

Short note

The helminth fauna of the serotine bat *Eptesicus serotinus* (Chiroptera, Vespertilionidae) in Southern Belarus

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ABSTRACT. The serotine bat *Eptesicus serotinus* (Schreber, 1774) as one of chiropteran species can fly, migrate and, being infected with helminths, spread these parasitic worms in their habitat. The aim of the current study was to summarize the results of own helminthological investigation of serotine bats living in Southern Belarus also establish helminth species and infection of these chiropterans. The helminthological examination of 28 serotine bat carcasses was carried out in Southern Belarus during 1996–2015. All animals were infected. The serotine bats were hosts for 12 species of helminths: six trematode species, two cestode species and four nematode species. The cestode *Vampirolepis skrjabinariana* (Skarbilovich, 1946) was the most frequently detected parasites. The trematode *Plagiorchis muelleri* Tkach et Sharpilo, 1990 has been found in Belarus for the first time. This helminth registered in Belorussian population of serotine bats as *Plagiorchis* sp. The cestode *Milina grisea* Beneden, 1873 appears as *Myotolepis crimensis* (Skarbilovich, 1946) and *Myotolepis* sp. in Belarus. All species of helminths are ordinary parasites of bats. One helminth species (*Plagiorchis vespertilionis* (Müller, 1780)) have medical significance. Three nematode species (*Ascarops strongylina* (Rudolphi, 1819), *Physocephalus sexalatus* (Molin, 1860) and *Physaloptera myotis* (Babos, 1954)) parasitize serotine bats on larval stage and two of them (*A. strongylina* and *P. sexalatus*) have important for veterinary science.

Keywords: helminths, serotine bat, *Eptesicus serotinus*, Belarus

Introduction

Bats is unique group of mainly night mammals who are capable to fly and be guided in air space by means of echolocation. The serotine bat, *Eptesicus serotinus* (Schreber, 1774), is a one of Eurasian bats. The area covers the territory from Spain and North Africa to Southeast China, and the northern border of the area reaches the coast of the Baltic Sea and Central Volga area, in the south – India and Indochina [1]. This animal lives in various landscapes, also in human settlements.

The helminth fauna of the serotine bat was studied in some European countries, for example, in Poland [2–6], Belarus [7–10], Ukraine [11–14], Moldova [15–20], Hungary [21], France [22].

The aim of the study is to summarize the results of own helminthological investigation of serotine

bats living in Southern Belarus, to establish the species of helminths and infection of these chiropterans.

Materials and Methods

The material for this report was collected during 1996–2015 in Southern Belarus (Brest region: Brest, Kamenets, Malorita and Stolin districts). A total of 28 serotine bats (13 males and 15 females) were got. The serotine bats were all killed by accidental causes: frozen to death during hibernation, died from collisions with cars, and killed by animals. All bat carcasses were in good condition and put the refrigerator for further studies.

The animals were examination by complete helminthological autopsy according to Skrjabin [23]. The identification of bat helminths were

Table 1. Helminth infections of serotine bats in Southern Belarus

Species of helminths	Prevalence %	No. helminths (min-max; total; mean)
Trematoda		
Lecithodendriidae Lühe, 1901		
<i>Lecithodendrium linstowi</i> Dollfus, 1931	46.4	1–82; 236; 18.2
<i>Ophiosacculus mehelyi</i> (Mödlinger, 1930)	3.6	150; 150; 150
<i>Paralecithodendrium ascidia</i> (Beneden, 1873)	7.1	1–7; 8; 4
<i>P. chilostomum</i> (Mehlis, 1831)	46.4	2–584; 1153; 88.7
Plagiorchiidae Lühe, 1901		
<i>Plagiorchis muelleri</i> Tkach et Sharpilo, 1990	35.7	1–24; 68; 6.8
<i>P. vespertilionis</i> (Müller, 1780)	32.1	1–5; 20; 2.2
Cestoda		
Hymenolepididae Ariola, 1899		
<i>Milina grisea</i> Beneden, 1873	14.3	3–36; 50; 12.5
<i>Vampirolepis skrjabinariana</i> (Skarbilovich, 1946)	92.9	1–300; 790; 30.4
Nematoda		
Filariidae Cobbold, 1864		
<i>Litosoma filaria</i> Beneden, 1873	3.6	1; 1; 1
Physalopteridae Leiper, 1908		
<i>Physaloptera myotis</i> (Babos, 1954), larvae	7.1	1–20; 21; 10.5
Spirocercidae Chitwood et Wehr, 1932		
<i>Ascarops strongylina</i> (Rudolphi, 1819), larvae	7.1	1–32; 33; 16.5
<i>Physocephalus sexalatus</i> (Molin, 1860), larvae	10.7	10–400; 520; 173.3

carried out using the works of some helminthologists [2–6,12,13,15–20,24,26–28].

Results and Discussion

The total rate of helminth infection of serotine bats was 100%. The animals were host for 12 species of helminths: six trematode species, two cestode species and four nematode species (Tab. 1). Infections by 2–5 species of helminths were in 89.3% of examined bats. The prevalence of trematodes, cestodes and nematodes was 78.6%, 100% and 25.0%, respectively. The range of intensity of these helminths was 1–584 for trematodes (overall mean was 74.3), 3–300 for cestodes (overall mean was 30.0) and 1–400 for nematodes (overall mean was 82.1). All species of helminths are ordinary parasites of bats and parasitize these hosts in various European countries [2–7,11–13,15–22].

All trematodes and cestodes were localized in

the intestine, nematodes in the intestinal and gastric walls (larvae of *Ascarops strongylina*, *Physocephalus sexalatus* and *Physaloptera myotis*) also in the cavity body (*Litosoma filaria*).

Three fluke species have often found in serotine bats. It is *Lecithodendrium linstowi*, *Paralecithodendrium chilostomum* and *Plagiorchis vespertilionis*. The prevalence of these helminths was 46.4% for *L. linstowi* and *P. chilostomum*, and 32.1% for *P. vespertilionis*. Maximum number of *P. chilostomum* specimens (584) was in one serotine bat. A total of 1153 specimens of this fluke were collected in serotine bats. These helminth species parasitize serotine bats on the territory of Poland, which borders the Republic of Belarus. There 44.4% of serotine bats were infected with trematode *L. linstowi*, 66.7% with trematode *P. chilostomum* and 55.6% with trematode *P. vespertilionis* [3,5]. In addition, the fluke *P. vespertilionis* found in 76.9% serotine bats examined in Lublin Province, Poland [2]. The trematode *P. vespertilionis* have medical

significance, one worm was found in man in the Republic of Korea [29].

The trematode *Plagiorchis muelleri* has been found in Belarus for the first time. Infection the serotine bat with this helminth was 35.7% in Southern Belarus. Previously, this helminth was identified in serotine bats as *Plagiorchis* sp. [8–10]. Fluke *P. muelleri* is widespread specific parasite of bats in Palaearctic region and was found in various European bat species from Ukraine, Spain, Germany, Austria, former Czechoslovakia and Poland [13].

The cestode *Vampirolepis skrjabinariana* registered most frequently detected parasites. The prevalence of this helminth in serotine bats was 92.9%. The number of parasites varied from 1 to 300 specimens. This cestode often infect serotine bat populations in Europe. For example, 55.6% of serotine bats were infected with this helminth in Poland [5], 64.2% in Moldova [15].

Another tapeworm *Milina grisea* found in 14.3% of serotine bats. This helminth is widely spread in Palaearctic bats [21,28]. So, 58.3% of serotine bats infected by this parasite in Hungary [21], 55.6% in Poland [5], 22.9% in Moldova [15]. This tapeworm featured as *Myotolepis crimensis* (Skarbilovich, 1946) and *Myotolepis* sp. in Belorussian population of serotine bats [9,10].

The nematode *L. filaria* is rare helminth species parasitize serotine bats in Southern Belarus. Only one specimen of this parasite was found in male of serotine bat from Brest district. The nematodes *A. strongylina* and *P. sexalatus* are very important for veterinary science and known to occur in pigs [30]. Serotine bat infection was 7.1% for larvae of *A. strongylina* and 10.7% for larvae of *P. sexalatus* in Southern Belarus (Tab. 1). The infection rate of these chiropterans can reach 8.9% (*A. strongylina*, larvae) and 15.1% (*P. sexalatus*, larvae) as in Moldova [19].

In conclusion, all studied serotine bats were infected with helminths in Southern Belarus. Twelve helminth species parasitize these animals (six trematode species, two cestode species and four nematode species). The cestode *Vampirolepis skrjabinariana* was the most frequently detected parasites. The trematode *Plagiorchis muelleri* has been found in Belarus for the first time. The cestode *Milina grisea* appears as *Myotolepis crimensis* and *Myotolepis* sp. in Belarus. The trematode *Plagiorchis vespertilionis* have medical significance, and nematodes *Ascarops strongylina* and *Physocephalus*

sexalatus have important for veterinary science.

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