



Pronghorn, sheep and cattle range relationships in Carter County, Montana
by Roy Bruce Campbell

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE in Fish and Wildlife Management
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Abstract:

A study of pronghorn-livestock range relationships was conducted in Carter County, Montana during the summer of 1968 and from April to September, 1969. Six habitat types were distinguished. Vegetation was evaluated on four habitat types and on certain sheep pastures. Lower values for forb abundance were recorded on sheep pastures than on non-sheep pastures. Classification as to age and sex of 5,000 individual pronghorn observations indicated a summer composition of 26.6 percent males, 44.7 percent females and 28.7 percent fawns. Pronghorn densities for summer and early fall of 1968 and late spring, summer and early fall of 1969 were 2.7, 3.0, 2.2, 2.6 and 2.9, respectively. Biological data were obtained from each of 12 pronghorns collected. Weights of males continued to increase up to age 4. Physical condition indexes - showed an increase in body condition from April to September. Fences were classified in relation to pronghorn passability. Pronghorn distribution and movements were not significantly influenced by fence type, probably due to fence condition and/or open gates. Home range sizes were determined for 16 individually recognizable pronghorns. Statistical tests indicated no real difference between home range sizes of the three groups — "bachelor" males, female associations, and territorial males — however, other factors probably influenced the outcome of the tests. Pronghorn distribution, as determined from 5,000 individual pronghorn and 577 group observations was tested statistically for randomness in relation to habitat type. These tests indicated that distribution was not random and that group classification may be more meaningful as concerns evaluation of habitat use. Pronghorn group distribution was influenced by condition of vegetation, human activity, livestock use, arid past grazing history of pastures. Livestock distribution was governed by the rancher and fences. Pasture use and association data indicated a compatible prong-, horn-cattle relationship, but a non-compatible pronghorn-sheep relationship. Feeding site examinations for pronghorns, sheep, and cattle and analyses of 13 rumens from pronghorns provided food habits data. Forbs were the dominant items in the pronghorns diet all three seasons, Shrub use was greatest for spring and fall and grass use was insignificant all three seasons. Shrubs were the major items in the spring diet of sheep, whereas grasses dominated for summer and fall; Grasses were dominant all three seasons in the diet of cattle. Forb usage was. greatest for spring and summer. Shrub use was insignificant all three seasons. Agropyron smithii was the major grass used by cattle and sheep. Artemisia tridentata was preferred by pronghorns and sheep in the spring. Melilotus officinalis was preferred by pronghorns, sheep and cattle whenever available. Pronghorns generally preferred range plants with the highest crude protein levels. A progressive seasonal decline in crude protein content was noted for all plants analyzed. The low use by pronghorns for all three seasons of pastures occupied by sheep precluded any severe direct forage competition even though similarities existed in the diets. The most important aspect of pronghorn-sheep competition was the non-compatible relationship between the two which resulted in pronghorn withdrawal from 14.7 percent of the study area. Differences in pronghorn-cattle food habits and the compatible relationship between the two indicated that joint range use occurred, and as a result more efficient range use was achieved.

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Signature Roy Bruce Campbell
Date Aug 4, 1970

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IN CARTER COUNTY, MONTANA

by

ROY BRUCE CAMPBELL

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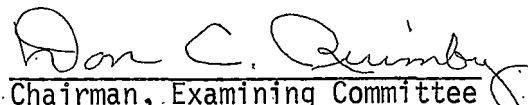
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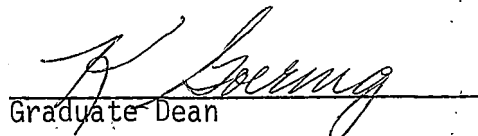
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