HELMINTHS FAUNA EPIDEMIOLOGIC ASSESSMENT IN THE HOUSE MOUSE (*Mus musculus* Linaeus, 1758)

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Abstract. *Mus musculus*, along with all rodents, is one of the largest group of mammals in the world, living in a variety of terrestrial habitats, including human-made environments. The epidemiological importance of these mammals is transmitting of some serious pathogenic agents to human. Rodents can be infected by a large number of parasitic cestodes, protozoa, and nematodes that may cause infectious diseases in human. The aim of this ecoparasitological study is the house mouse epidemiological helminth fauna assessment. The epidemiologic characteristic reveals 2 categories of parasitic species (zoonotic, rodent characteristic). Zoonotic species include 1 species of the Trematoda class (*Plagiorchis elegans* – 12.9%), 3 species of the Cestoda class (*Mesocestoides lineatus larvae* – 6.5%, *Taenia taeniaeformis larvae* – 6.5%, *Taenia pisiformis larvae* – 9.7%), 3 species of the Secernentea class (*Syphacia obvelata* – 32.3%, *Syphacia stroma* – 12.9%, *Strongyloides ratti* – 12.9%), 1 species of the Adenopforea class (*Capillaria hepatica* – 12.9%). From the category of rodent specific parasitic species, a total of 7 species were found, including 3 species of the Cestoda class (*Skrjabinotaenia lobata* – 9.7%, *Paranoplocephala omphaloides* – 6.5%, *Catenotaenia cricetorum* – 6.5%), 3 species of the Secernentea class (*Heligmosomoides polygirus* – 3.2%, *Mastophorus muris* – 25.8%, *Rodentolepis straminea* – 3.5%), and 1 species of the Adenoforea class (*Trichuris muris* – 12.9%). The zoonotic risk to humans is found in 6 parasitic nosiological entities, including 4 imaginal helminthiasis – plaghiorchiosis *(P. elegans*), syphasiosis (*S. stroma, S. obvelata*), strongyloidiasis (*S. ratti*), capillariasis (*C. hepatica*), and 2 larval helminthiasis – strobilocercosis (*T. taeniaeformis larvae*), mesocetoidiasis (*M. lineatus*). This research aims to establish the house mouse role of the parasitic species transmission in the zoonotic and epizootic chains. The study contributes to a better understanding of the parasitic infection's dynamics, providing data for the parasitozoonosis diseases on human and animal health prevention and control.

Keywords: parasite species, *Mus musculus*, house mouse, biotopes.

Rezumat. Evaluarea epidemiologică a helmintofaunei la șoarecele de casă (*Mus musculus* Linaeus, 1758). *Mus musculus* de rând cu toate rozătoarele este încadrat în cel mai mare grup de mamifere la nivel mondial, trăind într-o varietate de habitate terestre, inclusiv în medii antropice. Importanța epidemiologică a acestor mamifere constă în rolul lor de vectori ai unor agenți patogeni gravi pentru om. Rozătoarele pot fi infectate cu un număr mare de cestode, protozoare și nematode parazite, iar unele pot provoca boli infecțioase la om. Scopul acestui studiu ecoparazitologic prevede evaluarea epidemiologică a helmintofaunei la șoarecele de casă. Caracteristica epidemiologică denotă 2 categorii de specii parazitare (zoonotice, caracteristice rozătoarelor). Din categoria speciilor zoonotice fac parte 1 specie din clasa Trematoda (*Plagiorchis elegans* – 12.9%), 3 specii din clasa Cestoda (*Mesocestoides lineatus larvae* – 6.5%, *Taenia taeniaeformis larvae* – 6.5%, *Taenia pisiformis larvae* – 9.7%), 3 specii din clasa Secernentea (*Syphacia obvelata* – 32.3%, *Syphacia stroma* – 12.9%, *Strongyloides ratti* – 12.9%), 1 specie din clasa Adenopforea (*Capillaria hepatica* – 12.9%). Din categoria speciilor caracteristice rozătoarelor s-au constatat în total 7 specii, inclusiv 3 specii din clasa Cestoda (*Skrjabinotaenia lobata* – 9.7%, *Paranoplocephala omphaloides* – 6.5%, *Catenotaenia cricetorum* – 6.5%), 3 specii din clasa Secernentea (*Heligmosomoides polygirus* – 3.2%, *Mastophorus muris* – 25.8%, *Rodentolepis straminea* – 3.5%) și 1 din clasa Adenoforea (*Trichuris muris* – 12.9%). Riscul zoonotic pentru om este constat la 6 entitități nozologice parazitare, inclusiv 4 helmintoze imaginale – plaghiorchioza (*P. elegans*), sifacioză (*S. stroma, S. obvelata*), strongiloidoza (*S. ratti*), capilarioza (*C. hepatica*) și 2 helmintoze larvare – strobilocercoza (*T. taeniaeformis larvae*), mesocestoidoza (*M. lineatus*). Prin această cercetare, se urmărește stabilirea rolului șoarecelui de casă în transmiterea acestor specii în lanțurile zoonotice și epizootice. Studiul contribuie la o mai bună înțelegere a dinamicii infecțiilor parazitare, oferind date referitoare la prevenirea și controlul bolilor parazitozoonozelor asupra sănătății umane și animale.

Cuvinte cheie: specii parazitare, *Mus musculus*, șoarecele de casă, biotopuri.

INTRODUCTION

Rodents are considered as the largest group of mammals in the world; these creatures live in a variety of terrestrial habitats, including human-made environments. They breed prolifically and are highly compatible to various environments (PARSHAD 1999).

Mus musculus (Linaeus, 1758) is a species with a wide global distribution and a notable presence in the Republic of Moldova. It has a high ecological plasticity, manifested by the extremely wide diversity of habitats with their change depending on the seasons. This species has a significant impact both on natural ecosystems and human activities (MUNTEANU et al., 2021). Ecologically, House mouse plays a significant role in ecosystems as a food source for many species of birds and mammalian predators (LARION et al., 2021). The main importance of these mammals is their potential of transmitting some serious pathogenic agents to human (KHATOON et al., 2004).

The house mouse's synanthropic lifestyle with frequently human and domestic animals contact, represent a public health threat in both urban and rural habitats (MEERBURG, 2006; NEIDERUD, 2015). The human infection can occur through direct contact with rodent excretions or consumption of contaminated food (by fur, feet, urine, faeces), and indirectly by ectoparasite vectors' bites (fleas, ticks). The carnivorous animals (fox, dogs, cats) infection occurs through the direct consumption of infected rodents (HILL et al., 2002; ECKERT et al., 2004; KAPEL et al., 2006).

According to World Health Organization reports, most emerging and re-emerging infectious diseases affecting humans are zoonotic in nature, transmitted from animals to humans (WORLD HEALTH ORGANIZATION, 2018).

These reports show that zoonotic diseases, in particular those associated with rodents and other wild animals, pose a significant risk to public health and human welfare (DASZAK et al., 2000; CLEAVELAND et al., 2001). Thus, some papers report that small rodents can transfer more than 60 known diseases to humans, and the list is still growing (KHATOON et al., 2004). Mice can be infected by a large number of parasitic cestodes, protozoa, and nematodes which may cause infectious diseases in human (CLAVERIA et al., 2005).

Parasitic agents are an integral part of natural biocenoses, playing a crucial role in the biosphere by directly contributing to the formation and regulation of biodiversity (POULIN et al., 2004; HORWITZ et al., 2005). The helminths interacting with various groups of animals through diverse ecological connections, form parasite-host biosystems with enhanced bioecological stability, thereby ensuring the continuous perpetuation of the species (TĂLĂMBUȚĂ et al., 2008; ȘUTEU et al., 2011; KRIVOPALOV, 2011).

As a result of the aforementioned considerations, we conclude that monitoring the parasitic fauna of the house mouse is of major importance, given that small rodents play a key role in the evolutionary cycles of parasites as definitive, intermediate hosts, or vectors.

Consequently, monitoring the parasitic fauna of the house mouse is essential, as small rodents serve as hosts (definitive, intermediate, vectors) in the life cycles of various parasites.

The **aim** of this ecoparasitological study is the house mouse epidemiological helminth fauna assessment, focusing on the bioecological, nosological, and zoonotic characteristics identification. Additionally, the study seeks to host role determine of the parasitic species transmission in zoonotic and epizootic chains.

MATERIALS AND METHODS

Small rodents were collected in the period 2015–2023, from different natural and anthropized biotopes from Northern, Central and Southern Area of the Republic of Moldova. The biotopes were characterized of forest strips, the edge of wheat/corn fields, meadows, ponds, and roadside limits. The capture of the specimens was carried out by placing 100 live traps at a distance of 5 m from each other. This methodology is recommended for biotopes with a well-developed sub-tree floor and abundant grass cover (NISTREANU et al., 2021).

The parasitological studies were carried out on 31 *M. musculus* specimens (12♀, 19♂) following euthanasia with *Chloroform pro narcosi* solution, that inhibits conductivity at the cardiac centers, inducing a rapid and painless death without suffering, within the laboratory of Parasitology and Helmintology, Institute of Zoology, Moldova State University. Laboratory investigations were performed by total rodent dissection and microscopic examination of the muscles (masseter, arms and diaphragm muscles), of thoracic organs (trachea, lungs, heart) and of abdominal organs (esophagus, stomach, intestine, colon, liver, spleen, kidney, urinary bladder) to establish parasitological indices (ROMASHOV et al., 2003). Species identification was determined according morphological criteria (RYJIKOV et al., 1978, 1979). The degree of infestation with *Capillaria hepatica* was determined by volumetric estimation of the affected portion of the liver (+ constitute 25,0%, ++ – 50,0%, +++ – 75,0%, ++++ – 100%). The taxonomic classification was carried out according to the data provided by several sources indicated in the Table 1. The parasitological evaluation was performed by determining the infection frequency (infected animals/total animals), and the degree of spread (prevalence, %). The results were statistically processed in the *Excel* software.

RESULTS AND DISCUSSIONS

Mus musculus is a species with a global distribution and is widely spread in the Republic of Moldova, having a significant impact on both nature and human life. It presents an important zoonotic and epizootic risk, as a host for a wide range of parasitic species. The diversity and prevalence of parasites are influenced by ecological factors and interspecies interactions. For this reason, parasitological research is important for dynamics understanding of the zoonotic diseases and developing strategies for rodent population control, and the management of parasitic zoonosis outbreaks.

Research on the epidemiological of house mouse helminth fauna assessment has emphasized a high taxonomic diversity. Thus, the taxonomic structure of the helminth fauna is classified into 4 classes, 12 families, 14 genera, and 15 species (Table 1).

The results of laboratory investigations on the quantification of helminth fauna indices indicate a high level of infection (Table 1). The prevalence of *Plagiorchis elegans* is 12.9%, followed by *Skrjabinotaenia lobata* at 9.7%, *Catenotaenia cricetorum* at 6.5%, *Taenia taeniaeformis* larvae at 6.5%, *Taenia pisiformis* larvae at 9.7%, *Mesocestoides lineatus* larvae at 6.5%, *Paranoplocephala omphaloides* at 6.5%, *Rodentolepis straminea* at 3.5%, *Syphacia obvelata* at 32.3%, *Syphacia stroma* at 12.9%, *Heligmosomoides polygirus* at 3.2%, *Mastophorus muris* at 25.8%, *Strongyloides ratti* at 12.9%, *Trichuris muris* at 12.9%, and *Capillaria hepatica* at 12.9%. The total infection index is 61.3% (infected animals).

Regarding the frequency index (Table 1), it is observed the highest level is found in *Syphacia obvelata* with 10/31 (infected animals/total animals), followed by *Mastophorus muris* – 8/31, *Plagiorchis elegans* – 4/31, *Syphacia stroma* – 4/31, *Strongyloides ratti* – 4/31, *Trichuris muris* – 4/31, *Capillaria hepatica* – 4/31, *Skrjabinotaenia lobata* – 3/31, *Taenia taeniaeformis* larvae – 3/31, *Taenia pisiformis* larvae – 3/31, *Mesocestoides lineatus* larvae – 2/31, *Catenotaenia cricetorum* – 2/31, *Paranoplocephala omphaloides* – 2/31, *Rodentolepis straminea* – 2/31, *Heligmosomoides polygirus* – 1/31. The total frequency is 19 infected out of 31 examined specimens.

Table 1. Taxonomic structure and parasitological indices quantification in *Mus musculus.*

Taxons			Indices	
Class	**Family**	**Species**	**Frequency (nr)**	**Prevalence (%)**
Trematoda	*Plagiorchidae*	*Plagiorchis elegans* (Rudolphi, 1802)	4	12.9
Cestoda	*Catenotaeniidae*	*Skrjabinotaenia lobata* (Baer, 1925)	3	9,7
		Catenotaenia cricetorum (Kirshenblatt, 1949)	2	6.5
	Taeniidae	*Taenia taeniaeformis larvae* (Batsch, 1786)	3	9.7
		Taenia pisiformis larvae (Bloch, 1780)	3	9.7
	Mesocestoididae	*Mesocestoides lineatus larvae* (Goeze, 1782)	2	6.5
	Anoplocephalidae	*Paranoplocephala omphaloides* (Herman, 1783)	2	6.5
	Hymenolepididea	*Rodentolepis straminea* (Goeze, 1782)	2	3.5
Secernentea	*Oxyuridae*	*Syphacia obvelata* (Rudolphi, 1802)	10	32.3
		Syphacia stroma (Linstow, 1884)	4	12.9
	Heligmosomidae	*Heligmosomoides polygirus* (Dujardin, 1845)	1	3.2
	Spirocercidae	*Mastophorus muris* (Gmelin, 1790)	8	25.8
	Strongyloididae	*Strongyloides ratti* (Sandground, 1925)	4	12.9
Adenophorea	*Trichuridae*	*Trichuris muris* (Scrank, 1788)	4	12.9
	Capilariidae	*Calodium hepaticum* (Bancroft, 1893)	4	12.9
https://www.gbif.org/dataset/90d9e8a6-0ce1-472d-b682-3451095dbc5a [21.03.2025] Taxonomic tree of plants and animals with photos | BioLib.cz [21.03.2025] Taxonomy browser (root) [21.03.2025]				

Knowledge of nosologically aspects is essential for investigating the impact of helminth fauna on the health of the house mouse and, ultimately, for identifying potential pathological effects and understanding how infections may influence host populations involved in the biological cycle. Our results show the **nosological characteristic** which includes 3 categories of 14 total helminthiases: 1 (14.29%) trematodiasis (plagiorchiasis), 5 (35.72%) cestodiases (strobilocercosis, mesocestoidiasis, paranoplocephalosis, catenoteniasis, skrjabinoteniasis), and 7 (50.00%) nematodiases (syphacioisis, strongyloidiasis, capillariasis, heligmosomiasis, trichuriasis, rodentolepiasis, mastophorosis).

A detailed literature review shows that 1415 species of infectious organisms known to be pathogenic to humans, including 868 (61%) are considered zoonotic, including 165 (19%) viruses and prions, 269 (31%) bacteria and rickettsiae, 113 (13%) fungi, 43 (5%) protozoa and 278 (32%) helminth species (TAYLOR et al., 2001).

The **epidemiological characteristic** (Table 2) denotes 2 categories of parasitic species (zoonotic, rodent-specific). The 8 zoonotic species (53.34%) include 1 species from the Trematoda class (*Plagiorchis elegans*), 3 species from the Cestoda class (*Mesocestoides lineatus* larvae, *Taenia taeniaeformis* larvae, *Taenia pisiformis* larvae), 3 species from the Secernentea class (*Syphacia stroma*, *Syphacia obvelata*, *Strongyloides ratti*), and 1 species from the Adenophorea class (*Capillaria hepatica*). The category of rodent-specific species (46.67%) includes a total of 7 species, including 3 species from the Cestoda class (*Skrjabinotaenia lobata*, *Paranoplocephala omphalodes*, *Catenotaenia cricetorum*), 3 species from the Secernentea class (*Heligmosomoides polygyrus*, *Mastophorus muris*, *Rodentolepis straminea*), and 1 species from the Adenophorea class (*Trichuris muris*).

Table 2. Epidemiologic characteristics of the helminth fauna.

Impact	Taxons				Total
	Trematoda	**Cestoda**	**Secernentea**	**Adenoforea**	
Zoonotic	*P. elegans*	*M. lineatus* *T. taeniaeformis* *T. pisiformis*	*S. stroma* *S. obvelata* *S. ratti*	*C. hepatica*	**8 species**
Rodents	-	*P. omphalodes* *C. cricetorum* *S. lobata*	*H. polygyrus* *R. straminea* *M. muris*	*T. muris*	**7 species**

The bioecological analysis of the identified parasitic species highlights zoonotic species such as *Plagiorchis elegans* from the Trematoda class, which in its adult stage parasitizes of the definitive hosts stomach (birds, reptiles, bats, small rodents, humans), and in its larval stage, it parasitizes of the aquatic gastropod tegument (*Lymnaea stagnalis*) as an intermediate host, followed by the larvae of *Culex* mosquitoes as a complementary host (BOCK et al., 1987). The species *Mesocestoides lineatus* and *Taenia taeniaeformis* from the Cestoda class parasitize of the canid's intestines (*Canis lupus*, *Vulpes vulpes*, *Felis catus*) in the adult form. While the metacestode (*Strobilocercus fasciolaris*) parasitizes of the rodents and humans' liver and the peritoneal cavity, in the larval form. *Capillaria hepatica* is a nematode that parasitizes the liver of rodents, lagomorphs (leporids), swine, carnivores, primates, and humans. Carnivores serve as mechanical vector hosts, transporting and spreading the parasitic forms (https://www.cfsph.iastate.edu/Factsheets/pdfs/taenia.pdf). *Syphacia stroma* and *S. obvelata* are also ageohelminths, which parasitizes of the rodents and humans small and large intestine (MAHMOUD et al., 2009, https://www.cfsph.iastate.edu/Factsheets/pdfs/taenia.pdf).

The epizootic impact is characteristic of the species *Taenia pisiformis* larvae – a cestode that parasitizes in the intestines of carnivores (*C. lupus*, *V. vulpes*, *F. catus*) in the adult stage, while the larval stage, localizes on the viscera and of the rodents peritoneal cavity (https://www.cfsph.iastate.edu/Factsheets/pdfs/taenia.pdf).

Rodent-specific species such as biohelminths *Skrjabinotaenia lobata*, *Paranoplocephala omphaloides*, *Catenotaenia cricetorum*, and *Rodentolepis straminea* of the Cestoda class, but the larval form (cysticercoid) parasitize in intermediate hosts (*Tenebrionidae*, *Oribitidae*, *Tyroglyphidae*), while the adult form parasitize of the rodents' intestines. On the other hand, *Heligmosomoides polygirus* and *Trichocephalus muris* are species of geohelminths that parasitize of the rodents' intestines (WALKEY et al., 1980, RUSHWORTH et al., 2016). *M. muris* is a biohelmint that larval form parasitizes in the intermediate hosts (*Geotrupes stercorarius*, *Tenebrio molitor*), while in the adult stage parasitizes of the rodents' intestines (SMITH et al., 2011).

Thus, helminth fauna bioecological characteristics contribute to the detailed analysis of the development process, transmission to different hosts (definitive, intermediate, vector), survival/development in the surrounding environment, and the relationship with ecological factors (habitat, climate, trohicity).

Rodents are known to transmits diseases and act as a reservoir host for many zoonotic pathogens, including varios groups of protozoan and helminths parasites that pose a health risk to humans (MUSTAPHA et al. 2019; TAYLOR et al., 2001). The major zoonotic parasites in rodents belong to 5 groups: Protozoa, Trematoda Nematoda, Cestoda, and Acanthocephala (MEERBURG et al., 2009, PARAMASVARAN et al., 2009, CHEN et al., 2012). Zoonotic parasites are separated into 4 categories, such as direct-zoonotic, meta-zoonotic, cyclo-zoonotic, and sapro-zoonotic parasites. Direct zoonotic parasites infect humans directly from animals. Meta-zoonotic parasites can infect humans from invertebrate intermediate host. Cyclo-zoonotic parasites have vertebrate intermediate hosts. Sapro-zoonotic parasites mean that parasites can be infected to humans from soil or water (IONESCU, 2005; YOUN, 2009). In this context, the **zoonotic characteristic** (Table 2) of the helminth species identified in *M. musculus* includes: 3 species of direct zoonotic helminths (37.5%) from the Secernentea class (*Syphacia obvelata*, *Syphacia stroma*, *Strongyloides ratti*); 1 species of **sapro-zoonotic** helminths (12.5%) from the Adenophorea class (*Capillaria hepatica*); 1 species of **meta-zoonotic** helminths (12.5%) from the Trematoda class (*Plagiorchis elegans*); and 3 species of **cyclo-zoonotic** helminths (37.5%) from the Cestoda class (*Taenia taeniaeformis* larvae, *Taenia pisiformis* larvae, *Mesocestoides lineatus* larvae).

Table 2. Zoonotic characteristic of helminths.

Categories	Taxons				Total	
	Trematoda	Cestoda	Secernentea	Adenophorea	Species	%
Direct zoonotic	-	-	*S. obvelata* *S.stroma* *S.ratti*	-	3 species	37.5
Sapro-zoonotic	-	-	-	*C. hepatica*	1 species	12.5
Meta-zoonotic	*P. elegans*	-	-	-	1 species	12.5
Cyclo-zoonotic	-	*T.taeniaeformis* *T. pisiformis* *M. lineatus*	-	-	3 species	37.5
Total	1 specie	3 species	4 species	1 species	8 species	100

Previous date shows the humans zoonotic risk of the 6 parasitic nosiological entities, including 4 imaginal helminthiasis – plaghiorchiosis *(P. elegans*), syphasiosis (*S. stroma*, *S. obvelata*), strongyloidiasis (*S. ratti*), capillariasis (*C. hepatica*), and 2 larval helminthiasis – strobilocercosis (*T. taeniaeformis* larvae), mesocetoidiasis (*M. lineatus*).

Similar previously parasitological studies were conducted (1960–1970) which revealed 6 zoonotic species (*Mesocestoides lineatus larvae* – 0.62%, *Taenia hydatigena* larvae – 0.62%, *Taenia taeniaeformis larvae* – 13.75%, *Alveococcus multilocularis larvae* – 0.62%, *Trichinela spiralis* – 1.87%, *Syphacia obvelata* – 17.54%), and 11 rodents specific species (*Mathevotaenia symmetrica* – 2.5%, *Skrjabinotaenia lobata* – 3.12%, *Rodentolepis straminea* – 1.25%, *Trichuris muris* – 2.5%, *Heligmosomum azerbaidjani* – 0.62%, *H. polygyrum* – 1.25%, *H. skrjabini* – 2.53%, *Mastophorus muris* – 0.62%, *Aspiculurus tetraptera* – 6.87%, *A. sculzi* – 1.87%) on *M. musculus* in the territory of the Republic of Moldova (ANDREYKO, 1973, 1984).

Recent similar studies of the helminth fauna epidemiologic characteristic which reveal 2 categories of parasitic nozological entities, including 4 zoonoses (syphaciosis – 20.0%, strongyloidiasis – 15.%, strobilocercosis 10.0%, capillariasis – 15.0%), and 7 rodents specific parasitoses (paranoplocephalosis – 10.0%, catenoteniosis – 5.0%, skrjabinoteniosis – 10.0%, rodentolepiosis – 5.0%, heligmosomosis – 5.0%, tricurosis – 15.0%, mastophorosis – 20.0%), are noted in *Apodemus uralensis* (Pallas, 1771) from Republic of Moldova (CHIHAI et al., 2022). Another report show 3 nosiological entities categories: 2 zoonotic parasitosis such as syphaciosis – 38.7%, strongyloidiasis – 12.9%, 3 mixed parasitosis (zoonotic+epizootic) as mesocestoidosis – 12.9%, strobilocercosis (*T. taeniaeformis larvae)* – 12.9%, capillariasis – 22.6%) and 7 rodents specific parasitic species as catenoteniosis – 6.5%, skrjabinoteniosis – 22.5%, rodentolepiosis – 19.3%, heligmosomosis – 19.4%, tricurosis – 22.5%, mastophorosis – 29.0% identified in the host *Microtus arvalis* (Pallas, 1778) from Republic of Moldova (CHIHAI et al., 2021).

Thus, our results indicate an increase invasion index, compared to previous years. This is likely due to the fallow areas with conditions favorable for the development of small rodents. At the same time, the considerable increase in the number of foxes (10 times), whose diet predominantly consists of small rodents (MUNTEANU et al. 2004, 2014; SAVIN et al., 2017), may also contribute.

Other papers report 3 zoonotic parasitic species (*Taenia taeniaeformis* larvae – 1.37%, *Syphacia obvelata* – 23.29%, *Capillaria hepatica* – 5.48%), and 7 rodents' specific species (*Brachylaima* sp. – 5.48%, *Aspiculuris tetraptera* – 21.92%, *Mastophorus muris* – 13.70%, *Nippostrongylus brasiliensis* 6.85%, *Heterakis spumosa* 17.81%, *Trichuris muris* – 2.74%, *Heligmosomoides polygyrus* – 4.11%) were reported the same results in house mouse from Italy (MILAZZO et al. 2010). The helminth fauna wich 112onsist of 3 zoonotic species (*Strobilocercus fasciolaris* (*Taenia taeniaeformis larvae*) – 1.4%, *Syphacia* sp., - 4.9%, *Syphacia obvelata* – 6.1%), and 8 rodent-specific species (*Catenotaenia pusilla* 7.2%, *Rodentolepis fraternal* – 1.2%, *Heligmosomoides polygyrus* – 39.2%, *Aspiculuris tetraptera* – 12.8%, *Heterakis spumosa* – 0.7%, *Trichuris muris* -2.6%, *Mastophorus muris* – 0.7%, *Gongylonema* sp. – 0.2%) was recorded in *Mus musculus* from Belgrade, Serbia (KATARANOVSKI et al., 2008). Other papers report a 3 zoonotic parasitic species with different prevalences (*Taenia taeniaeformis metacestoda* – 13.4%, *Syphacia obvelata* – 5.4%, *S. stroma* – 0.2%), and 8 rodent specific parasitic species (*Catenotacnia pusilla* 6.6%, *Hymcnolepis fratema* – 1.0% *H. straminea* – 2.4%, *Mathevotaenia symmetrica* – 3.4%, *Trichocephalus muris* – 8.5%, *Heligmosomoides polygyrus* – 10.8%, *Aspiculuris tetraptera* – 18.3%, *Mastophorus muris* – 1.2%), were reported in *Mus musculus* from Hungary (KRISKA 1993). Another scientist report 2 zoonotic parasitic species (*Taenia taeniaeformis larvae – 9.16%, Syphacia obvelata* – 6.1%), and 1 rodent specific parasitic species (*Hymenolepis diminuta* – 12.2%) in *Mus musculus* from Poland (KUCIA et al., 2006). Other researchers report a 3 zoonotic parasitic species (*Hydatigera taeniaeformis larvae* – 15.5%, *Capillaria hepatica* – 6.5%, *Syphacia obvelata* – 3.3%), and 1 rodent-specific species (*Trichocephalus muris* – 5.0%) in *Mus musculus* from Voronezh region, Russian Federation (ROMASHOVA, 2003). Another scientist report 3 zoonotic parasitic species (*Strongyloides stercoralis* – 30.0% *Syphacia obvelata* – 26.7% *Toxocara cati* – 30.0%), and 1 rodent specific parasitic species (*Trichocephalus trichiurus* – 13.3%) in *Mus musculus* from Poland (LINOVITSKAYA et al., 2019). The overall, 4 zoonotic parasitic species (*Syphacia obvelata* – 11.5 %, *Syphacia muris* – 1.9 %, *Hymenolepis diminuta* – 8.3 %, *Hymenolepis nana* – 4.5 %, and 1 rodent specific parasitic species *Aspicularis tetraptera* – 1.3 % were found in *Mus musculus* from Iran (EBRAHIMI et al., 2019). Similar results report other researcher, 1 zoonotic species (*Syphacia obvelata* – 25.0%), and 4 rodent-specific species (*Nippostrongylus brasiliensis* – 15.6%, *Heligmosomoides polygyrus* – 31.3%, *Heterakis spumosa* – 6.3%, *Trichuris muris* – 3.1%) (KIM et al., 2015).

As a result of the aforementioned, we observe the potential risk of parasitic contamination in natural and anthropized biotopes, through the transmission of invasive forms of wild animals to domestic ones, including humans. At the same time, rodents are component of the trophic chain of larger predators, which in turn serve as vectors for parasitic forms in the ambient environment. Thus, both links of the epidemiological chain contribute to the sustainability of parasitic biosystems and determine the natural focality of biocenoses. The ecoparasitological study regarding of the house mouse helminth fauna epidemiological assessment is necessary for the complexity elucidating of the interaction's host-parasite. This study aims to establish the role of the house mouse in the transmission of these species within zoonotic and epizootic chains. The research results contribute to enhancing knowledge about the dynamics of parasitic infections, which in turn help refine measures for the control and prevention of diseases with zoonotic and epizootic impact.

The research results provide necessary data for the development and implementation of measures to prevent and control parasitic diseases, as well as to reduce risks to public health. In this context, monitoring of the small rodent's parasitic fauna in across different areas, has a significant bioecological, medical, and veterinary importance in preventing of the pathogen's transmission to humans and animals, involved in the zoonotic and epizootic parasites biological cycles. For this reason, measures are required to reduce the infestation levels in wild animals.

CONCLUSIONS

1. The highest level of the **frequency** index was found in *Syphacia obvelata* with 10/31 (infected animals/total animals), followed by *Mastophorus muris* – 8/31, *Plagiorchis elegans* – 4/31, *Syphacia stroma* – 4/31, *Strongyloides ratti* – 4/31, *Trichuris muris* – 4/31, *Capillaria hepatica* – 4/31, *Skrjabinotaenia lobata* – 3/31, *Taenia taeniaeformis* larvae – 3/31, *Taenia pisiformis* larvae – 3/31, *Mesocestoides lineatus* larvae – 2/31, *Catenotaenia cricetorum* – 2/31, *Paranoplocephala omphaloides* – 2/31, *Rodentolepis straminea* – 2/31, *Heligmosomoides polygirus* – 1/31.
2. The **nosological characteristic** which includes 3 categories of 14 total helminthiases: 1 (14.29%) trematodiasis (plagiorchiasis), 5 (35.72%) cestodiases (strobilocercosis, mesocestoidiasis, paranoplocephalosis, catenoteniasis, skrjabinoteniasis), and 7 (50.00%) nematodiases (syphacioisis, strongyloidiasis, capillariasis, heligmosomiasis, trichuriasis, rodentolepiasis, mastophorosis).
3. The **epidemiological characteristics** denotes 2 categories of parasitic species (zoonotic, rodent-specific): 8 (53.34%) zoonotic species (*Plagiorchis elegans*, *Mesocestoides lineatus* larvae, *Taenia taeniaeformis* larvae, *Taenia pisiformis* larvae, *Syphacia stroma*, *Syphacia obvelata*, *Strongyloides ratti*, *Capillaria hepatica*), and 7 (46.67%) rodent-specific species (*Skrjabinotaenia lobata*, *Paranoplocephala omphalodes*, *Catenotaenia cricetorum*, *Heligmosomoides polygyrus*, *Mastophorus muris*, *Rodentolepis straminea*, *Trichuris muris*).
4. The **zoonotic characteristic** includes: 3 direct zoonotic helminths species (*Syphacia obvelata*, *Syphacia stroma*, *Strongyloides ratti*); 1 sapro-zoonotic helminths species (*Capillaria hepatica*); 1 meta-zoonotic helminth species (*Plagiorchis elegans*); and 3 cyclo-zoonotic helminths species (*Taenia taeniaeformis* larvae, *Taenia pisiformis* larvae, *Mesocestoides lineatus* larvae).

Acknowledgements: *The research was carried out in the framework of sub-program: 010701, "Assessment of the structure and functioning of the animal world and aquatic ecosystems under the influence of biotic and abiotic factors in the context of ensuring ecological security and population well-being".*

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Received: April 9, 2025
Accepted: August 26, 2025