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1-14-2022

### Effects of Environmental Gradients on the Abundance and Diversity of Helminths Across 7 Bison Herds in the Upper Midwest

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# Beef Day 2022

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## Effects of environmental gradients on the abundance and diversity of helminths across 7 bison herds in the upper Midwest

*Bradly Wehus-Tow, Jeff M. Martin, Jameson Brennan*

### Objective

Determine the effects of mean annual precipitation (MAP) and mean annual temperature (MAT) gradients on intestinal parasites (helminths) in bison translocated over the past 15 years from western South Dakota.

### Study Description

Data were collected from Wind Cave National Park and 6 satellite bison herds across the upper Midwest ranging across South Dakota, Indiana, and Kansas with a MAP gradient ranging from 34 to 82 mm and a MAT gradient ranging from 9 to 13°C. Fecal samples were collected non-invasively from 50 freshly voided bison dung patties at each herd. Helminth eggs were recovered and identified using sugar floatation; Trichostrongyle-type eggs were hatched by coproculture to identify to species. Preliminary findings indicate that general abundance of trichostrongyle-type helminths increases by 2.3 EPG per 1°C and by 0.2 EPG per mm, but *Cooperia* sp. decreases over MAT and MAP whereas *Haemonchus* sp. increases over MAT and MAP.

### Take Home Points

Knowledge generated will assist bison managers in reducing stress associated with movement and adjust expectations of production loss by selecting for animals that may be better adapted to their regions. It may also help managers to identify what species of intestinal parasites might be most prevalent in their regions based on environmental differences.

### Acknowledgements

Corissa Busse and Dr. Elizabeth Bach with The Nature Conservancy

Dr. Danielle Buttke with the National Park Service and Dr. Catherine Krus, Colorado State University

Center of Excellence for Bison Studies at South Dakota State University for project funding and support

