

PROGRESS REPORT, March 2009

Resource selection, movement, recruitment, and influence of winter backcountry recreation on bighorn sheep (*Ovis canadensis*) in the Teton Range, northwest Wyoming

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Project Overview

The Teton Range bighorn sheep herd resides year-round at high elevation in Grand Teton National Park and on the Bridger-Teton and Caribou-Targhee National Forests. It is Wyoming's smallest and most isolated native herd- a remnant population of perhaps 125-150 sheep derived from a much larger bighorn sheep complex that historically lived in northwest Wyoming. Unlike many other bighorn sheep herds in Wyoming, the Teton herd has yet to undergo a transplant to augment its numbers. However, the population's hold on the future is tenuous owing to its small size, likely isolation and the combined effects of loss of historic winter ranges, habitat alteration due to fire suppression and threats posed by increasing recreation in and near important seasonal ranges.

The overall goal of this study is to improve our understanding of how and why bighorn sheep use the Teton landscape through identifying locations, characteristics, and use patterns of seasonal habitats and movement corridors by collecting data from GPS radio-collared ewes over 2.5 years and modeling probability of use across the landscape using a resource selection function. Additionally, we aim to map historic bighorn sheep distributions in the Tetons, assess the avoidance of seasonal habitats by bighorn sheep due to winter backcountry recreation, evaluate the effects of retiring domestic sheep allotments on the herd, determine lamb production and survival to mid-summer for GPS-collared ewes, and determine causes of adult mortality. Results from this project will directly contribute to developing informed and effective bighorn sheep conservation and management strategies in the Teton Range.

Project Progress

In February 2008, we captured and GPS-collared 20 bighorn ewes in the Teton Range to initiate the study. At time of capture, 17 of 19 ewes were pregnant (1 was a yearling and not of reproductive age) and all 20 tested negative or presented low titers for 12 common bighorn sheep diseases. Of these original twenty, five died throughout 2008 (4 in avalanches and 1 from unknown cause). In response to this decrease in sample size, we decided to capture an additional 8 bighorn ewes in March 2009. We are awaiting pregnancy and disease testing results from the 8 new sheep. Currently, 23 ewes are GPS-collared in the Teton Range and collecting location data for the future resource selection analysis.

In summer 2008, field crews observed GPS-collared ewes and monitored lamb survival. We observed each collared ewe at least three times throughout the summer. We determined that 50% of lambs from collared ewes survived until at least mid-summer. Field crews also collected 60 bighorn sheep fecal samples that are presently being analyzed for diet composition.

During winter 2009, we initiated the backcountry recreation component of the study. Field crews contacted backcountry users at eight access points throughout the Teton Range five random days each week and recruited them to carry handheld GPS tracking units for the day. We have collected over 400 GPS tracks of backcountry use for this winter, which are easily transferred into a Geographic Information System (GIS) and will be incorporated into the

resource selection model to determine if bighorn sheep are avoiding human recreation areas, even if those areas are suitable habitat. Winter and summer methods will be continued through the completion of the study in December 2010.