New Data Regarding the Helminth Fauna of Wild Ruminants in Primorsky Krai

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A B S T R A C T

The results of an investigation of the helminth fauna of musk deer, Siberian roe deer and Manchurian deer in Primorsky Krai are provided. Regarding the musk deer, the nematodes Spiculopteragia spiculoptera, Nematodirus filicolis, Pygarginema skrjabini and Trichuris sp. have been registered. The intensities of the infections ranged from 1 to 6 specimens. In one case, 66 specimens of P. skrjabini were found in the omasum of a musk deer. S. spiculoptera was registered in the musk deer for the first time. All of the examined roe deer were infected with helminths; S. spiculoptera dominated, and N. filicolis, P. skrjabini, Mazamastrongylus dagestanica and Dicrocoelium dendriticum were also recorded. Ostertagia antipini species and the minor morph of S. spiculoptera, “Rinadia mathevossiani”, were registered for the first time in Primorsky Krai. The Manchurian deer carried S. spiculoptera and D. dendriticum.

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Introduction

The wild ruminants of Primorsky Krai include moose (Alces alces), Manchurian deer (Cervus elaphus), sika deer (Cervus nippon), Siberian roe deer (Capreolus pygargus) and musk deer (Moschus moschiferus). There is also a small population of Amur goral (Naemorhedus goral). There are only a few publications regarding the helminth fauna of the wild ruminants of Primorsky Krai. This significant issue remains poorly studied for a number of reasons. Data regarding the helminths of the musk deer in the region were presented by Kadenazii (1958), and the results of helminthological dissections of Siberian roe deer, Manchurian deer and musk deer were reported in Oshmarin and Parukhin (1963), but these authors did not provide quantitative characteristics of the infection rates. Data regarding the gorals’ endoparasites were summarized by Voloshina and Khrustalev (1992).

The main aim of the present study was to supplement the data regarding the helminth species compositions that inhabit the abomasa and small intestines of musk deer, Siberian roe deer and Manchurian deer.

Material and Methods

Laboratory studies of the contents (matrixes) of the abomasa and small intestines that were collected from 15 individual of far-eastern musk deer, 6 Siberian roe deer and 2 Manchurian deer were conducted using standard helminthological methods.

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The collection of the samples was performed in the Terneysky District of Primorsky Krai during the snowy periods (November–February) from 2010 to 2014.

We identified the nematode species using whole mounts that were processed with a 10% aqueous solution of glycerine. We performed the species detection based on morphological features (primarily the specifics of the males' bursa and spicule structures) and information from the literature (Skryabin et al., 1954; Pryadko, 1976; Kuznetsov, 2006). We did not identify the species of the females because the morphological differences between the females of the most commonly discovered species are small.

Results and Discussion

All of the examined musk deer had single nematodes in the abomasum and small intestine contents. The intensities of infection ranged from 1 to 6 specimens. Two animals were infested only with female nematodes (2 and 4 specimens). In 2 cases, only males were found (1 and 3 specimens). The Spiculopteragia spiculoptera and Nematodirus filicolis nematode species were observed. Additionally, 2 animals had large spirurida Pygarginema skrjabini nematodes. One specimen of P. skrjabini was found in the abomasum content of one of the musk deer, and the omasum of another musk deer was infested with 66 specimens of P. skrjabini. Moreover, 2 specimens of Trichurus sp. were found in the colon of one of the musk deer.

We discovered S. spiculoptera, and this species was mentioned in any of the literature related to the helmith fauna of the musk deer (Kadenazii, 1958; Asadov, 1960; Safronov, 1961; Oshmarin and Parukhin, 1963; Gubanov, 1964; Pryadko, 1976; Prikhodko, 2003). Therefore, the musk deer has newly been identified as a host of S. spiculoptera.

All of the examined Siberian roe deer had male S. spiculoptera nematodes (from 26 to 392) in the abomasum and small intestine contents (173 specimens per animal on average). Two male specimens of the minor morph of the S. spiculoptera species “Rinadia mathevossiani” were found in one of the roe deer. “R. mathevossiani” was not previously observed in Primorsky Krai. Additionally, 3 roe deer carried male Mazamastronyulus dendriticus in numbers that ranged from 1 to 25 specimens (9 specimens per animal on average), and 2 deer had N. filicolis (1 and 12 specimens). We found 10 Ostertagia antipini nematode specimens in one of the roes, and this is the first report of O. antipini in Primorsky Krai.

The numbers of female nematodes (females were not differentiated by species) that were discovered in the abomasum and small intestine contents of the Siberian roe deer ranged from 32 to 476 specimens (238 female nematodes per roe deer on average).

In addition to the nematodes of the above-listed species, which are similar in size and morphology, we found 112 P. skrjabini nematodes in the abomasum and omasum of one of the roe deer. In addition to nematodes, we discovered the trematode Dicrocoelium dendriticum in the small intestines of 2 roe deer (2 and 20 specimens in these two deer).

The information regarding the taxonomic composition of the helmiths of roe deer that was collected from the same territory more than half a century ago (Oshmarin and Parukhin, 1963) agrees with our results in terms of only one species, D. dendriticum (junior synonym — Dicrocoelium lanceatum).

All of the nematodes that were discovered in the abomasum and small intestine contents of the Manchurian deer belonged to one species, S. spiculoptera. We discovered 179 male and 272 female S. spiculoptera in one of the Manchurian deer and 27 males and 162 females in another. Additionally, there were more than 10 specimens of the trematode D. dendriticum in the small intestine of one of the Manchurian deer.

Conclusion

The authors conducted research of the helmith fauna of the digestive tracts of 15 musk deer, 6 Siberian roe deer and 2 Manchurian deer. The musk deer were infested by S. spiculoptera, Nematodirus filicolis, P. skrjabini and Trichurus sp. The intensities of the infections of all of the reported species ranged from 1 to 6 specimens. S. spiculoptera was observed in musk deer for the first time. All of the examined roe deer were infected with nematodes, and the intensities of infection ranged from several tens to several hundreds of specimens. S. spiculoptera dominated, and N. filicolis, P. skrjabini, M. dendostanica and D. dendriticum species were also found in the roe deer. Additionally, O. antipini and the minor morph of S. spiculoptera, “R. mathevossiani”, were found in the roe deer, and these taxa were reported in Primorsky Krai for the first time. S. spiculoptera and D. dendriticum were found in the Manchurian deer.

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References


