

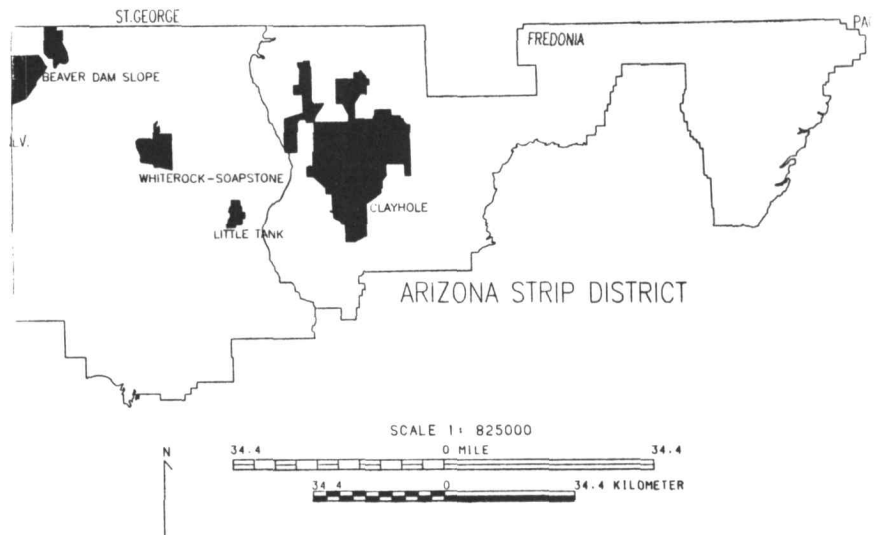
Twenty Years of Rest-Rotation Grazing on the Arizona Strip—An Observation

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The year was 1968. The year was witness to many changes in the United States. The civil rights movement was maturing into law and action. The environmental movement was emerging. The Vietnam War was at its peak as were the anti-war protests. This caused changes in our foreign policy. The United States astronauts were preparing to walk on the moon. Our view of the world would be forever changed. During this time another little known change was taking place. This change involved how rangeland forage was to be managed. Rest-rotation grazing was being initiated on the Clayhole, Beaver Dam Slope, Little Tank and the White-rock Soapstone grazing allotments on Bureau of Land Management (BLM) administered lands on the Arizona Strip.

Rest-rotation grazing was being promoted by August L. Hormay. He visited some of the Arizona Strip allotments to assist the BLM in establishing and implementing the grazing systems. This change incorporated systematic rest from grazing to benefit the forage species by allowing them to increase in their plant communities to a point where nature intended.

Cattle movements were planned in a prescribed manner to provide for set periods of rest and grazing. There were times the prescribed grazing system could not be followed for various reasons, such as drought; so cattle would enter another pasture that should be rested or cattle would not be put into the allotment. Flexibility in grazing systems is a requirement when dealing with nature and all its unknowns. But on most of the years the prescribed grazing systems were followed.



BUREAU

The four described allotments were not the only ones placed on rest-rotation sequence on the Arizona Strip. They do reflect the whole spectrum of vegetation types of the district and have been on rest-rotation grazing consistently for 20 years. From these four allotments the potential and limits of rest-rotation grazing in the arid and semi-arid areas has been learned. The expression of utilization and weather in key forage trend has helped define the above limits and potential.

What is Rest-Rotation Grazing?

Rest-rotation grazing is explained from a pamphlet on the subject as:

"Under rest-rotation grazing heavy emphasis is placed on restoration of vigor to the point where seed can be produced and where conditions are systematically created for establishment of seedlings of desirable forage plants.

To obtain reproduction it is necessary to rest the range from grazing at three critical times for three main purposes: first,

to restore plant vigor; second, to insure development and ripening of seed; and third, to insure establishment of seedlings. The general form of rest-rotation grazing, therefore, consists of four basic steps in the following sequence:

1. Graze the range for maximum live-stock production.
2. Rest the range until plant vigor is restored.
3. Rest the range until seed ripens, then graze for maximum livestock production.
4. Rest the range until reproduction becomes firmly established.

The number of years required to apply these steps depends on the growth requirements of the key species on the range, the one species most desired for forage and plant cover. The key species is usually one of the most palatable on the range and one easily destroyed by grazing. All other forage species on the range having growth requirements equal to or less exacting than those of the key species will also be maintained by the amount of rest that satisfies the key species." (Hormay and Talbot 1961.)

The Allotments

The Beaver Dam Slope allotment (about 36,000 acres) is in the Mohave Desert. Low rainfall (5–10 inches) and hot summer temperatures (115°–120° F) make for an arid environment. Vegetation are creosotebush and bursage complexes with attendant forages such as big galleta, Indian ricegrass, winterfat, and annuals like Indian wheat and cheatgrass. This is a three-pasture allotment.

Clayhole and Little Tank allotments (178,000 and 6,000 acres respectively) occur in the Desert Grasslands vegetation type with 5 to 12 inches of precipitation. The forage consists of black and blue grama, galleta, squirreltail, Indian ricegrass, shadscale, and fourwing saltbush. Clayhole is a nine-pasture allotment and Little Tank is a four-pasture allotment.

The Whiterock-Soapstone allotment (19,000 acres) is in the pinyon-juniper vegetation type. In the late 1960's around 7,000 acres of chainings with seedings, chainings without seedings, and sprayings were done. Seedings consisted of various perennial wheat grasses. The areas with land treatments provide most of the forage on the allotments. This allotment consists of three pastures. Precipitation generally amounts to about 15 to 18 inches per year.

All four allotments have vegetation trend and utilization studies established and documented since 1968–70 to 1986–88. Trend studies from 1968–1980 used a three-foot by three-foot plot with pictures taken of the plot and its surrounding area. The plot's vegetation was measured by cover methods. After 1980 the trend plots were superseded by 200-plot frequency transects. Utilization studies were all done using the grazed class method, which determines utilization by percent of height/weight taken from key species. The trend and utilization studies were done in key areas. Upward trend indicated that the key species were increasing in composition, and vice versa is downward trend.



1974

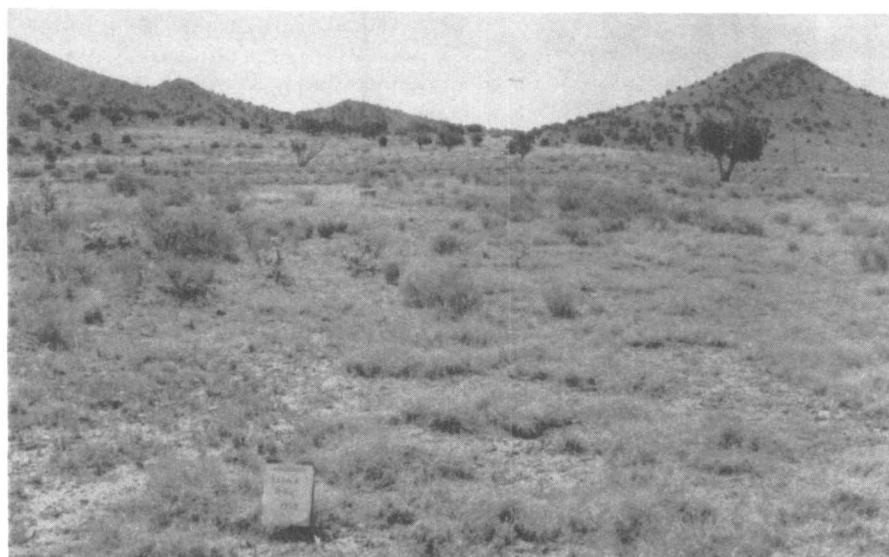


1988

On the Beaver Dam Slope Allotment rest-rotation grazing has caused change. The big galleta has increased in area over 14 years.



1969



1988

Little Tank Allotment, in the above key area, had annuals (*Russian thistle*) growing along with shrubs in 1969. Today, 20 years later, *galleta* grass has replaced the annuals.

The Results

On the Beaver Dam Slope allotment, four trend plots from 1970-1982 were all static or down trend for key plant species. Utilization levels averaged 36% with a range 10-70%. The four trend transects from 1981 to 1989 all show upward trend on key species. Average utilization in that time was 22% with a range of utilization from 11 to 34%.

The Little Tank allotment has four key areas and the plots from 1969 to 1980 all remained static or were down. Utilization levels during this period averaged 57 to 63%, which is heavy. The transects show from 1981 to 1987, three key areas up and one static in key species trend. Utilization of the key species averaged from 31 to 48%, which is considerably less than the 1969 to 1980 time period.

The Clayhole allotment from 1969 to 1979 showed trend in two plots up, four plots static, three plots down with average utilization levels ranging from 41 to 60%. The trend transects from 1983 through 1986 showed four trend transects up, two static, two down with an average utilization ranging from 28 to 52%. Recent years have shown lower utilization levels and more up trends.

The Whiterock-Soapstone allotment from 1969 to 1979 showed all down trend in its three key areas and utilization averaged 19 to 68%. The trend transects from 1981 to 1987 showed one up trend, one static trend, and one down trend, with average utilization ranging from 24 to 48%. Much of the down trend has to be attributed to brush and tree invasion on the the chained and sprayed areas, a natural occurrence unrelated to grazing.

Summary

The study data demonstrates that utilization levels play a role in the trend of key species. Summarizing the trend data shows the following:

Utilization levels alone are not the cause of trend direction; weather and ecological succession play a major role. But lower utilization levels do allow for key forage species to

Key Species Trend on Allotments With:

Greater Than 50% Utilization			Less Than 50% Utilization		
Up	Static	Down	Up	Static	Down
1	5	3	12	7	5



1969



1988

The Whiterock-Soapstone Allotment was treated by chaining, burning and seeding in 1968. After the grass was established, a 3-pasture rest-rotation grazing system was implemented in 1969. The wheatgrasses have been well maintained for 20 years. The browse species, naturally reinvading, are bitterbrush and cliffrose.

increase when weather and ecological conditions so permit.

The trends found in the past 20 years of rest-rotation on the Arizona Strip have also been demonstrated in more detailed studies in Utah and Nevada (Laycock and Conrad 1981, Eckert and Spencer 1986).

Conclusion

What then can be said about rest-rotation systems in semi-arid and arid environs? Real gain in increasing key species on native rangeland comes slowly and subtly. Improvement comes with below 50% utilization levels. Land treatments are better maintained under rest-rotation grazing than season-long use, but brush and tree invasion occurs regardless of management.

Rest-rotation grazing can bring improvement to arid and semi-arid ranges when there is potential for improvement or where land treatment sets back succession to allow for improvement. Our results show rest-rotation grazing must operate with below 50% utilization levels in grazed pastures in arid and semi-arid environs. Heavy utilization levels during use periods will negate the effects of a year to one-and-a-half years rest from grazing and cause static or downward trend.

One strong lesson of the rest-rotation grazing experience is that should a drought occur there is reserve forage in the rested pasture. And drought is a frequent visitor in the Southwest.

Bibliography

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