

LIVESTOCK GRAZING'S CONTRIBUTION TO FIRE HAZARD

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In recent years, historic blazes have and continue to scorch the West. Congress has reacted by creating a National Fire Plan that attempts to address some of the factors contributing to the increasing costs of fire fighting and loss of life and property. Included in the plan are funds for increased fire-fighting capacity, home-owner education and prescribed burning to reduce fuels. Nevertheless, the contribution of livestock production to fire hazard is often overlooked (Belsky and Blumenthal 1997) and continues unabated on public and private lands in the West. While climatic conditions like extreme drought and high winds are the key ingredients in any large blaze (Wuerthner 1991, Savage et al. 1996), past management practices, including logging, fire suppression and livestock grazing, have exacerbated the situation by creating densely stocked timber stands that may be more vulnerable to high intensity fires (Agree 1993, Shinneman and Baker 1997, Belsky and Blumenthal 1997).

Historically throughout the lower elevation forest and grass ecosystems of the West, fires frequently burned stands with low intensity blazes (Agree 1993, Covington et al 1994), although high intensity fires may have always existed even prior to the intervention of the white man (Shinneman and Baker 1997).

Young seedlings and saplings of common tree species like juniper and ponderosa pine are extremely vulnerable to even moderate levels of heat. As a consequence low intensity blazes tended to thin forest stands to create open timber stands dominated by a few widely spaced large trees (Agree 1993, Covington et al 1994.).

Livestock grazing is frequently overlooked as an important factor in changing forest stand condition and fire regimes. There is a substantial body of scientific literature that identifies livestock grazing as a major factor in the alteration of historic fire regimes and a contributor to fire hazard (Arnold 1950, Cooper 1960, Madany and West 1983, Mitchell and Freeman 1993, Rummell 1951, Savage and Swetnam 1994) .

First livestock grazing removes the grasses that compete with tree seedlings for water and nutrients. This favors the establishment of deep rooted trees and allows them to dominate the site. Studies of ungrazed sites in several ponderosa pine dominated ecosystems have found that in the absence of livestock grazing, but in the absence of fire, open ponderosa pine forests with a minimum of understory pine seedling establishment was documented (Madany and West 1983, Rummell 1951,).

Secondly, most tree species require bare soil for successful germination and again heavy grazing by removing the grassy understory of many forest sites and

creating the bare disturbed soil sites that favors tree establishment has led to greater tree-stocking density.

Third, grazing removes the fine fuels such as grasses that helped to carry the light intensity fires that once burned at regular intervals throughout much of the lower elevation forest ecosystems of the West. This has permitted young saplings and trees to become established and be recruited into the forest stand (Agree 1993, Arnold 1950, Savage and Swetnam 1994).

Fourth, by permitting a large number of small saplings to become established, competition for water among existing living trees is increased making trees more vulnerable to insects and other pathogens (Hessburg et al 1994). Under extreme drought such trees are actually more flammable than a dead tree since internal water content is often less than kiln-dried lumber, yet due to the flammable resins found in living trees, such drought-stressed trees often explode into flames upon contact with a fire.

Fifth, by contributing to the spread and persistence of fire prone weedy species like cheatgrass, livestock production has created far more acres of highly flammable plant communities in many parts of the West (Belsky and Gelbard 2000, Billings 1990, Mack 1981).

Despite the contribution of livestock grazing to the on-going and growing fire hazard in the West, livestock grazing on public lands continues unabated and is seldom altered to reduce the incidence or intensity of western fires.

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