Annual Monitoring Report
for Implementing the
Kaibab National Forest Land Management Plan

Fiscal Year 2002

Forest Supervisor Certification

I certify that the Kaibab National Forest Plan as amended is sufficient to guide management of the Forest over the next year. Changes necessary to maintain the viability of the Plan are identified in this document.

_____ _____

MIKE. WILLIAMS Date

Forest Supervisor

Monitoring Activities

Introduction

The Monitoring Plan for the Kaibab National Forest Plan identifies 58 items to be tracked as measures of the effectiveness of the forest plan.[1] Emerging research results and other new information have changed our understanding of natural resources, sometimes alleviating concerns, and at other times, raising new issues. Valuation of various forest resources by society, the Forest Service and other agencies has continued to change since the inception of this Plan in 1988. This has been expressed by public concern and action, as well as governmental action and funding of activities. This, in turn affects what can or should be monitored and how it will be done.

With monitoring, we believe the real question should often be, "Is the Forest better today than five years ago?" for particular conditions or habitats. The current monitoring criteria often do not address this issue in any meaningful way. In preparation for revision, scheduled for 2006-2008, we are analyzing needs for forest plan amendment(s) to bring the monitoring requirements up to date. Major progress in this effort is expected to begin in 2004.

The following sections report what is being or has been accomplished recently by particular issue or concern areas, and what potential may exist to accomplish additional monitoring work, if necessary. For details on the last 5-year monitoring efforts, please see the Fiscal Year 1999 Monitoring Report.

[1] These items are reported every five years and will be next reported in the 2003 report.

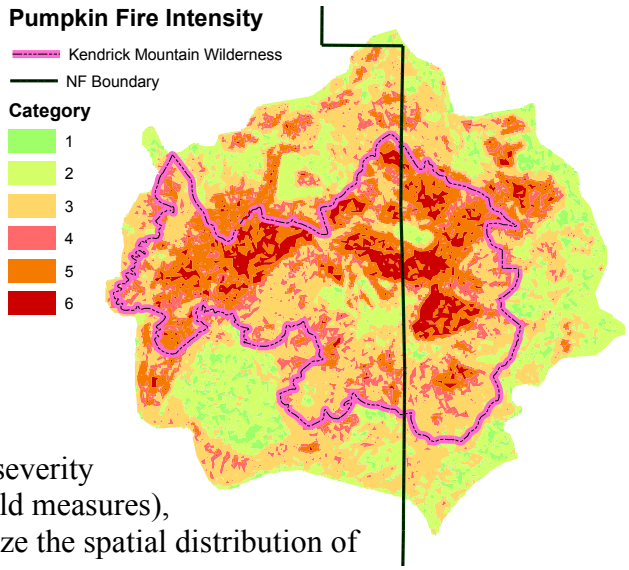
Forest Plan Amendments

No Forest Plan Amendments were completed in FY 2002.

Pumpkin Fire Monitoring (USGS, Sandra Haire)

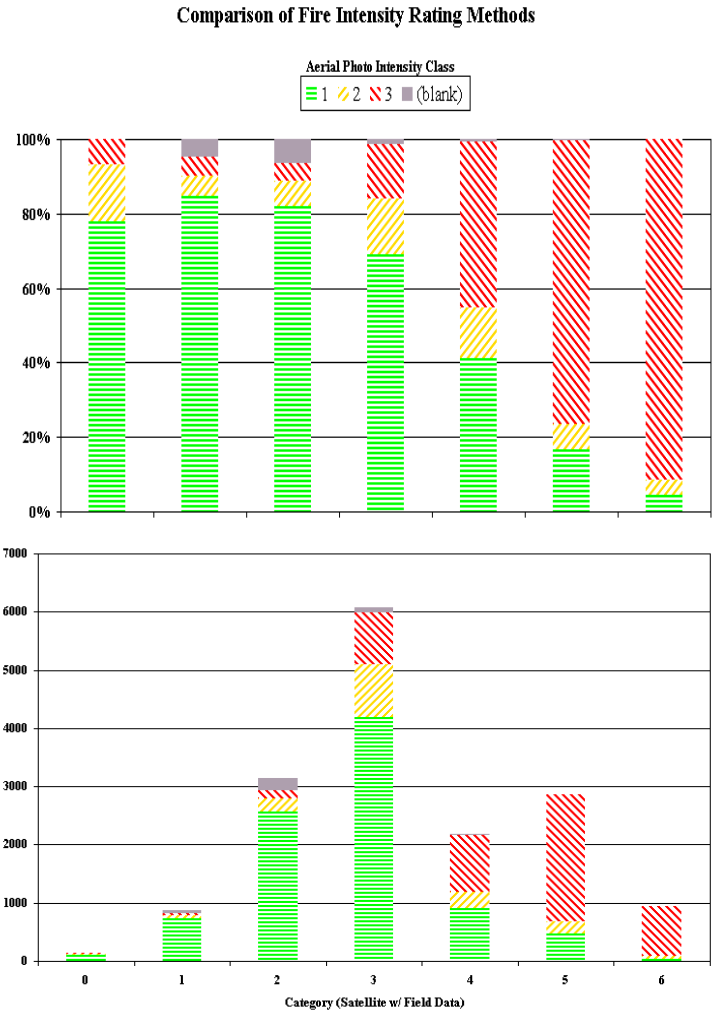
A. Summary of monitoring activities

Plots established in 2001 were re-visited for bird counts and collection of vegetation and burn severity data. All data have been entered in spreadsheet format, and some avian community data summaries are complete. The spatial model of burn severity, a burn perimeter, and the raw satellite data have been provided by the researchers. Currently, they are producing categorical maps using the field data in conjunction with the burn severity spatial models.



B. What we are learning

These maps provide alternative representations of burn severity (i.e., few to several categories and based on different field measures), which can be useful alone and will also be used to analyze the spatial distribution of bird species in relation to post-fire landscape heterogeneity.



Separately, the adjacent graphs represent a Forest exercise to compare burn severity classifications created by the researchers as described above and those created by Ranger District personnel based upon aerial photo-interpretation.

The first graph represents acres by category; the second represents percent of each category on the x-axis. The values on the x-axis are the fire intensity categories derived from Haire's work with 6 being the most severe. A value of "0" indicates area not classified in Haire's study that was included in the District's analysis. The bars show the acres of the District's aerial photo-interpreted severity classes (with 3 being the most severe) that fall into each of Haire's six severity categories. A solid gray band indicates area unclassified by the District that was included in Haire's work.

The results, while different, indicate fairly good agreement between the methods. The large majority of the green (little damage apparent on the aerial photos) falls into the

lower intensity categories (one through three) of the satellite/field-verified study while most of the severe (red) is found in categories four through six. The moderate (orange) category appears more spread out but shows the highest percentage in categories three and four.

Depending upon the method and break point used, between 40% and 75% of the Pumpkin Fire burned with moderate to high severity – probably well outside the natural range of variation for most of the forest within the fire perimeter.

C. Recommendations

Encourage the research to continue.

The following work was ongoing on the North Kaibab RD this year:

I. ***Snag dynamics, use and associated bird communities in wildfire-burned ponderosa pine landscapes.*** Carol Chambers, Assistant Professor, NAU.

A. Summary of monitoring activities

The focus of this project is to investigate bird community response to recent fires (<5 years old) and older fires (>10 years previous). The study will identify bird use of snags, snag longevity, snag spatial pattern, and other characteristics of snags that are selected by wildlife for nesting or foraging. Bird community response will include effects on neotropical migrants (this ties back to Bridger-Knoll Fire Monitoring and collaborative questions asked concerning neotropical migrants).

B. What we are learning

This is an ongoing study with interesting results on snag longevity and wildlife use. Preliminary results of the study will be reported in a research publication.

C. Recommendations

Continue monitoring every 5 years

II. ***Landscape level competition (including habitat, prey, and predation) between red-tailed hawks and northern goshawks on the Kaibab Plateau.*** Teryl Grubb, RMRS.

A. Summary of monitoring activities

This study was completed. The study focused on dietary overlap of red-tailed hawks with goshawks.

B. What we are learning

A draft master's thesis will be defended in 2003.

III. ***Northern goshawk demographics on the Kaibab Plateau of northern Arizona***. Richard T. Reynolds, RMRS

A. Summary of monitoring activities

This study began in 1992 and has completed its eleventh year in examining territory occupancy, fecundity, site fidelity, reproduction and other demographic parameters. This study is expanding into the effects of prey densities on reproduction. This study is of extreme importance because the Kaibab Plateau houses the largest known population of goshawks in North America. This study may have a major influence on the status of goshawks in the West.

B. What we are learning

Researchers have identified 147 post-fledgling family areas (PFAs). Enough information has been gathered to begin determination of the impact of management activities on the goshawk population. Researchers have observed a possible cycle in small mammal populations, and goshawk occupancy and reproduction. Goshawk fecundity (reproduction) is highly dependent on prey populations, while prey populations appear to be dependent on cone crop and weather factors. Researchers observed 19 active goshawk nests this season. Of those nests, 10 were successful and fledged young.

C. Research needs identified

1. Effects of implementation of the goshawk guidelines on goshawk reproduction.
2. Effects of human disturbance (e.g., logging activities, recreational activities, etc.) on goshawk reproduction.

D. Barriers to effective monitoring

Lack of consistent, long term funding.

E. Emerging issues

1. Development of a post-study plan for monitoring reproductivity and nest occupancy is vital.
2. Effects of implementation of the goshawk guidelines on reproduction are a major issue for outside groups.
3. Effects of prescribed fire and Urban Interface treatments on goshawk reproduction must be examined.

F. Recommendations

1. Continue demographic study for a minimum of 1-2 years.
2. Encourage R.T. Reynolds to expand the study to examine effects of prescribed fire and Urban Interface treatments on goshawk reproduction.
3. Develop and implement a post-study reproductive/occupancy monitoring plan with R.T. Reynolds and other goshawk biologists (e.g., P.L. Kennedy, Colorado State University)
4. Develop and implement a study to evaluate the effects of implementation of goshawk guidelines on goshawk reproduction. A major commitment from the Forest, Region, and Research Station is required in order to facilitate a long-term study of this magnitude.

IV. *Northern goshawk habitat on the Kaibab National Forest in Arizona: factors affecting nest locations and territory quality.* Richard T. Reynolds and Suzanne M. Joy, RMRS.

A. Summary of monitoring activities

This study focuses on the effects of habitat composition and structure on the demographic performance of northern goshawks on the Kaibab Plateau.

B. What we are learning

This study provided the North Kaibab Ranger District with fine-scale GIS models of goshawk habitat, which have been used to improve monitoring efforts. Additionally, the results of this study were presented in a PhD dissertation.

V. *Effects of seral stage and forest structure on goshawk prey species.* Richard T. Reynolds and Susan Salafsky, RMRS.

A. Summary of monitoring activities

This study focuses on the effects of forest structure on goshawk prey population dynamics and habitat use.

B. What we are learning

A draft Master's thesis will be defended in 2003.

C. Recommendations

Continue study through 2003

VI. *Determining Levels Of Noise Disturbance For Northern Goshawk On The Kaibab Plateau.* Carrie L. King, Melissa S. Siders, Dr. Larry Pater

A. Summary of monitoring activities

Sound was measured for logging trucks, ATVs, chainsaws, and heavy wildfire fire engines in decibels (dB) and kilohertz (khz) at 100, 200, 300, and 400 meters. Data was collected at potential (but unoccupied) nest trees at the base of the tree and at nest height.

B. What we are learning

Management of Northern goshawk (*Accipiter gentilis*) on the Kaibab National Forest includes limiting human activity in nesting areas during the breeding season. This can cause difficulty for many resource areas. Currently, the North Kaibab Ranger District allocates a 440-meter buffer (1/4 mile) between human activities (e.g. logging trucks) and active goshawk nests. If a proposed activity is closer than 440 meters to a nest site, then that activity will be postponed until after the young have fledged from the nest. The purpose of this study is to determine the distance at which management activities cease to be heard under varying atmospheric conditions and topography; this study does not examine whether nesting goshawks are disturbed.

C. Recommendations

Continue study through 2003. Based upon the results of this and a previous study, adjust District implementation of Forest Plan guidelines about Human Disturbance in goshawk territories. Consider the need for amendment of the guidelines themselves.

VII. *Development and Testing of Artificial Bat Roost Structures: Bat Bark.* M.S. Siders.

A. Summary of monitoring activities

Artificial bat roost structures (Bat Bark) on 67 trees were monitored for bat use during summer by ocular estimation.

B. What we are learning

Bats continue to use Bat Bark. We continue to monitor the multi-chamber bat bark design to determine if it will be used by larger colonies.

C. Barriers to effective monitoring

1. Funding.

2. Need technical expertise to better monitor roosts for species, amount, and type of use.

D. Emerging issues

Interest exists in purchasing Bat Bark for institutional and private use.

E. Recommendations

Continue monitoring and development for the next one to two years

VIII. ***Peregrine falcon monitoring***.

A. Summary of monitoring activities

One of nine peregrine eyries (North Canyon) located within the North Kaibab Ranger District was monitored this season for occupancy. This site was monitored as part of the requirements of the Biological Opinion for East Rim Overlook.

B. What we are learning

The North Canyon site was occupied (adults seen on territory).

C. Barriers to effective monitoring

Funding and/or locating skilled volunteers would enhance coverage.

D. Emerging issues

1. The peregrine falcon has been de-listed, however monitoring must continue for five years post de-listing. A new monitoring protocol is being developed.
2. Specific support/funding for monitoring in 2002 was not provided.

E. Recommendations

1. Continue monitoring this and other eyries for 5 years (as per post-de-listing requirements of the US Fish and Wildlife Service) to determine activity for all known eyries.
2. Work cooperatively with the Arizona Game and Fish Department and/or recruit volunteers in order to conduct monitoring with limited funding
3. Although the species has been de-listed, monitoring needs to continue for five years post de-listing.

IX. ***Foraging ecology of spotted bats on the Kaibab Plateau.*** Carol Chambers, Assistant Professor, NAU; Mikele Painter, Masters student, NAU.

A. Summary of monitoring activities

This study is completed. The study focused on the foraging ecology of spotted bats on the Kaibab Plateau.

B. What we are learning

A draft master's thesis will be defended in 2003.

X. ***Birds in recreational landscapes.***

A. Summary of monitoring activities

Point count surveys for the focal species, hermit thrush, were conducted in Jacob Lake Campground.

B. What we are learning

No hermit thrushes were observed within the campground on either of two visits. Results of survey data were entered into the national database.

C. Barriers to effective monitoring

Lack of funding.

XI. *Intraspecific reservoirs: complex life history and the persistence of a lethal ranavirus in tiger salamander populations.* Jesse Brunner, ASU.

A. Summary of monitoring activities

This is an on-going study that focuses on the epidemiology of a ranavirus that is generally lethal to tiger salamanders. This season, tiger salamanders in water sources located on the North Kaibab Ranger District were tested for the virus through genetic sampling.

B. What we are learning

The virus is present in salamander populations on the North Kaibab Ranger District. Results of the study will be presented in a draft PhD thesis in 2003.

C. Recommendations

Continue study through 2003

XII. *Goshawk inventories.*

A. Summary of monitoring activities

Surveys for goshawks were conducted in portions of the Apache Trout and Billy West project areas.

B. Recommendations

Complete surveys in project areas as per Forest Plan guidelines

XIII. *Mexican spotted owl inventories.*

A. Summary of monitoring activities

Surveys for Mexican spotted owls were conducted according to US Fish and Wildlife Service protocol in portions of the Apache Trout and Billy West project areas.

B. Recommendations

Complete surveys in project areas as per requirements of the Mexican Spotted Owl Recovery Plan and the Endangered Species Act

XIV. *Arizona Strip springs, seeps, and natural ponds: inventory, assessment, and development of recovery priorities.* Grand Canyon Wildlands Council, Inc.; Arizona Water Protection Fund, Arizona Department of Water Resources.

A. Summary of monitoring activities

This study has been completed. The study involved a systematic inventory of the hydrology and ecology of natural water sources on the Arizona Strip, and included 26 water sources within the North Kaibab Ranger District. (Grand Canyon Wildlands Council, Inc. 2001, An inventory, assessment, and development of recovery priorities for Arizona Strip springs, seeps, and natural ponds - A synthesis of information: Arizona Water Protection Funds Report 99-074WPF, 53 p.)

B. What we are learning

The study provided information on the condition of natural water sources. This information is intended to serve as a baseline for land management agencies to use in future monitoring efforts. Investigators reported widespread habitat degradation at springs throughout the Arizona Strip. Additionally, they reported that cienega (wet meadow) habitats that commonly support amphibians are being lost.

C. Emerging issues

Investigators advised that management and protection of wet meadows should be a high priority, as wet meadows are hotspots for biodiversity and are keystone habitats.

D. Recommendations

Seek funding sources to continue monitoring wet meadow habitat within the North Kaibab Ranger District

XV. ***Inventory, assessment, and management of the northern leopard frog on the Kaibab National Forest, North Kaibab Ranger District.*** Sean M. Blomquist, Amphibians and Reptiles Biologist, Arizona Game and Fish Department; Michael J. Sredl, Ranid Frogs Projects Coordinator, Arizona Game and Fish Department.

A. Summary of monitoring activities

This study was completed. The study focused on inventorying amphibian populations at potential habitat for northern leopard frogs and identifying potential threats to the species.

B. What we are learning

Investigators found two historical accounts of northern leopard frogs in Kanab Creek on the North Kaibab Ranger District, but were unable to detect current populations or occurrences. Investigators identified three potential threats to leopard frogs on the North Kaibab Ranger District: alteration of hydrology, introduction of trout, and disease. Results of this study were published in Arizona Game and Fish Department Technical Report 190.

C. Recommendations

Seek funding sources for additional surveys in Kanab Creek and for a monitoring program to detect leopard frogs and nonnative species in suitable leopard frog habitat

XV. ***Bridger-Knoll Fire Monitoring.*** **Kaibab** NF administrative study.

This study is tracking long-term mortality of fire-damaged trees and snag longevity. No work was carried out on this project in FY 2002. Plots will be re-measured in future years.

The following work was ongoing on the Williams RD in FY 2001:

I. Snag Production from Basal Burning. Chuck Nelson Kaibab NF.

A. Summary of monitoring activities

The bases of eight trees were burned in 1996 to create wildlife snags. All trees have died. Six of the snags have completely fallen over, and the top half of a seventh has fallen over. Cavities were documented in the remaining one-and-a-half trees, but no bird activity was observed.

B. Recommendations

Keep monitoring.

II. Snag Production from Inoculation. Chuck Nelson, Kaibab NF.

A. Summary of monitoring activities

In 1996, 60 ponderosa pine trees were inoculated with heart rot fungi to promote cavity-nesting habitat. After six years, four trees have died, and five trees have cavities started, but no apparent nesting has begun. There were no cavities in 55 trees. Rocky Mountain Research Station research personnel visited the plot. There is some uncertainty as to whether the heart rot fungi inoculation was successful.

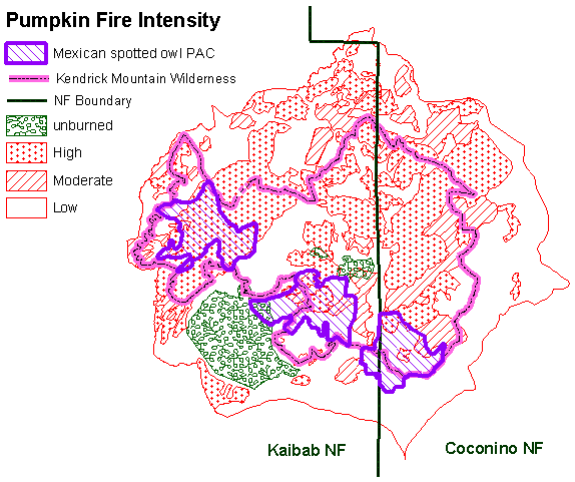
B. Recommendations

Keep monitoring. This is a ten-year monitoring study.

III. Mexican Spotted Owl Surveying and PAC Monitoring. Chuck Nelson and Kevin Whelan, Kaibab NF.

A. Summary of monitoring activities

In FY2002, a total of 3,600 acres were surveyed to Region 3 protocol in two areas on the Williams Ranger District. No owls were detected during the surveys. Additionally, 6 protected activity centers (PACs) on the district were monitored incidentally. Occupancy was not confirmed in any of the PACs. Two PACs, Pumpkin and Newman, on Kendrick, were burned by the Pumpkin Fire in May and June, 2000.



B. Recommendations

Continue monitoring.

IV. Northern Goshawk Nest Area Monitoring. Chuck Nelson and Kevin Whelan, Kaibab NF.

A. Summary of monitoring activities

In FY2002, 14 northern goshawk nest areas were monitored on the Williams and Tusayan ranger districts, with 7 territories occupied and one known bird fledged. Because of the lack of funds, 31 territories were not checked during the season. In all, 5,700 acres (approximately) were monitored. In most cases the territory was visited only once during the season.

B. Recommendations

Continue monitoring.

V. Monitoring of Wildlife Habitat Improvements. Chuck Nelson and Steve Vannote, Kaibab NF.

A. Summary of monitoring activities

In FY2002, 25 existing wildlife improvements were monitored on the zone for condition and repair needs. Five aspen exclosures and 10 trick tanks were in good condition. Six exclosures around trick tanks and lakes and 4 trick tanks were in poor condition and needed repairs.

B. Recommendations

Implement needed repairs. Continue monitoring other improvements on the zone.

VI. Elk, Mule Deer, and Pronghorn Antelope Monitoring. Chuck Nelson, Kaibab NF, John Goodwin, Arizona Game and Fish.

A. Summary of monitoring activities

Surveys of elk, mule deer, and pronghorn antelope within the Kaibab National Forest (Units 7, 8, and 9 on the south zone) were completed by the Arizona Game and Fish Department. The following estimates were obtained:

Species	Unit	Bulls/Bucks : 100 Cows/Does	Calves/Fawns : 100 Cows/Does
Elk	7	15	40
Elk	8	21	42
Elk	9	31	24
Mule Deer	7	27	23
Mule Deer	8	12	30
Mule Deer	9	7	29
Pronghorn	7	17	11
Pronghorn	8	40	19
Pronghorn	9	22	17

B. Recommendations

Continue monitoring.

VII. Birds in Recreation Landscapes Research Project. Chuck Nelson, Kaibab NF.

A. Summary of monitoring activities

In cooperation with the Cornell Laboratory of Ornithology as part of the Birds in Forested Landscapes program, we assisted surveys of hermit thrushes, competitors/predators, cowbirds, recreational disturbance, and landscape and habitat characteristics within and near Cataract, Kaibab, Dogtown, and Whitehorse Lake campgrounds. Surveys were done during two different sampling dates at each campground. Three survey points were sampled at each campground, one inside the campground, one on the edge of the campground, and one approximately 1,500 feet away from the campground (a control site). At each survey point, observation totaled 30 minutes and included intermittent playback of tape recordings of hermit thrush song and calls of birds mobbing owls.

No hermit thrushes were detected during any of the surveys at any of the campgrounds. Observed competitors/predators included chipmunk/ground squirrel, gray squirrel/fox squirrel, humans, crows, ravens, jays, grackles, and domestic pets. No cowbirds were detected during any of the surveys at any of the campgrounds. Recreational disturbance was detected during most survey periods, and included mechanical noise, human noise, and music. Landscape and habitat characteristics varied among points and campgrounds. Several Kaibab Forest Management Indicator Species were observed during the surveys, including the pygmy nuthatch (Cataract Lake, Dogtown Lake, Whitehorse Lake), hairy woodpecker (Cataract Lake, Whitehorse Lake), mule deer (Dogtown Lake, Whitehorse Lake), and elk (Whitehorse Lake). Ospreys were observed at Kaibab Lake and on a nest at Whitehorse Lake. An olive-sided flycatcher was observed at the control site at Kaibab Lake. A variety of other migratory bird species were observed during the surveys of the campgrounds, including the violet-green swallow, western bluebird, mountain chickadee, mourning dove, yellow-rumped warbler, red-breasted nuthatch, gray or dusky flycatcher, northern flicker, dark eyed junco, red-winged blackbird, turkey vulture, western wood pewee, rough-winged swallow, American robin, chipping sparrow, white breasted nuthatch, brown creeper, common nighthawk, western tanager, and red crossbill. Cattle were observed at Dogtown Lake.

B. Recommendations

2002 was the final year of this 4-year research project.

VI. Grazing Utilization on 31 Allotments on the South Zone. Derek Padilla, Lauren Johnson, Paul Webber, Kaibab NF.

VII. Spotted Owl Monitoring/Surveying. Kara Leonard and Chuck Nelson, Kaibab NF.

VIII. *Northern Goshawk Monitoring.* Jennifer Monahan and Chuck Nelson, Kaibab NF.

Other Related Activities

Recreation

We are currently participating in a multi-Forest process to decide whether and how to limit off-road access to the Forest by wheeled, motorized vehicles.

The Forest is also carrying out a roads analysis process with the Coconino National Forest to identify

what roads are (and should be) managed for passenger vehicle use. This analysis will be used along with project-specific analysis in the future to determine the needs for and management of all roads in specific areas.

The Forest Service has been increasing it's corporate tracking of real property and activities across a wide array of resource areas. In one of these called "Infrastructure", a particular emphasis is being placed upon recreation-related arenas. This database is useful for summarizing condition and needs for infrstructure investments and financial planning to keep facilities maintained.

Accomplishment in FY 2002 is as follows:

Developed Recreation -

- Developed site records were migrated from Meaningful Measures (MM) spreadsheets into Infrastructure.
- Data clean up was started, and annual updates made in appropriate categories.
- Basic information on newly reconstructed sites was enetered.
- Reporting was based on information in the Infrastructure database.

Trails -

- The new trails module was not in service in 2002. Field data will be retained until the module is operable. Reporting was based on MM data.

General Forest Areas -

- Updates were provided to the MM Coordination Center so that the data in Meaningful Measures would be ready to migrate into Infra.

Vegetation

Some plots necessary to replicate a 1990 forest inventory have been measured. Many more need to be measured to complete the replication. Funding and priority for it have limited the accomplishment of this task. Completing it will allow a more robust assessment of habitat for several Management Indicator Species.

The Forest continues to grow tree biomass at rates far exceeding losses due to all causes; catastrophic fires may have taken 15 to 20 percent of timber growth in the past decade.[2] When losses of significant magnitude do occur (such as the Bridger Fire in 1996, and Outlet Fire in 2000) they tend to be in relatively concentrated areas. While these changes create heterogeneity on the landscape, the patterns are probably little like those of pre-European landscapes, especially in woodlands, ponderosa pine and lower elevation mixed forests. The Forest considers the risk of catastrophic fire in planning treatments, such as management-ignited fire (prescribed fire) and tree thinning.

Pediocactus (*P. paradinei*) was monitored in FY 2002. Populations have declined rapidly in the past two years, apparently primarily in response to severe drought. On two plots, it appeared that OHV use was an important cause of loss. This issue will be discussed on-Forest for consideration of specific action to reduce further losses.

Bugbane (*Cimicifuga arizonica*) was not monitored in FY 2002. This is consistent with the Conservation Agreement.

[2] Very rough information about growth and mortality may be derived by querying the Forest Inventory and Analysis database on thwe world-wide web at: http://www.ncrs.fs.fed.us/4801/FIADB/fim_tab/wc_fim_tab.asp

Wildlife and Ecosystem Functions

The following table displays ongoing activity in restoring and enhancing wildlife habitat on the Forest. An increasing emphasis is being placed upon grassland habitats and species.

ACRES OF WILDLIFE HABITAT RESTORED OR ENHANCED in FY 2002	
Threatened, Endangered, & Sensitive Species habitat restored or enhanced.	0
Terrestrial wildlife habitat restored or enhanced:	
WILDLIFE WATERS (e.g., guzzlers, aprons, etc.) as acres of influence:	
Repaired/minor maintenance	460
Cleaning and/or filling catchments	360
TOTAL ACRES ENHANCED BY WATER PROJECTS	820
WILDLIFE HABITAT (acres treated):	
Grassland/meadow restoration	3,335
Aspen release	15
Pronghorn antelope fenceline improvements - 82 on 2 allotments:	
Homestead	6,880
Davenport	7,500
TOTAL ACRES ENHANCED BY HABITAT PROJECTS	1772
TOTAL ACRES OF TERRESTRIAL WILDLIFE HABITAT RESTORED OR ENHANCED	18,540

Monitoring Requirements of other Laws

Clean Water Act, Clean Air Act, Endangered Species Act

We comply with the Clean Water Act through the implementation of Best Management Practices (BMPs) on our projects. We include these in design of allotment management plans, timber sales and roadwork. We also maintain contacts with the Arizona Department of Environmental Quality on large project proposals.

The National Forests in Arizona fund a position with ADEQ to coordinate our prescribed burning programs and ensure compliance with the Clean Air Act. This position and the relationship built between agencies has been quite successful in maintaining good will while accomplishing needed work.

The Endangered Species Act is complied with through project designs that meet recovery plan requirements and maintain the viability of all TE&S species. We also consult with the USF&WS on all projects where this is required. Biological Assessment and Evaluations must be completed prior to approval of NEPA decision documents and are maintained in the Supervisor's Office.

Research Needs Update

Many needs are previously discussed by project above and in previous monitoring reports.

Emerging Issues and Trends

On this Forest, emerging issues are fairly typical of all Southwestern Forests with some exceptions. It is becoming clear that the Management Indicator Species (MIS) selected for the original Forest Plan are not good indicators of management on the Forest. Many are subject to numerous actions beyond either the boundaries of the Forest, the Forest's management authority, or both. The Forest is researching the possibility of amending the Plan to select new MIS. Collaboration and partnering are increasing. Riparian issues, including T&E species associated with them, are not becoming as critical as elsewhere.

We are experiencing changes in who uses the Forest and how they (and we) view it. Up until now, increases in recreational use have been within the bounds forecast in the 1988 Plan but the type of use is changing. Mountain bikes and off-road vehicle-use are growing in popularity. We expect increased fees and increasing limitations on visitation to Grand Canyon National Park to increase use of the Forest, including wilderness areas. The North Kaibab RD is partnering with NAU to implement a campsite monitoring and inventory sample in the Kanab Creek Wilderness that began in FY1999.

The completed Kaibab National Forest User Study provides information to be used in the upcoming Forest Plan revision. Spin-offs of the planning described above are an update of the Recreation Opportunity Spectrum and conversion from the Visual Management System to the Scenery Management System (both in progress.)

The risk and fact of catastrophic fires are now being realized. People are increasingly supportive of action, although there are also those adamantly opposed to management to either mitigate risk or (especially) to salvage timber after large fires. Implementation of the National Fire Plan continues. It promotes aggressive fuel treatments that will minimize uncharacteristically intense fires. The Kaibab is planning and implementing urban interface treatments to help meet the Region's priorities for treatment. They will provide opportunities for monitoring to see if they create the desired result.

The Forest has shifted much of its work emphasis to the range program due to several factors including compliance with the Burns Amendment schedule, the number of permits expiring soon and public interest in grazing effects.

Antelope populations and their declining habitat began to attract more attention from both the Kaibab and Coconino National Forests after the Arizona Game and Fish Department approached the Forests with some population tracking information. While antelope population on the Kaibab NF appear to be stable, restoration of corridors, if not entire grassland/savannah areas, has become a planning issue on several landscapes and is actively being discussed at a multi-district scale across the two Forests. This issue is likely to become linked with efforts aimed at maintaining and restoring prairie dog and/or ferret populations over time.

Noxious weeds are not a severe problem on the forest yet, but there is still concern that if we do not begin progress towards containment and eradication they could become a severe problem. An integrated noxious weeds treatment EIS began a few years ago in collaboration with the Coconino and Prescott National Forests. A decision is expected in 2004.

Current and Potential Monitoring Partnerships

Most of our monitoring partnerships are with NAU (Bridger Salvage Sales, Kane Ranch, Kanab Creek Wilderness and Frenchy EMUs), Arizona Game and Fish Department (Bridger Salvage Sales, bats and other wildlife populations, maintaining the Heritage database and water development maintenance) and Rocky Mountain Station (uneven-aged growth plots, goshawk demography).

Opportunities for partnerships probably exist for monitoring populations of rare or endangered species, including the Paradine plains cactus and noxious weeds through groups such as the Arboretum at Flagstaff and even ADOT. Others who might be interested in helping monitor economic, social and biological conditions include, Grand Canyon Trust, the Southwest Center for Biological Diversity, permit holders and local residents. These opportunities have not yet been seriously pursued.

Barriers to Effective Monitoring and Evaluation

The Forest Service has released draft forest planning regulations that would require extensive, well-designed and reviewed monitoring of various sustainability indicators. Adoption would likely result in greater emphasis and expenditure on monitoring and evaluation.

The biggest barrier to effective monitoring and evaluation continues to be a lack of emphasis and resource allocation, both internally and externally.