

**SPATIAL ECOLOGY OF NORTH AMERICAN BISON ON VERMEJO PARK RANCH, NEW MEXICO**

*Researchers.*

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*Rationale.* North American bison are often considered a keystone species due to their influence on species composition, alteration of the physical and chemical environment, and impact on spatial and temporal landscape heterogeneity. Bison do not graze in a uniform manner, instead they create both distinct grazing patches and large grazing lawns. Through these distinct grazing patterns, bison enhance forage quality and maintain landscape heterogeneity both at small- and large-scales. On Vermejo, we intend to analyze movement decisions by North American bison to better understand the primary drivers of their local distribution and grazing behavior. This study will evaluate factors that influence the size and selection of home ranges for bison on Vermejo, and the role these factors play on space use patterns; whether aggregate grazing behavior results in high-quality forage patches that free bison from the costs of migration and whether

movement decisions are timed with the emergence of green-up in spring; and finally, an assessment of overall landscape connectivity to identify movement corridors used by bison to move between habitat at high and low elevation. Addressing these questions will inform local management decision on Vermejo, provide a better understanding of bison ecology in the American Southwest, and contribute more broadly to important ecological concepts such as second-order habitat selection, the green wave hypothesis, and landscape connectivity.

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