

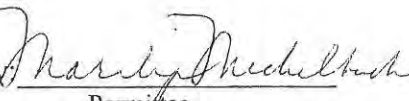
Crater Allotment Management Plan

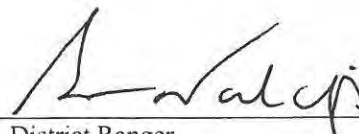
Peaks Ranger District

Coconino National Forest

Prepared by: 
District Range Staff

Date 4/17/01

Agreed to/Reviewed by:  Date 4/17/01
Permittee

Approved by: 
District Ranger

Date 4-17-01

Crater Allotment Management Plan

DESIRED CONDITIONS

The following description of desired future conditions are based upon broad management direction (Forest Land Management Plan, all applicable laws, Forest Service Regional direction) and the site specific conditions of the area.

In the future, the desired conditions for this area will:

Watershed / Soils - Maintain satisfactory soil conditions as satisfactory. Improve impaired soils on the allotment within portions of the White Horse and Trick Wildfire areas, by increasing ground cover for an improvement in soil properties. Ensure cattle management maintains or improves watershed conditions.

Air Quality - Airsheds will continue to meet State Implementation Plan (SIP) attainment levels. Broadcast burning within this allotment will stay within these attainment levels. Proper burning permits and smoke monitoring will insure air quality standards are met.

Wildlife Habitat - Meet the needs of game and non-game species including threatened, endangered and sensitive species. Where wildlife habitat needs improvement (mainly within the wildfire areas), increase forage and cover species (production, diversity and vigor). Ensure cattle management maintains or improves wildlife habitat.

Heritage Resources - Heritage resources will be located, documented and avoided by ground disturbing activities. There will be no effects to heritage resources. Maintain Contemporary American Indian medicinal plant populations as healthy and stable.

Recreational Use - Maintain a variety of low to moderate impact, dispersed recreation opportunities. Activity levels will continue to be low to moderate. Reduce or eliminate conflicts between recreationists and cattle when possible.

Rangeland Condition - Maintain or move toward the desired natural community type of open ponderosa pine forest with productive grass, forb and shrub understory. This desired community is near the potential natural community except 1) some of the closed pine stands would be more open, 2) no oak exists in this area of the Forest, and 3) Fendler ceanothus would remain at current high levels. This would retain the rangeland management status as satisfactory. In impaired areas, within the wildfire areas, proceed with natural succession into a open ponderosa pine bunchgrass community.

Maintain full capacity rangelands. In the potential capacity area of the allotment within the White Horse wildfire area and Trick wildfire area, increase ground cover to bring the soils into a satisfactory condition.

Throughout the allotment, insure vegetation species are diverse, vigorous and productive. Maintain forage production at current levels or higher. Maintain trend at static to upward. Where possible from other resource projects such as further prescribed burning

Crater Allotment Management Plan

or tree thinning, reduce dense ponderosa pine pole stands to increase forage. Manage cattle grazing to use the forage capacity produced, with consideration for wildlife forage and cover needs and watershed stability and water quality (35% use standard by cattle throughout the allotment). In addition, maintain grasses as available as fuel to carry fires needed to meet landscape goals.

Control noxious weeds as absent, or as a minor component of the vegetation.

Aspen - The two small aspen clones within the allotment will become healthy and reproducing aspen stands. Restricting deer, elk and cattle browsing of the young aspen suckers would allow the stands to regenerate.

Social / Economic Conditions - Maintain or improve native vegetation for Forest visitors to use and enjoy. Move toward these desired conditions and where possible maintain ranching life-styles from the ranching operation for up to ten years. In the next ten years within the Crater Allotment, reduce or eliminate conflicts, when possible, between cattle, expanding tourism and the community of Flagstaff.

PROJECT OBJECTIVES

The following list of project objectives, or goals, to move toward the desired conditions for the rangeland ecosystem on the Crater Allotment.

- Maintain or improve watershed and soil condition by increasing effective ground cover vegetation and implementing Best Management Practices (BMP's) for proper grazing use and livestock distribution. The following is a list of the BMP's for this Allotment.

Planned Grazing System - Grazing systems are alternately rested and grazed in a planned sequence. Rotate livestock in a planned grazing system that alternates rest and graze period throughout a given year and from year to year. See each alternative for specifics on how this practice is now displayed.

Proper Grazing Use - Grazing at an intensity that will maintain enough cover to protect the soils and maintain or improve the quantity and quality of desired vegetation. See each alternative for specifics on how this practice is adopted.

Trough or Tank - To provide watering facilities for animals at selected locations. No new tank construction, pipeline construction, and water lot development is planned for any alternatives. Livestock and wildlife use is well distributed by water sources throughout the allotment.

Crater Allotment Management Plan

Fencing - Fencing is intended to improve livestock and wildlife management, control access, prevent soil loss, and improve water quality. See each alternative for fencing specifics.

Monitor and enforce permittee compliance - Monitor and enforce permittee compliance with terms and conditions of the grazing permit.

- Within the ponderosa pine vegetation type, move toward or maintain a desired plant community, near the potential natural community, of an open ponderosa pine forest with a productive grass, forb and shrub understory. The desired plant community differs from the potential natural community by an increase in Fendler ceanothus and grass production under an open tree canopy with no gambel oak.
- Create two healthy aspen stands, from the current old, dying and heavily eaten aspen trees.
- Improve forage production in some of the more densely forested sites and sites of current low forage production.
- Where possible, allow livestock grazing use for up to ten years with consideration of identified resource and social needs for the Crater Allotment and the surrounding communities.
- Assure 35% current use standards are met by cattle and elk. At key areas (defined in monitoring section), monitoring points will be established within the allotment. Reduce cattle numbers or modify season of use to meet these use standards, if needed.

Crater Allotment Management Plan

MANAGEMENT STRATEGY

- Permit grazing for up to a ten year period. The exact length of the permit will depend on the permittees ability to properly manage the allotment.
- Maximum cattle numbers is 50 to 61 head from 6/1-10/31 using a four pasture deferred rotation grazing system. Graze periods in each pasture is approximately 48 days each year in Antelope and Little Horse pastures and 28 days in White Horse West and East pastures.
- Assure 35% forage use standard is met by cattle and elk. Key areas monitoring points will be established within the allotment. Reduce cattle numbers or season of use to meet these use standards, if needed.
- Divide White Horse Pasture roughly in half with 1/2 mile of barbed wire fence and a cattle guard to help range and watershed conditions in the White Horse Wildfire area. This fence will add a fourth pasture to the grazing management system, decreasing graze periods and increasing rest periods for the entire allotment. This project will cost \$4500, roughly half for materials (Forest Service share) and half for labor (permittees share).
- At least two canopy cover, frequency and ground cover monitoring transects will be established within the allotment (Ruyle 1997). The plots will be located within each of the impaired soil sites of the White Horse and Trick Wildfire areas.
- Allow White Horse and Trick Wildfire areas and the Wild Bill Study Plots to naturally regenerate to open ponderosa pine stands.
- Broadcast burn approximately 1000 acres of the allotment to increase grass, forb and shrub production. Three hundred acres will occur in the White Horse Wildfire area to rejuvenate the Fendler ceanothus, Arizona fescue and mountain muhly. One hundred and fifty acres will occur in dense ponderosa pine forest to thin pockets of small trees and open up the canopy. The remaining 550 acres will be burned in moderately dense forested stands. In the forested areas, yellow pines and snags would be either protected or avoided during burning to try to retain these relatively rare, but important habitat components. Lining and foaming are commonly used protection measures. Logs will be protected by either avoiding or using appropriate ignition techniques. Burning could occur in the spring, fall or winter. It is planned to be a cool ground fire, targeted at pine needle accumulations and small woody debris in forested areas. The cost of this burning will be approximately \$40-60 per acre for a total of \$40,000-60,000. Burning will be done by the Forest Service.
- Build two aspen exclosures (approximately one and three acres) to protect the aspen suckers from deer, elk and cattle browsing until they are tall enough to withstand elk browsing. These fences will cost approximately \$2500. Fencing will be done by the Forest Service. Maintenance will be shared by the Forest Service and the permittee.

Crater Allotment Management Plan

- Continue on-going elk/cattle monitoring effort at \$300/year (half Forest Service, half permittee), continue administrative costs. Conduct additional condition and trend monitoring at \$200/year.
- Maintenance will be done on all new and existing structural improvements including barbed wire fences, trick tanks, stock tanks and drinkers, as needed by the permittee.

Additional Management Items

Annual Operating Plans: Annual operating plans make adjustments to cattle numbers, and time and duration of pasture use based on current climatic and range conditions. Making these plans each year and adjusting throughout the season as conditions change adds needed flexibility to the action alternatives.

Roads and Cattle Guards: Common to all alternatives is the need to keep forest users from leaving gates open. Where roads are maintained as open, cattle guards will be put in place. Where roads are identified for closure, in past and future road decisions, no cattle guard is necessary.

Cattle Guard Maintenance: Cattle guard maintenance is shared between the Forest Service and the permittee for level 3 roads (main surfaced roads). Cattle guard maintenance on level 2 roads (secondary smaller roads) is the responsibility of the permittee.

Implementation of Structural Improvements: Common to all alternatives is the need for cultural, wildlife and recreation coordination when implementing the grazing system. Structural improvements such as fencing, stock tanks and cattle guards will be used to implement the grazing plan. During the life of the permit, there may be additional or fewer improvements needed based on adapting to changes and meeting the goals of the new system. The following parameters need to be followed when implementing structural improvements.

- **Cultural Resource Coordination:** A programmatic cultural report has been completed and approved by the State Historic Preservation Office (SHPO). Using the parameters described in the programmatic report, conduct survey and obtain clearance prior to any ground disturbing activities related to structural improvements.
- **Threatened, Endangered and Sensitive Species Coordination:** Additional very site specific biological assessments and evaluations will be written for chosen actions. Refer to and follow any mitigation measures or implementation parameters described in the biological assessments and evaluations written for the selected alternative. Location of improvements may be altered somewhat in

Crater Allotment Management Plan

response to species considerations. Involve a wildlife biologist prior to final planning of any new improvements.

- **Recreation and Special Use Guidelines:** Timing of the construction of new range structures must be coordinated with the recreation specialists and special use permit holders.
- **Fencing:** All new fencing will contain a smooth bottom wire and appropriate bottom wire height for wildlife. Conduct cultural resources and threatened, endangered and sensitive species coordination as described above. Where possible, locate fences within tree lines to limit impact to visual quality. Elk jumps may be constructed along new fences and along existing fences as appropriate.

Monitoring: Common to all alternatives are monitoring items chosen by the team to answer questions and check progress of improvement. The following is a list of the main items that will be monitored in the action alternatives: compliance, allotment inspections, range readiness, forage production, rangeland utilization, condition and trend, precipitation and soil condition (see Monitoring section for more specific information).

Mitigating Measures: In addition to implementation of Best Management Practices, the following mitigating measures are to be followed. Follow utilization guidelines to provide for favorable growth of forage species. If utilization guidelines are exceeded, stocking and management may need to be adjusted to maintain productivity of the pasture for the future. Livestock distribution techniques, such as intensified salting and herding should be used, to provide for better use of a pasture.

Other Management Items: Salting occurs throughout the allotment, but is not used in northern goshawk PFAs, meadows, burn areas or locations closer than 1/4 mile from water. Cattle will continue to be excluded from the Crater Lake riparian area. Grazing systems are alternately rested and grazed in a planned sequence. Rotate livestock in a planned grazing system that alternates rest and graze period throughout a given year and from year to year. No new tank construction, pipeline construction, and water lot development is planned for any alternatives. Livestock and wildlife use is well distributed by water sources throughout the allotment.

Crater Allotment Management Plan

MONITORING

Monitoring on this allotment over this year and up to the next 10 years will include: compliance, allotment inspections, range readiness, forage production, rangeland utilization, condition and trend, soil condition, and threatened and endangered species.

Compliance: Throughout each grazing season compliance monitoring will be done by Forest Service personnel to determine accomplishment of the terms and conditions of this permit, Allotment Management Plan, and annual operating instructions.

Allotment Inspections: Allotment inspections are a written summary done each fall by Forest Service personnel to document compliance monitoring and to provide an overall history of that year's grazing. This document may include weather history, the year's success, problems, improvement suggestions for the future, and monitoring summary.

Range Readiness: Each spring before cattle move above the Mogollon Rim range readiness will be assessed by Forest Service personnel to determine if vegetative conditions are ready for cattle grazing. The range is generally ready for grazing when cool season grasses are leafed out, forbs are in bloom, and brush and aspen are leafed out. These characteristics indicate the growing season has progressed far enough to replenish root reserves so that grazing will not seriously impact these forage plants.

Forage Production: Production surveys for the allotment will be done every nine to 13 years. Cattle numbers could be adjusted as a result of evaluating these figures.

Rangeland Utilization: Utilization monitoring is an estimate of the available forage by weight consumed or trampled through grazing and is expressed as a percent of current years biomass removed. Utilization monitoring is designed to assess key forage utilization levels by cattle and elk during the year and from year to year. Key forage species for this allotment include Arizona fescue, mountain muhly, squirreltail and carex. Utilization monitoring will be conducted by the permittee and spot checked by Forest Service personnel throughout the year in every grazed pasture. This monitoring will calculate an overall utilization value for a pasture 1) before cattle go into a pasture, 2) within five days after cattle leave a pasture, and 3) at the end of the growing season in the fall. Utilization will be averaged into the following five categories: no-use (0-10%), light (11-20%), moderate (21-50%), high (51-70%) and extreme (71%+). The goal for utilization will be 35% or less by cattle and elk throughout the year with this intensive livestock grazing system. In addition, key site and key species monitoring will be conducted at a minimum within the Horseshoe Wildfire area and a ponderosa pine site.

Key areas will normally be 1/4 to one mile from water, located on productive soils on level to intermediate slopes and be readily accessible for grazing. Size of the key forage monitoring areas could be 20 to 500 acres. In some situations such as high mountain meadows with perennial streams, key areas may be closer than 1/4 mile from water and less than 20 acres (Coconino National Forest Plan 1987, as amended).

Crater Allotment Management Plan

Condition and Trend: Ecological condition and trend monitoring will help determine the effectiveness of the Allotment Management Plan and long-term trend. In the past we have used Parker 3-step and paced transects to determine condition and trend. We now have better monitoring techniques for ecological condition and trend.

The Region 3 Terrestrial Ecosystem Survey (TES) has mapped and described the potential vegetation and soils for this allotment. TES presents a benchmark against which we can measure our current condition, and assess the impacts of our proposed management. This enables us to quantify the benefits or trade-offs of different alternatives, helping us to determine which plant community(s) maximize our management objectives.

Ecological Condition: Estimated plant community canopy cover, similar to TES plant community descriptions, will be used to assess current vegetation conditions. We will analyze the data using a similarity index that meets our objectives. We will determine ecological similarity of the plant communities and a species by species similarity calculation. We will look at herbaceous canopy cover for our assessment purposes and calculate similarity of total canopy cover of herbaceous species. For species richness we will compare species presence or absence. Southwestern Region, Rangeland Analysis and Management Training Guide (6/97) describes similarity calculations.

To make our assessments more consistent across northern Arizona forests, a basic set of standard methods will be used. Data will be collected in three parts:

1. General Information: location, plot size, aspect, slope, elevation, geology, erosion, ground cover, fuel model information, evidence of disturbance(s), canopy cover by life form, basal area, RMRIS cover type, VSS class, and production.
2. Ocular Plant Composition: All plants will be identified to species (if possible). Estimates of canopy cover by percent categories and height will be recorded for each species. Percent canopy cover categories are those used by TES. For woody species, live and dead may be separated, and additional estimates may be recorded: diameter, crown base height, maturity, age and vigor.
3. Soil Condition Rating Guide: see FSH 2509.18. Information will be recorded on hydrologic function, stability and nutrient cycling of the soil.

Trend: Ecological trend will be measured using plant frequency methods. *Some Methods for Monitoring Rangelands and other Natural Area Vegetation*, 1997, edited by G.B. Ruyle; Cooperative Extension, College of Agriculture, University of Arizona, Tucson; Extension Report 9043; Chapter 2 - Plant Frequency Sampling for Monitoring Rangelands is the specific reference guide.

Plot Location and Sampling Intensity: Plot location and sampling intensity are important considerations when determining ecological condition and setting up long term trend monitoring. It is important the plots be located in areas that best monitor the impacts of our management practices.

Crater Allotment Management Plan

Factors to be considered in determining sampling intensity are: complexity of sensitivity of known or anticipated resource use conflicts or controversy, diversity of vegetation types, ecological status, trend, and the desired level of precision. Sampling intensity is dependent on the kind, quality, and quantity of data needed. In determining the sampling intensity, the examiner should weigh the desired level of inventory against funding and personnel capabilities.

Canopy cover plots should be read within TES map units that are effected by alternatives in an environmental assessment. The exact number of plots within each map unit is determined by factors listed in the previous paragraph.

No Parker 3 Step plots exist on the Crater Allotment, so these new monitoring plots will not be located over existing Parkers like other allotments. At a minimum, new plots will be located within each of the impaired soil sites of the White Horse and Trick Wildfire areas.

Precipitation: Precipitation is currently recorded within or near this allotment at Flagstaff National Weather Service Office at Bellemont, Flagstaff Airport and the Kendrick Fire Lookout Tower. We suggest that additional rain gauges be established at the Crater Allotment headquarters or other convenient location on the allotment for a more accurate record of local precipitation. This data could be recorded throughout the year and summarized in the annual inspection.

Soil Condition: The Intergovernmental Agreement between the Forest Service and the State of Arizona that controls water quality and the Clean Water Act requires implementation and effectiveness monitoring. The objectives of monitoring are to: 1) collect data sufficient to assist line officers and resource managers in evaluating effects of management activities on soil and water resources; 2) support changes in management activities to protect soil and water quality. Monitoring will help determine how successfully managers are implementing Guidance Practices and how effectively those practices are protecting soil and water quality. Arizona Department of Water Quality (ADEQ) will continue to monitor water quality in the area (see attached table "Water Quality Status of Watersheds Affected").

Evaluating watershed condition can be assessed using information from the monitoring schemes above. Monitoring of plant abundance, ground cover, species diversity and estimates of overall soil condition (using the methods throughout this monitoring section) will indicate whether or not management practices are effectively meeting management goals. Trends toward improvements in species abundance and diversity should indicate that management practices are effectively improving soil condition and by inference, maintaining or improving downstream water quality and complying with water quality standards. Conversely, decreases in plant abundance and species diversity may indicate that management practices are not effective and need to be changed. Environmental factors, especially precipitation, will be considered when evaluating monitoring results.

Crater Allotment Management Plan

At the end of 10 years, all planned improvements will be in place. Overall effectiveness will be evaluated on a yearly basis and intensively again at the end of the 10-year permit period. The annual operating plans will make adjustments to pasture graze periods, pasture rest periods and cattle numbers to respond to results of the previous year's annual monitoring, weather conditions, and as improvements are implemented.

A Fixed Station in Volunteer Wash, Biocriteria Program, is located in the Sycamore Watershed several miles from the Crater Allotment. This sites, like others throughout the Forest, have and are being used to track long-term conditions and trends at critical points in a watershed and to develop biological criteria for stream segments. Information from these sites will be considered in evaluating the effectiveness of management practices, but may be of limited value considering the multitude of influences affecting each monitoring site.

Threatened, Endangered and Sensitive Species: Threatened, endangered and sensitive species monitoring is covered by the preceding monitoring schemes, with some additional monitoring to fully cover specific plant and animal species.

Rationale: This monitoring program gives this alternative the best data possible to monitor the effectiveness of this new management strategy while staying within the projected Forest Service budget. This is insured mainly because of the cooperation by the Forest Service, Crater permittee(s) and the Arizona Game and Fish Department in collecting this information.

