Does Population of Origin Affect Translocation Success in Bighorn Sheep?

FRANCES CASSIRER, *Idaho Department of Fish and Game, 3316 16th St., Lewiston, ID, USA 83501*

KIMBERLY ANDREWS, *Department of Fish and Wildlife Sciences, University of Idaho, Moscow, ID, USA 83844*

ERIN LANDGUTH, *Division of Biological Sciences, University of Montana, 32 Campus Drive, Missoula, MT, USA 59812*

HOLLIE MIYASAKI, *Idaho Department of Fish and Game, 4279 Commerce Circle, Idaho Falls, ID, USA 83401*

LISETTE WAITS, *Department of Fish and Wildlife Sciences, University of Idaho, Moscow, ID, USA 83844*

ABSTRACT: Since 1922, over 21,000 wild sheep have been translocated within and among states and provinces in western North America for species restoration (Western Association of Fish and Wildlife Agencies Wild Sheep Working Group). In Idaho, bighorn sheep have been translocated since the 1960's from multiple states and provinces including Oregon, Wyoming, Montana, Alberta, British Columbia, and within Idaho. Several sources are often used to reestablish a single population to increase numbers and genetic diversity. As a result, despite small founder sizes, many of Idaho's reintroduced populations have similar or greater allelic richness than native populations. However, it is unknown whether translocated individuals from different source populations contribute equally to numbers and genetic diversity. We used 10 neutral microsatellite markers to empirically evaluate the genetic composition of restored populations in Idaho, and their sources. We then simulated the expected present-day genetic composition of the re-established populations, under the assumption that translocated individuals from each source population performed equally. By comparing the empirical genetic data with the simulation results, we evaluated whether the assumption of equal fitness across translocation sources was violated, and therefore whether certain source populations were more successful than others. This analysis could help inform decisions to increase the success of future translocations.

Biennial Symposium of the Northern Wild Sheep and Goat Council 21:45; 2018

KEYWORDS Bighorn sheep; *Ovis canadensis*; restoration; translocation; microsatellite markers; genetic diversity; source herds; fitness.