# Livestock Grazing in Wildland Fuel Management Programs

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Fuel management programs that utilize livestock are going to be much more important in future land planning activities for several reasons. According to BLM and Forest Service data, the number of acres burned by wildfire annually are on a long-term upward trend. The fires which do occur are larger and more intense. Federal funding for wildfire suppression has leveled out and with federal budgets shrinking, funding will probably decrease in the future. Federal agencies, environmental groups, and professional societies are calling for increased controlled burning, and fuel management programs to reduce the intensity of fires. At the same time we are losing many traditional vegetation management tools.

**Why are the Fires More Frequent and Severe?**

The primary reason fires are burning more acres and becoming more severe is due to changes in fuel loads and arrangements (Peters and Bunting 1994, Whisenant 1990). Large areas once dominated by herbaceous vegetation are now dominated by woody species. Most researchers believe this change was caused by heavy grazing pressure in the late 1800's which reduced fine fuel loads and vigorous fire suppression which continues today. The result was reduced fire frequencies, which in turn allowed sagebrush and juniper cover to increase tremendously. Grazing pressures which originally reduced fine fuel loads have decreased significantly during the past 30 years and fine fuels including cheatgrass are again filling the interspaces between the shrubs allowing fires to spread. When ignifition occurs in these areas increased fuels result in fires that are very destructive to the existing perennial vegetation and extremely difficult to control.

Another important factor is the amount of rangelands that are dominated by annuals has increased tremendously during the past 30 years (Young and Tipton 1990). Annuals such as cheatgrass, are capable of producing large amounts of fuel. They form a continuous arrangement of fuels which allows easy ignitition and the rapid spread of fires. Once an area has been converted to an annual type due to fire the fire recurrence period can be very short. With each new fire more perennial species are lost and more surrounding areas are converted to annual rangelands (Peters and Bunting 1994, Whisenant 1990, Young and Evans 1978).

**Responses to Increasing Fire Frequency and Severity**

Numerous groups and individuals are calling for major changes in current fire management procedures in response to the increasing danger of uncontrollable wildfires. Almost all of the groups are calling for fuel management programs including increased use of prescribed fire to reduce the available fuel loads. Some examples include the report of the Interagency Management Review Team (IMRT) from the South Canyon, Colorado fire. This team composed of representatives from the USFS, BLM, NPS, USFWS, NWS, made several recommendations. Among them was the following concerning fuels management, "The IMRT strongly recommended that both departments begin taking immediate steps to reduce fuel loads and actively pursue the reintroduction of fire into all aspects of land management." A 1995 draft Federal Wildland Fire Management Policy and Program Review also discussed fuels management. In part it stated, "Some areas will need immediate management intervention to prevent high-intensity fire and maintain their sustainability as healthy ecosystems." Interior Secretary Bruce Babbit stated in the July–August 1995 issue of *American Forests*, "If we gave it (prescribed fire) just a fraction of the time and energy that our predecessors put into the fire exclusion campaigns, prescribed fire would soon take its rightful place on the land management agenda," and Carol Rice owner of a fire management firm near Oakland, California stated in the June 1994 issue of *American City & County*, "Vegetation management legally enforced when necessary, is still the best fire prevention tool."

**Fuel Management Options**

Several options exist for reducing fuel loads on rangelands. Vegetation control with herbicides can be effective if the proper material is used at the right rate. However, public sentiment towards widespread herbicide use is largely negative due to perceived environmental dangers. Also, many chemicals have been lost due to a lack of reregistration. Mechanical control is possible but, heavy equipment cannot operate in many areas due to soil damage and topography. Hand treatment to reduce fuel loads is highly selective, can be applied on all terrain, but is normally cost prohibitive. Prescribed fire is gaining favor in many locales but has several drawbacks. It is risky to use due to the ever present danger of escape and the resultant liability. Personnel qualified to conduct prescribed burns are in short supply. The smoke generated by prescribed fire is another

real hurdle that must be addressed. Regulations such as those found in the clean air act and public outcry over the pollution caused by smoke may limit the amount of prescribed fire that can be used in any given region. Burning may also provide a competitive advantage to cheatgrass in communities that have been invaded by this plant.

On the other hand, properly managed livestock grazing can achieve many of the desirable outcomes related to fuel reduction without all of the problems inherent in the other options. Some advantages include: selectivity which can be achieved by managing the time and type of livestock used, low probability of environmental damage, cost effective when compared to other techniques, generally available at most locations and, the existence of a large number of personnel experienced in grazing management.

**Examples of Fuel Reduction Programs Using Livestock**

An extensive literature and "personal contact" search for fuel reduction programs using livestock in the Pacific Northwest turned up every few examples. In fact, very few fuel reduction programs of any kind were located, which supports the need identified by the various groups previously mentioned. However, one example where livestock plays an important role in reducing fire danger is on Idaho Fish and Game lands near Boise. Cattle and sheep supplied by private livestock operators are used to manipulate vegetation for wildlife and reduce the danger of wildfire. The greenstripping program developed by the Bureau of Land Management in Idaho relies on grazing animals to reduce fine fuels in the strips by grazing and trampling and has demonstrated some success in slowing fire spread.

Most of the successful programs that use livestock to reduce fuel loads and fire danger are found in California. That fact is not surprising when one considers the widespread urbanization that has occurred and the damage that results when wildfires burn homes and people instead of sagebrush. The East Bay Regional Park District, which manages several parks around San Francisco, uses cattle to reduce fine fuels and goats to reduce brush on over 50,000 acres. The livestock are allowed to graze under leasing arrangements which not only reduce fire hazard but net the District in excess of $300,000 annually (Budinski 1995). The Tahoe and Angeles National Forest use sheep to control grass and brush on fire breaks. They are so important to fire control efforts in the Angeles and Tahoe Forests that the grazing fees are commonly waived and/or ranchers have been paid to graze their sheep. In Canada, the sheep are so valuable in vegetation management that ranchers are paid an average of $5 per sheep, per month to reduce understory competition and fire danger. Other pertinent examples exist in Arizona, New Mexico, and Texas. These examples are highlighted to demonstrate that using livestock to reduce fuel loads is not only feasible but desirable in many places.

**Cheatgrass Dominated Sites**

Cheatgrass dominated rangelands continue to increase in size throughout the entire Intermountain west, especially in the Columbia and Great Basin regions (Monsen 1994, Pellant and Hall 1994). Fires occurring on low elevation rangelands which receive less than 14 inches of annual precipitation, and with established populations of cheatgrass, often result in a conversion from sagebrush-bunchgrass communities to annual dominated grasslands (i.e. cheatgrass). The existing data indicates that these native rangelands once converted to an annual type will normally remain an annual community unless massive expenditures of resources are applied (Friedel 1991, Laycock 1991). These annual grasslands burn more frequently than surrounding native rangelands. Each burn reduces the surviving perennial vegetation while at the same time converting more of the surrounding shrub-bunchgrass communities into an annual community (Whisenant 1990, Young and Evans 1978). The increased fire frequency and conversion results in forage losses, increased erosion, increased fire danger to adjacent residences, weed invasions and most importatly loss of diversity of plants and animals. In this case, livestock grazing used to reduce fuel loads, fire occurrence and severity, and prevent adjacent shrub-bunchgrass lands from burning should be the foremost priority on these lands.

Low elevation ranges on which cheatgrass has excluded almost all desirable perennial species should be managed as an annual grassland with the primary goals of reducing fuel loading, and providing maximum grazing opportunities consistent with long-term protection of the site. Grazing plans on these annual rangelands which include annual deferment or rest, are likely to increase the fire danger with no benefit to the few perennials which may still occur (Young and Tipton 1990). The primary considerations for

protecting an annual grassland is the maintenance of enough litter to protect the soil, and adequate seed production to maintain the stand. Research results delineating the utilization levels required to achieve the fore mentioned items are unavailable for annual grasslands dominated by cheatgrass. Experience leads one to believe that annual use levels between 60 and 70 percent will not result in long-term damage to cheatgrass stands.

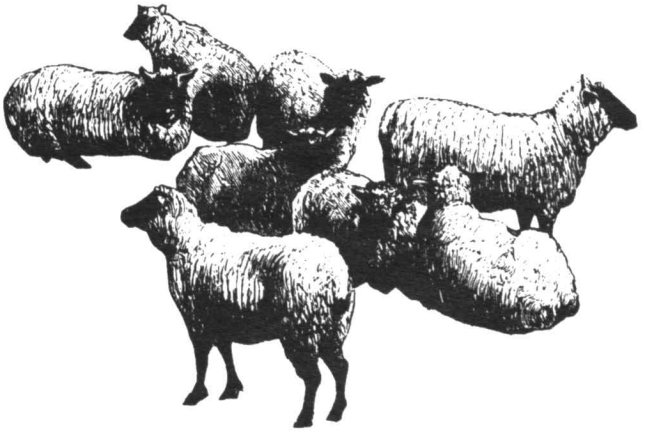
Proper management of these ranges requires more flexibility than on perennial ranges. The area of use, season of use, and stocking rates vary yearly due to precipitation amounts and timing. Water may need to be hauled and temporary fencing established to achieve the desired use levels. These factors increase the costs of using these areas. However, these costs must be compared with the benefits obtained. These benefits may include: reductions in winter feed requirements for livestock, improved nutritional status of livestock during the spring, grazing deferment on adjacent perennial rangelands, lowered fire suppression costs, and protection of the surrounding shrub-grassland ecosystem.

**Sagebrush-Bunchgrass Sites**

Livestock used to manage fuel loads in the sagebrush-bunchgrass sites surrounding annual cheatgrass ranges can be important in controlling fire frequency and intensity. Successful ignition and burning of most sagebrush-bunchgrass rangelands is dependent primarily on the amount and continuity of the herbaceous fuel loads found within a sagebrush stand (Whisenant 1990). Sagebrush-bunchgrass sites in a pristine or high seral state normally have a long burn interval due to diverse population of widely spaced bunchgrasses and relatively low sagebrush canopy cover. The grasses provide a low level of fuel continuity and remain green through much of the fire season. These factors combined with sparse sagebrush cover reduce the possibility of catastrophic fires and allow a long interval between fires.

Unfortunately several factors are now in place to degrade the ideal situation described. Much of the low elevation sagebrush-bunchgrass range in the Intermountain west is in a low seral condition with excessive sagebrush canopy cover and little perennial grass as an understory. Range sites in mid-seral stages with good perennial grass populations and relatively high sagebrush canopy cover are often no longer grazed at utilization levels adequate to reduce fine fuel loads. Cheatgrass is expanding its range throughout the Intermountain west. This is important as the cheatgrass dries early in the fire season and provides the continuity necessary for rapid fire spread to the existing shrubs.

On sites with excessive sagebrush canopy cover but adequate remnant populations of desirable bunchgrasses, winter sheep grazing may provide an option to reduce the sagebrush cover (Welch et al. 1987). Reducing the sagebrush cover before a fire will reduce the intensity and spread of the fire. It will also benefit the existing bunchgrasses.



Utilization levels on upland sites have decreased markedly on most federally controlled lands. In Nevada, total cattle numbers have fallen by 210,000 head between 1982 and 1994. Sheep numbers have dropped from 129,000 to less than 91,000 head during the same period. A similar trend is evident in Idaho, Washington and Oregon (Bay 1995). Reduced livestock numbers, and management prescriptions aimed at protecting unfenced riparian areas, have resulted in much lower utilization levels on the uplands and an accumulation of old herbaceous materials. This material in combination with cheatgrass provides an ideal fuel to rapidly spread throughout an otherwise healthy sagebrush-bunchgrass community.

The management strategy under this scenario should be to reduce the frequency and size of fires that occur in these types. Due to the tremendous amount of land involved and current livestock numbers available, a priority system identifying areas to be "treated" with livestock grazing will need to be established. The priority areas could then be utilized in a season and level that would reduce the continuity and amount of fuel available. Removing the livestock while adequate soil moisture remains to allow regrowth of perennials is critical. Additional costs will probably be inccurred under such a management system. But, the costs are minimal when compared to those associated with either the loss of these communities or with trying to restore them using normal revegetation practices.

In summary, existing data makes a clear case for the fact that fires are increasing in frequency, size, and intensity. These fires are resulting in increased danger to firefighters, and losses of irreplaceable vegetative communities through conversion to annual grassland or other low seral states. Fire occurrence, frequency, intensity and size is dependent in large part to the fuel complex present. Individuals, organizations and agencies who influence fire management policies are calling for fuel management schemes to reduce the damages caused by uncontrollable wildfires. Managed livestock grazing is currently being used in limited amounts in North America and Canada to reduce fuel loads and fire danger. Greater use of livestock to reduce fire danger is possible and desirable on western rangelands and becoming more important as other vegetative management

options are reduced due to public resistance and excessive costs. The increased use of livestock to reduce fire danger will require increased management to achieve fuel reduction objectives but, the increased costs are small in comparison to the damage occurring on western rangelands and the costs of rehabilitation on burned areas.

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