Impact of Winter Backcountry Recreation on a Formerly Migratory Bighorn Sheep Population in Wyoming

ALYSON B. COURTEMANCH,[1] *Wyoming Game and Fish Department, P.O. Box 67, Jackson, WY 83001, USA and Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology, University of Wyoming, 1000 E. University Avenue, Laramie, WY 82071, USA*

MATTHEW J. KAUFFMAN, *U.S. Geological Survey, Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology, University of Wyoming, 1000 E. University Avenue, Laramie, WY 82071, USA*

STEVE KILPATRICK, *Wyoming Wildlife Federation, 2490 Horse Creek Road, Jackson, WY 83001, USA*

SARAH R. DEWEY, *Science and Resource Management, Grand Teton National Park, P.O. Box 170, Moose, WY 83012, USA*

ABSTRACT Many ungulate populations have lost or are at risk of losing their traditional migrations. The Teton bighorn sheep (*Ovis canadensis*) population in northwest Wyoming is one such example. It has lost access to its historical winter range and now resides year-round in its high-elevation summer range, wintering exclusively on windswept ridges above 3,000 m. Backcountry skiing is expanding in the Teton Range and is a growing concern for this isolated population. We sought to investigate the impacts of backcountry skiing on bighorn sheep winter habitat selection and movements. We outfitted 28 ewes with Global Positioning System (GPS) collars from 2008-2010 and collected concurrent GPS tracks of backcountry skiers. We modeled winter habitat selection for GPS-collared ewes as a function of habitat attributes and distance to backcountry ski routes using a design II resource selection function with a discrete choice model. Results indicated that distance to ski routes, elevation, snow cover, and distance to escape terrain best predicted winter habitat use. Results suggested bighorn sheep avoid backcountry ski routes even in otherwise relatively high-quality habitat. Ewes exposed to more intense skiing activity exhibited higher daily movement rates. It appears that backcountry skiing activity has further limited winter habitat for this formerly migratory population.

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[1] *E-mail: alyson.courtemanch@wyo.gov*