Helminth Fauna of the Siberian Roe (Capreolus pygargus) Digestive Tract

Dmitry N. Kuznetsov a,c,*, Ivan V. Seryodkin b, Dariya A. Maksimova b, Alexander V. Khrustalev c

a A.N. Severtsov Institute of Ecology and Evolution RAS, Moscow, Russia
b Pacific Geographical Institute FEB RAS, Vladivostok, Russia
c K.I. Skryabin Institute of Fundamental and Applied Parasitology, Moscow, Russia

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A helminthological study of six adult Siberian roe deer (Capreolus pygargus) individuals from Primorsky Krai was performed. The abomasa and small intestine contents were assessed. All animals were infected with nematodes, and the intensity of infection ranged from tens to hundreds of specimens. Spiculopteragia spiculoptera was the dominant species, and Mazamastrongylus dagestanica and Nematodirus filicollis were also detected. Ostertagia antipini and a minor morph of S. spiculoptera, “Rinadia mathevossiani”, were observed for the first time in Primorsky Krai. In addition, the Spirurida nematode Pygarginema skrjabini was detected in one roe, and the trematode Dicrocoelium dendriticum was found in the small intestines of two roes.

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Pygarginema skrjabini
Dicrocoelium dendriticum

Introduction

Among Russian zoologists, the Siberian roe deer Capreolus pygargus Pallas, 1771 has been considered a subspecies of the European roe deer Capreolus capreolus Linnaeus, 1758 — Capreolus capreolus pygargus for the major part of the 20th century (Flerov, 1952; Geptner et al., 1961). This fact affected the data presentation of the helminth fauna of the roe. Extensive information about the roe helminth fauna, which was collected during the 20th century, did not distinguish between the two roe species (C. pygargus and C. capreolus) (Pryadko, 1976).

The Siberian roe is a widespread species, and there are mixed populations of C. pygargus and C. capreolus. According to the results of molecular-genetic studies, 80% of the roes in the Moscow and adjacent regions have “Siberian” mitochondrial genomes (Zvychaynaya et al., 2011). In connection with that, a helminthological study of the Siberian roe is quite important.

There is poor helminthological information about the Siberian roe deer that inhabits the Russian Far East. A study by Oshmarin and Parukhin (1963) can be considered as the only report. The authors presented the results of a roe helminthological study in Primorsky Krai, but there was no data on the quantitative rate of infection.

Our objective was to gain information about the C. pygargus helminth fauna. Our research focused on the helminth species composition and uppermost nematodes that parasitise the abomasum and small intestine. Interest in these helminths is based on the high rates of infection and species diversity. A high degree of community for the nematode species composition of different...
ruminant species is typical. Therefore, a study of Siberian roe deer helminth fauna is important to identify the helminth exchange process between wild and domestic ruminants.

Materials and Methods

Helminthological autopsy of the abomasum and small intestine of six C. pygargus adult individuals was carried out according to conventional methodology (Ivashkin et al., 1971). Data collection occurred in the Terneysky District of Primorsky Krai (Russian Far East) during the snow period (November–February) from 2010 to 2013.

We collected the contents from the abomasum and first 50 cm of the small intestine connected with the abomasum. The samples were placed in a container and covered with water in a 1:1 ratio. We also scraped off the mucous tunic of the abomasum and small intestine and placed it in a container with the contents. After 10–15 min, we decanted the supernatant and recovered the sediment with water. We repeated this procedure 3–5 times until the supernatant became transparent. Then, we fixed the sediment with 96% ethanol at a 1:1 ratio.

In the laboratory, we picked out the nematodes from the sediment using a binocular loupe. Species identification of the nematodes was made using males only because of unreliability of precise diagnostics based on females. Male species were cleared with 10% aqueous solution of glycerine in temporary whole mounts. Species identification was based on morphology, specifically on the reproductive system according to Skryabin et al., 1954; Pryadko, 1976; Govorka et al., 1988, and Kusnetsov, 2006. Because of the scarcity of data on the morphology of Nematodirus spp., we used our own keys for this genus (unpublished).

Results and Discussion

All studied individuals of C. pygargus had the nematode species Spiculopteragia spiculoptera Guschanskaia, 1931, ranging from 26 to 392 males per animal, with an average of 173 specimens per animal. One of the roe deer had two males of the minor morph S. spiculoptera species, “Rinadia mathevossianii” (Ruchliadev, 1948). Morph R. mathevossianii was found in Primorsky Krai for the first time. We also found males of Mazamastrongylus dagestanicus (Altaev, 1952), ranging from one to 25 specimens in three roe deer, with an average of nine specimens per animal. Two roe deer had one and 12 specimens of Nematodirus filicollis (Rudolphi, 1802) males. One roe had 10 specimens of Ostertagia antipini Matschulsky, 1950, and this species was observed for the first time in Primorsky Krai.

The total number of nematode females found in the abomasum and small intestine contents of C. pygargus ranged from 32 to 476 specimens, with an average of 238 nematode females per roe deer.

In addition to the nematodes listed above, which are similar in size and morphology, we found 112 nematodes of the species Pygarginema skrjabini Kadenazii, 1948 in the abomasum of one roe deer. These nematodes belong to the order Spirurida. They are relatively large at 2–2.5 cm in length. In contrast to all mentioned nematodes, which have a direct life cycle, the P. skrjabini cycle includes an intermediate host, dung beetles.

In addition to nematodes, the trematode Dicrocoelium dendriticum (Rudolphi, 1819) was found in the small intestine contents of two roe deer, with two and 20 specimens per animal.

Information about the taxonomical composition of the roe deer helminths was collected from the same area over a half of century ago (Oshmarin and Parukhin, 1963). Those results consist with our results for only one species, D. dendriticum (=Dicrocoelium lanceatum). In addition to this species, Oshmarin and Parukhin (1963) reported five species of roe deer helminths in the Sikhote-Alin Reserve, Skrabinotrema ovis, Oesophagostomum venulosum, Spiculopteragia shulzi, Dictyocaulus eckerti, and Setaria altaica.

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References


