

Mother-infant social interactions in rangeland-raised beef cattle*Mohammed N. Sawalhah, Andrés F. Cibils and Vanessa J. Prileson**New Mexico State University, Animal and Range Sciences, MSC 31, P.O. Box 30003, Las Cruces, NM 88005, USA; acibils@nmsu.edu*

The objective of this study was to document free ranging cow-calf proximity patterns to assess whether maternal-induction of foraging behaviors is likely to be important in free ranging beef calves. Location data collected on 28 cross-bred cows and 14 calves that grazed two adjacent 219 and 146 ha pastures were used to determine the spatial and temporal relationships among range calves, their dams, and other nursing cows in the herd at two different calf ages (1 or 4 months). Cow and calf positions were recorded with GPS collars at 5-min intervals during 14 d over four grazing periods between 2009 and 2011. Association software was used to analyze GPS data and develop association matrices including all cows and calves at two different spatial thresholds (5 and 10 m). Social structure software was used to conduct cluster analysis of the association matrices using the average association option. Cows other than the dam that spent the most time in the proximity of the focal calf were considered 'babysitter' cows. Different cows performed the 'babysitter' function for a given calf on different days. Calves spent on average 11 and 21.7 h/day within 5 or 10 m of an adult cow, respectively, and spent 2.9, 8.1, and 2.1 h/day within 5 m of their dams, other adult cows, or a 'babysitter' cow, respectively. Calves spent significantly ($P < 0.01$) more time within 5 m of other cows (8.1 h/day) vs. their dam (2.9 h/day) regardless of age, and spent a similar ($P = 0.77$) amount of time within 5 m of their dam vs. the 'babysitter' cow at 1 month (1.8 vs. 2.0) but not at 4 months of age (4.2 vs. 2.1; $P = 0.02$). Calves spent more time within 5 and 10 m of their dams at 4 vs. 1 month of age (4.2 vs. 1.8 and 7.3 vs. 3.2 h/day, respectively). Cluster analyses showed higher mother-infant clustering at 4 vs. 1 month of age regardless of the spatial threshold considered. Calves spent relatively little time in the proximity of their dams, especially at a young age, and tended to have more opportunities for interaction with other nursing cows in the herd. If early life learning of foraging behaviors occurs through imitation and is a function of the time a calf spends close to an adult cow, then the influence of the dam vs. other nursing cows may be less important than previously believed.