Seasonal Resource Selection by Introduced Mountain Goats in the Southwest Greater Yellowstone Area

B. LOWREY, *Department of Ecology, Montana State University, Bozeman, Montana 59717 US; blake.lowrey@msu.montana.edu*

R. A. GARROTT, *Department of Ecology, Montana State University, Bozeman, Montana 59717 USA*

H. MIYASAKI , *Idaho Department of Fish and Game, Idaho Falls, ID 83401 USA*

G. FRALICK, *Wyoming Game and Fish Department, Thayne, Wyoming 83127 USA*

S. R. DEWEY, *Grand Teton National Park, Moose, WY 83012 USA*

ABSTRACT Mountain goats (*Oreamnos americanus*) are among the least studied North American ungulates. Aided by successful translocations from the early to mid-1900's, introduced populations have greatly expanded within non-native ranges, yet there remains a paucity of empirical studies concerning their habitat requirements and potential distributions. The lack of studies presents a formidable challenge to managers tasked with monitoring mountain goat expansion and mitigating for any potential negative impacts posed to native species and communities. We constructed summer and winter resource selection models using GPS data collected during 2011–2014 from 18 (14 female and four male) mountain goats in the Snake River Range of the southwest Greater Yellowstone Area. We used a generalized linear mixed-model approach and evaluated landscape and environmental covariates at multiple spatial grains within four related suites. The multi-grain resource selection function greatly improved model fit, indicating that mountain goat resource selection was grain dependent in both seasons. In summer, mountain goats largely selected rugged and steep areas at high elevations and avoided high solar radiation, canopy cover, and time-integrated NDVI. In winter, mountain goats selected lower elevations characterized by steep and rugged slopes on warm aspects and avoided areas with high canopy cover, NDVI amplitude, and snow water equivalent. Slope was the dominant predictor of habitat use in both seasons, although mountain goats selected for steeper slopes in winter than in summer. Regional extrapolations depicted suitable mountain goat habitat in the Snake River, Teton, Gros Ventre, Wyoming and Salt Ranges centered around steep and rugged areas. Winter range was generally characterized by the steepest slopes within a more broadly distributed and generally less steep summer range. Further research should examine the spatial and temporal overlap with native populations to further our understanding of resource selection dynamics and the potential for introduced mountain goats to alter intraguild behavioral processes of sympatric species, namely the Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*).

Biennial Symposium of the Northern Wild Sheep and Goat Council 20:105.

KEYWORDS mountain goats, multi-grain analysis, *Oreamnos americanus*, resource selection function (RSF); Yellowstone