

A Monitoring Protocol to Assess Pneumonia-caused Mortality as Limiting a Bighorn Sheep Population

E. FRANCES CASSIRER,¹ Idaho Department of Fish and Game, Lewiston, ID 83501, USA

Abstract: The role of pneumonia in bighorn sheep (*Ovis canadensis*) population dynamics is obvious when all-age dieoffs occur in large populations. However, in other situations, few if any dead animals may be recovered and the cause of population decline or stagnation may be less obvious. These include declines in small populations with few or no radio-collared animals and cases where a population is limited by low recruitment. This information is useful to focus restoration activities; however, managers often have limited time and resources to devote to monitoring cause-specific mortality. Based on information collected in Hells Canyon from 1997 to 2005 and a review of the literature, temporal patterns often are observed when pneumonia-caused mortality occurs in bighorn sheep adults and lambs. These patterns can be detected by periodic monitoring of radio-collared and unmarked animals during critical seasons. The protocol is a relatively simple and useful first step for assessing probable limiting factors in bighorn sheep populations.

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¹ E-mail: fcassirer@idfg.idaho.gov