

Testing new options for the treatment of *psoroptes ovis* in bighorn sheep

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ABSTRACT: Bighorn sheep (*Ovis canadensis*) in North America have shown significant declines after the outbreak of *Psoroptes*; a highly pruritic skin mite. Currently used medications do not last long enough to eliminate the parasite and so multiple drug applications are needed, thereby limiting their value in free-ranging wildlife situations. This study aimed to identify a treatment for *Psoroptes* that is effective and appropriate for use in free-ranging bighorn sheep. A randomized, controlled, treatment trial was performed to test the efficacy of two different anti-parasitic drugs: eprinomectin and fluralaner, using injectable, oral, and topical routes of administration. Twenty naturally infected bighorn sheep were captured and housed in two purpose-built 5-acre enclosures. Animals were monitored daily and sampled monthly to assess disease resolution following treatment through evaluation of clinical signs, microscopic skin crust analysis, and antibody titer testing. Eprinomectin, (used at 2mg/kg of an extended release solution) and the topical form of fluralaner (used at 5mg/kg and 10mg/kg) were ineffective. The oral formulation of fluralaner showed encouraging results when administered at either 5 or 25mg/kg dosages. All orally treated individuals showed resolution of clinical signs lasting for one to four months following treatment despite cohabitation with other persistently infected individuals. Due to a lack of host immunity, the treatment of entire herds is essential for disease eradication. Longer lasting effects of orally administered fluralaner present a new management option for the treatment of psoroptic mange in free-ranging bighorn sheep. The potential exists for remote application using medicated feeds, enabling a cost-effective, low-stress option for the management of this disease in affected free-ranging bighorn sheep herds.

Biennial Symposium of Northern Wild Sheep and Goat Council 22:33; 2020

KEY WORDS: Bighorn Sheep, Eprinomectin (LongrangeTM), Fluralaner (BravectoTM), Mange, *Ovis canadensis*, *Psoroptes*, Psoroptic mange
