Effects of Hunter Access on Hunting Season Elk Distributions in the Missouri River Breaks

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Increasing harvest of adult female elk (*Cervus elaphus nelsoni*) is the primary management tool for curtailing elk population growth and reducing elk populations. However, this tool is not effective when elk are located on private properties that restrict hunter access to elk during the hunting season. The purpose of this project was to evaluate the effects of hunter access and other landscape factors on elk resource selection during the archery and rifle hunting seasons in the Missouri River Breaks area. We sampled 46 adult female elk for 2-years in 2 adjacent populations: the Missouri River Breaks (MRB) population and the Larb Hills population. The MRB archery and rifle season elk population ranges were 97% accessible to hunters. Several large properties in the center of the Larb Hills range restricted or did not allow hunter access, and the archery and rifle season elk population ranges were 79% accessible to hunters. To quantify the effects of hunter access and other factors on elk selection of home ranges and elk selection of locations within their home range, we conducted a resource selection modeling exercise. Second-order population-level selection coefficients showed that elk in both MRB and Larb Hills selected home ranges in areas with no hunter access, and hunter access was the strongest predictor of second-order selection. Similarly, third-order population-level selection coefficients showed elk in both populations selected locations within their seasonal home range with no hunter access, and the strength of selection for locations with no hunter access was stronger in the archery season than the rifle season. However, individual models revealed that although third-order population-level selection for no hunter access was strong, only 43% of MRB elk selected for no hunter access during the archery season and 18% of elk selected for no hunter access during the rifle season. Additionally, the majority of all MRB elk locations (i.e., 68% of archery locations and 91% of rifle locations) occurred in areas accessible to hunters. In Larb Hills, individual models confirmed results of the population-level analysis, and 76% and 60% of elk selected for locations with no hunter access during the archery and rifle seasons. Even if hunter access is restricted or in a relatively small geographic area within an elk population range, elk refuge situations may have a disproportionate affect on elk distributions and prevent effective harvest of female elk to maintain elk populations at objective levels. Working cooperatively with stakeholders to minimize these situations is necessary for curtailing further elk population increases and maintaining a distribution of elk across public and private lands. If elk refuge situations cannot be resolved, stakeholders may need to choose between allowing some level of hunter access to harvest female elk or accepting higher numbers of elk, and associated property damage issues.