

IMPACTS OF FOREST GRAZING ON WILDLIFE HABITAT

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TRANSACTIONS WESTERN SECTION THE WILDLIFE SOCIETY 22:82-84

Abstract: The impacts of forest grazing on wildlife habitat can only be evaluated after careful consideration of the forest ecosystem being grazed, the kind of grazing animal, and the specific wildlife species that are of interest. Managers can mitigate livestock impacts by recognizing that impacts can be negative or positive depending on the particular habitat type involved, the wildlife species of interest, and the management objectives.

Domestic livestock (cattle, sheep and goats) have grazed in forest environments since the 1700's in the southeastern United States and since the 1800's in the western states. Large numbers of cattle and sheep (540,000 AUMs on Forest Service land in California in 1985) spend part of every year on forested range. Grazing by deer, elk and other big game as well as small mammals also can have profound, often local effects, on forest habitats. These effects can be either positive or negative depending on management objectives. For example, grazing which reduces native grasses and promotes forb growth may improve habitat for deer while degrading small mammal habitat.

Forest ecosystems that can be classified as permanent forest range include the eastside pine type of California, ponderosa pine types of the Rockies, and pine types of the southeast. These forests provide forage throughout the life-cycle of the stand. Other forests are classified as transitory range. These forests, such as the mixed conifer and Douglas-fir types, provide large amounts of forage only when the tree cover is removed. On transitory range, forage can be expected early in a rotation and declines dramatically as tree cover closes, usually 10-15 years following harvesting (Fiske 1983, Kosco and Bartolome 1983).

Plantation grazing occurs in both permanent forest range and transitory range types. These areas have specific management concerns because the main objective is to grow trees in an economically efficient manner. Unmanaged grazing is often detrimental to meeting these objectives (Arvola 1978, Thomas 1983). However, managed grazing is increasingly used to achieve specific reductions in some plants while promoting tree growth (Sharrow and Leininger 1982, Allen 1986, Kosco and Bartolome 1983, Monfore 1983, Krueger 1983).

The impacts of grazing can affect one or more of the components of wildlife

habitat. Grazing might impact forage availability for wildlife species; resting, foraging, thermal or escape cover; breeding habitat; or water supplies. Wallmo and Schoen (1980) have examined these wildlife components and found that the relative importance of any one of these components is dependent on its abundance and distribution in the environment. Abundance of one factor alone does not guarantee that a wildlife species needs are met, but the juxtaposition and availability of components determine whether habitat requirements are met (Loft et al. 1986). Thus grazing impacts must be examined by recognizing overall species needs and the distribution and availability of wildlife habitat components.

KINDS OF IMPACTS AND EVIDENCE FOR THOSE IMPACTS

The impacts of domestic livestock on forest habitats include alteration of forage quantity, quality and species composition; removal of cover and alteration of structure; and promotion or destruction of tree seedling survival and growth. The evidence for these impacts is varied. Each impact will be judged as good or bad depending on whether range, wildlife and timber management objectives are met. The judgement will often vary depending on the perspective of the resource manager. And again, impacts must be considered in terms of individual wildlife species habitat requirements.

There is evidence that livestock alter forage quantity, quality or species composition. Sharrow and Rhodes (1982) found sheep reduced brush cover on Oregon Douglas-fir clearcuts and improved big game habitat by increasing quality of fall forage and quantity of quality spring forage, even though there was an overall reduction in total standing crop. Baron (1962) found that cattle increased grass production on clearcuts with subsequent heavy use by deer, rabbits and mice. Moore and Terry (1978) used a short-duration

grazing system with cattle to significantly reduce pineland threewain (*Aristida stricta*) and saw-palmetto (*Serenoa repens*) resulting in increases in herbs desirable to certain wildlife species.

Evidence for use of livestock to remove cover and alter structure exists. Radosevich and Conard (1982) studied a Sierra mixed conifer forest and found that where cattle removed the rapidly sprouting and seeding brush species on clearcuts, better wildlife habitat resulted from both a forage and ease of movement standpoint. Krueger (1983) determined plant community structure was most influenced by logging, big game, and cattle in that order on Oregon clearcuts. Brown (1983) suggested using livestock as a tool to manipulate wildlife habitat to meet specific management objectives. He indicated that livestock have been successfully used to manipulate wildlife habitat through Coordinated Resource Management Plans in eastern Washington.

Page et al. (1978) reported, however, that under heavy stocking rates, cattle changed vegetation structure to the detriment of some wildlife species. The response varied by habitat. Species, such as California and antelope jack rabbits, ground squirrels and pocket gophers, increased as these animals tend to favor areas of lower cover. Meadow mice on the other hand declined because they prefer heavy cover. In a heavily grazed aspen community, the removal of a willow midstory also caused profound changes in wildlife species, depending on a species particular preferences (Page et al. 1978).

The impact of domestic livestock grazing on wildlife movements and use of habitats has been studied by several authors. Lonner and Mackie (1983) found elk avoided areas grazed by cattle and thus might be excluded from preferred food or resting grounds. This may have long term detrimental effects on herd health. On the other hand, Anderson and Scherzinger (1975) reported a 3-fold increase in elk numbers following planned livestock grazing. Loft et al. (1986) found heavy cattle grazing in a Sierra forest range caused mule deer to shift areas used for fawning and hiding cover. They also found that moderate grazing minimized effects on deer habitat, when compared to heavy grazing.

The effects of livestock grazing on tree seedlings is well documented. Unmanaged domestic livestock grazing on plantations can have negative results (Thomas 1983, Arvola 1978). However, livestock can be used as a tool to reduce unwanted vegetation on plantations (Kosco

and Bartolome 1983, Sharrow and Leininger 1982, Monfore 1983, Krueger 1985, Allen and Bartolome 1986, Thomas 1983).

The relationship between the reduction of unwanted brush or grass with the improved survival and growth of tree seedlings and the effect on specific wildlife species has not been as well documented or quantified. Wildlife species with preferences for habitats with reduced cover tend to increase (Kruse et al. 1979, Wheeler et al. 1980). However, a total elimination of the browse component has been difficult to achieve through grazing alone (Huntsinger and Bartolome 1986, Allen and Bartolome 1986). Also, as mentioned previously, the relative distribution of the wildlife habitat components has greater impact than the effects of one clearcut alone (Wallmo and Schoen 1980).

Managers can mitigate livestock impacts by recognizing that the impacts are tied to specific habitats and that the impact itself can be negative or positive depending on wildlife species of interest and management objectives. Specific management options for grazing include changing the kind of livestock or even the particular herd (Monfore 1983), altering the grazing season (Kaufmann et al. 1982), changing stocking rates and ensuring animal distribution (Allen 1986). Animals of different age classes can also cause different impacts (Thomas 1983).

The other papers on forest grazing in these transactions give specific examples of some of the impacts of forest grazing on wildlife habitat, as well as the use of grazing as a tool to meet management objectives and mitigate adverse impacts on specific wildlife species.

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