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Research Article

Distribution of Nematodes of the Suborder Ascaridata in the Fergana Valley, Eastern Uzbekistan

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Abstract | This study examines the species composition, distribution, and epidemiological features of nematodes of the suborder Ascaridata in warm-blooded animals in the Fergana Valley, eastern Uzbekistan. The research, conducted from 2022 to 2025, was carried out on 311 mammals and 68 poultry using complete and incomplete helminthological necropsy, as well as coprological examinations based on the Fülleborn flotation method and sequential washing techniques. Six species from two families (Ascaridae and Anisakidae) and five genera were identified: *Ascaris suum*, *Ascaridia galli*, *Parascaris equorum*, *Toxascaris leonina*, *Toxocara canis*, and *Toxocara mystax*. The highest prevalence was recorded in dogs infected with *Toxocara canis* (34.4%) and in poultry infected with *Ascaridia galli* (29.4%), followed by horses infected with *Parascaris equorum* (28.15%) and pigs with *Ascaris suum* (19.58%). Age-related susceptibility was particularly evident in young horses and donkeys infected with *P. equorum*. The relatively high prevalence of zoonotic species (*T. canis* and *T. mystax*) indicates active environmental contamination and potential public health risks. Climatic conditions, mixed livestock farming, and stray animals contribute to the persistence and transmission of ascarid infections. This study provides the first comprehensive epidemiological assessment of Ascaridata nematodes in the Fergana Valley and establishes a baseline for future ecological and molecular studies.

Keywords | Ascaridata, Fergana Valley, Helminth fauna, Prevalence, Zoonotic nematodes, Intensity of infection

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INTRODUCTION

In recent years, there has been a significant increase in scientific interest in the study of helminths infecting mammals and birds. Among these parasites, nematodes belonging to the suborder Ascaridata are of particular importance. These parasitic worms are widely distributed across diverse ecosystems and are recognized as some of the most pathogenic helminths affecting humans, domestic and wild animals. Their infections can cause substantial pathological effects and pose serious threats to the overall health and physiological condition of their hosts (Despommier *et al.*, 2019). In general, species belonging to the suborder Ascaridata including *Toxocara canis*, *Toxocara mystax* (*Toxocara cati*), *Toxascaris leonina*, *Parascaris equorum*, *Ascaris suum*, and *Ascaridia galli* are widely distributed among domestic and wild animals, representing important targets for veterinary surveillance and zoonotic disease prevention.

Particular attention has recently been directed toward veterinary parasitology, especially regarding the global distribution and zoonotic potential of ascarid nematodes infecting dogs and cats *T. canis* and *T. cati*. According to a global meta-analysis, the pooled prevalence of *T. canis* infection in dogs was estimated at 11.1% (95% CI: 10.6–11.7%) (Rostami *et al*., 2020). Similarly, the global prevalence of *T. cati* infection in cats, as determined by coprological helminth detection methods, was reported to be 17.0% (95% CI: 16.2–17.8%) (Bonilla-Aldana *et al*., 2024). These helminths *T. canis* and *T. cati* pose a serious threat not only to animal health but also to public health (Shakarboev and Berdibaev, 2023). The eggs of *T. canis* and *T. cati* can be transmitted to humans and other hosts through contaminated soil, water, and the environment. As a result, zoonotic diseases such as visceral and ocular larva migrans may develop (Macpherson, 2013; Hotez and Wilkins, 2009).

However, other ascarid nematodes particularly *T. leonina* should not be overlooked. According to a global meta-analysis, the overall prevalence of *T. leonina* infection was found to be 2.9% in dogs and 3.4% in cats (Rostami *et al*., 2020). Nevertheless, free-ranging or densely populated stray animals, foxes, and other canid and felid populations may maintain high prevalence rates of *T. leonina* and release large quantities of eggs into the environment (Despommier *et al*., 2019; Berdibaev *et al*., 2025).

Another important representative of the Ascaridata suborder is *P. equorum*, which is among the most widespread nematodes in horses. This helminth primarily parasitizes young horses (Turgunov *et al*., 2024), inhabits the intestinal tract, and causes the disease known as parascaridosis. The eggs of *P. equorum* are highly resistant to environmental conditions and can remain viable for extended periods, facilitating stable transmission of the infection across pastures (Reinemeyer, 2009).

Additionally, *A. suum*, another important member of the Ascaridata suborder, is a large nematode parasitizing pigs. This helminth primarily localizes in the small intestine of pigs and causes ascariosis (Roepstorff and Murrell, 1997). The eggs of *A. suum* are encased in a thick shell and exhibit high resistance to environmental factors particularly moisture, low temperatures, and chemical agents allowing the infection to persist for extended periods in both farm and natural environments (Roepstorff *et al*., 1997). During the migratory larval stage, the parasite causes mechanical damage, inflammatory responses, and immunopathological reactions in the liver and lung tissues, leading to the formation of hepatic lesions known as "milk spots" (Kouam *et al*., 2018). In recent years, the emergence of resistance to certain anthelmintic drugs used against ascariosis has further increased the veterinary and medical parasitological significance of *A. suum* (Kaplan, 2004).

Research conducted in Uzbekistan has demonstrated that infection of chickens with *A. galli*, the causative agent of ascariosis, shows seasonal variation. Infection rates in poultry ranged from 30% to 60%, whereas young birds up to six months of age were affected at rates of up to 60% (Sultanov, 1963). Similarly, international studies have reported a high prevalence of *A. galli*, with infection detected in 45.6% of poultry, confirming the widespread occurrence of this nematode in poultry populations (Ritu *et al*., 2024).

However, most existing studies are based on global or other regional examples, and there is a lack of systematic data on the species-specific prevalence of Ascaridata nematodes in Central Asia particularly under the conditions of the Fergana Valley as well as their occurrence in different animal hosts and the influence of ecological factors.

This study is significant as it aims to determine the prevalence of Ascaridata nematodes *Ascaris suum*, *Toxocara canis*, *Toxocara mystax*, *Toxascaris leonina*, *Parascaris equorum*, and *Ascaridia galli* in animals of the Fergana Valley. The objective is to investigate their species composition, distribution, and prevalence among warm-blooded hosts in this region.

MATERIALS AND METHODS

Study area

The research was conducted from 2022 to 2025 in the eastern part of the Republic of Uzbekistan, specifically in the Fergana Valley (Figure 1). This region is characterized by a sharply continental climate, with high temperatures in summer and relatively mild conditions in winter, providing a favorable ecological environment for the development and spread of helminths.

Procedures

Sub-procedures-1: Helminth collection and fixation

During the study, a total of 311 mammals and 68 birds were examined using both complete and incomplete helminthological dissection methods (Skrjabin, 1928; Romashov *et al*., 2003; Anikanova *et al*., 2007; Shakarboev *et al*., 2025). Helminths identified during the dissection were collected, washed in water, and fixed in Barbaggallo's solution.

Sub-procedures-2: Fecal Examination for Eggs and Larvae

To detect helminth eggs and larvae, fecal samples were collected and examined from 69 horses, 40 pigs, 35 donkeys, and 12 dogs using the Fülleborn flotation method and sequential washing techniques. The collection, fixation, and laboratory processing of helminthological material were performed following standard parasitological protocols. Helminth morphology was studied, and original microphotographs were taken using an NLCD-307B light microscope at magnifications of 4×, 10×, and 40×. Identification of helminth species was carried out using various keys and monographs (Kozlov, 1977; Ryzhikov *et al*., 1983; Mozgovoy, 1953; Anderson, 2000).

Data analysis

Data obtained from helminthological examinations were recorded and analyzed to determine species composition, prevalence, and distribution among the studied host animals. Descriptive statistics, including prevalence percentages and host-specific infection rates, were calculated. Comparative analysis was performed to assess differences in infection rates among host species and age groups.

RESULTS

The identified helminths were classified according to the systematics presented in the monograph by Shults and Gvozdev (1970), Fundamentals of general helminthology. As a result of the conducted research, six species of Ascaridata were recorded among warm-blooded animals in various regions of the Fergana Valley, belonging to two families, two subfamilies, and five genera.

Order: Ascaridida Skrjabin et Schulz, 1940
Suborder: Ascaridata Skrjabin, 1915
Family: Ascaridae Baird, 1853
Genus: *Parascaris* Yorke et Maplestone, 1926

Figure 1: Map of the study area.

Links Researchers

Parascaris equorum Goeze, 1782 (Figure 2)
Primary hosts: horses, donkeys
Localization: small intestine, stomach
Prevalence: 28.15% in horses, 18.75% in donkeys
Intensity of infection: 2–52 specimens in horses, 2–31 specimens in donkeys
Recorded locations: Namangan and Andijan cities; Andijan, Kurgantepa, Jalaquduq, Shakhrikhan, Pakhtaobod, Altinkul, and Bulakbashi districts

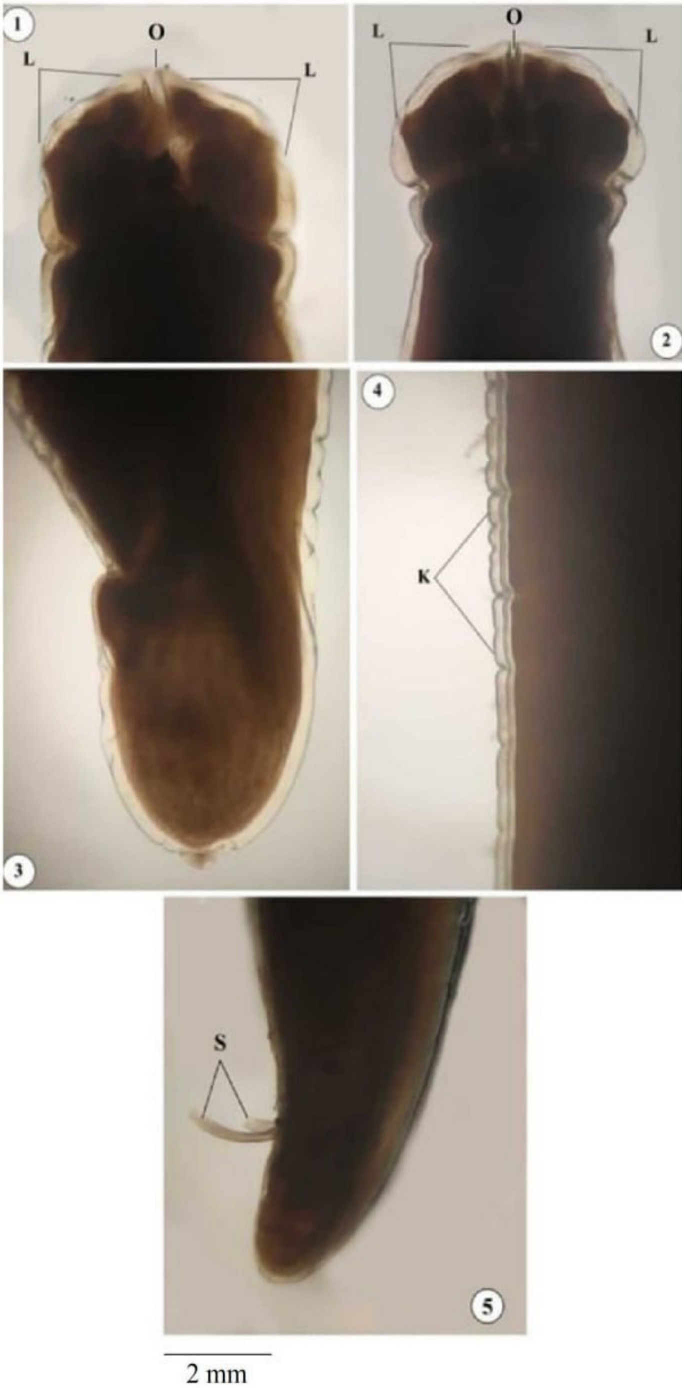

Figure 2: External morphology of *Parascaris equorum*: (1) Adult female and (2) male with mouth (O) surrounded by lips (L); (3) posterior end of the female; (4) transverse striated cuticle (K); (5) spicules (S) at the posterior end of the male.

Toxascaris Leiper, 1907
Toxascaris leonina Linstow, 1902 (Figure 3)
Primary hosts: dog, wolf, fox, jackal, raccoon dog, jungle cat
Localization: Small intestine, stomach
Prevalence: Detected in 9 out of 93 dogs (9.67%) examined by complete helminthological dissection
Intensity of infection: 1–10 specimens
Recorded locations: Andijan, Izboskan, and Norin districts

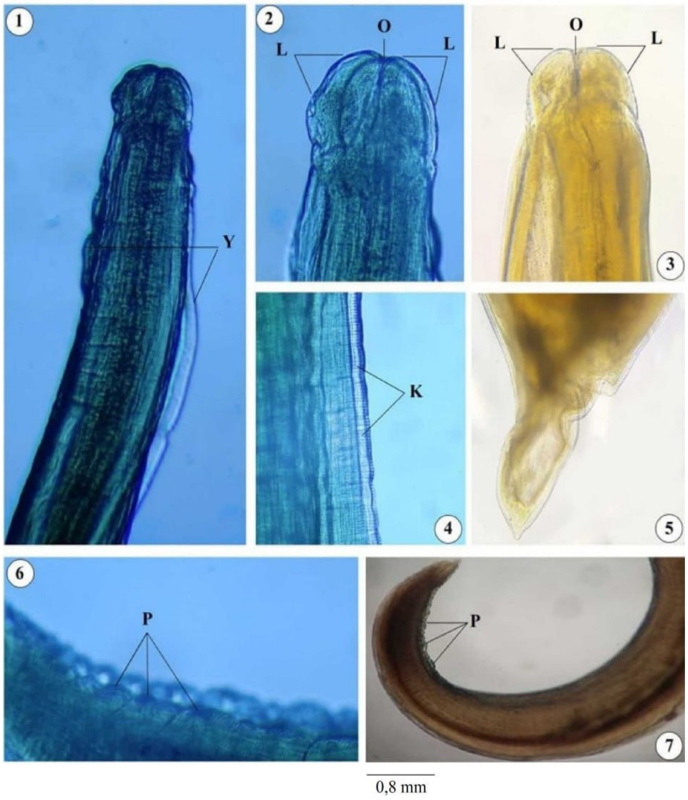

Figure 3: External morphology of *Toxascaris leonina*: (1) Anterior end of the adult male body with lateral alae (Y); (2) male and (3) female mouths (O) surrounded by lips (L); (4) transversely striated cuticle (K); (5) posterior end of the female; (6,7) caudal papillae (P) of the male.

Ascaridia Dujardin, 1844
Ascaridia galli Schrank, 1788 (Figure 4)
Primary hosts: Turkey, chicken, guinea fowl, domestic duck, greylag goose, pheasant, common pheasant
Localization: Small intestine, stomach
Prevalence: Detected in 20 out of 68 birds (29.4%) examined by complete helminthological dissection
Intensity of infection: 1–22 specimens
Recorded locations: Andijan, Izboskan, Norin, and Quva districts; Fergana city; Uchkurgan district

Ascaris Linnaeus, 1758
Ascaris suum Goeze, 1782 (Figure 5)
Primary hosts: Pig, also reported in humans
Localization: Small intestine, stomach

Prevalence: Detected in 19 out of 97 pigs (19.58%) examined by complete helminthological dissection
Intensity of infection: 1–28 specimens
Recorded locations: Izboskan district, the cities of Andijan, Fergana, and Kokand

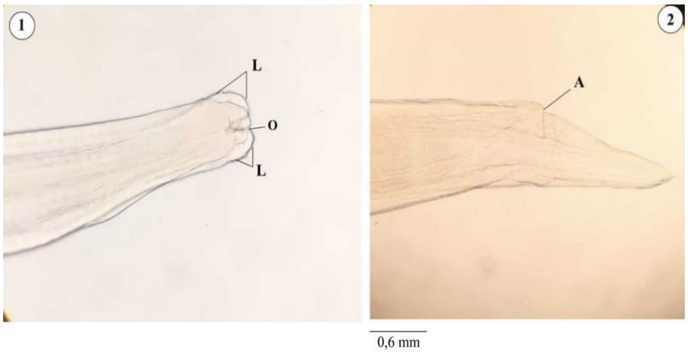

Figure 4: External morphology of *Ascaridia galli*: (1) Mouth (O) of the adult female surrounded by lips (L); (2) anus (A) located near the posterior end of the female.

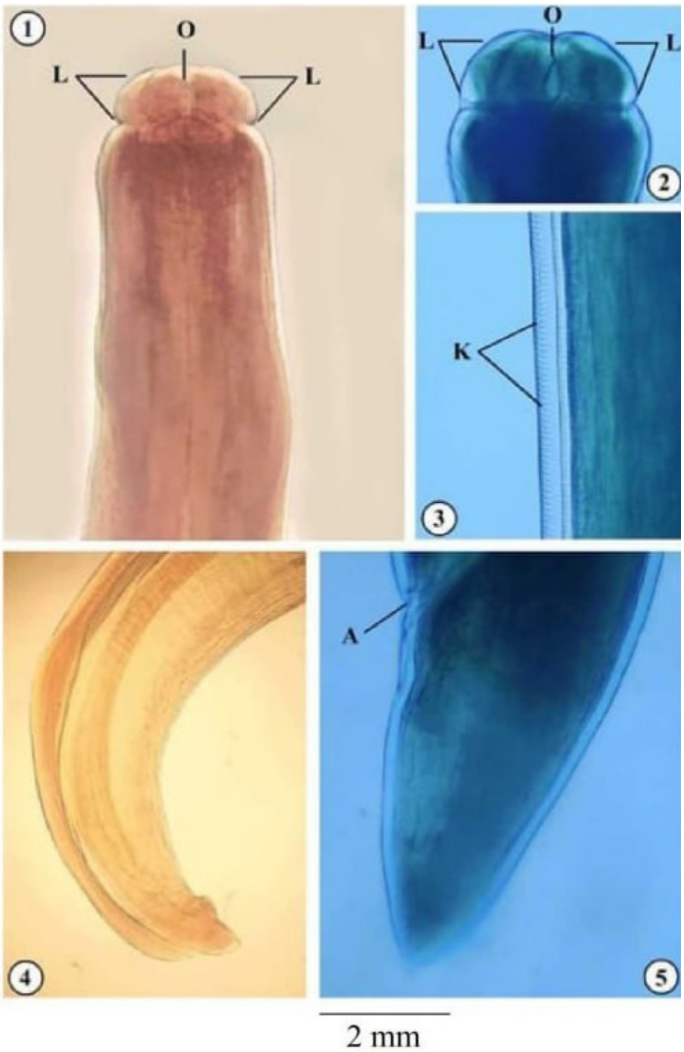

Figure 5: External morphology of *Ascaris suum*: (1) Adult female and (2) male with mouth (O) surrounded by lips (L); (3) transversely striated cuticle (K); (4) posterior end of the male; (5) anus (A) located near the posterior end of the female.

Anisakidae Skrjabin et Karokhin, 1945
Toxocara Stiles, 1905
Toxocara canis Werner, 1782 (Figure 6)
Primary hosts: Wolf, fox, jackal, badger, jungle cat, dog
Localization: Stomach, small intestine
Prevalence: Detected in 32 out of 93 dogs (34.4%) and in 1 out of 4 jackals (25%) examined by complete helminthological dissection
Intensity of infection: 1–37 specimens in dogs; 4 specimens in jackals
Recorded locations: Andijan, Uchkurgan, Quva, Izboskan, Norin, Altinkul, Bulakbashi, and Jalaquduq districts; the cities of Andijan and Fergana

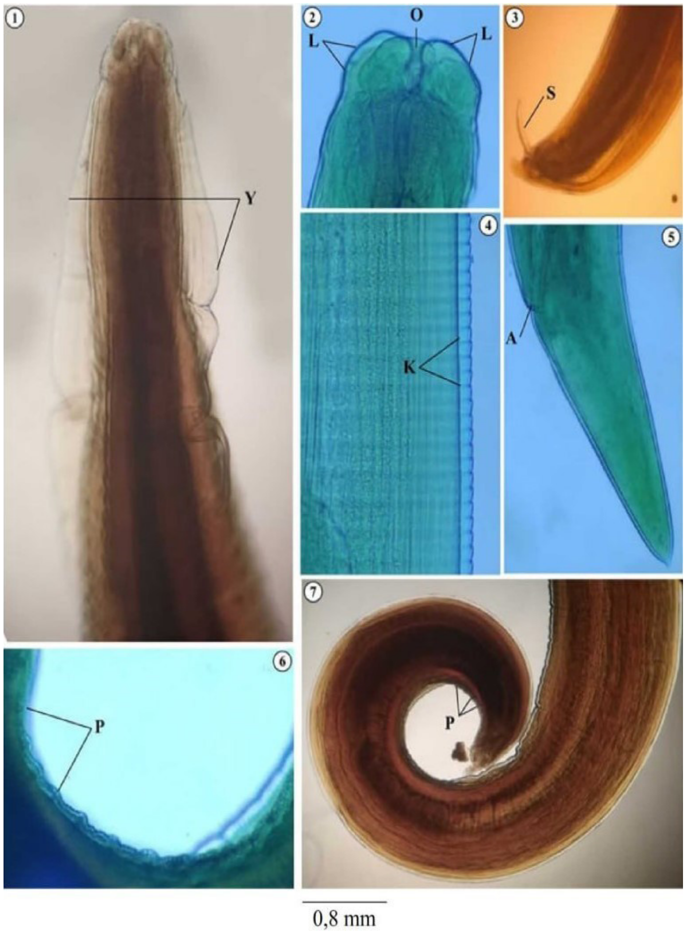

Figure 6: External morphology of *Toxocara canis*: (1) Anterior end of the adult female body with lateral alae (Y); (2) mouth (O) surrounded by lips (L); (3) spicules (S) at the posterior end of the male; (4) transversely striated cuticle (K); (5) anus (A) located near the posterior end of the female; (6,7) caudal papillae (P) of the male.

Toxocara mystax Zeder, 1800 (Figure 7)
Primary hosts: Fox, wolf, badger, jackal, jungle cat, dog
Localization: Small intestine, stomach
Prevalence: Detected in 3 out of 12 cats examined by complete helminthological dissection
Intensity of infection: 9–18 specimens
Recorded locations: Andijan and Altinkul districts

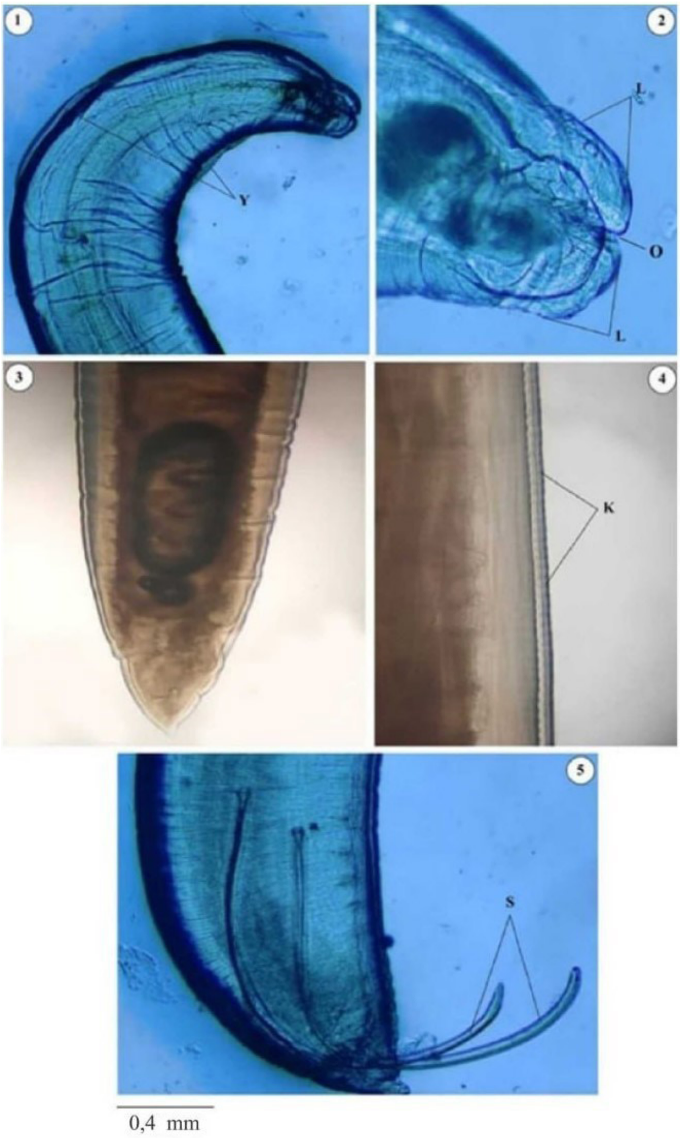

Figure 7: External morphology of *Toxocara mystax*: (1) Anterior end of the adult male body with lateral alae (Y); (2) mouth surrounded by lips (L); (3) posterior end of the female; (4) transversely striated cuticle (K); (5) two equal spicules (S) at the posterior end of the male.

As a result of the conducted research, six species of Ascaridata were recorded among warm-blooded animals in various regions of the Fergana Valley, belonging to two families and five genera.

Helminthological examinations revealed the host distribution as follows: one species in horses and donkeys, two species in dogs, one species in jackals, one species in pigs, one species in cats, and one species in chickens. These nematodes were found to parasitize the stomach and small intestine of their hosts. Some species, such as *T. canis* and *T. mystax*, may pose a significant risk to human health. Therefore, these species are of not only general biological interest but also of medical and veterinary importance.

A. suum was detected parasitizing the small intestine of pigs from private farms in the Fergana and Andijan regions. The overall prevalence was 19.58%, while the intensity of infection ranged from 1 to 28 specimens per host (Table 1). The relatively low distribution of this species in the Fergana Valley may be attributed to the limited population of pigs in the region, which likely restricts its transmission and overall prevalence.

Table 1: Prevalence of infection with *Ascaris suum* in pigs.

District/ City	Number of animals examined	Number of infected animals	Prevalence %	Intensity of infection (number of specimens)
Fergana city	22	5	22.7	1-19
Andijan city	31	5	16.13	6-17
Kokand city	25	7	28.0	1-28
Izboskan district	19	2	10.5	4-12
Total	97	19	19.58	1-28

A. galli parasitizes the small intestine of birds and is widely distributed in private farms and poultry enterprises across nearly all districts of the Fergana, Andijan, and Namangan regions. The average prevalence of infection in chickens was 31.25% in Fergana region, 29.03% in Andijan region, and 28.57% in Namangan region. The intensity of infection ranged from 1 to 22 specimens on average. The highest prevalence was recorded in Quva and Izboskan districts (Table 2).

Table 2: Prevalence and intensity of *Ascaridia galli* infection in chickens.

District/ City	Number of animals examined	Number of infected animals	Prevalence (%)	Intensity of infection (specimens)
Norin	11	3	27.3	1-6
Uchkurgan	10	3	30.0	2-10
Izboskan	19	6	31.6	1-4
Fergana city	7	2	28.6	2-18
Quva	9	3	33.3	1-22
Andijan	12	3	25.0	2-6
Total	68	20	29.4	1-22

P. equorum parasitizes the small intestine of odd-toed ungulates and is considered one of the most widespread nematodes among animals in the regions of the Fergana Valley.

The prevalence of infection was 28.15% in horses and 18.75% in donkeys, while the intensity of infection ranged from 2 to 52 specimens on average. The highest prevalence rates were recorded in the Altinkul, Shakhrikhan, Kurgantepa, and Andijan districts (Table 3). Horses under two years of age comprised 55% of the infected animals

(Figure 8).

Table 3: Prevalence and intensity of *Parascaris equorum* infection in horses.

District/ City	Number of animals examined	Number of infected animals	Prev-alence (%)	Intensity of infection (specimens)
Altinkul	21	7	33.3	2-39
Bulakbashi	8	2	25.0	12-52
Shakhrikhan	15	5	33.3	7-25
Kurgantepa	12	4	33.3	2-37
Andijan	12	4	33.3	6-23
Jalaquduq	14	2	14.28	33-34
Andijan city	7	1	14.28	17
Namangan city	11	3	27.3	15-44
Pakhtaobod	3	1	33.3	5
Total	103	29	28.15	2-52

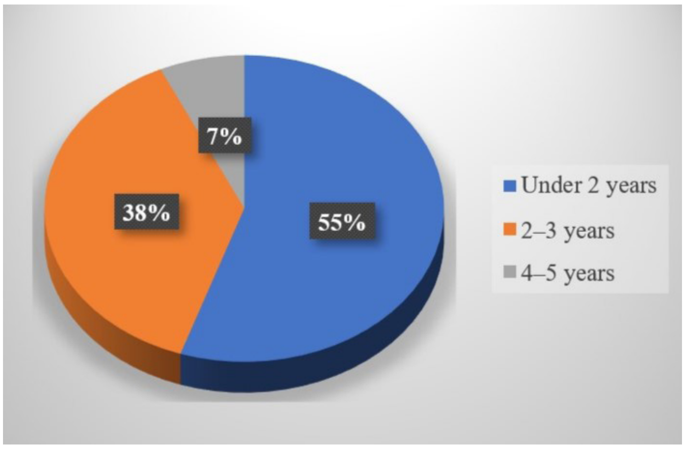

Figure 8: Age-related prevalence of *Parascaris equorum* infection in horses.

Additionally, age-related infection rates of donkeys with *P. equorum* were investigated. The results indicated that infection was predominantly observed in young animals (Table 4).

Table 4: Age-related prevalence of *Parascaris equorum* infection in donkeys.

Age of donkeys	Number examined	Number infected	Prevalence (%)
0–2 years	9	4	44.4
2–6 years	14	2	14.3
Over 6 years	12	-	-
Total	35	6	18.75

T. leonina is a nematode parasite of the small intestine of carnivorous animals and was recorded in the Namangan and Andijan regions. The prevalence (extensity of invasion) was 9.67%, while the intensity of invasion ranged from 1 to 10 specimens.

As a result of studying toxascaridosis among canid species distributed in the Fergana Valley, 9 out of 97 examined animals were found to be infected. The highest infection rate was observed in Andijan district, where the prevalence reached 26.3%, and the intensity of invasion ranged from 1 to 10 specimens (Table 5).

Qualitative and quantitative indicators of *T. leonina* infection, as well as the age-related patterns of infection in animals, were determined. Considering the widespread occurrence of toxascaridosis among canids in the Fergana Valley and its medical and veterinary significance, the development of effective control and prevention measures against toxascaridosis is of great importance.

Table 5: Prevalence and intensity of *Toxascaris leonina* infection in dogs across different regions.

District/ City	Number of dogs examined	Number infected	Preva-lence (%)	Intensity of infection (specimens)
Norin	12	1	8.33	3
Andijan	19	5	26.3	1-10
Izboskan	21	3	14.3	1-4
Total	52	9	17.3	1-10

T. canis parasitizes the small intestine of carnivorous animals and is one of the most widespread nematodes among predatory animals in the Fergana, Namangan, and Andijan regions.

The results of the study indicate that there are areas in the Fergana Valley with a high prevalence of toxocarosis. This invasive disease poses serious medical and veterinary problems in the region and has zoonotic potential. Timely laboratory examination of dogs, along with prophylactic and therapeutic deworming, can significantly reduce environmental contamination with *T. canis* eggs in urban and rural areas.

Among the districts studied, the highest prevalence of infection in dogs was recorded in Quva (50%), Altinkul (60%), and Izboskan (47.6%) (Table 6). The average prevalence of infection in animals was 37.5% in Fergana region, 34.28% in Andijan region, and 31.57% in Namangan region, with the intensity of infection ranging from 1 to 37 specimens on average.

T. mystax parasitizes the small intestine of carnivorous animals and was recorded among cats in the Andijan region. The prevalence of infection was 25%, with an intensity ranging from 9 to 18 specimens.

Table 6: Prevalence and intensity of *Toxocara canis* infection in dogs across different regions.

District/City	Number of animals examined	Number of infected animals	Prevalence (%)	Intensity of infection (specimens)
Norin	12	4	33.3	2-13
Uchkurgan	7	2	28.57	1-7
Quva	4	2	50.0	4-10
Fergana city	4	1	25.0	8
Bulakbashi	8	2	25.0	1-4
Altinkul	5	3	60.0	1-2
Andijan	19	5	26.3	1-12
Izboskan	21	10	47.6	1-37
Jalaquduq	4	1	25.0	4
Andijan city	9	2	22.2	1-6
Total	93	32	34.4	1-37

DISCUSSION

The results of this study demonstrated the widespread occurrence of nematodes belonging to the suborder Ascaridata among warm-blooded animals in the Fergana Valley. Six species were identified (*A. suum, A. galli, P. equorum, T. leonina, T. canis,* and *T. mystax*), representing two families and five genera, which confirms a relatively diverse ascarid fauna in the region. This diversity can be explained by the climatic conditions of the valley, where high summer temperatures and relatively mild winter conditions favor the prolonged survival of ascarid eggs in the external environment.

The prevalence of *A. suum* in pigs, recorded at 19.58%, is lower compared to the 40% observed in highly endemic areas (Roepstorff and Nansen, 1998). This difference can be explained by the relatively limited scale of pig farming in the valley, the low density of farms, and the incomplete formation of the epizootiological chain of infection sources. Nevertheless, the zoonotic potential of *A. suum* (Dold and Holland, 2011) underscores the necessity for continuous monitoring.

Comparisons across regions also support the consistency of our results. In particular, studies conducted in the Tashkent region reported infection rates ranging from 11.3% to 23.7% (Shakarboev *et al*., 2023), which is comparable to our findings. Similarly, in the Republic of Crimea, the prevalence was 21.86% (Pasechnik, 2021), indicating that regional conditions, farming practices, and sanitary-hygienic factors significantly influence infection rates.

In our study, 20 out of 68 chickens were found to be infected, resulting in an overall prevalence of 29.4%. This is comparable to prevalence rates reported in Pakistan (25.7%) and Kenya (25.63%) (Kaingu *et al*., 2010; Sayyed *et al*., 2000). Our findings also indicate that roosters were more frequently infected with ascariosis than hens. The relatively consistent prevalence across different districts suggests the high environmental resilience of ascarid eggs.

Among dogs, *T. canis* was recorded with a prevalence of 34.4%, which is considerably higher than the global average of 11.1% (Rostami *et al*., 2020). Studies conducted in the Republic of Karakalpakstan also reported a high infection intensity in dogs (37.9 ± 2.5) (Berdibaev *et al*., 2023). In some districts (Altinkul–60%, Quva–50%), elevated infection rates may be associated with local soil contamination and the irregular deworming of dogs.

The zoonotic significance of *T. canis* is high, as its eggs can cause visceral and ocular larva migrans syndromes in humans (Macpherson, 2013; Hotez and Wilkins, 2009). Therefore, toxocariasis in the Fergana Valley should be considered a significant medical and veterinary concern.

In the present study, the prevalence of *T. leonina* was 9.67%, which is considerably higher than the global average. According to a worldwide meta-analysis, the overall prevalence of *T. leonina* in dogs is approximately 2.9%, based on an analysis of 119,317 dogs across 135 different studies (Rostami *et al*., 2020). The meta-analysis also indicated that infection rates were higher in stray dog populations, reaching around 7% (Rostami *et al*., 2020). Individual studies conducted in various regions of Europe and Asia, including neighboring areas, have reported even higher prevalence rates. For instance, in central, western, and northern regions of Kazakhstan, prevalence ranged from 23–40% (Lider *et al*., 2010; Valieva, 2012; Sultanov *et al*., 2014), in the Caucasus region of Russia it reached 57% (Trunova, 2008), and in certain areas of Uzbekistan, prevalence was recorded as high as 89% (Safarov *et al*., 2022).

Among horses, *P. equorum* exhibited a prevalence of 28.15%, which is comparable to the 48% reported in foals in European countries (Lind and Christensson, 2009) and 42–52.3% in horses in the Republic of Tatarstan (Idrisov *et al*., 2019). Notably, 55% of infected horses were under two years of age, confirming the high susceptibility of young animals. This situation may also be associated with the potential development of resistance to anthelmintic drugs (Reinemeyer, 2009; Stoneham and Coles, 2006). Therefore, routine coprological monitoring and targeted deworming of young animals are essential.

In this study, the prevalence of *T. mystax* (i.e., *Toxocara cati/T. mystax*) in cats was 25%, indicating active circulation of zoonotic ascarids in the region. Although the sample size was relatively limited, this prevalence is considered high or moderately elevated when compared to global parasitological studies.

Meta-analyses and large-scale epidemiological surveys estimate the global prevalence of *Toxocara* infection in cats at approximately 17% (16.1–17.8%) (Rostami *et al*., 2020). However, regional variations can lead to significantly higher values, particularly in areas with insufficiently controlled cat populations. Moreover, several studies have reported prevalence rates exceeding 25%, especially in African and tropical regions, where infection rates in cats have reached 28.3–58.4% (Rostami *et al*., 2020).

Overall, the epidemiological structure of Ascaridata nematodes in the Fergana Valley can be explained by the mixed livestock systems, the high number of private farms, the presence of stray animals, and the climatic conditions that favor the survival of eggs in the environment. The widespread occurrence of zoonotic species highlights the need for integrated control measures in the region, including regular deworming, laboratory monitoring, sanitation and hygiene practices, and raising public awareness.

This study provides systematic epidemiological data on ascarid infections for Central Asia, particularly the Fergana Valley, and lays the foundation for future molecular and ecological investigations.

CONCLUSIONS AND RECOMMENDATIONS

The results of this study confirmed the widespread occurrence of Ascaridata nematodes among warm-blooded animals in the Fergana Valley. A total of six species belonging to two families (Ascaridae and Anisakidae) and five genera *A. suum, A. galli, P. equorum, T. leonina, T. canis*, and *T. mystax* -were identified, providing the first systematic overview of the regional composition of ascarid fauna.

Among horses, *P. equorum* showed the highest prevalence (28.15%), while among dogs, *T. canis* was most prevalent (34.4%), with young animals demonstrating particularly high susceptibility. In cats, the detection of *T. mystax* at 25% indicates active zoonotic ascarid circulation in the region. In poultry, *A. galli* was recorded at 29.4%, highlighting the economic significance of this nematode for local farms.

The higher-than-global-average prevalence of *T. canis* in dogs indicates a significant level of contamination of soil and the surrounding environment with infective eggs in the region. This underscores the need to recognize toxocariasis as an important medical and veterinary issue.

The findings also demonstrate that the epizootiological structure of ascarid nematodes in the Fergana Valley is directly influenced by the mixed livestock farming system, the high number of private households, the population of free-roaming animals, and the prevailing climatic conditions.

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NOVELTY STATEMENT

This study represents the first comprehensive and systematic epidemiological investigation of nematodes belonging to the suborder Ascaridata in the Fergana Valley, focusing on their species composition, geographical distribution, and invasion parameters.

A total of six ascarid species belonging to two families and five genera were identified in the region, and their faunistic structure was established. The prevalence and intensity of infection were evaluated across different districts, providing a detailed spatial assessment of invasion levels.

Age-related dynamics of infection were determined, and the epidemiological significance of zoonotic species was substantiated. The obtained results were compared with global data, revealing that the Fergana Valley constitutes an active epizootiological zone for ascarid infections.

Overall, the findings of this study provide a solid scientific basis for improving epizootiological monitoring and the prevention of zoonotic diseases in the region.

AUTHORS CONTRIBUTION

Materials were collected, morphologically studied, and statistically analyzed by Sardorbek Turgunov. Species identification, analysis of the collected materials, and preparation of the manuscript were carried out by Erkinjon Shakarboev, Sardorbek Turgunov, and Abat Berdibaev. All authors have read and approved the final version of the manuscript.

Generative AI and AI assisted technology statement

The authors declare that no generative AI and AI assisted technology was used in the creation of this manuscript.

Conflict of interest

The authors have declared no conflict of interest.

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