

Evaluation Of Habitat Selection By A Reintroduced Population Of California Bighorn Sheep (*Ovis canadensis californiana*) In South-Central Idaho

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Abstract: Translocations have proven to be a successful conservation tool for reestablishing populations of bighorn sheep in areas where they have been extirpated. The success rate, however, of these translocations has been variable, with lack of habitat being a common source of failure. Given that translocation efforts are extremely expensive and time consuming, it is vital that we maximize their success rate by gaining a better understanding of what habitat is suitable for bighorns, and also rigorously assess proposed reintroduction areas to assure that enough usable habitat is available. In February of 2000 and 2001, 45 California bighorn sheep (*Ovis canadensis californiana*) were translocated from Oregon to the Jim Sage Range in Idaho in an effort to restore them to their historic habitat. Over a 23-month period after the first release we used radio telemetry to estimate the habitat use of the sheep population. We then used GIS and the logistic regression modeling technique to compare the habitat characteristics of used sheep group locations versus the characteristics of randomly selected locations. The characteristics included vegetative composition, terrain ruggedness, distance to water sources, distance to steep slopes, slope, aspect, and elevation. We developed seasonal predictive habitat selection models based on winter ($n = 55$), lambing ($n = 130$), and summer ($n = 211$) habitat use. The habitat models correctly classified 83 – 87% of used sites. The models predicted that 35% of the Jim Sage Range contained favorable lambing habitat, 34% favorable summer habitat, and 41% favorable winter habitat. Across all seasons, distance to steep slopes significantly contributed to the presence of sheep. Otherwise, the predictive subset of variables that best described sheep habitat selection varied by season. The models can be used to determine which habitat variables are important for sheep, and to predict the amount and distribution of favorable habitat in an area. Consequently, the models can be applied to manage sheep where they currently exist, and also evaluate future reintroduction sites.