

Importance of Forest Lands to Ranching in Montana

Don Bedunah and E. Earl Willard

Editor's Note: The reader may wish to refer to the article "The Future of Rangelands in Western Montana: A Rancher's Perspective" by Charles M. Jarecki, *Rangelands* 7(3) June 1985 for more information on ranching in Montana.

The timber industry has largely dominated the economy of western Montana since the late 1800s; however, private and public forested lands continue to provide a valuable grazing resource for ranchers. This paper describes these lands and summarizes the history of grazing and the importance of forest grazing in western Montana (the area west of the Continental Divide).

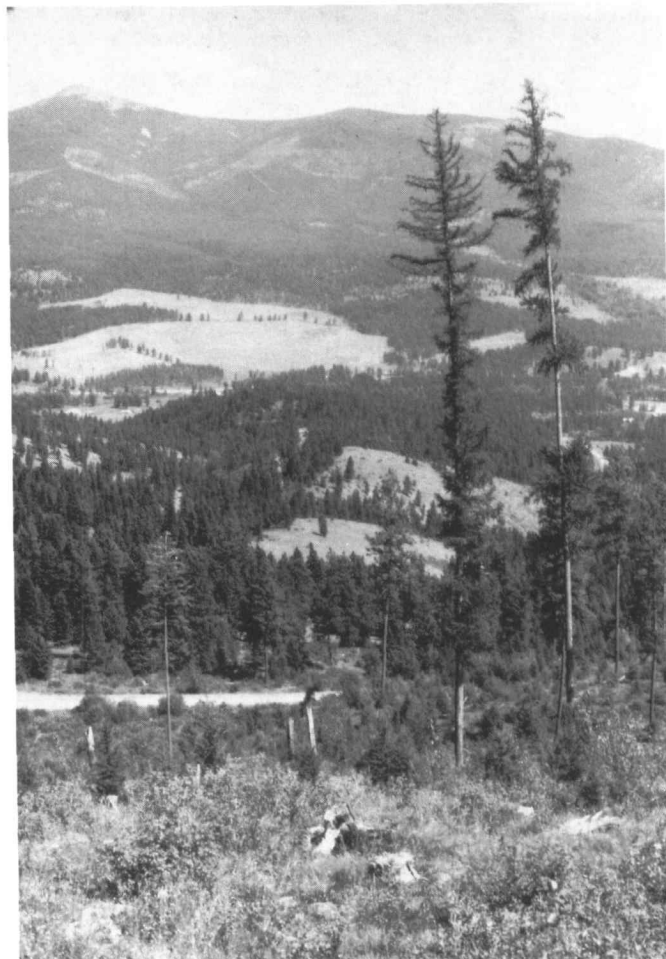
About one-half of the more than 22 million acres classified as forests in Montana are grazed by livestock for three to six months each year. Forest grazing occurs on a complex of vegetation types: mature forests, clearcuts, thinned stands, selectively logged areas, sites successional to forests, creek bottoms, open dry meadows, wet meadows and grassy slopes. The forest ranges usually encompass a series of ridges, slopes, and drainages. Sites such as creek bottoms, wet meadows, and grassy slopes are highly preferred by livestock, while forested sites and steep slopes receive less use. Mueggler (1965) found that on a 10 percent slope, with access only from the bottom, 75 percent of cattle use is likely to be within 810 yards of the foot of the slope. These factors result in an uneven livestock grazing distribution.

Livestock may be both beneficial and detrimental to the forest ecosystem. Damaging effects result from browsing on young trees, trampling or horning of trees, removal of the soil's protective layer, and soil compaction. Benefits may be exposure of mineral soil for tree establishment, decreased competition from herbaceous and shrubby species, and reduction of flammable understory vegetation.

History of Grazing in Western Montana

Livestock were first introduced into western Montana in the mid-1800s. Most ranching was on the "open range," and fences were used only to keep livestock out of crops and gardens. Many ranchers believed that forage was an unlimited resource which was there for the taking. Overgrazing became the rule by the late 1800s, especially on public lands.

The formation of large national forests in western Montana in the early 1890s was the first major action that led to control of grazing on public lands. The first forest reserve was established in 1891 and grazing fees were adopted in 1906. Control of livestock numbers and grazing trespass on these forest reserves was a difficult problem between 1900 and 1905 (Dana 1956). At first, sheep grazing was forbidden in all reserves outside of Washington and Oregon. This policy was changed in 1901 to allow sheep in portions of forest reserves



if it could be shown that sheep grazing would not be detrimental. Initially, grazing by cattle and horses was regarded as less detrimental than sheep grazing, so the former was initially subject to little control on forest reserves. In 1900, however, permits were required for all livestock. The permits were issued for a specific number of animal unit months (AUMs) on a specified area. The public land grazing permits were tied to individual private ranches with enough property to support the animals when they were not on the forest reserve. Management of livestock grazing within forest reserves continued to be a problem, but overgrazing was slowly reduced.

Livestock grazing has not had a pronounced impact on the majority of forest vegetation in western Montana (Pfister et al. 1977), although some of the most open, low-elevation forests have been overgrazed. This is especially true for the ponderosa pine series and drier habitat types in the Douglas-fir series.

Authors are associate professor and professor School of Forestry, University of Montana, Missoula 59812.

Cattle numbers in western Montana climbed from 110,000 in 1925 to 300,000 in 1982. Sheep and lamb numbers declined dramatically from 125,000 in 1925 to approximately 20,000 in 1982. Reasons for the decline include (1) lower returns and higher risks with sheep than cattle, (2) lack of competent sheep herders, (3) uncertainties in grazing allotments on public domain, and (4) application of more science and technology in competing meat and fiber industries (Ensminger 1977). In western Montana, bear, coyote and eagle predation are responsible for significant sheep losses; sheep losses from poisonous plants may also be heavy in local areas. The reduction of sheep numbers is a matter of particular concern because herded sheep can make effective use of forest lands: Sheep graze more in the forest understory than do cattle. Sheep will also feed on noxious plants such as spotted knapweed and leafy spurge.

Future trends in livestock numbers are open to speculation. Sheep numbers will probably continue to decline. The projected trend in cattle numbers during the next 50 years on the Lolo National Forest indicates a 39% increase (U.S. Forest Service 1980). Similar trends may occur on other public lands in western Montana.

Western Montana's Forested Ranges

Grazing lands in western Montana include a mosaic of rangelands, permanent forest range and transitory range.



Each type varies in terms of forage production, forage species and dependability of forage over time, and grazing capacity varies considerably from site to site. Generally, wet meadows are most productive, followed by open bunchgrass range, open ponderosa pine/bunchgrass, Douglas-fir forests, Douglas-fir/larch, larch, and Engelmann spruce/lodgepole pine forests.

Rangelands

This type which includes dry meadows, certain wet meadows, grasslands, and the alpine zone comprises less than five percent of the western Montana forest ecosystem. The major forage species on lower elevation grasslands and dry meadows are rough fescue, Idaho fescue, and bluebunch

wheatgrass. Rough fescue is found on the wetter sites, while bluebunch wheatgrass is favored on drier sites; Idaho fescue is favored by intermediate moisture conditions on cooler sites. These grasses usually mature and dry by late July or early August.

Wet meadows are flooded in the spring and may be subirrigated the rest of the year. These meadows are dominated by a mixture of grasses such as tufted hairgrass, redtop, bluejoint reedgrass and mannagrass and by sedges such as beaked sedge, Nebraska sedge and ovalhead sedge (Eddleman 1972). Forage on wet meadows usually remains green throughout the growing season. Frosts or hard freezes on upper elevation wet meadows makes the forage unpalatable in the fall. Willow, serviceberry and red-osier dogwood are often eliminated by heavy grazing on the wet meadows.

Alpine ranges are presently very lightly grazed. The low-growing grasses and sedges can be damaged by grazing, so these sites are rather fragile.

Permanent Forest Ranges

Permanent forest ranges make up only 16 percent of the forest areas in western Montana and are characterized by an open overstory of trees, with an understory of herbaceous and shrubby species (Morris 1945). Such forests are generally located at lower elevations on warm, dry sites as ponderosa pine and aspen forests and at high elevations on cold, moist sites as subalpine forests. This type provides a permanent forage supply in moderate amounts. Overstory removal in open old-growth stands will result in a moderate increase in livestock forage.

Ponderosa pine forests make up most of the permanent forest range. These forests, located at lower elevations, have a variety of understory forage species. Major species include bluebunch wheatgrass, Idaho fescue, rough fescue and pinegrass. Aspen forests are uncommon in western Montana.

Transitory Forest Ranges

Most of the range in western Montana is transitory forest. These are areas of natural forest that may furnish little livestock forage when forested. Fires or logging operations remove some or all of the trees, which allows understory species to increase for a variable period of time. These ranges are located in the Douglas-fir, western larch, spruce and subalpine fir forests. The transitory range is the major potential source of increased forage production in western Montana.

The Douglas-fir zone is the major source of transitory forest range. It is often dominated by an understory of pinegrass and elk sedge. Pinegrass has a low palatability when mature, but is grazed by cattle during spring and early summer. Elk sedge maintains its succulence longer than other plants and is considered a preferred forage plant for cattle.

Transitory forest range is temporary and becomes less productive for forage as the trees regenerate. When new areas are cut and roads constructed, the location of forage areas and patterns of livestock movement change. Data on plant succession after logging is limited. A few studies indi-

Table 1. Forest ecosystems in Montana and how they are used by livestock. (Herbel et al. 1981).

Ecosystem	Acres	% Grazed	Ac/AUM	Present Stocking (AUM)
Mountain grasslands	11,800,000	97	3.1	3,651,274
Mountain meadows	200,00	79	1.6	96,854
Wet grasslands	<100,000	79	1.5	<52,377
Alpine	300,000	70	22.2	9,450
Ponderosa pine	2,600,000	74	16.9	113,516
Douglas-fir	5,600,000	52	20.4	142,688
Lodgepole pine	6,400,000	56	90.9	39,424
Fir-spruce	2,600,000	51	35.7	37,128
Western hemlock	200,000	0	—	0
Western larch	1,300,000	41	6.9	78,351
Western white pine	100,000	48	4.2	11,232

cate that forage production for livestock can be expected to peak from a few years to perhaps 20 to 30 years after logging. Grass and forb production peaks earlier than shrub production.

In many forested areas, clearcuts are the major, and sometimes the only, source of forage for livestock. Since this is transitory forest range, the length of time during which the area will supply forage after tree harvest is a major concern to the permittee. More information is needed on the successional pattern of transitory ranges and plant materials that may improve livestock production on these areas. Timber harvesting and silvicultural practices should be planned which would maintain livestock numbers over time.

Importance of Forest Ranges to Livestock

Most ranchers in western Montana do not own substantial acreages of summer range, so they depend on grazing leases on forest lands to maintain a viable operation. Ranchers generally must supply areas for early spring grazing and fall grazing to complement summer grazing leases, which run June 1-15 through October 1-15. Hay production on private lands is an essential and integral part of the ranch units that use forest range. To some extent, future demand for forest grazing will be controlled by ranchers' ability to increase hay production. Over 1.5 million acres are considered suitable for grazing. The national forests supply about 13 percent of the forage needs during the summer. Some western Montana counties such as Flathead, Lake and Sanders have a substantial number of cattle that summer on private timber company lands and state lands. In many areas, large timber companies (especially Champion Timberlands and Burlington Northern) supply significant amounts of forage because these areas have been logged intensively and are generally accessible.

A summary of forest ecosystems in Montana and how they are used by livestock grazing is presented in Table 1. Although these figures are not limited to western Montana, they provide a perspective on relative grazing capacity of each ecosystem and the relative importance of each for grazing (percent grazed data). The western white pine, western larch and western hemlock ecosystems are all west of the Continental Divide. The grazing capacity data (Ac/AUM) indicate that western white pine and western larch ecosys-

tems have the greatest potential for forage production, provided the overstory is thinned or clearcut. The potential for increased livestock forage is considerable on many forested sites. However, more information is needed on the grazing potential of such sites after being seeded to forage species following timber harvesting and the impact of the seeding and grazing on the timber resource.

The ponderosa pine forests are generally grazed during the spring and fall. Locally, they may also be grazed during the summer, and horses often winter on this type in some areas (Eddleman and McLean 1969). The Douglas-fir forests provide summer grazing where sufficient forage is available. Higher elevation types are used later in the summer and early fall. Livestock generally move onto forest ranges in early- to mid-June and are taken off by the first of October.

The forests of western Montana supply a valuable forage resource that is often obscured by the importance of other resources, especially timber. Nevertheless, the area has historically provided forage for a viable livestock industry, which has been an integral part of the state's economy.

Literature Cited

- Dana, S.T. 1956. Forest and Range Policy: Its Development in the United States, McGraw-Hill, New York. 455 pages.
- Eddleman, L.E. 1972. Cattle in the forest. In: Forest land use and the environment (R.M. Weddie, editor). University of Montana, Missoula. P. 24-37.
- Eddlemann, L.E. and A. McLean. 1969. Herbage—its production and use within the coniferous forest. In: Coniferous forests of the northern Rocky Mountains. University of Montana, Missoula. P. 179-194.
- Ensminger, M.E. 1977. Animal Science. The Interstate Printers and Publishers, Inc. Danville, Ill. 1047 p.
- Herbel, C.H., P.L. Sims, W.A. Laycock, R.A. Evans and K.G. Renard. 1981. Range research assessment: western United States. USDA /Science and Education Rep. P NGP-36.
- Morris, M.S. (editor). 1945. Land use and control of privately owned cutover lands in western Montana. Report to Northern Rocky Mountain Section, Society of American Foresters.
- Mueggler, W.F. 1965. Cattle distribution on steep slopes. J. Range Manage. 18(5):255-257.
- Pfister, R.D., B.L. Kovalchick, S.F. Arno and R.C. Presby. 1977. Forest habitat types of Montana. Gen. Tech. Rep. INT-34. USDA Forest Service, Intermountain Forest and Range Experiment Station, Ogden, Utah. 174 pages.
- USDA Forest Service. 1980. Proposed Lolo National Forest Plan. USDA Forest Service, Lolo National Forest, Missoula, Mont.