

EVALUATION OF EWE VACCINATION AS A TOOL FOR INCREASING BIGHORN (OVIS CANADENSIS) LAMB SURVIVAL FOLLOWING PASTEURELLOSIS EPIDEMICS

E. Frances Cassirer, Idaho Department of Fish and Game, 1540 Warner Avenue, Lewiston, ID 83501

Karen Rudolph, Idaho Department of Fish and Game, Wildlife Health Lab, 16569 S. 10th Ave., Caldwell, ID 83605

Pat Fowler, Washington Department of Fish and Wildlife, 8702 N. Division Street, Spokane, WA 99218

Victor L. Coggins, Oregon Department of Fish and Wildlife, 65495 Alder Slope Road, Enterprise, OR 97828

David L. Hunter, Idaho Department of Fish and Game, Wildlife Health Laboratory, 16569 S. 10th Ave., Caldwell, ID 83605

Michael W. Miller, Colorado Division of Wildlife, Wildlife Research Center, 317 West Prospect Road, Fort Collins, CO 80526-2097

Abstract: Successful restoration and management of bighorn sheep herds has been limited by periodic pneumonia-related outbreaks. These outbreaks cause extensive all-age mortality, followed by several years of low lamb survival. This low lamb survival is presumably due to transfer of pathogenic strains of *Pasteurella* spp. from ewes to lambs.

We conducted a field experiment to evaluate whether treatment of free-ranging pregnant, bighorn ewes with a combination of an experimental sheep *Pasteurella* vaccine (Miller et al. 1997) and a commercially-available bovine *Pasteurella* vaccine (PRESPONSE®H-M, Fort Dodge Laboratories, Inc.) would increase lamb survival following a pneumonia outbreak. We assumed that pasteurellosis was the dominant source of lamb mortality in each study herd, that vaccines would enhance colostral antibody secretion in treated ewes, and that peak exposure of lambs to pasteurellosis occurred before colostral immunity completely waned.

Thirty-six bighorn ewes (12 ewes/herd) from 3 district herds in or near Hells Canyon affected by a pasteurellosis epidemic in 1995 were included in our experiment. Survival of lambs in 1996 was low in all 3 herds, with November lamb:ewe ratios of $\leq 7:100$. In March 1997, 6 randomly-selected ewes in each herd were captured, radio collared, and injected with both vaccines; 6 others were captured, radio collared, and injected with 0.9% saline solution as controls. In addition to our field study, we concurrently evaluated vaccine effects on survival of lambs born to captive ewes ($n=7$) removed from Hells Canyon during the 1995 epidemic. Lambs were observed at least weekly, and usually more frequently. Lambs were considered to have survived if they were alive in October 1997, approximately 6 months after birth. Free-ranging lamb survival differed among herds (range:22% - 100%), but survival among lambs born to vaccinated and unvaccinated ewes did not differ within herds. No captive lambs survived. In light of our findings, we reexamine our *a priori* assumptions to assess why vaccination failed to increase lamb survival in these study populations.

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