A Real Pain in the Butt: Gastrointestinal Parasites Impact Horn Growth of Rocky Mountain Bighorn Sheep

TANISHA C. HENRY, *Department of Biological Sciences, University of Calgary, Calgary, AB, T2N 1N4, CA; tanisha.henry@ucalgary.ca*
PETER NEUHAUS, *Department of Biological Sciences, University of Calgary, Calgary, AB, T2N 1N4, CA*
KATHREEN E. RUCKSTUHL, *Department of Biological Sciences, University of Calgary, Calgary, AB, T2N 1N4, CA*

ABSTRACT: Sexual selection often leads to exaggerated secondary selected traits, such as large horns in bighorn rams (*Ovis canadensis*), which confer the bearer fitness benefits. These traits are the product of female mate choice and male-male competition for limited mating opportunities. Elaborate traits are expensive to develop and maintain, and thus an honest signal indicating the quality of an individual to potential mates and competitors. Bighorn rams establish a dominance hierarchy before the mating season, and monopolize breeding with 1 female at a time, leading to a high skew in the reproductive success of dominant males. Morphological traits such as body mass and horn length, in addition to age and social experience, are predictors of reproductive success in males. Disease limits bighorn male horn growth: however, there is a paucity of research on how parasites impact the growth of sexually selected traits in ungulates. We investigated the extent to which 6 gastrointestinal parasites as well as lungworms influence the annual horn growth of bighorn sheep. We include the number of parasite eggs shed in feces as well as the overall parasite richness for each male. We found that across age classes parasite species richness is negatively correlated with annual horn growth, while the effect of infection intensity varies with both age class and parasite species. These findings have implications for wildlife disease monitoring as well as bighorn sheep conservation initiatives.

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