

Habitat Use, Individual Performance, and Population Performance of Wild Ungulates Relative to Population Structure and Domestic Ungulate Habitat Use

Investigators

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Objectives

Determine effects of land management practices on condition and productivity of wild ungulates;
Determine effects of fine (hourly, daily) and coarse (seasonal, annual) scale livestock use patterns on distribution of mule deer and pronghorn at both fine and coarse temporal scales;
Determine productivity, survival, and cause-specific mortality patterns of mule deer and pronghorn and how these are affected by individual condition and animal distribution;
Determine population composition and population size of mule deer and pronghorn and relate these to individual animal performance;
Evaluate current and alternative population management programs for mule deer and pronghorn to assess effects on population performance and economic returns;
Define effective habitat and livestock management schemes for maximizing individual deer and pronghorn performance and consequently population production.

Location

Corona Range and Livestock Research
Center, Corona, NM

Expected Completion

December 2010

Status

A total of 25 mule deer and 25 pronghorn were captured, radio-collared, and assessed for physiological condition using ultrasonography December 2005. Deer and pronghorn have subsequently been monitored for movements, habitat use, and behavior. Aerial sightability and composition surveys of deer and pronghorn were conducted in April 2005-2006. Vegetation composition and use surveys were initiated in Summer 2006. Hunt monitoring has been continuous throughout the history of CRLRC. All project activities continue.

Progress and Results

Aerial surveys indicated mule deer densities of 12-13 deer/mile² in April 2005, higher than other population in New Mexico where comparable data is available (5-7 deer/mile²). Survey data indicated that the mule deer population declined approximately 26% from April 2005 to April 2006. Further, evidence indicates that age structure of the doe population is old; of 15 mule deer does captured during December 2005, four were aged by tooth wear as >10 years despite efforts to avoid deer that appeared aged (i.e., substantial grey/white in pelage, emaciated). Pronghorn populations were more stable than mule deer; minimum counts were 136 and 126 in 2005 and 2006, respectively.

Adult mule deer females were in poor condition on CRLRC; lactating does averaged only 5.1% ingesta-free body fat (IFBF; all does combined = 6.9%) and only 5/15 had measurable subcutaneous fat. Bucks were able to accrue significantly more subcutaneous fat than does; based on rBCS scores, fat levels in bucks averaged 8.8% IFBF. Pronghorns showed significantly less sexual dimorphism in any condition or size measures than did mule deer. In general, buck pronghorn had slightly greater amounts of subcutaneous rump fat, had thicker loin muscles, and higher rBCS scores than did does. Comparative data on pronghorn condition are not available to place condition levels at CRLRC in perspective.

Survival of both mule deer and pronghorn does (0.47 and 0.64, respectively) was extremely low, while buck survival (0.75 and 0.89, respectively) was good. Little or no precipitation during mid-late gestation resulted in high early mortality due to malnutrition for mule deer, a pattern seen previously in north-central New Mexico (see STAMP summary). Pronghorn died primarily from disease, likely enterotoxemia associated with the June green-up and later likely toxic effects of certain forages (analysis pending).