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Authors: Zarnke, Randall L., and Rosendal, Soren

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Serologic Survey for *Mycoplasma ovipneumoniae* in Free-ranging Dall Sheep (*Ovis dalli*) in Alaska

Randall L. Zarnke[1] **and Soren Røsendal,**[2] [1] Alaska Department of Fish and Game, 1300 College Road, Fairbanks, Alaska 99701, USA; [2] Department of Veterinary Microbiology and Immunology, Ontario Veterinary College, Guelph, Ontario, Canada N1G 2W1

ABSTRACT: Indirect hemagglutination tests on sera from 251 Dall sheep (*Ovis dalli*) from interior Alaska collected during the period 1979 to 1987 revealed no evidence of exposure to *Mycoplasma ovipneumoniae*. Apparently, this potentially fatal disease agent has not been introduced into free-ranging Dall sheep populations. In the interest of continued health of such Dall sheep, strict enforcement of domestic animal health regulations and prudent land use practices are clearly indicated.

Key words: *Mycoplasma ovipneumoniae*, Dall sheep, *Ovis dalli*, prevalence, serology, indirect hemagglutination test, serosurvey.

Mycoplasma ovipneumoniae caused pneumonia in 10 and death of three Dall sheep (*Ovis dalli*) at the Metropolitan Toronto Zoo (Canada) during 1986 (Black et al., 1988). Domestic sheep were believed to be the source of *M. ovipneumoniae*. Black et al. (1988) concluded that *M. ovipneumoniae* is highly pathogenic for Dall sheep and posed questions regarding the occurrence and impact of this disease agent in free-ranging Dall sheep. The objective of the present study was to determine the serum antibody prevalence of *M. ovipneumoniae* in free-ranging Dall sheep from the interior of Alaska (USA).

Blood samples were collected from Dall sheep at Sheep Creek (63°25′N, 143°50′W; n = 125), Dry Creek (63°55′N, 147°25′W; n = 112) and White Mountains (65°40′N, 141°20′W; n = 11) by Alaska Department of Fish and Game (1300 College Road, Fairbanks, Alaska 99701, USA) personnel while conducting population ecology studies during the period 1979 to 1987. Three samples were also collected from captive Dall sheep near Fairbanks (64°50′N, 147°50′W). Specimens were allowed to clot and settle for 12 to 36 hr at ambient temperatures. Occasionally, samples also were centrifuged. Sera were collected by aspiration and frozen. Indirect hemagglutination tests (Cho et al., 1976) were conducted at the Ontario Veterinary College (Guelph, Ontario, Canada N1G 2W1). A titer of $\geq$1:16 was established as indicative of previous exposure based upon results of tests involving captive Dall sheep (Black et al., 1988). Known positive and negative control sera from Dall sheep involved in the Toronto Zoo epizootic were included with each series of tests.

Results of all tests were negative. Without sampling every animal in a population, we cannot be completely certain that none of the sheep have been exposed to *M. ovipneumoniae*. However, confidence intervals for the Dry Creek and Sheep Creek populations suggest that if *M. ovipneumoniae* is present in either population, we are 95% certain that prevalence is <4% (Johnson and Kotz, 1969). Thus, free-ranging populations represented in the current study are probably immunologically naive to *M. ovipneumoniae*. If *M. ovipneumoniae* were to be introduced into these populations, significant morbidity and mortality could result. A domestic animal pathogen (parainfluenza III virus) has recently been introduced into free-ranging bison in Alaska (Zarnke, 1987). Hopefully, prudent land use practices and strict enforcement of domestic animal health regulations will prevent introduction of *M. ovipneumoniae* and other disease agents into Dall sheep populations.

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