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Influence of stocking rate and weather on activity patterns of young cows: a GPS assessment

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Stocking rate is one of the most important management factors affecting the productivity of grazed rangelands. A study was conducted in central NM to evaluate the effects of two stocking rate levels and weather factors on the activity patterns of young rangeland-raised cows. Data were collected over four years by tracking 52 cross-bred cows grazing a 146 ha pasture. GPS collars were used to record and store cow position at 5-min intervals. The pasture was stocked moderately in 2004 (73 AUMs) and 2005 (78 AUMs) and lightly in 2006 (34 AUMs) and 2007 (32 AUMs). Stocking rate level significantly ($P<0.01$) affected the sinuosity and distance traveled by cows during daytime (DAY, from sunrise to sunset), pre-night time hours (PRE, from midnight to sunrise), and post-night time hours (POST, from sunset to midnight). Cows in moderately grazed treatment traveled farther than counterparts in lightly grazed treatment during DAY and PRE hours but traveled shorter distances during POST time period ($P\leq0.01$). Cows stocked moderately exhibited trajectories with higher sinuosity than that of their lightly stocked counterparts ($P<0.05$) during the three daily time periods analyzed. Young cows in moderately grazed treatment explored larger areas than counterparts in lightly grazed treatment ($P<0.01$). Cumulative precipitation, wind, and air temperature affected the distance traveled and the sinuosity of young cows regardless of the stocking rate, but their influence appeared to decrease as stocking rate increased. Lunar cycle affected the distance traveled during DAY ($P<0.05$) and the sinuosity of a cow's trajectory during PRE hours ($P<0.01$).