
ELK, CERVUS ELAPHUS, RESOURCE SELECTION AND IMPLICATIONS FOR ANTHRAX MANAGEMENT IN SOUTHWEST MONTANA

Lillian R. Morris**, University of Florida, Department of Geography, Emerging Pathogens Institute, Gainesville, FL

Kelly M. Proffitt , Montana Fish Wildlife and Parks, Bozeman, MT

Valpa Asher, Turner Enterprises, Inc., Bozeman, MT

Jason K. Blackburn, University of Florida, Department of Geography, Emerging Pathogens Institute, Gainesville, FL

Anthrax, caused by the spore forming bacterium *Bacillus anthracis*, is a zoonotic disease that affects humans and animals throughout the world. In North America, anthrax outbreaks occur in livestock and increasingly wildlife species. Vaccine administration in wildlife is untenable, and the most effective form of management in wildlife is surveillance and decontamination of carcasses. Successful management is critical, as untreated carcasses can create infectious zones increasing risk for other susceptible hosts. This study focused on informing management in a re-emerging anthrax zone in southwest Montana. In 2008, a large anthrax epizootic primarily affected a domestic bison, *Bison bison*, herd and the bull segment of a free ranging elk, *Cervus elephus*, herd in southwestern Montana. Following the outbreak, we initiated a telemetry study on elk to evaluate resource selection during the anthrax season in an effort to inform anthrax management. A mixed effects generalized linear model (GLM) was used to estimate resource selection by bull elk, and habitat preferences were mapped across the landscape. Preferred habitats were overlaid on ecological niche model-based estimates of *B. anthracis* presence. We found significant overlap between areas with a high predicted probability of bull elk use and *B. anthracis* potential. These potentially risky areas of elk and *B. anthracis* overlap are broadly spread over both public and private lands. Future outbreaks in the region are probable, and this analysis identified the spatial extent of the risk area in the region, which can be used to prioritize anthrax surveillance.