post-fledging areas.

Peregrine Falcon

The PNF did not monitor the three remote territories on the Chino Valley Ranger District and the Thumb Butte and Granite Mountain territories on the Bradshaw Ranger District.

Southwestern Willow Flycatcher

The PNF did not monitor any populations or habitat for the Southwestern willow flycatcher; however, population monitoring may have occurred off the PNF by the U.S. Geological Survey and the U.S. Fish and Wildlife Service.

Yellow-billed Cuckoo

The PNF did not monitor any populations or habitat for the Yellow-billed Cuckoo.

Spikedace

As part of a program started with Rocky Mountain Research Station in 1994, and as required in the Biological opinion for the Amended Forest Plans in the Southwestern Region, all seven permanent sites on the upper Verde River were monitored in spring of 2010 for fish community structure and information on habitat conditions. Fish sampling methods included backpack electro-fishing and seining of habitats. Habitat conditions were documented with photos.

Fisheries surveys were conducted in 2010 by the Arizona Game and Fish Department in the upper Verde River. Spikedace continued to be absent in fish surveys, as has been the situation since 1996. Monitoring of livestock river crossings at Perkinsville determined that effects to the habitat are minimal.

Gila Chub

Aquatic habitat conditions in Upper Water Spring and Middle Water Spring (Indian Creek), Little Sycamore Creek, and a portion of Sycamore Creek were altered by sediment and ash runoff due to the Cave Creek Complex Fire in summer of 2005. Gila chub habitat conditions were monitored by PNF personnel in portions of Indian, Sycamore, and Little Sycamore Creeks in FY 2010.

Aquatic conditions are altered in all occupied Gila chub habitat affected by the Cave Creek Complex Fire. Visual observations of the Gila chub populations revealed the typical distribution of fish has decreased due to loss of pool habitat.

Gila Trout

In fall 2009, the Arizona Game and Fish Department (AZGFD) stocked Gila trout into Grapevine Creek, a tributary to Big Bug Creek in the Agua Fria River drainage. Two site visits were made by the AZGFD in March and August of 2010. Visual observations indicate that Gila trout are establishing in this stream.



Figure 4. Hiking to the site location to re-stock Gila trout in Grapevine Creek November 2009 (FY 2010)

Mexican and Narrow-headed Gartersnakes

Surveys were conducted for Mexican and narrow-headed gartersnakes in the upper Verde River from April through September of 2010 under an agreement with Northern Arizona University. Six sampling trips were conducted in three different sections of the river. Sampling sessions consisted of three to four days and two to three nights at each location. Sampling methods included trapping with minnow traps and visual encounter surveys

Two adult and one neonate (newborn) narrow-headed gartersnakes were captured in the Prospect Point sampling location along the river. No other specimens of Mexican or narrow-headed gartersnakes were seen or captured at the other sampling locations.

Management Indicator Species

A draft Management Indicator Species Report was nearly completed in FY 2010.

Table 16. Management Indicator Species Trends

Species	Habitat	Current population trend
Aquatic macroinvertebrate	Riparian, aquatic, late seral	Stable
Goshawk	Ponderosa pine, late seral	Decreasing
Hairy woodpecker	Ponderosa pine, snags	Stable
Juniper (Plain) titmouse	Piñon/juniper snags	Decreasing
Lucy's warbler	Riparian, late seral	Increasing
Mule deer	Piñon/juniper/chaparral, early seral	Decreasing
Pronghorn antelope	Grassland, desert shrub	Declining
Pygmy nuthatch	Ponderosa pine, late seral	Stable
Spotted (Rufous-sided) towhee	Chaparral, late seral	Decreasing
Tassel-eared squirrel	Ponderosa pine, early seral	Stable
Turkey	Ponderosa pine, late seral	Increasing

Section 3: Progress toward Desired Condition

Fire Management

"Provide for fire management support services necessary to sustain resource yields while protecting improvements, investments, and providing for public safety. In as much as possible, return fire to its natural role in the ecosystem." (Forest Plan, p. 14)

Resource Objectives

Prior to August 2006, the PNF Forest Plan allowed naturally occurring wildfires to be managed for the objective of resource benefits only in designated wilderness areas. During August 2006, the Forest Plan was amended (Amendment #16) to include additional areas outside of designated wilderness areas to allow this.

During FY 2009, two lightning-caused wildfires were managed with objectives that included resource benefits. These were the Hyde Fire (255 acres) located south of Hyde Mountain on the Chino Valley Ranger District and the Woodchute Fire (779 acres) located in and adjacent to the Woodchute Wilderness Area on the Chino Valley and Verde Ranger Districts. During FY 2010, there were no opportunities to manage wildfires for resource benefit objectives. This was due to a lack of ignitions (lightning) where and when suitable conditions existed.

Natural Role of Fire

The PNF is becoming successful in returning wildfire to its natural role in various ecosystems, even with the complexity of implementing this strategy at a larger scale. Use of prescribed fire is expected to continue with

success in vegetation and fuels management to restore wildfire-adapted ecosystems.

Heritage Resources

"Heritage resources represent an opportunity for research, education, understanding and enjoyment that enhances their stewardship and protection." (Forest Plan, p. 12)

Agency and Tribal Consultation

In general, budgets and staffing for heritage resources management are focused on project implementation, which involves direct on-the-ground work as well as consultation with Federal and State agencies and American Indian tribes, communities, and nations.

On-the-ground work includes the inventory, documentation, and protection of prehistoric and historic sites. Consultation typically concerns the Arizona State Historic Preservation Office and, to a much lesser extent, the Advisory Council on Historic Preservation. Consultation with American Indian tribes, communities, and nations occurs on a regular basis by the forest archaeologist, designated as the forest's tribal liaison.

Constraints on Meeting Desired Condition

Due to pressing matters concerning project implementation, consultation, and a lack of discretionary heritage resource funding, heritage resource personnel were able to spend little time working on research, outreaches, education, and enhancement activities.

Exceptions to this included: archaeological inventory that was conducted under the auspices of the Walnut Creek Consortium in the Walnut Creek area of the Chino Valley Ranger District; the PNF's support for research pertaining to the function of walled hilltop sites;

and the coordination of an involved Site Steward Program.

Interpretation

The PNF has numerous archaeological sites that are extremely visible and easily accessed. While the vast majority of sites are important from a research and traditional cultural property standpoint, most do not lend themselves to capital investment for the purposes of interpretation. Nevertheless, opportunities for interpretation do exist, particularly for some of the larger sites and those that fit into a particular thematic category. The opportunity for interpretation does not need to rely on a single location but can focus on some broad pattern of history or prehistory as it relates to the PNF.

Lands

"Conduct landownership adjustment, right-of-way acquisition, landline location, and special-uses programs to promote efficient management." (Forest Plan, p. 14)

The PNF lands staff continues to implement efficient land management practices through the effective use of land exchanges, special-use permits, small tracts, and when necessary, encroachment resolution with the help of law enforcement.

Noxious Weeds

"Prevent any new noxious or invasive weed species from becoming established, contain or control the spread of known weed species, and eradicate species that are the most invasive and pose the greatest threat to biological diversity and watershed condition." (Forest Plan Amendment #14, Final Environmental Impact Statement for Integrated Treatment of Noxious or Invasive Weeds, January 2005, p. 265)

Coconino, Kaibab, and Prescott NFs

The completion of the Environmental Impact Statement for the Coconino, Kaibab, and Prescott National Forests has been beneficial to continue managing the ever-increasing invasive weed species populations.

Currently there are 27 noxious weed species found within the three national forests and four additional species on other adjacent lands. Currently, no other invasive species have been identified. The desired condition is to prevent any new plants from becoming established on national forest lands. Controlling these plants would promote ecosystem health and prevent losses in the productive capacity of the land.

Treatments

The Coconino and Prescott National Forests have focused weed eradication efforts on the middle reaches of the Verde River (from Camp Verde south to Childs) to sustain and protect the wild and scenic river designations. In 2010, 12 miles of the upper Verde River were re-treated for noxious weeds with the focus of removing tamarisk. In addition, small populations of noxious weeds were removed within many of the PNF's wilderness areas.

The PNF treated a total of 950 acres of invasive weed species. Monitoring in 2010 revealed that biological treatments (e.g. insect releases) have been only moderately successful, while herbicidal and hand-labor treatments were effective and successful.

Range

"Provide forage to grazing and browsing animals to the extent benefits are relatively commensurate with costs, without impairing land productivity, in accordance with management area objectives. Cooperate with other agencies and private range landowners to

reduce impacts of livestock grazing. Identify and manage areas that contain threatened and endangered species of plants." (Forest Plan, p.12).

Healthy Forests Restoration Act

In 2010, the PNF completed approximately 20,000 acres of vegetative treatments, as part of the Nation’s Healthy Forests Restoration Act (HFRA), to improve vegetation and watershed conditions and reduce the risk of catastrophic wildfires. The primary purpose of these treatments was to reduce fuel loading and potential wildfire hazards, and secondary, to improve forage production, vegetative ground cover, and watershed conditions.

Drought Conditions and Indicators

Adjustments were made to stocking and grazing management that corresponded with changing climatic conditions. Authorized livestock numbers in FY 2010 was 60 percent of term permitted numbers, and actual use livestock numbers were 58 percent of term. This is in response to the dry summer and fall and extension of the ongoing 15-year drought.

Grazing permittees are actively involved in range inspections and surveys.

Forest research and range scientist have documented for years that climatic cycles of drought and wet periods often have more effect on vegetative ground cover than resource management activities (i.e., livestock grazing). The monitoring assessment noted that the climatic drought conditions over the last 15 years have reduced the frequency and density of vegetation particularly among the grasses and grass-like plants.

In 2010, the PNF’s drought indicators and conditions showed a majority of the forest as moderately wet, with precipitation levels at 94 percent of average. Monsoonal moisture was generally wide-spread except for portions of the PNF west of the Bradshaw Mountains and the Juniper Mountains.

Structural Improvements

Range structural improvements listed below in Table 17 will improve livestock distribution and healthy watersheds to sustain and improve productivity of rangelands.

Table 17. FY2010 Range Structural Improvements

Description	Allotment
Red Mountain Pasture Division Fences, 5.25 miles	Yavapai
Allotment Boundary Fence at Turkey Pasture, 3.5 miles	Yavapai
Jordan Pasture Windmill Restoration and New Storage Tank	Old Camp
North Allotment Boundary Fence (Jordan Pasture), 1.0 miles	Old Camp
	Peck Canyon
Grapevine Canyon Trail-head Gate	Big Bug
Solar Pumps Installed at Bull and Glidden Wells	West Bear/Del Rio
Pine Pasture Boundary Fence Betterment, 2.0 miles	Bottle

Description	Allotment
Pine Pasture Cattle guard	Bottle
Peck Canyon Pipeline and Trough, 1.0 mile	Peck Canyon
Peck Canyon Pipeline Water Storage	Peck Canyon
Contreras Stock Tank Waterlot, 0.75 miles	Contreras
Reimer Spring Fence Enclosure	Cienega

Recreation

“Recreation users enjoy a full spectrum of experiences and benefits in appropriately managed facilities and other forest settings. All recreation sites are managed at a capacity of use level that ensures that the natural resources will be maintained at a desirable condition over the expected life of the project and/or activity.”
(Forest Plan, p.12)

National Visitor Use Survey

Based on the 2007 PNF National Visitor Use Monitoring Survey (NVUM), completed every 5 years, visitors surveyed gave the PNF high marks for visitor satisfaction in all major categories: Developed Day Use and Overnight Sites, Wilderness, and General Forest Areas.

Recreation Opportunities

The PNF continues to actively upgrade developed facilities infrastructure and has a strong construction/reconstruction program in place for camping facilities and trails. The recreation team continues to rely heavily on volunteer help.

Diverse camping opportunities exist throughout the PNF at designated dispersed, undesignated dispersed, and developed sites.

Managing 41 miles of the Verde Wild and Scenic River in cooperation with the Coconino and Tonto National Forests adds diversity of

recreational experiences for those visitors who wish to float the Verde River.

Recreation Planning

Recreation planning efforts seek to provide diverse recreation experiences. A mix of multiple uses and motorized and non-motorized trail opportunities is the primary focus for the next few years.

The PNF recreation team has been involved with the development of a Sustainable Recreation Strategy. The team has collaborated with different agencies (e.g., Yavapai County, Bureau of Land Management, public interest groups) to consider future planning to include recreational opportunities that “overlap” county, city, and forest boundaries. These multi-agency recreation opportunities would benefit Yavapai County community members.

Interpretation

Considerable progress has been made in providing interpretation of the PNF through environmental education, both within the trail program as well as through partnerships (e.g., Highland Center for Natural History).

Patrols and Volunteers

In the eight wilderness areas of the PNF, 94 staff patrols were completed by the wilderness ranger March through October. Volunteers

contributed 1,178 hours of service in designated wilderness areas.



Figure 5. Picture taken of trail and signage during a patrol of the Castle Creek Wilderness August 2010

Developing an agreement with the sponsored volunteer group, Community Forest Trust, has helped reduce the maintenance backlog on trails, designated dispersed campsites, and developed sites (e.g., campgrounds, trailheads, and picnic areas).

Roads and Facilities

“Maintain a transportation system to support resource goals. Construct, maintain and regulate use of Forest Service facilities to protect natural resources, correct safety hazards, reduce disinvestments, and support management activities.” (Forest Plan, p.14)

Roads Maintenance and Improvement

Budgets for roads continue to decline. The PNF manages to maintain level 3, 4, and 5 roads to meet highway safety standards. In general, the available budget only allows the PNF to address safety and the most critical resource protection needs. In FY 2010, the PNF aggressively pursued and procured additional funding and accomplished 31 miles of road and trail watershed improvement projects.

Facilities Maintenance and Improvement

Budgets for facilities continue to decline. The PNF reduced some deferred maintenance and made progress to reduce operating costs. Water systems are safe and maintained to standard. All of the occupied buildings are safe for employee use.

Two major projects addressed deferred maintenance at the Crown King Work Center (CKWC) and the Prescott Fire Center. The obsolete and aged sewer plant at CKWC was decommissioned, demolished, and replaced with a state-of-the-art, low operation and low maintenance cost facility. Operation cost will be reduced \$5,000 per year for the life of the system. At the 18-year old Fire Center, security was upgraded and interior and exterior building components and fixtures were repaired, replaced, or brought up to code. In addition, a solar hot water system was installed.

Soil and Water

“Protect and improve the soil resource. Provide for long-term water flow needs through improved management technology. Avoid adverse impacts to the public, Government facilities and all uses in floodplains and wetlands. Restore all lands to satisfactory watershed condition.” (Forest Plan, p. 13-14)

“Give riparian-dependant resources preference over other resources. Improve all riparian areas and maintain in satisfactory condition.” (Forest Plan, p. 14)

Best Management Practices

Consistent with the Forest Plan, best management practices (BMPs) were developed and implemented at the project-level to minimize impacts to soil, riparian, and water resources. Some of the BMPs implemented in 2010 included:

- The minerals program established specific measures for activities occurring within streamside management zones and implemented erosion control measures.
- Prescribe fire operations were completed in a mosaic pattern to maintain vegetative cover and established special burn prescriptions for streamside management zones.
- Rangeland management strategies incorporated utilization standards and other management tools to maintain/improve vegetative ground cover and overall watershed condition.
- Erosion control measures were implemented for those areas disturbed by mechanical timber harvest operations.

- Road and trail maintenance focused on improving drainage by out-sloping travel surfaces and creating rolling dips.

Field Inventories and Analyses

In support of other resource programs, the PNF’s soil scientist and hydrologist conducted soil and water resource inventories and analysis (resource specialist reports) for all projects requiring NEPA analysis. Soil condition inventory/ monitoring utilized Terrestrial Ecosystem Unit Inventory (TEUI) and other Southwestern Region protocols. Riparian conditions were analyzed using the proper functioning condition (PFC) to regional standards. The results of these field inventories and analysis were utilized to document existing resource conditions, develop desired resource conditions, and develop proposed actions or design features.

Table 18 lists the projects on which soil and water resource condition inventory and analysis was conducted in FY 2010.

Table 18. Allotments and soil/water resources assessed in FY 2010

Year	Project	Ranger District	TEUI (Soil) Acres	Stream/ Riparian Corridor (miles)
2010	Goat Allotment	Verde	328	0.65
2010	Buckhorn Allotment	Bradshaw	241	0.00
2010	Horsethief Allotment	Bradshaw	5,160	14.20
2010	Walnut Grove Allotment	Bradshaw	2,918	2.50
2010	Hassayampa Allotment	Bradshaw	2,971	7.30

Burned Area Emergency Response

In 2010, the PNF did not have any wildland fires greater than 500 acres; thus, no Burned Area Emergency Response (BAER) monitoring and evaluation occurred.

Water Quality and Quantity

Every two years the Arizona Department of Environmental Quality (ADEQ) is required by the Federal Clean Water Act (CWA) to conduct a comprehensive analysis of water quality data

associated with Arizona’s surface waters to determine whether State surface water quality standards are being met and designated uses are being supported. This report is submitted to the Environmental Protection Agency (EPA) for approval. Once approved, it is used to guide water resource management decisions. The objective of the analysis is to:

- Compile descriptive information about the surface water.
- Determine whether each designated use assigned to an assessment unit is “attaining” or “impaired.”
- If impaired, determine the pollutant(s) causing impairment.
- Provide future monitoring priorities (the planning list).

If water quality is impaired and development of a Total Maximum Daily Load (TMDL) is needed, the surface water is placed on the Federal 303(d) list. Impaired water is not placed on this list if: (1) alternative pollution control requirements are in place that will bring the surface water into compliance with its standards (e.g., a consent decree), (2) an approved TMDL is being implemented, or (3) the impairment is solely due to natural conditions. Further information on this assessment is included in Surface Water Assessment Methods and Technical Support which is available online⁴.

A number of waters within the PNF are included in the 2009 Status of Ambient Surface Water Quality in Arizona – Arizona’s Integrated 305(b) Assessment and 303(d) Listing Report which is

available online⁵. The water bodies listed in Table 19 are included on the 2009 Arizona Status List for not attaining beneficial uses or for impairment.

TMDLs are one of many tools in the CWA to help achieve the Act's main objective to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (CWA Section 101 (a)). When pollutants impair the use of water, a study may be completed to determine how to reduce them and restore water quality. A TMDL establishes the maximum amount of a pollutant allowed in the water while maintaining all of its designated beneficial uses. Arizona is required by law to identify polluted waters and to develop TMDLs to help address these problems.

TMDLs were completed for waters on or adjacent to the PNF including Turkey Creek, the Verde River, and the upper Hassayampa River. These are available online⁶.

Watershed Instream Flow

PNF instream flow (ISF) measurements have continued in 2010 on four perennial stream reaches, including: Apache and Walnut Creeks in the Verde River sub-basin and Big Bug and Cienega Creeks in the Agua Fria River sub-basin.

Watershed Based Community Partnerships

PNF line officers and resource specialists are members or participants in a number of local, state, and federal organizations or working groups focusing on watershed and water issues. The PNF continues its participation with the Verde Watershed Association, Yavapai County

⁴ <http://www.azdeq.gov/environ/water/index.html>

⁵ <http://www.azdeq.gov/environ/water/assessment/assess.html>

⁶ <http://www.azdeq.gov/environ/water/assessment/tmdl.html>

Water Advisory Committee, and Upper Agua Fria Watershed Partnership.

The Verde District Ranger continues to serve as the PNF representative on the Verde River Basin Partnership. The Bradshaw District Ranger and the PNF watershed specialist are on the Watershed Improvement Council (WIC)

sponsored by Prescott Creeks, a local non-profit organization. The goal of the WIC is to monitor and assess the nature of pollutants in the Granite Creek watershed above Willow and Watson Lakes. To complete this work, the Prescott Creeks organization applied for and was awarded a grant through the ADEQ Water Quality Improvement program.

Table 19. Impaired or non-attaining waters on or adjacent to the PNF

Water	Pollutants for Listing	Status
upper Hassayampa River	Cadmium, Copper, Zinc, and low pH	Impaired
Cash Mine Creek and unnamed tributary (headwaters of Hassayampa River)	Cadmium, Copper, Zinc, and low pH	Not Attaining
Granite Creek	Dissolved Oxygen, Fecal Coli-form, Nutrients	Not Attaining
Watson Lake	Nitrogen, Dissolved Oxygen, pH	Impaired
Verde River (from Perkinsville to confluence with East Verde River)	Sediment/Turbidity	Not Attaining

Timber

"Provide for non-declining sustained yield of timber. Establish improved balance in age-class distribution through silvicultural prescribed stand management. Focus on reducing constraining components of stand strata. Protect existing old-growth stands. Improve stand productivity through management. Provide green and dead firewood and other forest products on a sustained yield basis. Timber harvest will be used as a tool to accomplish multiple resource objectives when it is identified as the optimum method through site-specific environmental analyses." (Forest Plan, p. 13)

Fuelwood and Timber Harvest

In general, the PNF is moving towards desired condition for stand structure and productivity, although this is occurring at a rate that is slower than it could be. The PNF will continue to supply fuelwood sufficient to meet existing demand.

During the first six years of Forest Plan implementation, the number of ponderosa pine acres treated by intermediate and regeneration harvests was relatively constant. From 1992 until 2000, treatments were sporadic, and only the Maverick, Schoolhouse, Dearing, and Goldwater Timber Sales were offered. Since 2000, the PNF has offered and sold one timber sale each year.

The Forest Plan identifies 130,350 acres within the Pine Management Area (Management Area 4 or MA 4). Approximately 61,651 acres are tentatively suitable lands and 30,653 are considered commercial timberlands. An estimated 2,962 acres of commercial timberland in the Woodland and Chaparral Management Areas (MA 2 and MA 3) is also listed. Between 1987 and 2010, approximately 39 percent of the commercial timberlands have been treated.

Forest Health Emphasis

In 2006, the timber program moved toward a green tree harvest program that is typically found within the region. The objectives of a green tree harvest program are to improve forest health and wildlife habitat by thinning overstocked timber stands and to move the forest toward a more balanced age-class distribution.

The shift in management emphasis from harvesting timber for commodity production to harvesting timber for the purpose of restoring or improving forest health has facilitated the protection and recruitment of old growth trees.



Figure 6. Removal of small diameter trees to be used for forest products

Wildlife

"Manage for a diverse, well distributed pattern of habitats for wildlife populations and fish species in cooperation with states and other agencies. Cooperate with Arizona Game and Fish Department to meet or exceed management goals and objectives in the Arizona Cold Water Fisheries Strategic Plan.

Maintain and/or improve habitat for threatened or endangered species and work toward the eventual recovery and delisting of species through recovery plan implementation.

Integrate wildlife habitat management activities into all resource practices through intensive coordination. Support the goals and objectives of the Arizona Wildlife and Fisheries Comprehensive Plan, as approved by the Southwestern Regional Forester and the Director of the Arizona Game and Fish Department." (Forest Plan, p. 13)

Benefits of Forest Health Treatments

Impacts to wildlife habitat from forest health projects are beginning to be realized as residual stands of trees begin to respond to treatments with healthier canopies, more open understories, and increased herbaceous vegetation.

Wildlife populations are expected to shift accordingly to reflect these changed habitat conditions; wildlife species composition will shift toward those species that favor open forests and younger seral stages. The shifting habitat conditions are moving toward a better balanced age-class distribution and structure that inherently supports a more diverse array of species.

Habitats in ponderosa pine and piñon-juniper vegetation communities will become more patchy and diverse than before, with open areas on south aspects and ridges. The open areas

provide a greater diversity of understory vegetation and habitat for small mammals, birds, reptiles, and insects.

By improving the plant species diversity in the understory, the increased habitat diversity provides a greater abundance of prey species for larger predators from flycatchers to bats to owls to bobcats. Pockets of dense forest will remain in protected canyons and on north facing slopes. These areas provide habitat for those species needing older or late seral stage habitats.

Wildlife and Project Work

Wildlife habitat considerations are incorporated into the design and implementation of many projects including fuels reduction, forest health, livestock grazing, road use permits, small tracts acts, and recreation special use permits.

Threatened and Endangered Species

The recent delisting of the bald eagle is encouraging and suggests that management practices are meeting the needs of the species.

Progress toward improving habitat for threatened and endangered (T&E) fish species on the PNF is uncertain. Habitat for threatened spikedace and other native fish in the upper and lower Verde River has been protected for several years from impacting activities, specifically livestock grazing and OHV recreation.

Beneficial effects to native species have not been observed in locations where established populations of non-native predatory fish are present. This is also the case in the lower Verde River where reintroductions of Colorado pikeminnow and razorback sucker have not been successful in spite of annual stockings since the early 1990s. Other streams on the PNF, such as Sycamore Creek and Little

Sycamore Creek, with Gila chub populations have also experienced diminished populations and less occupied habitat due to the presence of non-native predatory fish.

The greatest short-term need for improving habitat for T&E fish species is the control and/or removal of non-native fish species from historical and current habitat, a task which would fall under the jurisdiction of the Arizona Game and Fish Department. Another major concern is the increasing human population growth in the areas surrounding the PNF and the expected increase in water demand. Long-term efforts to managed fish habitat should focus on maintaining a natural water flow regime in key streams on the PNF.

Section 4: Barriers to Effective Monitoring

Heritage Resources

Administrative Barriers

Budget constraints, workload, and a lack of personnel have prevented comprehensive monitoring of all sites eligible for and listed on the National Register. The overall number of sites monitored in FY 2010 was about the same as FY 2009. Criteria used to determine which projects were monitored included: the density of sites in or near a project area, the magnitude of the project, the likelihood of vandalism, and the National Register eligibility of the sites.

Funding has, and will probably continue to be, an issue with monitoring. As project work plans are developed at the beginning of each fiscal year, monitoring funds need to be figured into the plans. Significant time and effort have been focused on pre-project planning; coordination with the project manager; consultation with the State Historic Preservation Office and Native

American tribes, communities, and nations; and follow-up record keeping.

Individually these items are not barriers to effective monitoring, but taken together, they have created a significant impact on the time available for monitoring activities and proactive efforts to manage heritage resources.

External Barriers

Forest Plan monitoring has been effective in showing that overall protective actions have worked well; however, some mishaps have occurred in the past, chiefly due to a lack of communication or the failure of a site to be identified. For example, when protective site markers, such as flagging, are encountered by the public, they are sometimes removed. This was the situation in FY2010, and is a problem that will probably remain for some time to come, which will require heritage resource personnel to continue to check sites several times until a project is completed.



Figure 7. Petroglyphs on the PNF

Noxious Weeds

Administrative Barriers

Budget constraints and a lack of a full-time PNF weed program manager position have prevented extensive monitoring and more effective treatment of the noxious and invasive weeds.

Range Management

Administrative Barriers

Budget constraints and a lack of range management specialist personnel have prevented extensive monitoring of range conditions. The Southwest Region and the PNF has made range Rescission Act NEPA for permit reissuance a priority and, consequently, administration and monitoring have not been as extensive as desired.

Recreation

Time Interval for Visitor Monitoring

The establishment of the National Visitor Use Monitoring (NVUM) program as a national standard has provided and continues to provide consistent data for day-use developed areas, overnight use developed areas, wilderness, general forest area use, and view corridors. As each national forest completes more NVUM surveys, the quality and accuracy of the data improves. The PNF completed its 2nd NVUM survey in 2007 and will participate in NVUM's 3rd survey starting in the fall of 2011 and ending in the fall of 2012.

Soil and Water

Administrative Barriers

Budget and workload constraints, other PNF resource program priorities, and understaffing of the watershed and soils program continue to limit the full effectiveness of the watershed and soils program, specifically in regards to supporting analysis, implementation, monitoring, and maintaining a self-efficient soil and water program.

Wildlife

Ineffectiveness of the Forest Plan

As in previous years, the items identified in the Forest Plan for monitoring are not always relevant to determining progress in meeting Forest Plan goals. Monitoring non-game birds, as a measure of determining the health of riparian associated species, is probably not useful in measuring the accomplishment of PNF goals.

Wildlife population monitoring is a challenging task as cause and effect relationships are hard to determine because of extrinsic factors (e.g., neo-tropical migratory bird populations may be influenced by factors in other states or countries). Such an undertaking needs to be closely coordinated with State and other agencies.

To be effective, monitoring needs to be simple and easily implemented while providing a true picture of progress toward an objective. There is a need to adapt monitoring so that changes can be made in on-going programs/projects as soon as potential problems are identified.

Legal Requirements

The requirements for environmental documentation have become very complex for wildlife and are changing frequently. In addition, litigation-inspired legal interpretations of the requirements for Management Indicator Species analysis and migratory bird analysis (added by Executive Order in 2001) continue to add to the environmental analysis workload.

Alternatives for Accomplishing Monitoring

Barriers to effective monitoring primarily include lack of funding. Effective ways to accomplish monitoring include incorporating monitoring into project designs. Another possible tool for accomplishing monitoring is partnering with those groups or entities with the skills and resources to do the monitoring.

Section 5: Emerging Issues

Fire Management

Widespread Issues

A combination of circumstances has made the public very aware of fire management actions and practices on lands managed by Federal and state agencies across the Nation. This level of awareness has been extremely prevalent in all communities within and adjacent to the PNF. These circumstances include:

- an increase in vegetation and fuel loads resulting from the lack of wildfire in its natural role in fire-adapted ecosystems
- the effects of a long-term drought
- an increase in the number of homes and human access (wildland-urban interface) in and adjacent to national forest lands
- recent, high-profile catastrophic wildfires in Arizona and across the Nation where lives and homes have been threatened and lost (e.g., Indian Wildfire in Prescott in 2002 and Lane 2 Wildfire in Crown King in 2008)

Challenges to Managing Wildfires

The threat of large, high-severity wildfires has substantially increased public awareness of fire management practices and actions with an expectation that efforts will be made to protect lives and homes. This increased interest has provided many opportunities to work with individuals, groups, and other agencies to reduce these threats, but it has also created many challenges. These challenges include:

- increased treatment opportunities and needs with a limited budget

- varying levels of expectation by the public with some wanting aggressive treatments adjacent to their neighborhoods and others wanting little or no treatment
- reduced numbers and types of resources that are available for wildfire suppression and fuels management actions

Smoke Emissions

Smoke generated by prescribed fires has become one of the most challenging issues. Smoke emissions from all prescribed burns during FY 2010 were permitted and monitored by the Arizona Department of Environmental Quality (ADEQ).



Figure 8. Smoke emissions in the Verde Valley following a prescribed burn

Prescribed burns in FY 2010 were managed with objectives and techniques designed to reduce smoke intensities and the length of time that smoke was present. These techniques included size and locations of burns and timing and days of continuous burning in any single airshed; however, smoke issues did and will continue to persist.

Prescott sits in a low-lying area (Prescott Basin) that attracts and holds smoke as do the communities located within the Verde Valley.

This smoke can come from various and multiple locations and smoky conditions can linger for several days following the completion of a prescribed fire or unplanned wildfire

Even at low concentrations, smoke can reduce visual qualities and may cause health problems, especially to those with breathing disorders or hypersensitivity to smoke. Smoke in the air or even notification through the media that burning is planned generates numerous phone calls to local Forest Service offices. Keeping the public informed about fire activities and potential smoke concerns is a major part of managing both prescribed burns and wildfires.

Resouce Objectives

In FY2009 smoke columns were visible throughout most of the summer months from some location within the greater Verde Valley and often there were multiple columns. Most of this smoke was high elevation smoke with minimal physical impacts to the population within the Verde Valley. The increase in low-intensity fire during FY 2009 exposed residents and visitors of the Verde Valley to the effects of more historic smoke conditions.

During FY 2010, the national forests within central and northern Arizona were prepared to move forward with management of wildfires and the associated smoke impacts to the Prescott Basin and Verde Valley based on what was learned from the active FY 2009 fire season. However, the opportunities to manage wildfires in a similar fashion were very limited due to the lack of ignitions (lightning) and precipitation from the summer monsoons. The result was few and only minor impacts to sensitive airsheds across this area.

Heritage Resources

Sensitivity to Tribal Values

The PNF sends American Indian tribes, communities, and nations notices of projects and occasional meetings. American Indian tribes have not only shown interest in specific sites where their ancestors lived but also in large areas where certain cultural practices took place.

The future challenge for the PNF is to work effectively with tribes, communities, and nations so that these areas can be identified and managed in such a way as to show PNF sensitivity to tribal values that are based in the past but are expressed in the present. The PNF should consider seeking out funding and completing ethnographic studies as a way to better understand where these areas exist and, consequently, to improve its relationship with these tribal groups.

Impacts from People

Another emerging issue, mentioned previously, is the negative impacts on archeological resources from increased forest visitor use and the growing population in Yavapai County. As more people use the PNF, there is a greater potential for archeological sites to be negatively impacted.

One major concern is the increased use of off-highway vehicles (OHVs) to access more remote locations which were previously protected by their inaccessibility. In addition to providing greater access to archeological sites, OHV use has spawned new, user-created trails (also called social trails) around the PNF and, in some cases, altered existing trails. When new social trails are created or when existing trails are altered, heritage resources are in danger of being affected by direct impacts. Regulations implemented on the PNF for the Travel Management Rule may help reduce the creation and use of social trails.

Need for Increased Public Awareness

As the population of Yavapai County and public use of the PNF increases, there will be a greater need to augment the interpretation of heritage resources and increase public awareness about the protection of these resources.

Disseminating information to the public about heritage resources can be a key component for protecting against direct and indirect impacts.

Noxious Weeds

Increased Spread

Noxious weed populations continue to expand annually over the PNF, and the expansion of weeds over small areas also continues.

Additionally, critical habitats, wilderness areas, and wild and scenic river designations across the PNF are threatened by the spread of noxious weeds.

The recent Watershed Condition Assessment of the PNF found 6 percent of the Groom Creek 6th code watershed to be infested with noxious weeds, whereas forestwide estimates of noxious weed infestations are about 2 to 3 percent of the entire PNF. Currently, the area with the greatest increase is the Prescott Basin or the lands immediately south and west of the city of Prescott.

Range

Drought Conditions

Effects of the extended 15-year drought are still evident on PNF rangeland conditions. In general, however, drought conditions improved across the PNF in 2010. Drought recovery in plant density, frequency, and cover requires time and prudent management in the arid Southwest environment. Adaptive range management practices, effective communication, and timely actions between

the agency and livestock producers have been critical in managing drought issues and managing the impacts on range conditions and annual livestock stocking capacity across the PNF.

Recreation

Increased Demand and Use

Population increases in Yavapai County continue to create additional pressures for diverse recreation use. There is a need in the north Williamson Valley area for more developed recreation opportunities near Walnut Creek/Camp Wood. Similarly, rapid population growth in Paulden, Chino Valley, and the Verde Valley communities is impacting the Verde River ecosystem through increased dispersed recreation activities in these areas, including camping, picnicking, and off-highway vehicle use. Several roads that were frequently used by motorized recreationists to or along the Verde River have been closed and patrolled. These efforts have been successful in dramatically reducing illegal motorized use in this area.

Wilderness Concerns

As the population in Yavapai County and adjacent counties increases, the number of visits to the eight PNF wilderness areas is expected to increase as well. Impacts to natural resources within wilderness areas are documented, monitored, and maintained. The presence of noxious weeds in wilderness areas is also documented. Wilderness education has been recognized as a way to help prevent negative impacts to wilderness, and a wilderness education plan has been established to address this need.

Motorized Travel

Travel Management continues to be a major focus in recreation. The PNF already complies with the National Travel Management direction to prohibit cross-country travel across its entire area. The PNF continues to sign and map the open roads and motorized trails and to provide the public with the required Motor Vehicle Use Map (MVUM) which complies with the National Travel Management program.

Noxious Weeds

Noxious weeds are found in most recreation areas (e.g., campgrounds, trails, day-use areas, and dispersed recreation areas). Recreation personnel and volunteers map and document these areas. Recreation management efforts should take an active role treating noxious weeds and preventing their spread.

Roads and Facilities

Decreased Funds

Trends in the roads budget indicate that the PNF will do less and less maintenance for resource protection on level 1 and level 2 roads. Most of the funding will be used to maintain levels 3, 4, and 5 roads to highway safety standards and to only address critical safety concerns on the remainder of the inventory.

Trends in the facilities budget indicate that the PNF will be challenged to maintain facilities in a safe manner. Given the aging infrastructure, the deferred maintenance may increase faster than the capability to make improvements.

Motorized Travel

With the implementation of the MVUM, it is expected that there will be increased use of the designated road and trail system and decreased cross-country travel and resource damage.

Soil and Water

Best Management Practices

Monitoring of the soil/timber best management practices (BMPs) need to be integrated with the recently developed National BMP protocols. New soil quality indicators have been used in soil condition assessments and are providing promising results. Long-term monitoring elements for soil and water, primarily in rangeland management, are undergoing development.

Groundwater Dependent Ecosystems

Proper management and conservation of groundwater-dependent ecosystems⁷ is moving to the forefront of soil and water resource concerns.

These key natural resources are of high value to the public and the PNF for the ecosystem and wildlife habitat functions that they provide. More often than not, these water resources are a source of conflict for planning, assessing, and implementing management activities.

Impaired Water Quality

Water quality sampling completed by the Arizona Department of Environmental Quality (ADEQ) and partners in the Prescott Basin is showing impairments in Granite Creek and Watson Lake. Further studies are currently being conducted to define the impairment and sources of pollution. Concurrently, a TMDL for Watson Lake is under development by ADEQ. While Watson Lake itself is not within the borders of the PNF, the TMDL may prompt the creation of additional resource management considerations or recommendations for managing the Granite Creek watershed.

⁷ Groundwater ecosystems include natural springs, seeps—groundwater that flows onto the land surface through natural processes, or groundwater emerging in stream channels that supports perennial reaches of streams.

Timber

Excessive Fuels

The most critical resource issue facing the PNF is the density of overstocked ponderosa pine stands. There is an urgent need to treat these stands to prevent extensive insect infestation, reduce the potential for crown fires, and improve overall forest health. The existing timber industry infrastructure has allowed for the purchase, removal, and utilization of the wood that has been offered for sale, and it is critical that this infrastructure remain intact.

Public Awareness

Cultivating public awareness and acceptance of the need to use timber sales as a way to treat hazardous fuels and improve forest health in the wildland-urban interface continues to be a vital aspect of the timber program. As such, the wildland-urban interface is an increasingly important geographic area for natural resource interpretation and public information efforts.

Wildlife

Pronghorn

Pronghorn are receiving increasing attention statewide as their habitats decline. Habitats on the PNF are becoming more important as threats continue to increase across their range. These threats include:

- Housing development on private land, with subsequent roads and fences, continues to take place in places that are optimum habitat.
- Human disturbance is increasing.
- Forage conditions are affected adversely by drought.

Pronghorn are indicators for the suite of species that occupy grasslands. Grasslands are being lost due to urbanization. This makes

conservation of the remaining grasslands very important. The PNF manages only a small proportion of the grasslands; it is important that these areas be managed to benefit pronghorn.

Restoration of fire-dependent ecosystems (including the grasslands) is a high priority for the PNF. Future plans for the grasslands include the removal of juniper and the use of prescribed fire to keep grasslands open and free of invasive woody species.

Native Fish and Stream Habitats

The conservation and restoration of native fishes throughout the Southwest is a controversial issue. Restoration efforts have focused on: (1) construction of fish barriers and/or (2) chemical renovation of streams with non-native fish populations and restocking with native species. However, a recently introduced bill in Arizona, which would limit the use of piscicides (i.e. fish killing chemicals) because of the possible human health risks, may prevent use of this effective tool in conservation management.

Another continuing issue is the increased population and urbanization on private lands surrounding the PNF and inholdings within the PNF and how this has led to increasing pressure on threatened and endangered species' habitats (e.g., groundwater pumping and recreation activities), especially in and along the Verde River. Collaboration with city, county, state, and other federal agencies is ongoing and needed to prevent impacts to stream systems on the PNF. Increased public awareness and outreach is also critical for keeping the non-consumptive, historical values that native fish and flowing streams provide to the arid West.

Other Issues

Other emerging wildlife issues include:

- Noxious weeds are expanding and could eventually impact a variety of wildlife habitats.
- Timing and intensity of potential wildfires, as a result of increases in fuel levels, could threaten Mexican spotted owl and Northern goshawk habitat and populations on the PNF.
- Designing and implementing projects is a challenge because of the complexity of land ownership patterns in the wildland-urban interface and the increased resource objectives for fuels, vegetation, and forest health.
- The pumping of groundwater on private lands may impact flows in the Verde River.
- Unmanaged recreation, including illegal off-highway vehicle use, on some areas of the PNF threatens wildlife and fish species and their habitats.

Section 6: Recommendations

Five "Needs for Change" Topics

Of the topics listed in Section 5 (Emerging Issues), five were identified as "Needs for Change" during the revision of the 1987 Forest Plan:

1. Restore vegetation structure, composition, and desired characteristics of fire to selected ecosystems while using adaptive management to respond to citizen concerns related to smoke emissions.
2. Maintain and improve watershed integrity to provide desired water quality, quantity, and timing of delivery.

3. Provide sustainable, diverse recreation experiences that consider population demographic characteristics, reflect desires of local communities, avoid overcrowding and user conflicts, and minimize resource damage.
 4. Provide desired habitat for native fish species.
 5. Enhance the value of PNF-provided open space by defining visual character within areas near or viewed by those in local communities
- personnel.
-

Other Analysis for Forest Plan Revision

In addition to addressing the Needs for Change, the revised Forest Plan must also:

- evaluate areas as potential wilderness
- update wild and scenic eligibility of the upper Verde River
- evaluate eligibility for recommended research natural areas
- evaluate species viability
- review Management Indicator Species
- evaluate effects of climate change
- determine suitability for timber, range, and recreation
- complete the long term sustained yield calculations

Alternative Methods to Monitoring

Budget limitation was the item listed most often as a barrier to effective monitoring. The PNF should expand its efforts at monitoring by increasing involvement of volunteers in the monitoring program. This could be especially effective in the area of noxious weed identification and inventory if training and assistance were provided by Forest Service

Section 7: Certification of Forest Plan Sufficiency

I have reviewed this annual Forest Plan Monitoring and Evaluation Report for Fiscal Year 2010 and determined that:

- While management activities on the Prescott National Forest continue to lead toward desired conditions, Forest Plan Needs for Change should be addressed during the revision of the 1987 Forest Plan.
- The report is responsive to monitoring information as identified in chapter 5 of the 1987 Forest Plan. The monitoring plan and monitoring activities conducted by the Prescott National Forest are based on National Forest Management Act regulations and Forest Service Manual guidance.

Therefore, I have determined that the 1987 Forest Plan, as currently amended, remains sufficient (although in need of further change) to guide implementation activities over the next fiscal year.

/s/

Betty Mathews, Forest Supervisor

July 31, 2011

Date