

ENVIRONMENTAL ASSESSMENT

ORME RANCH - V-BAR ALLOTMENT MANAGEMENT PLAN

PURPOSE AND NEED

Orme Ranch, Inc. has proposed to enter into a time control grazing program by applying the principles of Holistic Resource Management (HRM). Public lands administered by the Arizona State Land Department, Prescott office, and the Prescott National Forest, Verde Ranger District, are involved in this proposal. Also affected are approximately 1,200 acres of private land owned by Orme Ranch, Inc. and approximately 200 acres owned by Orme School, Inc.

Time control grazing is rotation grazing based on the physiological requirements of plants in their various growth stages. Maximum livestock control is necessary to apply this concept and proper control, with present technology, requires numerous fences and substantial water development.

Present management of Orme Ranch is a six pasture rotation with 300 cattle. Environmental problems identified in the late 1970's (V-Bar Allotment Analysis, 1979) have been largely rectified under current management. Concerns that opportunities to increase forage production, grazing distribution and livestock production are not being realized under existing management has led to the proposal being addressed in this document.

AFFECTED ENVIRONMENT

Orme ranch, including the V-Bar Allotment, is located in grasslands/desert shrub vegetation types. The west side of the ranch is generally granitic parent material soils. The far west areas have moderate to heavy density stands of mimosa while the southwest part of the ranch has moderate density mesquite stands. Grasses on this area are dominated by warm season growers such as the gramas and cane bluestem.

The east half of Orme has basalt parent material soils with montmorillinitic clays. The dominant vegetation of this area is tobosa grass.

Pronghorn antelope occur throughout this ranch where brush does not inhibit them. Wildlife biologists believe that the central Arizona antelope herd has been fragmented by highways and increasing brush fields. The most critical habitat management need, on Orme, for pronghorn is in the west where the greater brush density occurs. Arizona Game and Fish Department is placing hunting limitations on the area west of I-17 and south of S-169 to reduce the harvest of this herd.

Topography is gentle with a few steep drainages in the northwest part of V-Bar. Quality riparian areas are found in Dry Creek and Little Ash Creek. Ash Creek, above Orme School, contains an improving riparian area.

HUMAN RESOURCES

Orme Ranch, Inc. has a Board of Directors consisting of members of the Orme family. The Ormes are a pioneer Arizona family and first obtained the V-Bar grazing permit in 1929. Orme Ranch, Inc. is a separate corporation from Orme School, Inc.

Alan Kessler is the ranch manager and is assisted by his wife, Diana. The Kesslers have both attended the grazing and management seminars conducted by the Center for Holistic Resource Management.

ALTERNATIVES

A management plan has been developed for Orme Ranch with time control grazing. The Holistic Resource Management model was used to identify opportunities and management strategies including initial range improvements. As part of this process, a set of goals or objectives have been defined that present realistic management opportunities. These objectives will be used as evaluation criteria for comparison of present and proposed management.

Time control grazing goals are divided into production and landscape categories. The basic difference is that a production goal relates to outputs and a landscape goal is environmental. These management goals are:

Production

1. Increase percent grazing distribution - estimated present distribution is 60%, overuse is 0%
2. Increase total forage production
3. Increase antelope habitat significantly
4. Increase pounds of meat produced per acre

Landscape

5. Increase forage diversity in tobosa
6. Increase cool season grasses
7. Increase grazing access in the catclaw on the west side of the ranch for cattle and antelope
8. Increase percent ground cover on lighter soils
9. Increase riparian area stability

COMPARATIVE ANALYSIS - PRESENT/PROPOSED MANAGEMENT

1. Increase percent grazing distribution

Present - Management has increased grazing to present 60% (from the localized overgrazing identified in the 1970's) by locating cattle, observing proper use and adhering to objectives of the current plan. Potential is to attain 75% distribution without creating localized overgrazing.

Proposed - Phase One, which creates 13 pastures from the existing six pastures, will provide 85% distribution through concentrating livestock in smaller pastures. This increase will allow 400 cattle to be run at the same stock density (animals/acre) with no change in grazing utilization levels. Phases Two and Three will increase distribution to 90% with the assumption that 10% of available range will probably not be used in the main herd management program.

2. Increase total forage production.

Limitations on forage production include:

- A. Lack of plant stimulation
- B. Accumulated litter reducing photosynthesis
- C. Crusted soil which inhibits rainfall infiltration
- D. Oxidation of organic matter resulting in low soil nutrient levels
- E. Repetitive grazing of the same plants reduces production because of plant stress

Present - Grazing can stimulate plants, reduce litter, fracture the soil crust and trample wastes and litter into the soil. Repetitive grazing is reduced by rotating livestock into different pastures.

Current management contains two shortcomings: first is the lesser distribution identified in #1. Secondly, the length of time spent in a pasture enables cattle to graze a plant and then graze the regrowth that occurs during the same growing season. This grazing stress is partially compensated for by providing rest from grazing, and not grazing the plants during the growth cycle in consecutive years.

Consideration has been given to modifying the existing management plan to use all six pastures every year. The two tobosa pastures, East and Estler, are grazed annually but only two or three of the four pastures on lighter soils are used each year. This modified schedule would reduce repetitive grazing but might actually increase the other production limitations because of reduced stock density. At light stock densities the cattle graze preferred forage species or the plants with new growth.

A program of prescribed burning of the grasslands is used to remove litter, stimulate grasses (and forbs) and improve nutrient cycling. This program overcomes some of the problems resulting from lack of adequate grazing distribution. Increases in tobosa production are slight after burning but forbs increase significantly.

Proposed - In the proper application of time control grazing the time factor is tied to the physiological requirements of forage plants. Grazing periods in a paddock are dictated by the plant daily growth rate with care to avoid repetitive grazing.

Grazing distribution is affected by stock density which is the number of animals per unit of land. The smaller the paddock the greater the stock density using a fixed number of animals.

The movement of livestock across land causes plant trampling, leaves animal wastes and breaks the soil crust. At higher stock densities, the herd effect created by livestock movement has a greater impact because of the animal concentration. Trampling plants puts the biomass on the ground where it can decompose; much organic matter is presently lost to oxidation because it is standing. Breaking the soil crust promotes infiltration and makes more water available for plants. This is further addressed in #8.

High stock density creates a competitive situation where cattle are less selective and graze all available forage plants.

3. Increase antelope habitat significantly.

Present - Improvements in antelope habitat result from two areas at existing management levels. They are:

- A. Increased annual forb production from improved grazing distribution which removes the tobosa biomass that eventually shades out annuals.
- B. Use of prescribed fire to release annuals, reduce woody species and improve palatability of tobosa grass.

Neither fire nor grazing distribution can by themselves maintain antelope habitat but in combination these two practices will enhance the habitat. Many fences have smooth bottom wires to ease antelope passage. Water is available all year. Cattle are grazed in one pasture at a time which minimizes disturbance during fawning. Antelope habitat is generally in good condition and with new hunt regulations in Unit 19A, there should be an increase in antelope numbers.

Proposed - While identifying critical antelope fawning areas on the map, it was observed that those areas had several similarities. That fawning occurs in the tobosa flats was expected but another shared characteristic was that fawning areas were sites with moderate to heavy livestock grazing. Because heavy tobosa cover shades out annuals, it is felt that the lesser density of grazed tobosa produces more forbs and this better forage is of more benefit than the heavier ground cover for fawning antelope.

Management options to defer grazing in paddocks that are critical fawning areas are contained in the Wildlife Implications section of the Appendix. The criteria contained in the Wildlife Implications are to be applied as standards for management action in the Orme Time Control Grazing Plan. It is hoped that the resulting habitat improvement will result in a corresponding increase in antelope numbers.

4. Increase pounds of meat produced per acre

Present - The evolution of the present management will be to reduce pasture size and increase grazing distribution. Seasonal grazing was implemented to allow growing season rest for the grasses on the lighter soils which were adversely impacted in the past by light stocking and selective grazing. Time control consists of alternating time of annual grazing and providing rest from livestock use. The range condition in the grasslands is improving but brush encroachment is occurring. The brush would be inhibited by use of fire but encroachment will probably continue. Using other area ranches for comparison, the Orme Ranch has an eventual potential for a 50% increase in stocking with conventional management, without reversing the improving range condition trend.

Proposed - Ungulates are the tool used for the application of HRM grassland management. To achieve the targeted objectives there is need for increased stock density. Forage production increases are maintained by adhering to plant growth needs, increased harvesting efficiency, improved plant/soil/water relationships and better nutrient cycling. Time control grazing specifically addresses these situations by identifying present deficiencies and potential tools to be used in rectifying the deficiencies.

Forage production and grazing distribution increases will both provide increased livestock carrying capacity. The combination of the two gives the greatest potential for increased meat production. Antelope increases (#3) are difficult to anticipate because of extraneous factors. Livestock numbers are commonly increased by 100% to achieve the time control grazing objectives.

5. Increase forage diversity in tobosa

Present - Forage diversity is greatest in the areas that are normally grazed but total production of better forage plants is limited by grazing. Selective grazing of preferred forage occurs because of low stocking density. Prescribed burning improves the palatability of tobosa and areas that have been burned show a greater percent composition by grasses other than tobosa. The effects of burning are lost with time and a re-treatment is periodically required.

Proposed - Greater forage diversity will occur when selective grazing is reduced and tobosa utilization is increased. Reduced grazing selection is a benefit of time control grazing as mentioned in objective #2. Increased stocking density is needed to obtain good grazing distribution. With the application of the grazing time control, to prevent repetitive grazing; the factors that currently limit production of preferred forage species will be controlled by uniform nonselective grazing.

6. Increase cool season grasses

Present - Squirreltail (Sitanion hystrix) is increasing as a result of spring rest. Other cool season grasses that occur are Bullgrass (Muhlenbergia emersleyi) and annual oats (Avena spp); the latter was originally seeded on roadsides.

Proposed - The time control grazing would eliminate seasonal grazing (summer on clay soils and winter on lighter soils) and provide additional spring deferrment to those pastures now used from November through March. The previously referenced reductions in selective grazing will favor cool season grasses which are the first grasses to green up in the spring and thus receive early grazing.

7. Increase grazing access in the catclaw on the west side of the ranch

Present - the only tools available under existing management are herbicide treatment for overall catclaw reduction or fire to temporarily open up sites (catclaw is highly resistant to mortality through burning).

No mechanism currently exists to force the cattle into the catclaw to use the abundance of understory grasses.

Proposed - An opportunity to open up the catclaw stands exists through concentrating cattle in the catclaw to facilitate trampling. Possibly burning could be used and increased grazing of resprouts attained through grazing concentration. This stand of catclaw limits the western movement of antelope; a reduction in stand density should provide additional range for the pronghorn.

8. Increase percent ground cover on lighter soils

Present - Under current grazing practices there is not enough livestock movement to put litter on the ground and break the soil crust. Much of the organic matter now oxidizes and is not available in the soil as nutrients because plant litter remains standing or lays on the soil crust.

Proposed - Concentrating livestock in smaller areas will increase trampling of standing dead grasses; this puts organic matter on the ground where decomposition occurs. Hoof action by livestock will fracture the soil crust and promote rainfall infiltration. The litter cover reduces evaporation, cools the soil surface and provides a better environment for soil microbes. Microbes in turn break down organic matter which then enters the soil. Available moisture and cooler soils combine with soil organic matter to provide a favorable site for seed germination and seedling establishment.

9. Increase riparian area stability

Present - Riparian sites on Orme can be categorized by moisture regime and vegetative age and diversity. Several large drainages in the western areas of the ranch are dry, sandy washes. These drainages contain mostly mesquite and some Desert hackberry (Celtis pallida). Little Ash Creek has perennial

water and is characterized by large, mature cottonwood and sycamore trees and a rocky channel. Many of the trees are overmature and some are dying. Because of a dense canopy there are currently few replacement trees growing. Scouring from high winter runoff further reduces regeneration of riparian species.

Dry Creek has good age class distribution and species diversity where surface water is present. Some parts of Dry Creek have narrow, steep sides that are not very high. Ash Creek has the largest riparian community on Orme Ranch. The vegetation on Ash Creek is typically young cottonwood and willow galleries with few mature trees except at Orme School. The creek channel is generally wide and sandy with smaller rocks. Ash Creek suffers from periodic flushing and scouring.

Improving watershed condition has reduced runoff and improved onsite water retention. Dry Creek has developed a mixed age plant community under these conditions. Ash Creek and Little Ash Creek have large watersheds, most of which are located outside Orme Ranch.

There is not a serious problem with livestock overgrazing these riparian sites because of other sources of water and also because of rotation grazing. The greatest potential for livestock impact is on Dry Creek where the mixed age riparian plants provide an attraction to cattle.

Proposed - Two riparian paddocks (pastures) are being considered. The first paddock would include Ash Creek above Orme School. The objective of this paddock is to graze in a manner that will increase Bermuda grass in the channel to provide soil stability and reduce the velocity of runoff. Slowing runoff will reduce channel flushing which inhibits riparian vegetation establishment.

The Dry Creek paddock will control livestock use of this site to protect riparian vegetation. High stocking for a short time will round off the banks and increase Bermuda grass ground cover for additional site stability.

No plans are being formulated for management of Little Ash Creek. There is presently little available livestock forage at this location and cattle do not overuse this area.

The dry washes are characterized by low available moisture and there is little management that will improve this situation.

EVALUATION OF ALTERNATIVES

Range conditions on Orme Ranch have been improving since 1981 as a result of present management. The supposition used is that progress in attaining some goals is being made and will continue under present management. The rating used are positive values, (except 0) because both present and proposed management include provisions for management adjustments to preclude resource damage.

- 0 - present situation will not change;
- 1 - present situation will improve slowly or total change will be small;
- 2 - present situation will improve at a moderate rate or total change will be moderate;
- 3 - present situation will improve significantly.

| Goal | Present | Proposed |
|-------------------------|----------|----------|
| 1. Grazing Distribution | 1 | 3 |
| 2. Forage Production | 1 | 3 |
| 3. Antelope Habitat | 2 | 3 |
| 4. Meat Production | 2 | 3 |
| 5. Forage Diversity | 0 | 2 |
| 6. Cool Season Grasses | 1 | 1 |
| 7. Catclaw Access | 0 | 1 |
| 8. Ground Cover | 1 | 2 |
| 9. Riparian Stability | <u>1</u> | <u>2</u> |
| Total | 9 | 20 |

Time Control Grazing is the most intensive livestock management technique currently being applied to native pasture. Environmental returns to management are greatest where management is most aggressive in working toward clearly defined objectives.

The proposal to implement Time Control Grazing presents the greatest potential for attaining the resource goals. Present management meets most goals but to a lesser extent and/or takes a longer time.

The recommended management program on Orme Ranch (including the V-Bar Allotment) is the application of Time Control Grazing using the principles of Holistic Resource Management.

COORDINATION WITH PRESCOTT NATIONAL FOREST LAND MANAGEMENT PLAN (PROPOSED)

The V-Bar Allotment is located in Management Area 5, Desert Grasslands. Time Control Grazing is Level E (Forest Service Range Management Information Handbook). At Level E, maximum livestock production (while maintaining soil/water values), is the objective. The Forest Plan, Standards and Guidelines for Management Area 5, Desert Shrub/Grassland, recommends management to Level E.

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APPENDIX

Proposed V-Bar Allotment Management Plan - Wildlife Implications
Letter of Notification of Planning, Special Groups and Interests
Scoping Document, August 28, 1984
Scoping Document, December 6, 1984
FSM 2214.04b - Criteria for Time Control Grazing Area Guidelines
FSM 2231.45 - Modification After Issuance
ASLD Memorandum: Procedures for SGM/HRM, May 2, 1985

PROPOSED V-BAR ALLOTMENT MANAGEMENT PLAN

Wildlife Implications

General

During the scoping sessions to the proposed V-Bar Allotment Management Plan, one fact was evident: the list of issues and concerns was unmanageable. The majority of these ICO's were in the wildlife field and can be attributed to lack of knowledge of the effects of time controlled grazing on the habitat.

Emphasis and indicator species were chosen in the land management process; however, the effects of the proposed management cannot be determined without close monitoring. The Arizona Game and Fish Department and the Prescott National Forest endorsed the concept that this area would be managed for the restoration of antelope habitat. Within these guidelines, the design of the proposed management plan will facilitate and be responsive to antelope distribution, seasonal selectivity, and essential habitats. A cooperative monitoring plan should be implemented that will insure restoration of the antelope habitat as well as timely identification of other resource implications.

The east side antelope herd is well distributed and numbers approximately 80 head. This is about fifty percent of the optimum population for this habitat type.

The west side is also at about 50 percent of optimum capacity and numbers approximately 50 head.

Areas of heavy use have been identified (see attached) and are seasonal in nature. The essential habitat that is indicated is known or suspected fawning areas. The exact components of this habitat are not known. It is suspected that security characteristics are the dominant factor. This could be represented by the height of ground cover, well drained open slope or other combinations of natural characteristics. In order to insure that the vegetation will have the composition and height characteristics, it would be necessary that these identified areas be placed within one paddock. These would be managed to provide optimum security characteristics during the April 15 to June 15 time frame. Pasture rotations will have to be flexible so that management can be responsive to unforeseen occupancy during critical times.

Another major issue is the superfluous waters and hub centers. The suspected "hub centers" are traditional wildlife waters. The presence of fencing at the hub center will be a source of intimidation, especially for the antelope. Water will be available outside, but in proximity to, these centers and the fencing will conform to antelope standards. The superfluous waters will be maintained for wildlife use and fenced to preclude only livestock, if within 1/4 mile of a center.

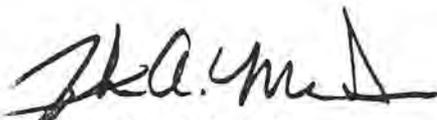
Another wildlife concern is the riparian areas within the proposed management area. These habitat zones are the most productive from the wildlife standpoint. Special consideration and management should prevail in these areas so that obligate species and abundance are enhanced. Riparian paddocks will be used where opportunities for enhancement are feasible.

The last major wildlife concern is the brush encroachment being experienced in these traditional grasslands. A habitat management program should be developed to control these areas of heavy brush, by opening them up for grass for production, to stimulate browse, yet retain their security and thermal characteristics. This may be accomplished by animal impact or a combination of animal impact and burning.

Other Requirements:

- a. A 24" minimum height of first electrical wire.
- b. Post the travel routes so that sportsmen understand the crossing procedures of hot wire fences.
- c. A smooth bottom wire should be installed to the eastern boundary fence to facilitate antelope movements.
- d. Exclude suspected fawning paddocks from rotations so that they will meet composition and security requirements.
- e. Implement a 3 year monitoring program to identify distribution, forage preference, selection factors for fawning areas, plant species composition and trends, and indicator species population dynamics.
- f. Riparian forage allocation should be calculated to enhance riparian condition class in the most timely manner. Grazing management will be used to enhance the vigor of endemic species and provides suitable condition for the growth of obligate riparian species.

These recommendations are a consensus of opinion from Forest Service and Game and Fish personnel. Considering the proposal is new to this Forest, the total impacts are not fully realized or mitigated. It is essential that the area be closely monitored and the ranch management understands that other requirements may be implemented when the resource indicates the need.



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