

Johne's Disease in a Rocky Mountain Bighorn Sheep in Southeastern Wyoming, USA

SAMANTHA E. ALLEN, Wyoming Game and Fish Department, Laramie, WY, 82070, USA

JACQUELINE P. KURZ, Wyoming State Veterinary Laboratory, Laramie, WY, 82070, USA

TEAL CUFAUDE, Wyoming Game and Fish Department, Saratoga, WY, 82331, USA

HALLY KILLION, Wyoming State Veterinary Laboratory, Laramie, WY, 82070, USA

JESSICA JENNINGS-GAINES, Wyoming Game and Fish Department, Laramie, WY, 82070, USA

PEACH VAN WICK, Wyoming Game and Fish Department, Wheatland, WY, 82070, USA;

peach.vanwick@wyo.gov

KERRY SONDGEROTH, Wyoming State Veterinary Laboratory, Laramie, WY, 82070, USA

ABSTRACT: Infectious disease threats to Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*) can be a limiting factor to population growth. One of these infectious diseases, *Mycobacterium avium* subspecies *paratuberculosis* (MAP; Johne's disease), is a chronic, bacterial enteric disease primarily of domestic ruminants that causes progressive wasting and, in some species, diarrhea, and is ultimately invariably fatal. It has been documented in North American wild ruminants (bighorn sheep, mountain goat, elk, deer) since 1979; however, the prevalence and implications of this disease in free-ranging populations is unknown. In May 2021, an adult female bighorn sheep carcass was retrieved from southeastern Wyoming. Postmortem gross and histologic examination was performed at the Wyoming State Veterinary Laboratory. Lesions consistent with MAP infection were identified and included emaciation, evidence of diarrhea, and inflammation of the abdominal lymph nodes, liver, and a segment of the small intestines. Large numbers of bacteria consistent with MAP were detected within the affected segment of intestine, and the presence of fecal MAP was confirmed by polymerase chain reaction (PCR) assay. A subsequent investigation was initiated to ascertain population-level prevalence. Fecal samples were collected from the field from the same herd unit as the MAP-positive bighorn sheep carcass. All fecal samples collected (n = 73) tested negative for MAP by PCR. This baseline work suggests that while uncommon, MAP can occur in free-ranging bighorn sheep in Wyoming and represents the need to consider all disease risks threatening bighorn sheep, encourages and guides future surveillance and diagnostics, and reinforces the importance of separation of wildlife and domestic animals.

Biennial Symposium of the Northern Wild Sheep and Goat Council 24:7; 2024

KEYWORDS: disease, domestic animal, Johne's disease, *Mycobacterium avium paratuberculosis* (MAP), polymerase chain reaction (PCR), Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*), ruminant, Wyoming, Wyoming State Veterinary Laboratory.