



*The Newsletter for
the BEHAVE Research
and Outreach Program*

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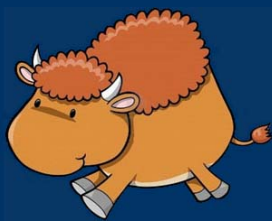
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When and Where to Roam: How Bison Make Decisions

Ryan also examined how social factors in a herd influenced when bison began to move after rest and why they chose to

Social Organization in North American Bison

The level of social organization in bison is widely debated. Some people believe bison live in extended families, while others believe social interactions among bison occur randomly. Graduate student, Ryan Shaw examined social organization in bison. One of his objectives was to determine if mother-daughter relationships are allowed to develop, do bison form long-term associations with related individuals?



Mother-daughter relationships are crucial to bison social structure

The study was conducted during spring, summer, and fall from 2007-2009 on the 350,000 acre Armendaris Ranch. Twenty-five treatment mothers were selected from the free-ranging herd. Their calves were not weaned and allowed

to stay with their mothers. Calves from 25 control females were weaned and removed from the herd, a typical practice for the Armendaris Ranch and most other bison operations.

Ryan found the strongest social associations were among mothers and their offspring. Further analysis revealed mothers and their offspring also had close associations over multiple generations. There were more mother-female than mother-male offspring relationships. Of the 27 prominent kin relationships observed, only five were with mother-male relationships.

Management Increases Stress in Young Male Bison

Ryan studied the stress levels of bison in under three different management scenarios. Male bison are typically weaned and placed in feedlots at a time when they would ordinarily be leaving their mothers and joining small bachelor groups.

Ryan looked at levels of stress for males under tight vs. loose confinement in feedlots and under free-ranging conditions. Yearling

travel in a specific direction. He found certain older females consistently made decisions for the group and initiated their direction of movement.

Of the 31 choices recorded, group direction was made by these older females 93% of the time. Furthermore, 52% of the time the direction chosen by these older females was different from the direction chosen by other group members. An entire bison group would not move after a rest period until an average of 47% of adult cows departed the main group.

Interestingly, the oldest females initiated movement after rest in 81% of cases, verifying their importance in decision-making.



Bison on the Armendaris Ranch

bison males were weaned and placed in either tight or loose confinement. The free-ranging males were weaned from their mothers and then returned to the herd. Fecal cortisol metabolites (FCM) were used as an index of stress. Pre-trial FCM were determined from samples taken prior to weaning. Fecal samples were collected every 2 weeks from mid-January to the end of April 2009.

Fecal cortisol levels were lowest for free-range bison (23 ng/g DM), intermediate for those in loose confinement (39 ng/g DM), and highest for bison in tight confinement (63 ng/g DM). FCM levels increased dramatically from pre-trial measurements through the end of the trial for bison in tight confinement. FCM did not change after weaning in free-range bison. Finally, FCM for bison in loose confinement were intermediate between free-range bison and those in tight confinement.

Collectively, these data support that: 1) bison live in extended families of mothers and their daughters and young males, 2) older females strongly influenced the initiation and direction of group movements across landscapes, 3) disruption of social dynamics greatly increases stress in young male bison.

Let me know what I can do to improve the newsletter!!

Sincerely,

A handwritten signature in cursive script that reads "Beth Burritt".

Beth Burritt
Utah State University - Department of Wildland Resources

Utah State University is an affirmative
action/equal opportunity institution

