Life Cycle, Distribution, And Significance Of *Parelaphostrongylus odocoilei* In Thinhorn Sheep (*Ovis dalli*)

EMILY J. JENKINS, Department of Veterinary Microbiology, Western College of Veterinary Medicine, 52 Campus Drive, Saskatoon, SK, S7N 5B4, Canada
ALASDAIR M. VEITCH, Department of Resources, Wildlife, and Economic Development, Box 130, Norman Wells, NT, X0E 0V0, Canada
ERIC P. HOBERG, Parasite Biology, Epidemiology and Systematics Laboratory, and US National Parasite Collection, BARC East, No. 1180, 10300 Baltimore Avenue, Beltsville, MD, 20715 U.S.A.
SUSAN J. KUTZ, Department of Veterinary Microbiology, Western College of Veterinary Medicine, 52 Campus Drive, Saskatoon, SK, S7N 5B4, Canada
BRETT T. ELKIN, Department of Resources, Wildlife, and Economic Development, #600 5102 50th Ave., Yellowknife, NT, X1A 3S8, Canada
LYDDEN POLLEY, Department of Veterinary Microbiology, Western College of Veterinary Medicine, 52 Campus Drive, Saskatoon, SK, S7N 5B4, Canada

Abstract: In 2000, the muscleworm *Parelaphostrongylus odocoilei* was identified in Dall's sheep (*Ovis dalli dalli*) of the Mackenzie Mountains, Northwest Territories (NWT). As *Parelaphostrongylus odocoilei* had not previously been reported in wild sheep (only in cervids and mountain goats), we began investigating the significance of this parasite in thinhorn sheep. Larvae consistent in appearance with *P. odocoilei* (molecular tests are underway) were present in fecal samples from thinhorn sheep in two "metapopulations": Eastern (the Mackenzie and Selwyn Mountains) and Western (the central Alaska and Wrangel-St. Elias ranges, and northern Rocky Mountains). *Parelaphostrongylus odocoilei* larvae were absent from thinhorn sheep populations north of the positive metapopulations. Larvae that resembled *P. odocoilei* were present at low levels in mountain goat (*Oreamnos americanus*) samples from the central Mackenzie Mountains. In addition to describing the geographic distribution, we examined seasonal patterns of larval shedding in a naturally infected Dall's sheep population in the northern Mackenzie Mountains. The prevalence of infection with *P. odocoilei* was 87-100% throughout 2000 and 2001. The pattern of larval shedding was similar for both years, with the highest levels in March/April/May, a decline through summer until August, followed by an increase in October/November to relatively high levels that were maintained over winter. In 2001, we completed the life cycle of *P. odocoilei* in an experimentally infected captive Stone's sheep (*Ovis dalli stonei*). The life cycle, pre-patent period (72 days), patterns of larval shedding, and effects (weight loss, chronic pulmonary hemorrhage, and granulomatous interstitial pneumonia) were similar to those described in experimentally and naturally infected cervids (the typical hosts). We continue to monitor the effects of *P. odocoilei* in experimentally infected Stone's sheep and a mule deer. Descriptive work on this newly discovered host-parasite relationship complements ongoing studies of population health in Dall's sheep in the Mackenzie Mountains, and will hopefully prompt others to investigate the presence and significance of this "new" parasite of wild sheep, particularly if translocations are contemplated.