Toxoplasma gondii and *Chlamydia abortus* Serosurveillance of Rocky Mountain Bighorn Sheep in Wyoming, USA

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ABSTRACT: Poor lamb recruitment in Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*) populations has been documented in many herds throughout parts of the western US and Canada. While respiratory pathogens definitely contribute to poor lamb recruitment, other infectious pathogens could also be playing a role. *Chlamydia abortus* and *Toxoplasma gondii* are infectious agents of domestic sheep and cattle that are known to cause abortion and stillbirth in small ruminants. While surveillance has been minimal in wildlife populations, the surveillance that has occurred did detect exposure to these pathogens in free-ranging bighorn sheep herds in the west, with *T. gondii* implicated as a causative factor in abortions and stillbirths in some free-ranging herds. Our objectives in this study were to determine seroprevalence of *C. abortus* and *T. gondii* in free-ranging bighorn sheep herds across Wyoming, USA. Serum was collected during annual bighorn sheep captures and stored at -20°C. Serum analysis was completed utilizing commercially available enzyme linked immunosorbent assays (ELISA). Antibodies to C. abortus were detected in 3 herds (Absaroka: 26.9%: 95% CI 11.9%–41.0%; Jackson: 33.3%: 95% CI: 8.4%–61.6%; Whiskey Mountain: 39.1%: 95% CI: 13.3%–61.5%), and antibodies to *T. gondii* were detected in 2 herds (Douglas Creek: 76.0%: 95% CI: 24.7%–90.6%; Ferris-Seminoe: 14.3%: 95% CI: 1.5%–42.8%). Our results suggest that these free-ranging populations were exposed to these pathogens, but it is difficult to elucidate how and when the pathogens were introduced. Continued efforts to monitor these populations, paired with submissions of any neonatal mortalities, might extend our knowledge on the significance of these pathogens, and provide some further insight into lamb recruitment.

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