

## RANGELANDS

### HOW DOES TARGETED GRAZING WITH SMALL RUMINANTS INFLUENCE SUBSEQUENT PATCH USE BY MULE DEER AND CATTLE?

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**THE STORY IN BRIEF:** We monitored deer and cattle presence in juniper-infested patches that had been subjected to four different targeted grazing prescriptions. We wanted to determine whether cattle and mule deer avoided or deliberately selected rangeland patches that had been intensively grazed with sheep and goats. We installed digital cameras with infrared motion sensors in 10 plots and collected data for an entire year following the targeted grazing event. Eight of the plots had received targeted grazing treatments and two had not (controls). Four treated plots were single large patches (20 x 30 m) and four consisted of a group of six small patches (10 x 10 m) (Fig.1). Both deer and cattle avoided large patches which had been grazed by goats + sheep. These patches had received heaviest utilization of herbaceous vegetation (73.5%) the previous summer. Deer selected small patches that had been grazed by goats + sheep; whereas cattle selected large patches and avoided small patches grazed by goats alone. Cattle exhibited greatest preference for grazed patches in summer, while deer avoided grazed patches in summer and spring. The probability of mule deer presence on a given patch was reduced by cattle presence.

**THE PROBLEM:** Small ruminants are being used increasingly in controlled grazing programs which target weeds and undesired rangeland vegetation. Targeted grazing prescriptions could produce significant added value if they improved short-term forage conditions for cattle and mule deer in addition to controlling undesired rangeland plant species. However, the short-term impacts of targeted grazing treatments on cattle and mule deer foraging patterns have not been documented.

**OBJECTIVE:** To document patterns of cattle and mule deer use of juniper-infested rangeland patches following the application of targeted grazing prescriptions using small ruminants.

**EXPECTED OUTCOMES:** We expect to determine whether cattle and mule deer either select or avoid rangeland patches purposely created with targeted grazing prescriptions. In addition, we expect to determine the relationship between specific targeted grazing prescriptions and the level of subsequent use by mule deer and cattle.

**DURATION:** 2006 – 2008 (These data are preliminary)

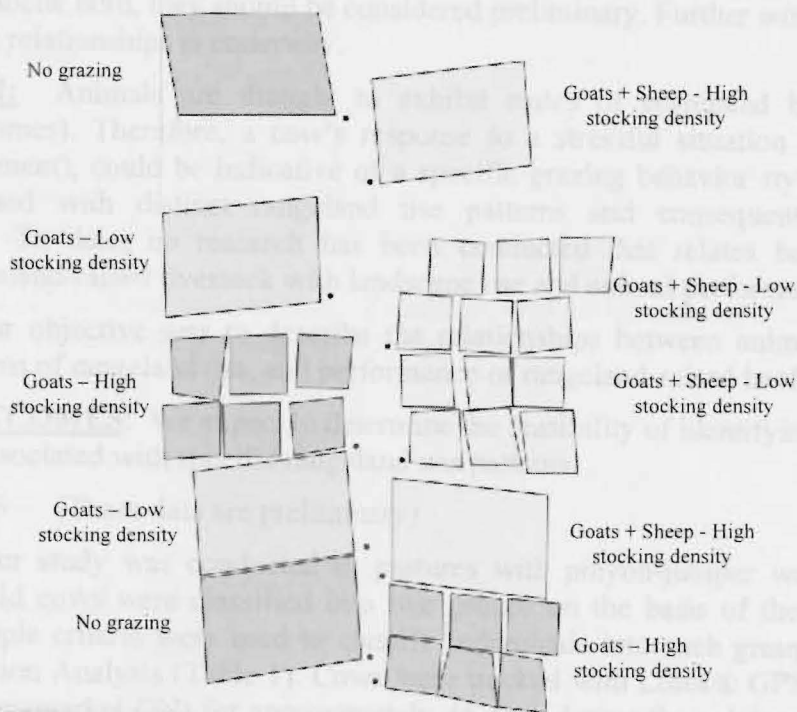
**APPROACH:** Plots on rangeland infested with one-seed juniper were exposed to high (small patches; 10m<sup>2</sup>/AU/day) or low (large patches; 60 m<sup>2</sup>/AU/day) stocking density (vs. control plots without grazing) of goats and goats plus sheep (2 replicates/treatment) during a summer targeted grazing experiment. Frequency of appearance of cattle and mule deer on these plots were determined the following winter, spring, summer, and fall

using automated cameras with infrared motion sensors. Individual counts at 2 minute intervals were used to predict selection indices (SI; i.e., frequency of animals in plots compared to controls) and model probability of deer presence in patches as a function of cattle counts.

**RESULTS:** Both deer (SI: 0.00) and cattle (SI: 0.40) avoided large patches which had been grazed by goats + sheep. These patches received heaviest utilization of herbaceous vegetation (73.5%) the previous summer. Deer selected small patches that had been grazed by goats + sheep (SI: 2.24); whereas cattle selected large patches (SI: 1.50) and avoided small patches grazed by goats alone (SI: 0.59). Cattle exhibited greatest preference for grazed patches in summer (SI: 3.18), while deer avoided grazed patches in summer (SI: 0.2) and spring (SI: 0.13). The probability of mule deer presence on a given patch was reduced by cattle presence.

**POTENTIAL APPLICATION:** Our results suggest that targeted grazing programs with small ruminants could be used to create different sized patches to improve forage conditions for either mule deer or cattle.

**EDUCATIONAL PLAN:** A detailed account of the results of this study will be submitted for publication in a peer-reviewed rangeland management journal. Our final article will be posted on the Corona Range and Livestock Research Center's web site (<http://corona.nmsu.edu>).



**Figure 1:** Diagram showing layout and relative dimensions of targeted grazing plots. The entire experiment area covered approximately one acre. Points along the central alley show the location of cameras.