Delineating and Estimating Seasonal Migration patterns of Rocky Mountain Bighorn Sheep in the Mountain Valley Complex of South Central Idaho

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ABSTRACT We monitored 52 Rocky Mountain bighorn sheep from four herds across the Lemhi and Beaverhead Ranges wearing GPS collars from January 2013 to July 2015. This population exhibits spatiotemporal behavior, forays into winter range for short periods (1-3 days) and returning to summer range that complicated our interpretation of seasonal migration movements, as well of our spatial delineation of summer range. Once this behavior is accounted for methodologically, more accurate estimates are calculated and reported. We investigated and modified Net-Squared Displacement (NSD) for the purposes of identifying when and where individual sheep initiated their spring and fall migrations between seasonal ranges. On average, spring migration commenced in late April to mid-May, where an individual will have increased rates of movement for 12 days over a distance of 12.8 km (3 annual migrations). Fall migration began at the end of October to early November, when increased movements occurred over a period of 8 days, returning to winter range over a distance of 11.5 km. Inter-annual and intergroup differences were observed in the data and reported. We also overlaid maps of seasonal movement patterns onto to domestic sheep allotments, as well as intergroup movement patterns.

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