An Investigation of Exposure of Bighorn Sheep to the Parasite *Toxoplasma gondii* in Idaho

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ABSTRACT: *Toxoplasma gondii* is a parasitic protozoan that can infect a diversity of vertebrates, including bighorn sheep. Members of the Felidae are the definitive hosts of *T. gondii* and spread the parasite by releasing oocysts into the environment via feces, infecting subsequent hosts when they ingest oocysts or infected tissue. Recent findings indicate that *T. gondii* infection in bighorn sheep can result in abortion and neonate loss. Work in other wildlife shows that T. gondii seropositivity is higher in urbanized areas and in older individuals because these factors are associated with a higher risk of exposure. We plan to evaluate the relationships among *T. gondii* antibody status, age, distance to urbanization, and bighorn sheep subspecies using data and blood samples collected from 179 adult and yearling bighorn sheep ewes from 8 populations in Idaho: 4 Rocky Mountain (*Ovis canadensis canadensis*) and 4 California (Ovis canadensis californiana). Antibodies to *T. gondii* were assayed by Indirect Fluorescent Antibody test. We detected exposure to T. gondii in a total of 18 bighorn sheep in 2 populations: the North Hells Canyon Rocky Mountain bighorn sheep population along the Snake River in northern Idaho and the Jacks Creek California bighorn sheep population in the Owyhee Canyonlands in southwestern Idaho. Within the North Hells Canyon herd, 12 of 12 ewes captured at a site near a town were seropositive whereas only 2 of 10 captured 40 miles up the Snake River were seropositive. Next steps include expanding our sample size to more deeply investigate spatial and temporal patterns of *T. gondii* exposure in wild sheep.

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KEYWORDS: California bighorn (*Ovis canadensis californiana*), ewe, Hells Canyon, Idaho, Indirect Fluorescent Antibody test, antibodies, Owyhee Canyonlands, parasite, Rocky Mountain bighorn (*Ovis canadensis canadensis*), *Toxoplasma gondii*.