



Livestock Grazing and the Environment

Grazing by privately owned domestic livestock is the most extensive economic use of the public's lands, occurring on 260 million acres managed by the Bureau of Land Management (BLM) and U.S. Forest Service. Each year taxpayers subsidize approximately \$100 million to support grazing on public lands, yet only 1.4% of U.S. cattle producers ranch on Western BLM and Forest Service lands. These few ranchers use 92% or 163 million acres of BLM land and 69% or 97 million acres of Forest Service land (Wuerthner and Matteson, 2002).

According to numerous authorities, **livestock grazing has had and is having serious impacts on the varied resources of these federal lands.**

In vast areas of the West, domestic livestock on the public's lands are...

Overgrazing grasses and other plants

As a result of being consumed beyond their ability to renew themselves, vegetative species are disappearing from our ranges, to be replaced by unpalatable weeds, thorny shrubs and unproductive woodlands (BLM, 1989) as well as by exotic, non-native species (D'Antonio, et al., 1992). A 1994 U.S. Forest Service report concluded that livestock grazing was the 4th major cause of overall species endangerment and the 2nd major cause of plant endangerment (Belsky et al. 2002). An analysis of 54 scientific papers on the impacts of grazing on lands in the west between 1945 and 1996 found that total vegetation biomass (weight of vegetation per hectare of land) was detrimentally affected by grazing in comparison to non-grazed plots in 91% of the observations made by biologists (Jones, 2002).

Contributing to erosion and destruction of rangeland soils

Erosion is estimated to be robbing millions of acres of public lands of valuable topsoil (National Research Council, 1994). Cattle can denude land of vegetation causing greater soil erosion and they can compact soils with their hooves resulting in reduced water infiltration. The removal of vegetation also exposes the ground to greater solar radiation increasing the evaporation of moisture (Wuerthner and Matteson, 2002), leaving those plants not eaten by cattle at increased risk of dying from lack of water.

Degrading water quality and damaging riparian areas

The thin ribbons of green vegetation that border water sources and provide cover and water vital to the survival of virtually all kinds of wildlife in the water-poor West are becoming endangered as livestock use of many of these areas is changing, reducing or eliminating the vegetation on their borders, trampling their banks, degrading water quality, and increasing water temperatures (Armour, et al., 1994; U.S. Environmental Protection Agency, 1990). In fact, grazing has damaged 80% of western streams and riparian areas in the U.S. (Belsky et al., 2002). The combined action of cattle trampling soils and consuming riparian plants collapses stream banks resulting in sediment loads and channel widening. In addition, the dramatic change in the physical characteristics of affected streams modifies or terminates the natural flood regime thus inhibiting the development of cottonwood and willow gallery forests (Kauffman, 2002). The loss of vegetation and compaction of soil keeps rainwater from entering the soil and instead, during storms, causes the water to rush into streams generating high peak flows that erode stream banks and deepen channels. As a result, water tables are lowered and less water is available in the soil for the late summer, potentially drying out the riparian area (Belsky et al., 2002).

Waste from livestock is a major cause of pollution, pathogenic bacteria blooms, and reduced oxygen levels in streams. One cow excretes between 30 and 40 pounds of urine and between 29 and 70 pounds of manure a day that often is directly deposited in streams. This waste raises the levels of nitrogen and phosphorous in the aquatic environment causing algae blooms that lower dissolved oxygen levels threatening fish and other organisms. The loss of shade from cattle trampling and grazing on riparian vegetation also raises the water temperature and reduces water oxygen levels (Carter, 2002). Fish have become increasingly threatened from grazing throughout the West, including in particular native trout (Fleishner, 1994) and salmon species (U.S. Forest Service and BLM, 1994). A single cow's daily waste can also introduce harmful bacteria into waterways. Such waste can contain up to 5.4 billion fecal coliform bacteria and 31 billion fecal streptococcus bacteria. In a 1997 study of a creek in Utah's Wasatch – Cache National Forest, 0 to 16 fecal coliform bacteria per 100 milliliters of water were found upstream of a cattle-grazing area. In stark comparison, 201 fecal coliform bacteria per 100 milliliters were found downstream of the grazing area. In some small tributaries the count was found up around 1400 fecal coliform bacteria per milliliter of water (Carter, 2002).

Competing with wildlife species for food and space

In many cases, the wildlife are losing and their numbers are declining (Flather, et al. 1994). Among the species that have been and are being affected by grazing are prairie dogs, desert tortoise, Sonoran pronghorn antelope, and numerous bird species, including game birds such as sharp-tailed grouse and sagehens (Nowakowski, et al., 1982; U.S. General Accounting Office, 1991).

Bison, bighorn sheep, deer, antelope, and elk are threatened by competition with domestic cattle. Unlike these native grazers which wander from area to area, cattle will concentrate in place, particularly riparian areas, for long periods of time grazing on grasses and trampling on most vegetation. This greatly reduces the suitability of the land for natural grazers and the loss of grasses and shrubs eliminates important cover for deer and antelope fawns and elk calves from predators (Willers, 2002).

Grazing has also negatively affected Neotropical migratory land birds and their habitats (Bock, et al., 1993). The North American Breeding Bird Survey has shown that grassland birds are undergoing declines that are more widespread than any other group of birds. Cowbird populations have increased dramatically as a result of the expansion of livestock grazing due to the cowbird's preference to feed on insects flushed out by cattle. Cowbirds – which lay their eggs in the nests of other birds which usually raise cowbird nestlings at the expense of their own – have negatively impacted populations of other birds such as the plumbeous vireo and the willow flycatcher in areas where the cowbirds were once uncommon or absent. Grazing also removes refuges from predators for birds and favorable habitats for roosting and nesting by reducing the height and ground cover of grasses (Bock, 2002).

The Mexican spotted owl, a federally listed species, is threatened by grazing which eliminates habitat of its prey base. The Forest Service failed to implement its 1996 grazing standards and guidelines to protect the owl on approximately 75 percent of southwest grazing allotments. A recent study showed that Mexican spotted owl populations are declining at a rate of more than 10 percent per year.

Grazing threatens amphibians by degrading riparian areas, which are vital to frogs' and toads' breeding and survival, particularly in the arid west. The degradation of streams greatly fragments amphibian habitat. Specifically, grazing decreases vegetative cover around amphibian breeding pools and streams. Such loss in vegetation and erosion of stream banks reduces vegetative cover and decreases the amount of water flowing through from increased evaporation. Such degraded habitats expose frogs to predators and desiccation and reduce insect prey populations. Cattle trampling amphibian breeding sites can leave egg masses trapped in small pools where the eggs may freeze or the tadpoles dry out before they metamorphose into adults. In streams, increased water flows from loss of vegetation eliminate still pools important for breeding sites of such species as the Columbia spotted frog, a candidate for ESA listing (Engle, 2002).

Today, as in the past, livestock grazing on our public lands is having a host of negative ecological impacts. Our "native ecosystems [are] pay[ing] a steep price for the presence of livestock." (Fleishner, 1994).

References cited:

Anderson, D.C., K. T. Harper, and R. C. Holmgren. 1982. "Factors influencing development of cryptogamic soil crusts in Utah deserts." *Journal of Range Management* 35:180-185.

Armour, Carl, D.A. Duff, and W. Elmore. 1991. "The Effects of livestock grazing on riparian and stream ecosystems." *Fisheries*. 16:7-11.

Belsky, J., A. Matzke, and S. Uselman. 2002. "What the River Once Was: Livestock Destruction of Western Waters and Wetlands." Pages 179 – 182 in G. Wuerthner and M. Matteson, eds. Welfare Ranching: The Subsidized Destruction of the American West. Island Press, Washington, D.C.

Bock, Carl E. 2002. "Birds and Bovines: Effects of Livestock Grazing on Birds in the West." Pages 217 – 219 in G. Wuerthner and M. Matteson, eds. Welfare Ranching: The Subsidized Destruction of the American West. Island Press, Washington, D.C.

Bock, C.E., V.A. Saab, T.D. Rich, and D.S. Dobkin. 1993. "Effects of livestock grazing on Neotropical migratory landbirds in western North America." Pages 296-309 in D.M. Finch and P.W. Stangel, eds. Status and management of Neotropical migratory birds. General Technical Report RM-229. U.S. Forest Service. Rocky Mountain Forest and Range Experiment Station. Fort Collins, CO.

Bureau of Land Management. 1989. Research and Demonstration Program Plan to Restore and Maintain Native Plant Diversity on Deteriorated Rangelands in the Great Basin and Columbia Plateau. U.S. Department of the Interior, BLM, Portland, Oregon.

Carter, John. 2002. "Stink Water: Declining Water Quality Due to Livestock Production." Pages 189 – 192 in G. Wuerthner and M. Matteson, eds. Welfare Ranching: The Subsidized Destruction of the American West. Island Press, Washington, D.C.

D'Antonio, C.M. and P.M. Vitousek. 1992. "Biological invasions by exotic grasses, the grass/fire cycle, and global change." *Annual Review of Ecology and Systematics* 23:63-87.

Engle, Janice. 2002. "Silent Springs: Threats to Frog habitat from Livestock Production." Pages 207 – 208 in G. Wuerthner and M. Matteson, eds. Welfare Ranching: The Subsidized Destruction of the American West. Island Press, Washington, D.C.

Flather, C.H., L.A. Joyce, and C.A. Bloomgarden. 1994. Species Endangerment Patterns in the United States. U.S Department of Agriculture, Forest Service, General Technical Report RM-241.

Fleishner, Thomas L. 1994. "Ecological costs of Livestock Grazing in Western North America." *Conservation Biology* 8: 629-644.

Jones, Allison. 2002. "Surveying the West: A Summary of Research on Livestock Impacts." Pages 171 – 173 in G. Wuerthner and M. Matteson, eds. Welfare Ranching: The Subsidized Destruction of the American West. Island Press, Washington, D.C.

Kauffman, J. Boone. 2002. "Lifeblood of the West: Riparian Zones, Biodiversity, and Degradation by Livestock." Pages 175 – 176 in G. Wuerthner and M. Matteson, eds. Welfare Ranching: The Subsidized Destruction of the American West. Island Press, Washington, D.C.

National Research Council. 1994. Rangeland Health: New Methods to Classify, Inventory, and Monitor Rangelands. National Academy Press, Washington, DC.

Nowakowski, Nancy, P.F. Ffolliott, and D.R. Patton. 1982. "Run Wild -- Wildlife/Habitat Relationships: Livestock-Wildlife Interactions in the Southwest. U.S. Department of Agriculture. Forest Service, Southwestern Region, Wildlife Unit Technical Report.

U.S. Environmental Protection Agency. 1990. Livestock Grazing on Western Riparian Areas.

U.S. Forest Service and BLM. 1994. Environmental Assessment for the Implementation of Interim Strategies for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho and Portions of California.

U.S. General Accounting Office. 1991. BLM's Hot Desert Grazing Program Merits Reconsideration.

Wuerthner, George and Mollie Matteson. 2002. Welfare Ranching: The Subsidized Destruction of the American West. Island Press, Washington, D.C.

Willers, Bill. 2002. "Where Bison Once Roamed: The Impacts of Cattle and Sheep on Native Herbivores." Pages 241-244 in G. Wuerthner and M. Matteson, eds. Welfare Ranching: The Subsidized Destruction of the American West. Island Press, Washington, D.C.

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