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NORTHEASTERN NEVADA WILDFIRES 2006 PART 2 – CAN LIVESTOCK GRAZING BE USED TO REDUCE WILDFIRES?

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INTRODUCTION

Large wildland fires, primarily ignited by lightning strikes, burned nearly one million acres of rangeland in Elko County, Nevada during 2006. This has given land managers and users food for thought and provoked many questions regarding the pre-existing conditions that may have contributed to these fires. The resounding question is, "what, if anything, can be done to reduce the chances for such large acreages burning in future fire seasons?" This question has stimulated much discussion among land managers and those who derive multiple uses from these lands. This fact sheet, addressing the use of livestock to reduce wildfires, is the second of three fact sheets about the 2006 wildfires in northeastern Nevada. The other two deal with wildfire and land-use history (McAdoo et al. 2007a) and how to rehabilitate fire-impacted areas (McAdoo et al. 2007b).

LIVESTOCK GRAZING AS A VEGETATION MANAGEMENT TOOL

Can livestock grazing reduce the risk of large recurring wildfires? In a word, yes, but with limitations. The approach used and its potential benefits depend on the context of the specific situation. More specifically, the size of the area to be treated, the type of fuel to be modified, management goals and objectives, etc. must all be considered. In site-specific situations, livestock can be used as a tool to lower fire risk by reducing the amount, height, and distribution of fuel. Livestock can also be used to manage invasive weeds in some cases and even to improve wildlife habitat. This under-used tool is the subject of a recent and timely publication, "Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement." (Launchbaugh 2006)

Although it can be a very useful tool, livestock grazing is not the panacea for our environmental woes, especially related to fire ecology. There are many fire-related variables on the landscape that act largely independent of livestock grazing. One recent example is a three-year (2004-2006) infestation of aroga moths that was documented by university researchers (personal communication, Peter Brussard, University of Nevada, Reno). These insects eat sagebrush leaves and have killed thousands of acres of sagebrush in northern Nevada during these years. The resulting dead and dying sagebrush may have

contributed to the spread of wildfire during 2006.

The Challenge of Scale

The use of livestock as a tool to manipulate vegetation for achieving fuel reduction management objectives across hundreds of thousands of acres is a difficult challenge at best, and probably beyond the capabilities of most producers and their operations.

How many cows would it take to remove combustible herbaceous vegetation, the primary ignition fuel of Nevada's large rangeland fires, on a large rangeland scale? Perhaps the best way to answer this question is to look at a realistic scenario. Consider the example of a 2005 wildfire complex involving multiple fires in the Tule Desert of Lincoln County, Nevada that burned 597,000 acres. These fires burned after an extremely wet year that resulted in 1,000 to 2,000 pounds of forage production per acre during 2005 in the form of invasive annual grasses (personal communication, Rick Orr, USDA Natural Resources Conservation Service). These were two highly flammable species, red brome and cheatgrass. Now factor in that the average amount of forage required to feed one cow and her calf for one month (a standard unit of measure called animal-unit-month or "AUM") is 800 pounds. Then, to be conservative, round this number to 1,000 pounds per AUM, assume that only 400,000 acres were usable rangeland for livestock, and estimate forage production for that year at only 1,000 pounds per acre. Using these values, it would take 100,000 cows and calves four months to consume all of the annual grass production on all 400,000 acres.

This is a simplistic example that accounts for no potential damage to any desirable perennial grasses in the area, an inevitable outcome when cattle graze an area during the entire growing season, year after year. An associated challenge would be securing adequate forage for this large herd the remaining eight months of the year. Furthermore, to be successful in the long term, this management strategy would have to be implemented every year that forage production from annual grasses was similarly high.

In Nevada, with about 70 million acres and only 500 thousand cows currently in the state, it seems impossible to "ramp up" livestock numbers sufficient to achieve the fuel reduction on hundreds of thousands of acres that would be required for fire protection state-wide. Even if this were possible in some years, there are other significant inter-related challenges:

- acquiring forage for excess livestock numbers during drought years and even during years with only moderate forage production;
- risking undesirable impacts of heavy repeated season-long grazing year after year, which arguably can deplete desirable perennial grass understory and leave a niche for more cheatgrass invasion and dominance (McAdoo and others 2007a);
- achieving sustainable production for both the forage resource and the commodity (livestock).

Given these considerations, landscape-scale fuel reduction by livestock seems unrealistic.

Targeted Grazing

However, targeted grazing can indeed reduce the amount, height, and distribution of fuel on a specific rangeland area, potentially decreasing the spread and size of wildfires under normal burning conditions. By definition, "targeted" or "prescribed" grazing is the use of an appropriate kind of livestock at a specified time, duration, and intensity to accomplish a specific vegetation management goal (Launchbaugh 2006). Cows eat primarily grass, goats can thrive on shrubs, and sheep prefer broad-leaf forbs (wildflowers) and weeds during the growing season and shrubs during fall/winter. Sheep will also eat green grass readily. All of these livestock, if used appropriately, can be used as tools for reducing fuel-loads on specific sites (Mosley 2006; Taylor 2006). This fact sheet focuses

just on grazing herbaceous vegetation, the primary fuel of the frequent fires on Nevada's rangelands, but targeted grazing can also be very effective in reducing shrub fuels as well (Laycock 1967; Campbell and Taylor 2006). Below are some basics to consider regarding the use of livestock for reducing the amount, height, and continuity of herbaceous cover (especially cheatgrass) in site-specific situations:

- During the spring, cheatgrass is palatable and high in nutritional value before the seed hardens. Repeated intensive grazing (two or three times) at select locations during early growth can reduce the seed crop that year, as well as the standing biomass. Research in Montana showed that repeated sheep grazing of cheatgrass-dominated sites can suppress or eliminate this invasive annual (Mosley 1996). Cheatgrass is most readily suppressed where this species occurs in nearly pure stands called monocultures (Mosley 2006). In areas where desirable perennial species are also present, the intensive grazing of cheatgrass must be balanced with the growth needs of desired plants that managers and producers want to increase.

- Late fall or winter grazing of cheatgrass-dominated areas, complemented with protein supplement for livestock, should also be considered. After the unpalatable seeds have all dropped, cheatgrass is a suitable source of energy, but low in protein. Strategic intensive grazing of key areas can reduce carry-over biomass that would provide fuel during the next fire season. Late fall grazing can also target any fall-germinating cheatgrass before winter dormancy, thus reducing the vigor of these plants the following spring (Mosley 2006). Fall/winter grazing when desirable perennial grasses are dormant and their seeds have already dropped results in minimal impact to these species and therefore can be conducted with minimal adverse impact to rangeland health in many areas. A caution here is that grazing in areas where precipitation has caused fall green-up can adversely affect desirable plants and should therefore be monitored closely to reduce unwanted results.

- The Bureau of Land Management (BLM) in some locations has an active "green-strip" program designed to reduce fire size and spread in key areas. Obviously, livestock can be used to maintain such green-strips to reduce the fine fuels (grasses) and control the spread of fire.

- The concept of "brown-strips" (Northeastern Nevada Stewardship Group 2004) refers to areas where one or more treatments (prescribed fire, mechanical thinning, herbicide, and/or grazing) are used to reduce shrub cover, releasing the native perennial grasses. These grassy areas are preferred by cattle, which can then be grazed to reduce herbaceous fuels. This method leaves "brown-strips" when the stubble dries out in mid-summer, serving as fuel breaks to control the spread of wildfire. Where appropriate, protein-supplemented cows or sheep could be used to intensively graze and create brown-strips (for example, along fences) to reduce the spread of fires during or after years of excess fuel build-up.

- Targeted grazing for the management of herbaceous fuels often requires a high level of livestock management, especially appropriate timing, as well as grazing intensity and frequency. In order to meet prescription specifications, operators often use herders, portable fencing, and/or dogs to ensure pastures are grazed to specification before the livestock are moved.

Other expenses may include feed supplements, guardian dogs and/or night enclosures for protection from predators, water supply portability, mobile living quarters, and grazing animal transport. Targeted grazing is a business whose providers must earn a profit (Pieschel 2006). Therefore, land management agencies need the option of contracting such jobs to willing producers and paying them for the ecosystem service rendered. This payment approach is already being implemented in some private and agency-managed areas to a limited extent, primarily for control of invasive perennial weeds. The use of and payment for prescription livestock grazing as a tool has substantial potential in the immediate and foreseeable future for managing vegetation in site-specific situations on Nevada's rangelands.

- In general, and less intensively, livestock can be used strategically by controlling the timing and duration of grazing in prioritized pastures where reduction of desirable perennial grass cover is needed for fire reduction purposes. Strategic locations could be grazed annually to reduce fuel loads and continuity at specific locations. Rotation of locations across years prevents overgrazing of any one area but confers the benefits of fuel load reductions to much larger landscapes. Even moderate grazing and trampling can reduce fuels and slow fire spread.

CONCLUSIONS

Livestock grazing is not a panacea for wildfire reduction on northern Nevada rangelands. However, targeted grazing can reduce wildfire risk in specific areas. The targeted grazing strategies discussed above all require a very flexible adaptive management approach by both land management agencies and targeted grazing providers. Managers must determine objectives, then select and implement the appropriate livestock grazing prescription, monitor accomplishments, and make adjustments as needed.

REFERENCES

Brussard, P. University of Nevada, Reno. Personal communication.

Campbell, E. and C.A. Taylor, Jr. 2006. Targeted Grazing to Manage Weedy Brush and Trees. Pages 77-87 *In*: K. Launchbaugh, editor. Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement. American Sheep Industry Association.

Launchbaugh, K., Editor. 1996. Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement. American Sheep Industry Association. 199pp.

Laycock, W.A. 1967. How Heavy Grazing and Protection Affect Sagebrush-Grass Ranges. J. Range Manage. 20:206-213.

McAdoo, J.K., B.W. Schultz, S.R. Swanson, and G.N. Back. 2007a. Northeastern Nevada Wildfires 2006: Part 1 – Fire and Land-Use History. Univ. Nevada Coop. Ext. Fact Sheet. FS-07-20.

McAdoo, J.K., B.W. Schultz, S.R. Swanson, and R. Wilson. 2007b. Northeastern Nevada Wildfires 2006: Part 3 – Rehabilitating Fire-Impacted Areas. Univ. Nevada Coop. Ext. Fact Sheet. FS-07-22.

Mosley, J.C. 1996. Prescribed Sheep Grazing to Suppress Cheatgrass: A Review. Sheep and Goat Research Journal 12:74-80.

Mosley, J.C., and L. Roselle. 2006. Targeted Livestock Grazing to Suppress Invasive Annual Grasses. Pages 67-76 *In*: K. Launchbaugh, editor Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement. American Sheep Industry Association.

Northeastern Nevada Stewardship Group, Inc. 2004. Elko County Sagebrush Ecosystem Conservation Strategy. Elko, NV.

Orr, R. USDA Natural Resources Conservation Service. 2006. Personal communication.

Pieschel, A. 2006. A Primer for Providers of Land Enhancement. Pages 169-176 *In*: K. Launchbaugh, Editor. Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement. American Sheep Industry Association.

Taylor, C.A., Jr. 2006. Targeted Grazing to Manage Fire risk. Pages 107-114 *In*: K. Launchbaugh, editor. Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement. American Sheep Industry Association.