LIVESTOCK GRAZING AFTER WILDLAND FIRE

Issue: In the Fall of 2006, Elko BLM District issued three Emergency Stabilization and Rehabilitation Plan Final Environmental Assessments (FEA's), three Findings of No Significant Impact (FONSI's) and Decision Record and Project Approvals. These actions were taken for the Sneekee, Mud and Elburz fires. All of these documents included the following: "The closure will occur for a minimum of two growing seasons or until establishment objectives are met, in order to provide an adequate amount of time to allow the seeded vegetation to establish and plant species not damaged by the wildfire to respond to natural revegetation. The burned area will be reopened to livestock grazing once the establishment objectives in the Fire Closure Agreement/Decision have been met."

Authority: The specific authority for implementing livestock closures is in the Public Rangelands Management Act of 1995. Temporary changes in grazing preference are allowed in Section 114 of this Act. Basically, the authorized officer (District Manager) may temporarily suspend active grazing use (partially or completely) to facilitate recovery from drought, fire, or another natural event or for the installation, maintenance, or modification of range improvements.

The Two-Year Rest Period: Early fire rehabilitation policy typically had the goal of stabilizing burned areas in terms of erosion. This meant allowing vegetative and associated litter cover to re-establish over time or in many cases to seed non-native perennial grasses such as crested wheatgrass. For many years, land management agencies have often had a blanket policy of deferring grazing from re-seeded burned areas for two growing seasons. This policy likely evolved from the post WWII research in the burgeoning field of range science. Most of the research in this time period was applied research involving numerous field trials and demonstrations. Much of this early research, for the Intermountain region, was conducted by John Valentine (Valentine, 1963) who also published a range improvement text (Valentine, 1971). This text specifies a two-year grazing rest after seeding. This recommendation was also consistent with research based recommendations for the southwest region of the US (Reynolds and Martin, 1968). This early work was primarily devoted to non-native perennial grass production in areas where the shrub overstory was removed by a variety of means including fire.

The two-year rest period recommended by Valentine and other texts such as Range Management (Stoddard, Box and Smith, 1975) was based on a combination of biology and field experience. During the first year of managing a seeded area, the goal was to develop enough vegetative growth to ensure survival (over wintering) of the seedlings. The second year goal was to ensure the seeded plants reached reproductive maturity and produced seed. The "rule of thumb" for considering plants established was plants could not be pulled out of the ground by hand (Valentine et al 1963).

It is important to note that earlier range management research also evaluated fire as a range management tool. Fire as a management tool is very different than wildfires.

Improving rangeland with fire typically has the goal of removing a brush overstory with a "cool" fire over moist soils and understory. In this instance, grazing was often prescribed after completion of the first growing season and light grazing during the second growing season (Pechanec and Stewart, 1954).

While other factors were obviously considered by land management agencies in the development of the two-year grazing rest policy, the basic principles of earlier range management research and knowledge undoubtedly influenced this policy. As our knowledge and the complexities of the issues regarding fire rehabilitation have increased, the validity of a blanket two-year post fire grazing rest policy to being questioned.

Some Thoughts Regarding Grazing After Wildland Fires: In 1999 a series of fires resulted in a catastrophic fire year that burned over 1.7 million acres in the Great Basin (USDI/BLM 1999). The following year, USFS issued a Report to the President on managing the impacts of fire (USDA/Forest Service, 2000). This report, also known as the National Fire Plan, added considerable complexity to rehabilitation efforts with the following policy suggestions:

- Focus rehabilitation efforts on restoring watershed function including, protection of basic soil, water resources, biological communities, and prevention of invasive species.

- Assign highest priority for hazardous fuels reduction to communities at risk, readily accessible municipal watersheds, threatened and endangered species habitat, and other important local features, where conditions favor uncharacteristically intense fires.

- Restore healthy, diverse, and resilient ecological systems to minimize uncharacteristically intense fires on a priority watershed basis. Methods will include removal of excessive vegetation and dead fuels through thinning, prescribed fire, and other treatment methods.

- Focus on achieving the desired future condition on the land in collaboration with communities, interest groups, and state and federal agencies. Streamline process, maximize effectiveness, use an ecologically conservative approach, and minimize controversy in accomplishing restoration projects.

- Monitor to evaluate the effectiveness of various treatments to reduce unnaturally intense fires while restoring forest ecosystem health and watershed function.

- Encourage new stewardship industries and collaborate with local people, volunteers, Youth Conservation Corps members, service organizations, and Forest Service work crews, as appropriate.

- Focus research on the long-term effectiveness of different restoration and rehabilitation methods to determine those methods most effective in protecting and restoring watershed function and forest health. Seek new uses and markets for byproducts of restoration.

This new complexity does appear inconsistent with a blanket policy based partially on 50 year old research. While the basic principles of establishing a seeding have not changed, adding invasive weeds, collaborative processes and ecosystem/landscape management principles has certainly increased the complexity of fire rehabilitation.

The blanket two year rest policy is in question. Sanders, 2000 pointed out several instances where this policy is questionable. In general, late season defoliation (after seed set) the first year after burning does not appear to significantly reduce the vigor of certain bunch grasses (Jirik and Bunting 1994). It should be noted, however, that growing season grazing of bunch grasses the first year following fire can result in significant plant mortality (Bunting et al. 1998). While vegetative production of bunchgrasses increases for several years after fire, Bunting, 1985 pointed out the increase in production is primarily due to an increase in production per plant and not an increase in density of plants (new plants established from seed).

Competition from other plants, especially annual grasses, is also a consideration for the prescription of post fire grazing (Sanders, 2000). While cheatgrass is generally not a problem on higher elevation rangelands, the lower elevation rangelands dominated by Wyoming big sagebrush are very susceptible to cheatgrass invasion and gradual dominance. Recently, cheatgrass and other Eurasian annuals, especially clasping pepper weed, are beginning to dominate salt desert shrub communities (Young and Sparks 2002). This has some researchers wondering if cheatgrass is evolving in such manner that allows it to exploit areas that were not previously invaded by cheatgrass (Young 2006).

At any rate, cheatgrass is genetically pre-disposed to the fire regimen of the Great Basin and this species exhibits phenomenal reproduction rates. Young et. al. 1987, reported stands of cheatgrass of 1,000 plants per square foot each producing 25 seeds. He also indicated a single openly grown plant with abundant tillers can produce 5,000 seeds. The reproductive nature of cheatgrass results in intense competition with both established and seeded species for nutrients, especially nitrogen, and early season moisture (Evans and Young 1984). There is considerable research indicating seeding, especially aerial seeding, into areas dominated by cheatgrass will have limited success unless the competition with cheatgrass is lessened (Young 2006). As a result, early spring grazing may be beneficial in reducing competition from annual grasses and allow for better recovery of existing plants and establishment of seeded plants (Sanders, 2000). In this instance, early grazing while cheatgrass is actively growing but native vegetation is dormant, both the seed production of cheatgrass and competition for moisture and nutrients could be lessened.

Another common recommendation for post fire grazing management is a three year or more rest for areas where bitterbrush has been seeded. The recent Charleston Complex Fire Closure indicated literature (although none was cited) suggested three years rest was needed to ensure seed production in the second year after seeding and to ensure woody leader stems in the third year after seeding (USDI/BLM 2006). The success of seeding bitterbrush depends largely on whether seeds are drilled or broadcasted (including aerial seeding). In general, broadcast and aerial seeding of bitterbrush are not recommended because of poor seedling establishment especially when competition with annuals such as cheatgrass is present (Booth et. al. 2006). Bitterbrush seedlings are also susceptible to grazing pressure other than livestock. For example, McAdoo and Young, 1980 indicated that bitterbrush seedlings were very susceptible to mortality by jackrabbit grazing. More recently, Clements and Young, 1996 indicated that rodent depredation had a significant impact on bitterbrush seedling survivability. These research results strongly suggest that bitterbrush seedling survival includes other factors in addition to livestock grazing. This research also suggests that excluding grazing from areas where the goal is to increase bitterbrush where no bitterbrush seedlings exist is likely an exercise in futility.

Recommendations: In light of the complexity of fire rehabilitation issues and current research, the following recommendations should be considered in relation to the two year blanket grazing exclusion:

- Where native bunchgrasses have survived a fire, grazing after the first post-fire growing season should be considered. Light grazing during the second year growing should also be considered.

- Early season use of Wyoming big sagebrush post fire seeded communities should be considered if cheatgrass is a dominant species and is in competition with post fire seeded species.

- Where bitterbrush has been seeded, grazing should be considered if seedling establishment has not occurred after the first or second year of livestock grazing use.

- Flexibility should be given to individual range specialists and permitees in determining the appropriate goals and grazing prescriptions to meet post-fire objectives.

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