



Characterizing the Seasonal Movements of Native and Restored Bighorn Sheep: A Case for Conserving Migratory Portfolios

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ABSTRACT: Animal migrations represent the culmination of a long evolutionary history resulting in genetic, physiological, behavioral, and life-history traits that facilitate the successful interaction between individuals and biotic and abiotic factors in their environment. Once lost, attempts to restore migration generally result in diminished seasonal movements compared to historic migratory patterns. Over their broad distribution, bighorn sheep show diverse seasonal movements from resident to long-distant migrants spanning varied elevational and geographic gradients, yet much of our current understating of bighorn sheep movements stems from periodic tracking of animals instrumented with VHF collars sampled from single populations. While restoration efforts (i.e., translocations) have undoubtedly resulted in modest successes, bighorn sheep occupy only a small fraction of their former range and predominantly occur in restored populations that number fewer than 100 individuals. Although factors related to disease, competition, and habitat quality routinely inform bighorn sheep translocations, less attention has been given to seasonal movements, yet the tendency to migrate has been positively associated with translocation success. As an initial step to exploring the importance of migrations in bighorn sheep restoration, we used GPS location data to characterize the seasonal movements of over 200 female bighorn sheep across four states. Specifically, we



evaluated the presence and diversity of migratory movements between restored and native herds. We report findings from this large-scale comparative analysis spanning herds with varied demographic performance and management histories and propose stronger consideration of seasonal movements as an important component of future bighorn sheep restoration.

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