

Coprological Assessment of Enteric Parasites in Argali Sheep (*Ovis ammon*), Siberian Ibex (*Capra sibirica*), and Domestic Sheep and Goats at the Ikh Nart Nature Reserve in Mongolia

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Abstract

In the spring of 2009 (April/May) the Denver Zoological Foundation in collaboration with the Mongolian Academy of Sciences conducted a field coprological assessment feasibility study at the Ikh Nart Nature Reserve in southeastern Mongolia. Our initial effort was directed at finding simple methodologies that would work consistently in the field for identifying some of the enteric parasites for argali sheep (*Ovis ammon*) and Siberian ibex (*Capra sibirica*), and then to compare these to samples from local nomad domestic fat-tailed sheep (*Ovis aries*) and cashmere goats (*Capra hircus*). Direct fecal examination yielded less eggs than the flotation techniques, but was still felt to be useful as a quick screening tool. From the flotation techniques we settled on using sugar because it appeared to yield the most eggs and sugar is readily available in Mongolia. We successfully recovered *Entamoeba* sp., *Eimeria* spp., trichostrongyles, large trichostrongyle species, *Trichuris ovis* and *Strongyloides papillosus*. We are using the digital images we captured to create a field guide for common enteric parasites found in wildlife and domestic ungulates found in the reserve. In the future, we plan to use the field guide and the quantitative modified McMaster technique to compare parasite egg-type numbers in both wild and domestic ungulates during different seasons.

Key words: *Ovis ammon*, *Capra sibirica*, domestic sheep and goats, coprological evaluation, Ikh Nart Nature Reserve

Introduction

Since 2000, the Denver Zoological Foundation, in collaboration with the Mongolian Academy of Sciences, has been conducting ecological research on a variety of species at the Ikh Nart Nature Reserve (Ikh Nart) in southeastern Mongolia. Ikh Nart was established in 1996 to protect 66,000 ha of open valleys and large maze-like rocky outcroppings in northwestern Dornogobi Aimag (Myagmarsuren, 2000; Reading et al., 2006). The region is high upland (altitude ~1,200 m) covered by semi-arid steppe vegetation. Permanent cold-water springs are available in some of the several, shallow valleys draining the reserve. The climate is strongly continental and arid, characterized by cold winters (low ~43°C), dry, windy springs, and relatively wet, hot summers (high ~35°C). Precipitation is low and seasonal, with most occurring in the summer.

The two free-ranging ungulate species we have been studying using radio-collars are argali sheep

(*Ovis ammon*) and Siberian ibex (*Capra sibirica*). Argali are listed as Appendix II by the Convention on the international Trade in Endangered Species. Nomadic pastoralists intensely graze domestic fat-tailed sheep (*Ovis aries*) and cashmere goats (*Capra hircus*) in the reserve. Periodic droughts combined with global warming also create regular poor-foraging conditions in the reserve, further stressing exotic ungulates. There is not only a strong potential for interspecific competition for nutritional resources, but also the potential for disease transmission and exchange of parasites due to shared pastures.

In the spring of 2009 (April/May), as part of our ecological research, we collected fresh fecal samples from argali, ibex, and domestic sheep and goats for coprological evaluation, in order to characterize some of the enteric pathogens associated with these ungulates. In addition to identifying the enteric parasites in both exotic and domestic sheep and goats, we wanted to create a field guide for enteric parasitic eggs to be used by