Early Spring Grazing on Native Range

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Background

During the 1980s, Forest Service employees and ranchers on the Fort Howes Ranger District at Ashland, Montana were increasingly concerned about range condition. Traditional management strategies indicated that later turnout dates were needed. Because most of the land in the area is administered by the Forest Service, there was very little opportunity for ranchers to develop traditional tame pastures for early spring grazing. Most ranchers were faced with having to either prolong their winter hay feeding period, or retain cattle on hay meadows during the green-up period, thus damaging subsequent hay production.

In 1987, the permittees met with representatives of Montana's Public Land Council, Forest Service employees, and with Montana's Extension Service. Turn out dates were discussed, and it was decided that "early spring grazing" may not damage vegetation if the grasses were grazed before they elevated their growing points. A cooperative study to evaluate vegetation response in "spring use" pastures was initiated on three allotments. On each allotment, study plots were located in a "spring use" pasture and in a summer use pasture. The "spring use" pastures were to be grazed for a 2-3 week period in early spring. Their strategy differed from traditional management in three ways: 1) the spring-use pastures were native range, not crested wheatgrass, 2) the spring-use pastures would be grazed every spring, and 3) the spring-use pastures would be rested the remainder of the year.

Methods

In the spring of 1988, two study sites were located on each of three allotments. One site was located in the spring pasture, while a comparable site with similar vegetation and soil was located in a summer-use pasture. The study sites were about 1/10 acre in size, and were called macroplots (Fig. 1).

Plant frequency was used to monitor vegetation change during a 5-year period. The presence or absence of key species from 25 small plots or microplots (20 x 20 inches) were recorded in each macroplot. Plant species were separated into three categories on the basis of response to grazing: decreasers, increasers, and undesirables. While an increase in the frequency of decreasers would indicate an upward trend, a decline of decreasers or an increase of undesirables would indicate a downward trend. A slight shift in decreasers and/or undesirables may result from environmental variation, and would reflect a "stable" trend. Data at each study site were collected annually from 1988 through 1992.

Ground cover was also measured. A wire rod was held vertically at 8 points within each microplot, and the wire was lowered until the tip touched the ground surface. Cover at the tip of the wire point was recorded as bare ground, gravel, moss, litter, vegetation or woody fuel.

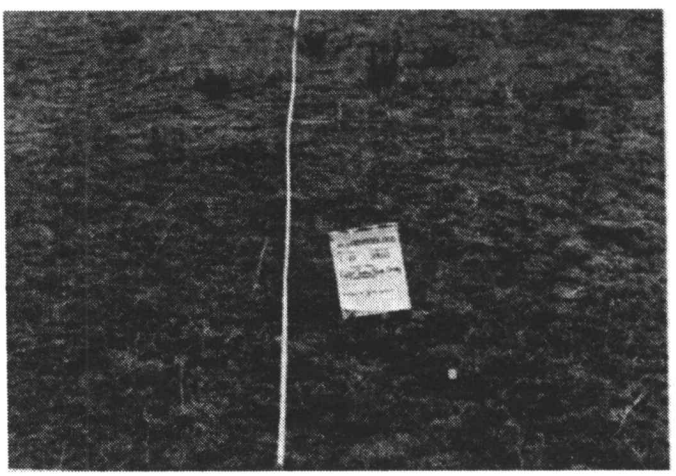

Fig. 1. *Transects were used to mark the location of macroplots and microplots. In July 1988, vegetation was stressed by drought.*

A total of 200 points were recorded per macroplot.

Results

The frequency data indicated several trends. On the Stag Rock Allotment, the small change in frequency of decreaser grasses in the spring and summer pastures resulted from sampling variation (Table 1). However, the increase in number of increaser plants from 1988 to 1992, especially combined with the decline of undesirable plants indicates an improvement in range condition (in both spring and summer-grazed pastures) (Fig 2). The improvement occurred during a 5-year period when use in the spring pasture averaged 65% and use in the summer pasture varied from 40% to 50%. The large increase of undesirable plants in the summer pasture (in 1992) was due to a Japanese brome invasion.

Frequency of decreaser plants in the spring pasture on East Tooley Allotment increased from 72 in 1988 to 89 in 1992 (Table 1). Utilization averaged about 40-50%. There

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Table 1. Plant frequency in 1988 and 1992 in "spring" and "summer" pastures on three allotments in the Ft. Howes Range District.

Kind of Plant[1]	Allotment					
	Stag Rock		East Tooley		Reanus Cone	
	Spring	Summer	Spring	Summer[2]	Spring	Summer
Decreaser or Desirable						
1988	138	111	72		93	92
1992	129	113	89		99	99
Increaser (Intermediate)						
1988	80	96	189		119	141
1992	114	108	192		165	160
Undesirable						
1988	20	15	3		102	90
1992	8	44	7		166	151

[1]Decreaser = green needlegrass, western wheatgrass, needleandthread
Increaser = bluegrama, junegrass, silver sagebrush, and fringed sagewort, big sagebrush, green sagewort, and daisy;
Invader = red threeawn, Japanese brome, broom snakeweed, cactus, phlox.
[2]Macroplot in summer pasture was relocated in 1990 because of prairie dogs.

was no major change in frequency of increasers or undesirable plants. Because prairie dogs invaded the original study site in the summer pasture, the macroplot was moved to a new location in 1990, and data are not reported.

Frequency of decreaser plants in the spring pasture on Reanus Cone Allotment increased from 93 to 99 during the 5-year period (Table 1). Frequencies of increaser and undesirable plants also increased during the period. Japanese brome made up most of the 1992 increase in undesirable plants. Because the pasture was in low-fair condition in 1988, plants were filling in the bare soil as range condition improved. Bare soil declined from 29% in 1988 to 18% in 1992 (Table 2).

The response of the plant community is not surprising. Spring grazing generally occurred prior to the elevation of grass' growing points and livestock were rotated while environmental conditions were still favorable for plant growth. With the grasses being able to grow, and the pastures rested the remainder of the year, the plant community was not harmed by the early grazing. In addition, plant response was influenced by precipitation which improved from a drought in 1988 to above-average in 1992.

Fig. 2. *Sagebrush and needlegrass dominate the plant community in the Spring Pasture on Stag Creek Allotment, August 1990.*

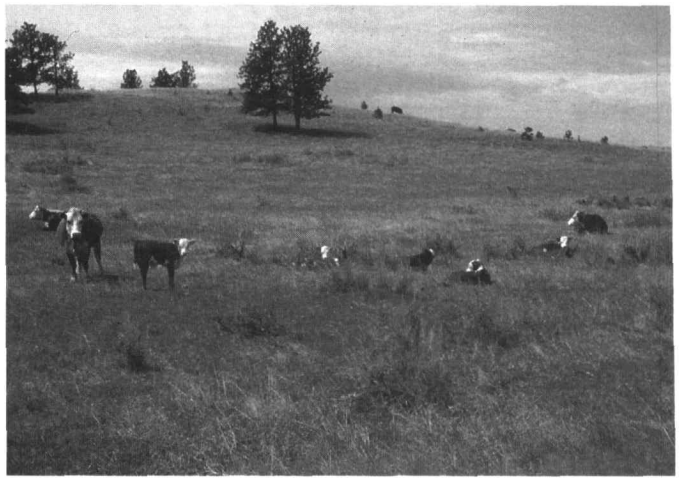

Fig. 3. *Cattle enjoying "spring" conditions on the Ashland District, Custer National Forest.*

The amount of bare ground decreased in the summer pasture on the Stag Rock Allotment (Table 2). While the other changes in ground cover characteristics (such as the increase in litter) on the allotment are encouraging, they

Table 2. Mean ground cover in 1988 and 1992 in "spring use" and "summer use" pastures on three allotments in Ft. Howes Ranger District.

Kind of Soil Cover	Allotment					
	Stag Rock		East Tooley		Reanus Cone	
	Spring	Summer	Spring	Summer	Spring	Summer
Bare						
1988	35	22	34	23	29	27
1992	32	12	22	47	18	29
Gravel						
1988	0	1	0	0	0	0
1992	0	3	0	0	0	0
Mosses						
1988	1	0	1	0	1	0
1992	0	1	0	0	0	0
Litter						
1988	43	62	38	75	47	46
1992	49	67	60	53	68	51
Vegetation						
1988	21	17	28	2	22	27
1992	18	16	17	0	15	19
Woody fuel						
1988	1	0	0	3	0	0
1992	1	1	0	0	0	1

[1] Study site in summer pasture of East Tooley was relocated in 1990 because prairie dogs moved into original study site. Therefore, 1990 and 1992 cover characteristics are shown for the East Tooley Summer Pasture.

Table 3. Mean annual vegetation cover (percent) from 1988 to 1992 in "spring use" and "summer use" pastures on three allotments in the Ft. Howes Ranger District[1].

	Allotment					
	Stag Rock		East Tooley		Reanus Cone	
	Spring	Summer	Spring	Summer	Spring	Summer
1988	21	17	28	22	22	27
1989	17	10	15	18	12	18
1990	13	8	7	3	10	10
1991	7	6	15	6	17	17
1992	18	16	17	0	15	19

[1]Vegetation hits represent a percentage of 200 ground cover estimates made per macroplot.

may be the result of precipitation or sampling variation.

The amount of bare ground also decreased, and litter increased from 1988 to 1992 in the spring pasture on the East Tooley Allotment. In contrast, from 1990 to 1992, bare ground increased while litter and vegetation cover decreased in the summer pasture. This downward trend indicates additional effort to assess, and possibly change current management is needed.

Ground cover changes also indicate an improved range condition in the Spring Pasture on the Reanus Cone Allotment (Table 2). There was less bare ground and more litter in 1992 than in 1988. These changes were less obvious in the summer pasture.

Vegetation cover (portion of soil surface covered by basal area of forbs and grasses, or by crown cover of shrubs) varied during the study period (Table 3). Most of the sites generally had more vegetative cover than what is expected (10-12 percent) for the area (Rod Heitschmidt, personal communication). The apparent decline in vegetation cover during the study period may have been influenced by the ability of plants to persist through the 1988 drought with a partial death loss the following year. In addition, because of the drought in 1988 there seemed to be a lot of bare ground, and "questionable" decisions on whether the wire point actually contacted bare ground, litter, or vegetation may have been subconsciously "called" in favor of vegetation. Because of variation in the data, our analyses also indicated that more than 200 points per macroplot were needed to obtain reliable estimates of vegetation cover.

In conclusion, we evaluated early spring grazing over a 5-year period. Monitoring indicated an upward trend in some pastures. Vegetation changes in "spring" pastures were similar to, or better than changes in the summer pastures. This indicates an "early spring" grazing treatment, if designed to meet the needs of grasses, will not adversely affect vegetation. These results are not surprising. In southeastern Montana, where soil, vegetation and grazing animals have evolved over thousands of years, native ranges can be used for early spring grazing. However, the actual grazing and rest periods must be carefully planned to meet the physiological needs of plants.