Assessing Landscape Scale Cheatgrass Fuel Load Reduction for Protection of Great Basin Ecosystems and Wildland-Urban Interface Using Late Season Grazing

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February 2012
ABOVE: Cheatgrass fueled wildfire.

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I. OVERVIEW

The Great Basin covers about 145 million acres of the American West covering portions of six states, including Nevada, Oregon, Utah, Idaho, Wyoming and California. Much of this area is rangeland, dominated by shrub-steppe plant communities, and more than 70% of the land area of the Great Basin is in federal ownership. Recent estimates indicate that there are as much as 25 million acres dominated by the invasive, non-native annual grass known as cheatgrass, and about 60 million acres are either infested or susceptible to invasion. Further, the Bureau of Land Management estimates that cheatgrass invades about 4,000 acres per day in the Great Basin.

The degrading effects of cheatgrass invasion have been increasing annually throughout the Great Basin. Numerous resource management challenges are a result of this habitat displacement process. Some of the major issues are:

- The growth of cheatgrass infestation has led to a reduction of native perennial grassland communities limiting forage for wildlife and domestic livestock, shortening wildfire return intervals, and significantly increasing the costs associated with wildland fire fighting.
- Protecting existing stands of shrubs and perennial grasses from frequent fire is a high priority for habitat conservation efforts, particularly with regard to sage-grouse management areas. Cheatgrass fueled wildfires (1.8 million acres in 1999 and 2.7 million acres in 2007), a major cause of public land degradation in recent years, are a result of not only the current year phytomass production, but production from past years as well.
- Reducing this vast acreage of cheatgrass and the extent and frequency of wildfires fueled by cheatgrass in the Great Basin will enhance the success of ecosystem restoration efforts, and provide an effective tool for conservation of important natural resources.
- It is easier and less costly to reduce the cheatgrass infestation than to restore or rehabilitate depleted plant communities. For example, the average rangeland fire suppression cost runs approximately $20 million per major fire event. With fires...
covering 1.8 to 2.7 million acres per year the suppression costs have been estimated to be around $600 per acre.

- Based on GAO estimates, 50 to 95% of the cost of fighting fires on Forest Service lands is associated with protecting private properties on the wildland urban interface (WUI). WUI firefighting costs have averaged $630 million to $1.2 billion, the cost of simply protecting private property for the Forest Service and BLM combined. Only 14% of WUI land has been developed as of 2005; as the remaining 86% is developed the cost of fire suppression within WUI areas will escalate. There is a high cost of doing nothing to mitigate cheatgrass fueled wildfires.

- Many of the rural communities in the Great Basin are in decline due to national and state economic conditions. This proposal provides a mechanism to possibly increase ranching profitability while mitigating a major threat to the Great Basin ecosystem. In addition to benefits from the value of private property protection in the WUI, there is value from protection of permittee investments on federal allotments which are significant from a rural economic growth point of view.

- Fire suppression costs are not just borne by federal agencies, there are also cost burdens on state agencies, local governments and individuals.

- The landscape level application of this research has significant potential to not only reduce long run economic costs to communities, individuals, and local governments but also federal agencies in terms of suppression costs.

**WIND EROSION IMPACTS**

- A decline in air quality (Figure 1) during a fire event results in respiratory health problems for the young, old and those with weak immune systems or respiratory diseases.

- Cheatgrass fueled fires cause significant wind erosion of post-fire soils.

- The loss of range productivity and other ecosystem services due to soil degradation is staggering.

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*FIGURE 1: Fire induced wind erosion in the Great Basin. Courtesy of Matt Germino, USGS.*
II. FALL CATTLE GRAZING AS POTENTIAL SOLUTION

The potential for using prescribed livestock grazing as a tool for reducing cheatgrass fuel loads has been recognized for some time. Specifically, prescription livestock grazing can reduce fire hazards and protect wildland-urban interface by disrupting the fire fuel continuity and reducing fire fuel hazards, increasing fire-free intervals, and enhancing the competitiveness and recovery of perennial plants. The use of prescribed cattle grazing in the fall to achieve these goals is new and novel. As a result of the University of Nevada, Reno Gund Ranch pilot study (2006-2009), we now know how to encourage domestic cattle to consume large, daily quantities of dry, dead cheatgrass, with little or no impact to the native plants growing with cheatgrass.

Before the 1700 acre pilot study was undertaken, cheatgrass stands at the Gund Ranch were assessed and photographed (Figure 2). In the area shown, cheatgrass fuel loads were reduced from 500 pounds per acre to 25 pounds per acre. To reduce cheatgrass fuel loads, the study advances the concept of using livestock to reduce cheatgrass through prescriptive fall grazing (Figure 3), while maintaining animal health and profitability. Results from the study are very promising (Figure 4).

This project specifically proposes to develop and implement a multi-state research project to investigate through on-the-ground studies, the efficacy of reducing cheatgrass fuel load carryover using late season livestock grazing on a landscape scale for protection of Wildland Urban Interface (WUI) areas and areas with special resource values such as sage grouse habitat. It will also investigate how cattle grazing in the fall may affect perennial plant species and plant diversity within cheatgrass dominated areas while measuring animal condition and performance to determine potential effects of the modified grazing patterns on animal health.

From a pilot study, it appears that an effective cheatgrass grazing fuel reduction strategy has the potential to provide producers with greater economic returns, as well as more flexibility in grazing operations by opening up new grazing resources in some areas. Other economic benefits include value of fire protection afforded to communities, insulating private property and infrastructure from wildfire threats, preventing wind erosion of soils, as well as greater plant species diversity with increased dominance of perennial vegetation.
Planning for the late season cheatgrass grazing project has already been initiated in the five states that are a part of the Great Basin, under the auspices of the Great Basin Environmental Program in conjunction with the Great Basin Consortium. We list below the initial steps and progress toward implementation.

- A provisional project team of faculty and scientists from the five universities and federal and state agencies has been assembled.
- Preliminary discussions and presentations explaining the project have been held with cattlemen’s associations, other state agricultural associations, county officials, private sector groups, NGOs and federal agencies with very positive responses.
- Financial contributions have been pledged from several of the cattlemen’s associations to support the project.
- Letters of support have been assembled from cattlemen’s associations and the other interest groups mentioned above.
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- Ranches with private lands that can accommodate the landscape level experiments have volunteered to host the late season cheatgrass grazing experiments.
- A plan has been developed to find federal lands that have grazing allotments that meet the late season cheatgrass grazing requirements for participating in the experiments.
- The Agricultural Experiment Station at the University of Nevada, Reno and other university partners have agreed to host the grant and disseminate funds to other participants.

In short, the land grant universities, in cooperation with several federal and state agencies, local governments and private sector partners, have much of the technical plans ready and are prepared to implement this project upon availability of funding.