

Parasitological Fauna and Food Ties of Minks in Conditions of Nature Habitat



Safiullin Rinat T^{1*}, Kriuchkova Elena N², Abalihin Boris G² and Sokolov Evgeniy A³

¹PhD in Veterinary Science, Professor, Leading researcher, All-Russian Scientific Research Institute for Fundamental and Applied Parasitology of Animals and Plants named after K.I. Skryabin, Russia

²PhD in Veterinary Science, Professor, Russia

³Candidate of Veterinary Science, Russia

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*Corresponding author: Safiullin Rinat T, All-Russian Scientific Research Institute for Fundamental and Applied Parasitology of Animals and Plants named after K.I. Skryabin, Russia

Abstract

In the result of research of 132 minks, including 107 American and 25 European a new type of parasite has been discovered. American minks (*Mustella vison*) were infected 14 types of helminths: among which from trematodes class- 2, cestodes- 1, nematodes- 11. 11 types of helminths were found in European minks (*Mustella lutreola*): from trematodes class- 3, from nematodes- 8. Studies of food residues in the gastrointestinal tract of the noted representatives of the mustelids family made it possible to establish food connections of the noted predators with populations of vertebrates and invertebrates- intermediate and additional hosts of various helminths, which explain the high efficiency of nematodes, trematodes and cestodes.

Keywords: European minks; Extensiveness of the invasion; Nematodes; Trematodes; Cestodes; Food connections with intermediate and additional hosts; Commercial hunting; Natural biocenosis; Parasitology; Tailless amphibians

Introduction

On the territory of the European part of the Russian Federation, most representatives of the marten family are objects of sport and commercial hunting. Some of them are bred in fur farms (mink, polecat), others are kept at home as ornamental animals. Close human contacts with different types of predators, which increase with the development of urbanization processes, increases the role of the latter as a sources of dangerous invasions (trichinellosis, echinococcosis, etc.) [1-6]. Animals are infected with all types of helminths exclusively through the digestive tract.

The purpose of this work is to study the food spectrum of the European (*Mustella lutreola*) and American (*Mustella vison*) mink, as well as to identify the food relationships of these predators in the natural biocenosis of the Central Non-Black Earth Region of Russia.

Materials and Methods

Experiments were carried out on 132 minks, including 107 American and 25 European, obtained from hunters from Ivanovskaya (86 and 24 heads, respectively), Vladimirkaya

(7 heads), Smolenskaya (2 heads), Moscow (6 heads) and Kostroma regions (1 and 1 goals) in 2000- 2019. At the same time, muscle tissue, internal organs, chest and abdominal cavities, the gastrointestinal tract and food residues in it were examined according to the methods generally accepted in parasitology.

Research Results and Discussion

The American and European mink belong to the ecological group of semi-aquatic predatory animals. This feature of biology determines the spectrum of their nutrition. Bones and skin of tailless amphibians (frogs) were found in the digestive tract of 27 minks, bones and hair of mouse like rodents were found in the stomach of 12 individuals, eggs and fragments of the chitin cover of crayfish were found in 4 individuals, bones and feathers of birds were found in 2 individuals, and bones and feathers of birds were found in 2 individuals. bones and scales of fish, in one case - the wings of a hymenopteran insect, in 2 - the remains of plant tissues.

A wide range of mustelids feeding on aquatic and terrestrial animals, which are intermediate hosts of helminths, contributes

to the spread of parasitic diseases among them (Table 1). Thus, 14 species of helminths were found in the American mink. The class of trematodes was represented by *Echinochasmus perfoliatus* (extensity of invasion reached 54.2% with an invasion intensity of 2-17 specimens in the field of view of the microscope) and *Paragonimus vestermani* larvae (EI = 0.9%); cestode-*Mesocestoides lineatus* (EI=1.9%, AI=2 specimens); nematodes-*Uncinaria stenocephala* (EI=18.6%, AI=4- 18 specimens), *Crenosoma petrovi* (EI=4.6%, AI=3-6 specimens), *Cr. vulpis*

(EI=3.7%, AI=2 – 10 specimens), *Cr. taiga* (EI=28.9%, AI=2-10 specimens), *Thominx aerophilus* (EI=6.5%, AI=4-15 specimens), *Capillaria putorii* (EI=2.8%, AI=2- 14 specimens), *Ancilostoma caninum* (EI=0.9%, AI=3 specimens), *Filaroides martis* (EI=1.8%, AI=3- 8 specimens), *Skryabingylus nasicola* (EI=2.8 %, AI=3- 8 copies). *Trichinella spiralis* (larvae) (EI=2.8%, AI=1-5 specimens) and *Trichinella pseudospiralis* larvae (EI=0.9%, AI=3-12 specimens).

Table 1: Helminth fauna of the American and European mink in the Central Non-Black Earth Region of Russia.

Type of Pathogen	American Mink			European Mink		
	Infested, number	EI, %	II, number	Infested, number	EI, %	II, number
Class Trematoda						
<i>Echinochasmus perfoliatus</i>	58	54,2	2- 17	5	20	3-159
<i>Paragonimus vestermani</i> (larvae)	1	0,9		1	4	
<i>Nanophyetus salminicola</i>	-	-	-	2	8	7-9
Class Cestoda						
<i>Mesocestoides lineatus</i>		1,9	2	-	-	-
Class Nematoda						
<i>Uncinaria stenocephala</i>	20	18,6	4 -18	7	28	2-14
<i>Crenosoma petrovi</i>	5	4,6	3- 6	3	12	2- 4
<i>Crenosoma vulpis</i>	4	3,7	2-10	1	4	1- 9
<i>Crenosoma taiga</i>	31	28,9	2-10	2	8	2- 5
<i>Thominx aerophilus</i>	7	6,5	4-45	4	16	3-6
<i>Capillaria putorii</i>	3	2,8	2-14	2	8	3-11
<i>Ancilostoma caninum</i>	1	0,9	3	-	-	-
<i>Filaroides martis</i>	2	1,8	3-8	-	-	-
<i>Skryabingylus nasicola</i>	3	2,8	3-8	-	-	-
<i>Filaroides martis</i>	-	-	-	1	4	4
<i>Trichinella spiralis</i> (larvae)	3	2,8	1-5	1	4	1- 4
<i>Trichinella pseudospiralis</i> (larvae)	1	0,9	3-12	-	-	-
<i>Trichinella pseudospiralis</i>	1	0,9	53	-	-	-

The European mink was infested with 11 helminth species, including *E. perfoliatus* (EI=20%, AI=3-159 ind.), *P. vestermani* larvae (EI=4%), *Nanophyetus salminicola* (EI=8%, AI= 7-9 specimens), *U. stenocephala* (EI=28%, AI=2-14 specimens), *Cr. petrovi* (EI=12%, AI=2-4 sp.), *Cr. vulpis* (EI=4%, AI=1- 9 specimens), *Cr. taiga* (EI=8%, AI=2- 5 specimens), *T. aerophilus* (EI=16%, AI=3-6 specimens), *Capillaria putorii* (EI=8%, AI=3- 11 specimens) , *Tr. spiralis* (larvae) (EI=4%, AI=1- 4 specimens), *Filaroides martis* (EI=4%, AI=4 specimens).

Conclusion

The revealed food relations of European (*Mustella lutreola*) and American (*Mustella vison*) mink with populations of

vertebrates and invertebrates- intermediate and additional hosts of various helminths, explain the high degree of infection of the mink with such parasitosis as echinocasmosis, crenosomiasis, uncinariosis and tominxosis.

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