Habitat Use of Translocated Bighorn Sheep (*Ovis canadensis*) in North-Central Wyoming: Does Source Herd Matter?

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Abstract: A common strategy to conserve bighorn sheep (*Ovis canadensis*) populations is translocation into historically occupied ranges. However, many translocations have resulted in herds with low productivity, potentially due to a mismatch between source habitats and novel habitats where translocations occur. We evaluated the spatial association and habitat use patterns of bighorn sheep from three source populations that were translocated into the same habitat in Devil's Canyon, Wyoming. We used global positioning system (GPS) locations collected from sheep originating from elsewhere in Wyoming (n=9), Oregon (n=6), and Montana (n=11). Wyoming sheep were translocated in 1973 and thus were considered residents, whereas Oregon and Montana sheep were recent translocations, beginning in 2004 and 2006 respectively. We modeled the relative probability of use for each group as a function of habitat attributes using resource selection functions. Habitat associations suggested that inter-herd differences existed for several habitat attributes, indicating that the three source herds used the same novel habitat in different ways. However, spatial association analysis revealed that rams and ewes from the three groups frequently came into contact during the breeding season, due to large movements by rams. Study findings suggest that cultural differences among translocated source herds influence habitat use but not interbreeding and gene flow.

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