Sociality in pre- and post-wean beef calves

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Introduction

Bonding between beef cows and their calves is well established; however, social relationships between calves is less understood. In wild ungulates, young calf integration into the natal herd is typically facilitated by its dam based in part on her pre-existing social rank and relationships. Weaning stress occurs when calves are transitioned off milk to solid feed and are commonly separated from their dam. Research is lacking on preferential relationships between calves during both the pre-wean and the post-wean periods. The objective of this study was to explore the relationships between calves during both the pre-wean and post-wean periods.

Materials and methods

Ten weeks prior to commencing observations, 40 mature Angus cows and their calves were randomly selected from a research herd, balanced for calf sex, and allocated to 1 of 2 grazing paddocks 12-15 acres in size. Beginning 2 weeks prior to weaning, live calf behavior observations were documented over 12 days, using instantaneous scan sampling between 7:00 and 12:30 or 13:00 and 18:30. This resulted in 6 scans per calf/day × 12 days (72 scans/calf). For each calf, the identity and proximity (in calf body lengths) of the calf in closest proximity (aka nearest neighbor) was noted, as well as their behavior. The same observation procedure was followed for 2 weeks after weaning (cow-calf separation). Calf sociality, defined as being within 5 calf body lengths of another calf, were recorded during the observations. A Half Weight Index (HWI) was calculated for every possible calf dyad, with greater HWI scores indicating calf dyads were observed as nearest neighbors more frequently. A generalized linear mixed model was used to investigate HWI differences. Pre- vs. post-wean by day interaction and focal calf sex were included as fixed effects. *P*-value ≤ 0.05 was considered significant.

Results

Sociality was observed in 52% of pre-wean scans and 42% in post-wean scans, respectively. Sociality was equally likely in bulls and heifers (0.012 +/- 0.0004; $P = 0.74$). A significant day by pre-/post-wean interaction was also identified ($P < 0.001$). Pre-wean HWI was higher than in the post-wean period ($P < 0.001$). There were no obvious trends across days within pre-wean calves and there were no observed differences across days for post-wean calves ($P < 0.05$).

Significance

Preliminary results provide support for individual differences in beef calf sociality pre-and post-weaning. Further analysis will explore whether preferential relationships exist between individual calves, and how these might be associated with different behavioral states.

