FAUNA AND DISTRIBUTION OF HELMINTHS OF SMALL HORNS CATTLE IN THE LANDSCAPES OF UZBEKISTAN

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Annotation

The article highlights the fauna and landscape-geographical features of helminths of small cattle in the conditions of Uzbekistan. According to the results of our own research and analysis of literature data, 110 species of helminths were registered in small cattle of Uzbekistan. Of these, 106 species belong to sheep, 74 species to goats. Of the 106 species of helminths Marshallagia uzbekistanica listed in the sheep of the Republic , we described them as a new species for science, and 2 species (Marshallagia uzbekistanica and Spiculocaulus kwongi) were noted by us for the first time in the CIS and 8 species (Moniezia alba, Marshallagia uzbekistanica, Cystocaulus vsevolodovi, Spiculocaulus kwongi, Neosrongylus linearis, Varestrongylus pneumonicus, Cooperia punctata, C. Pectinata) - for the first time in Uzbekistan. Also, out of 74 species of Marshallagia uzbekistanica helminths identified in goats of the Republic, we described them as a new species for science, and 4 species (Protostrongylus rufescens, Spiculocaulus kvongi, S. leuckarti, S. austriacus) are recorded by us for the first time in the CIS and 9 species (Protostrongylus rufescens , P. caprae, P. davtiani, Spiculocaulus kvongi, S. leuckarti, S. austriacus, Cystocaulus vsevolodovi, Neosrongylus linearris, Varestrongylus pneumonicus) are registered for the first time in Uzbekistan.

Considering the structure of the fauna of helminths of small ruminants, depending on the landscape and climatic conditions, two helminth fauna complexes were distinguished - plain and foothill-mountain. Studies have shown that the helminth fauna of small cattle of the plains is represented by 69 species,

consisting of trematodes, cestodes and nematodes. The main core of the helminth fauna complex of small cattle in the plain zone of Uzbekistan is 23 species. The helminth fauna of small cattle in the foothill-mountain landscape of Uzbekistan is represented by 102 species. The main core of the complex is 25 species.

Keywords: fauna, helminth, factor, circulation , biocenosis, plain , foothill-mountain.

Introduction. Ecological features of agricultural animals, including small cattle, the nature of their distribution and anthropogenic factors, of course, affect the formation of the helminth fauna.

The nature of the helminth fauna of animals in certain geographical areas is determined by natural conditions (Skryabin, 1924).

Dogel (1947) noted that the differences in the parasite fauna of animals in individual landscapes are determined by a complex of climatic conditions, the presence or absence of intermediate hosts, the composition of soil, water, etc.

Fedyushin (1948) stated that the composition and distribution of helminths are directly influenced by geographic and zonal factors, and indirectly, through the hosts, by "patterns of the zoogeographical order."

The degree of distribution of helminths of productive animals, including small cattle of Uzbekistan, is directly dependent on the climatic and geographical conditions of pasture areas and external factors (temperature, humidity, etc.) that inhibit or contribute to the development and preservation of invasive elements in the external environment . The most important environmental factors affecting the qualitative and quantitative composition of helminths include latitudinal zonality and vertical zonality.

Consequently, the extraordinary diversity of the natural and climatic conditions of Uzbekistan, of course, leaves its mark on the formation and distribution of the fauna of helminths of ungulates, including small cattle, as well as on their circulation in the biogeocenoses of this region.

Many scientists have conducted research on the study of faunal complexes, distribution, ecology of helminths and epizootology of the main helminthiases of

small cattle in Uzbekistan (Vereshchagin, 1926; Petrov & Shakhovtseva, 1926; Ershov, 1933; Badanin, 1949; Nikolsky, 1959; Azimov, 1963; Irgashev , 1963; Kuchkarov, 1968; Sultanov et al., 1971; Kurbanov, 1975; Sultanov et al. 1975; Asimov et al. 1976; Dadaev, 1978; 1997; Pulatov, 1985; Mufazalov, 1995; Azimov et al., 2015; Dadaev et al., 2023)

Despite numerous studies and publications on the helminths of small ruminants in Uzbekistan (a significant part of which was carried out by the authors) , these materials in the landscape-ecological aspect need additional analysis and generalization .

Based on this, the study of landscape and ecological features of helminths of small ruminants in various conditions of Uzbekistan is of great theoretical and practical importance.

The purpose of the study . The purpose of this study is to summarize and analyze the results of our many years of research and literature data on the fauna and distribution of helminths of small cattle in the landscapes of Uzbekistan.

The objects of research are helminths - parasites of small cattle in Uzbekistan.

The subject of the study is the fauna and ecology of helminths of small cattle in Uzbekistan.

Materials and methods. This work is based on the materials of field and experimental studies conducted over many years (1978-2019) in the laboratory of parasitology of the Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan and at the Department of Zoology and Anatomy of the Tashkent State Pedagogical University named after Nizami.

The degree of infection of small cattle with helminths was established by complete and incomplete helminthological dissections of animals, as well as their individual organs, according to the method of K.I. Scriabin (Scriabin, 1928).

Method _ 900 sheep and 120 goats were examined in full helminthological dissections. In addition, to study the epizootology of the causative agents of the main helminthiases of small ruminants by the method of complete and incomplete

helminthological dissections, about 22,460 sets of individual organs of sheep and 389 goats were also studied at meat processing plants and slaughter sites of various livestock farms in our Republic.

Helminthological material from small cattle was collected in five regions of Uzbekistan: North-Eastern (Tashkent, Syrdarya, Jizzakh regions), Eastern (Fergana, Andijan, Namangan regions), Central (Samarkand, Bukhara, Navoi regions), Southern (Surkhandarya , Kashkadarya region), North-West (Khorezm region, Republic of Karakalpakstan). At the same time, animals were studied at meat processing plants and slaughterhouses in Andijan, Namangan, Ferghana, Samarkand, Jizzakh, Syrdarya, Tashkent, Bukhara, Navoi, Kashkadarya, Surkhandarya, Khorezm regions and the Republic of Karakalpakstan. The study of morphology and identification of parasites were carried out on temporary and permanent preparations in accordance with the determinants and descriptions given in the works of domestic and foreign researchers (Schultz, 1970; Ivashkin, 1971; 1989).

Results. According to the results of our long-term studies and analysis of literature data, 110 species of helminths were registered in small cattle of Uzbekistan, of which 14 species belong to the class of cestodes, 10 species to trematodes, and 86 species to nematodes (Table 1).

Table 1

View helminths	Sheep	goats
Cestodes		
1 . *Moniezia expansa* (Rudolphi, 1810)	+	+
2. *M. benedeni* (*Moniez* , 1879)	+	+
3. *M. to utumnalia* Kuznetsov, 1967	+	+
4. *M. a lba* (Perroncito, 1879)	+	
5. *Avitellina centripunctata* (Revolt, 1874)	+	+
6 . Thysaniezia giardi (Moniez , 1879)	+	+
7. *Stilesia globipunctata* (Rivolta, 1874)	+	

8. *Taenia hydatigena* (Pallas, 1766) (= *Cysticercus tenuicollis*)	+	+
9. *T. ovis* (Cobbold, 1869) (= *Cysticercus ovis*)	+	+
10. *Multiceps multiceps* (Leske, 1780) (=Coenurus cerebralis)	+	+
11. *M. skrjabini* (Popov, 1937) (= Coenurus skrjabini)	+	
12. *M. gaigeri* (Hall, 1916) ((= Coenurus gaigeri)		+
13. *Echinococcus granulosus* (Batsch, 1786) larvae	+	+
14. *Alveococcus multilocularis* (Leukart , 1863) larvae	+	
Trematodes		
15. *Hastilesia ovis* (Orloff, Erschoff and Badanin , 1937)	+	+
16 . *Fasciola hepatica* L., 1758	+	+
17 . *F. g iganitica* (Cobbold, 1856)	+	+
18. *F. indica* Varma, 1953	+	
19. *Dendritic dicrocoelium* (Rudolph, 1819)	+	+
20. *Paramphistomum ichikawai* Fukui, 1922	+	
21. *Calicophoron calicophorum* (Fisschoeder, 1901)	+	
22. *C. erschowi* Davydova, 1959	+	
23. *Gastrothylax cruminifera* (Creplin, 1847)	+	+
24. Orientobilharzia turkestanica (Skrjabin, 1913)	+	+
Нематоды		
25. *Trichocephalus ovis* Abildgaard ,	+	+
26. *T. s krjabini* (Baskakov , 1924)	+	+
27. *Strongyloides papillosus* (Wedl, 1856)	+	
28. *Bunostomum trigonocephalum* (Rudolph, 1808)	+	+
29. *B. phlebotomum* _ (Railliet , 1900)	+	
30. *Chabertia sheep* (Fabricius, 1788)	+	+
31. *Oesophagostomus venulosum* (Rudolph, 1809)	+	+
32. *O. Columbian* _ Curtice , 1890	+	+

33 . *Dictyocaulus filaria* (Rudolphi, 1809)	+	+
34. *Protostrongylus raillieti* (Schulz, Orlow et Kutass , 1933)	+	+
35. *P. d' avtiani* (Savina, 1940)	+	+
36. *P. skrjabini* (Boev , 1936)	+	+
37. *P. hobmaeri* (Schulz, Orlow and Kutass , 1933)	+	+
38. *P. rufescens* (Leuckart , 1865)	+	+
39. *P. goats* Zdzitowiecki and Boev , 1971	+	+
40 . *Spiculocaulus kwongi* (Wu and Liu, 1943)	+	+
41. *S. l euckarti* (Schulz, Orlow and Kutass , 1933)	+	+
42. *S. orloffi* Boev and Murzina , 1948	+	+
43. *S. austriacus* (Gebauer, 1932)		+
44. *Mueller capillary* (Müller, 1889)	+	+
45. *Cystocaulus ocreatus* (Railliet and Henry, 1907)	+	+
46. *C. vsevolodovi* Boev , 1946	+	+
47. *Neosrongylus linearis* (Marotel , 1913)	+	+
48. *Varestrongylus pneumonicus* Bhalerao, 1932	+	+
49. *Trichostrongylus axei* (Cobbold, 1879)	+	+
50. *T. capricola* Ransom , 1907	+	+
51. *T. colubriformis* (Giles, 1892)	+	+
52. *T. probolurus* (Railliet , 1896)	+	+
53. *T. vitrinus* Looss , 1905)	+	+
54. *T. orientalis* Jimbo, 1914	+	
55. *T. skrjabini* Kalantarian , 1928	+	
56. *Camelostrongylus mentulatus* (Railliet and Henry, 1909)	+	+
57. *Cooperia oncophora* (Railliet , 1896)	+	+
58. *C. punctata* (Linstow, 1906)	+	
59. *C. pectinata* Ransom , 1907	+	

60. *Grosspiculagia occidentalis* Ransom, 1907	+	+
61. *G. belockani* (Assadov , 1954)	+	
62 . *G. trifida* (Guille, Marotel et Penissot , 1911)	+	
63 . *G. sogdiana* (Pulatov , 1954)		+
64 . *Haemonchus contortus* (Rudolph, 1803)	+	+
65. *H. placei* (Place, 1893)	+	+
66. *H. longistipes* (Railliet and Henry, 1909)	+	
67. *Marshallagia marshalli* Ransom , 1907	+	+
68. *M. m ongolica* Schumakovitch , 1938	+	+
69. *M. schikhobalovi* Altaev , 1953	+	
70. *M. dentispicularis* Assadov , 1954	+	+
71. *M. uzbekistanica* Azimov et Dadaev , 2001	+	+
72. *Nematodirus filicollis* (Rudolphi, 1802)	+	+
73. *N. abnormalis* May, 1920	+	+
74. *N. a ndreevi* Satubaldin , 1954	+	+
75. *N. archari* Sokolova , 1948	+	+
76. *N. assadovi* Seidov , 1965	+	+
77. *N. brevispiculus* Ermolova , 1961	+	+
78. *N. dogieli* Sokolova , 1948	+	
79. *N. davtiani* Gregorian , 1949	+	
80. *N. gazellae* Sokolova , 1948	+	+
81. *N. sugatini* Sokolova ,	+	
82. *N. helvetianus* May, 1920	+	+
83. *N. oiratianus* Rajewskaja ,	+	+
84. *N. spathiger* (Railliet , 1896)	+	+
85. *N. schulzi* Satubaldin ,	+	
86. *N.ferghanica* _ Zimin , 1970	+	+
87 . *Nematodirella longissimespiculata* (Romanovich,1915)	+	

88. *N. cameli* Rayevskaya et Badanin , 1933	+	
89 . *Ostertagia ostertagi* (Stiles, 1892)	+	+
90. *O. gruhneri* (Scriabin , 1929)	+	
91. *O. a rgunica* Rudakov , 1934	+	
92 . *O. volgensis* Tomskich , 1938	+	
93. *O. aegagri* Gregorian , 1949	+	+
94. *Orloffia orloffi* (Sankin , 1930)	+	
95. *O. dahurica* (Orloff, Belova et Gnedina , 1931)	+	
96. *Skrjabiangia buriatica* (Konstantinova, 1934)	+	+
97. *S. lyrata* (Sjoberg, 1926).	+	
98. *S. popovi* (Kassimov , 1942)	+	
99 . *Digestani Spiculoptera* (Altaev , 1953)	+	
100. *Teldorsagia trifurcata* (Ransom, 1907) .	+	+
101. *T. circumcincta* (Stadelmann, 1894) .	+	+
102. *T. Gregoriani* Drozdz , 1965	+	
103. *Skrjabinema ovis* (Skrjabin , 1915)	+	+
104. *S. goats* Schad , 1959		+
105 . *Ascaris sheep* Rudolph , 1819	+	
106. *Gongylonema pulchrum* Molin , 1857	+	+
107. *G. verrucosum* (Giles, 1892)	+	
108. *Parabronema skrjabini* Rassowska , 1924	+	+
109. *Setaria labiatopapillosa* (Alessandrini, 1848)	+	+
110 . *Skrjabinodera saiga* Gnedina et Vsevolodov , 1947	+	
Total:	106	74

Of the 110 species of helminths of small cattle in Uzbekistan, 106 species belong to sheep and 74 species to goats. Of the 106 species of helminths listed in the sheep of the Republic, Marshallagia uzbekistanica described by us as a new species for science, and 2 species (Marshallagia uzbekistanica and Spiculocaulus kwongi) were noted by us for the first time in the CIS and 8 species (Moniezia alba, Marshallagia uzbekistanica, Cystocaulus vsevolodovi, Spiculocaulus kwongi, Neosrongylus linearis, Varestrongylus pneumonicus, Cooperia atapunct, C. pectinata) - for the first time in Uzbekistan. Also, out of 74 species of helminths identified in goats of the Republic, Marshallagia uzbekistanica is described by us as new to science, and 4 species (Protostrongylus rufescens, Spiculocaulus kvongi, S. leuckarti, S. austriacus) are recorded by us for the first time in the CIS and 9 species (Protostrongylus rufescens , P. caprae, P. davtiani, Spiculocaulus kvongi, S. leuckarti, S. austriacus, Cystocaulus vsevolodovi, Neosrongylus linearris, Varestrongylus pneumonicus) are registered for the first time in Uzbekistan.

Considering the structure of the fauna of helminths of small ruminants, depending on the landscape and climatic conditions, two helminth fauna complexes have been identified - plain and foothill-mountain. Studies have shown that the helminth fauna of small cattle of the plains is represented by 69 species, consisting of trematodes, cestodes and nematodes. The main core of the helminth fauna complex of small cattle in the plain zone of Uzbekistan is 23 species. The helminth fauna of small cattle in the foothill-mountain landscape of Uzbekistan is represented by 102 species. The main core of the complex is 25 species.

It is known that animals become infected with helminths mainly on pastures, the ecological conditions of which contribute to the emergence and circulation of pathogens of invasions. Uzbekistan also occupies a vast territory with pronounced landscape and geographical zones, which, of course, influence the formation of helminth fauna complexes.

Considering the structure of the fauna of helminths of small ruminants, depending on the landscape and climatic conditions, we distinguish two helminth fauna complexes - plain and foothill-mountain (Table 2).

table 2

Distribution of helminths of small ruminants in the landscapes of Uzbekistan

Type of helminths	Landscape	
	Flat	foothill mountain
1. Moniezia benedeni	++	++
2. M. expanded	++	++
3. M. autumnalia	+	+
4. M. alba	-	+
5. Avitellina centripetal	++	+
6. Thysaniezia Giardia	++	+
7. Stilesia globipunctata	+	-
8. Taenia hvdatigena (larvae)	++	++
9. T. ovis (larvae)	+	+
10. Multiple multiple (larvae)	+	+
11 . M. gaigeri (larvae)	-	+
1 2 _ M. skrjabini (larvae)	+	+
13. Echinococcus granulosus (larvae)	++	++
14 . Alveococcus multilocular (larvae)	+	+
15. Hastilesia sheep	-	+
1 6 _ Hepatic tract	++	+
1 7 _ F. gigantica	++	+
18. F. indica	-	+
19. Paramphistome ichikawai	+	+
20. Calicophoron calicophorum	++	+
21. C. erschowi	++	+
22. Gastrothylax cruminifera	++	+
23. Dicrocoelium dendriticum	+	++

24. Orientobilharzia turkestanica	+	-
25. Trichocephalus ovis	+	++
26. T. scrjabini	+	++
27. Strongyloides papillosus	+	+
28. Bunostomum trigonocephalum	+	++
29. B. phlebotomum	+	++
30. Chabertia ovina	+	++
31. Esophagostomy sensual	++	++
32. O. Columbian	+	+
33. Dictyocaulus wires	++	+ +
34. Protostrongylus raillieti	-	++
35. P. davtiani	-	+
36. P. s krjabini	-	++
37. P. hobmaeri	-	+
38. P. rufescens	-	+
39. P. goats	-	+
40. Spiculocaulus kwongi	-	+
41. S. Leuckarti	-	+
42. S. orloffi	-	+
43. St. Austrian	-	+
44. Mueller capillary	-	++
45. Cystocaulus ocreatus	-	+
46. C. Vsevolodovi	-	+
47. Neosrongylus linearis	-	+
48. Varestrongylus pneumonicus	-	+
49. Trichostrongylus axis	+	++
50. T. capricola	-	+
51. T. colubriformis	+	+
52. T. probolurus	-	+

53. T. vitrines	+	++
54. T. orientalis	-	+
55. T. skrjabini	-	+
56. Camelostrongylus minded	+	-
57. Cooperia oncophora	+	+
58. C. punctata	+	+
59. C. pectinata	+	+
60. Grosspiculagia occidentalis	+	+ +
61. G. bellokan	-	+
62. G. trifida	+	+
63. G. Sogdiana	+	+
64. Haemonchus contortus	++	+
65. H. placei	++	+
66. H. longistipes	+	-
67. Marshallagy marashelli	++	++
68. Mongolian M.	++	+
69. M. schikhobalovi	+	+
70. M. dentispicularis	+	+
71. M. uzbekistanica	+	+
72. Nematodirus Swiss	+	++
73. No. abnormal	+	+
74. N. andreevi	-	+
75. N. filicollis	-	+
76. N. spathiger	++	++
77. No. Oiratianus	++	++
78. No. to be treasured	-	+
79. No. assadovi	+	+
80. N. brevispiculus	-	+
81. No. of dogs	-	+

82. No. Davtiani	-	+
83. No. gazelle	-	+
84. No. sugatini	-	+
85. N. schulzi	+	+
86. N. ferghanica	-	+
87. Nematodirella longissimuspiculata	-	+
88. No. of camels	+	-
89. Ostertagia I was shown	+	+
90. O. gruhneri	-	+
91. O. argunica	+	+
92. O. volgensis	+	-
93. O. aegagri	-	+
94. Orloffia orloffi	+	+
95. O. dahurica	-	+
96. Skrjabinagia Buryatia	+	+
97. S. lyrata	-	+
98. S. popovi	-	+
99. Dagestan Spiculopteraga	-	+
100. Teladorsagia trifurcate	+	+
101. T. Gregoriani	-	+
102. Teladorsage surrounded	+	++
103. Skrjabinema sheep	++	+
104. S. goats	+	+
105. Ascaris of sheep	+	+
106. Gongylonema beautiful	++	++
107. G. verrucosum	+	-
108. Parabronema skrjabini	++	+
109 . setaria labiatopapillosa	++	++
110 . _ Skrjabinodera saiga	+	-

Total	69	102

Note: ++ characteristic; + meet insignificantly; - not marked.

An analysis of the geographical distribution of species and supraspecific taxa of helminths of small ruminants in Uzbekistan indicates a high commonality of faunistic complexes of parasitic worms in animal plains and foothill-mountain zones. However, the faunal complexes of helminths and the biological groups of these landscapes differ significantly.

Most of the territory of Uzbekistan is a zone of plains (Kyzylkum desert, Ustyurt plateau, Karshi , Surkhan- Sherabad , Jizzakh steppes), which has long served as a valuable pasture for transhumance. Insects are widely represented on this territory , performing the role of intermediate hosts of helminths .

The plain complex covers significant areas of irrigated agriculture, where the main agricultural and fodder crops are grown. In this complex, the overwhelming number of dairy, meat-and-dairy and meat cattle is concentrated .

The plain complex also includes river valleys richer in herbage. Studies have shown that the helminth fauna of small cattle of the plains is represented by 69 species (Table 2), consisting of trematodes, cestodes, and nematodes. It should be noted that in the desert and semi-desert, mainly nematodes develop directly without the participation of an intermediate host. In the river valleys, trematodes are widely represented, in the development of which freshwater mollusks take part, as well as nematodes, in the life cycles of which numerous species of dipterous insects participate.

The main core of the helmitofaunal complex of small cattle in the plain zone of Uzbekistan is 23 species *(Moniezia expansa , M. _ benedeni , Avitellina centripunctata , Thysaniezia Giardia , Taenia hvdatigena (larvae), Echinococcus granulosus (larvae), Fasciola hepatica , F. _ gigantica , Calicophoron calicophorum , C. _ erschowi , Gastrothylax cruminifera , Oesophagostomum venulosum , Dictyocaulus* filaria , *Haemonchus contortus , H. _ placei , Marshallagia marashalli , M. _ mongolica , Nematodirus spathiger , N. _*

oiratianus , Skrjabinema ovis , Gongylonema pulchrum , Parabronema skrjabini , Setaria labiatopapillosa .

There are no helminths from the class of cestodes M *oniezia alba* , from the trematode class - *Hasstilesia ovis , Fasciola indica* and from the class of nematodes - *Nematodirus filicollis , N. andreevi , N. archari, N. brevispiculus , N. dogieli , N. davtiani, N. gazellae , N. sugatini , N. ferghanica , Nematodirella longissimespiculata , Skrjabinagia lyrata , S. popovi , Spiculopteraga dagestanica , Teladorsagia grigoriani,* registered in the foothill-mountain complex. It should be noted that one of the leading factors determining the formation of biocenoses, including helmitofaunistic complexes, in the plain zone of the Republic is human economic activity.

Discussion. It is known that in recent decades the Republic has carried out a grandiose work on the development and watering of lands, large reservoirs are being created, and the irrigation network is expanding. All this changes the appearance of biocenoses, which affects the formation of the helminth fauna of small cattle, i.e. the historically established system "parasite-host" is violated. As a result, there is a change in the qualitative and quantitative composition of helminths. The dominance of some groups of helminths and the disappearance of others is noted. Thus, with the commissioning of the South Surkhan reservoir in the south of Uzbekistan, the Amu -Bukhara canal in the Bukhara and Navoi regions, the development and watering of the Hungry Steppe in the northeastern part of the republic, conditions were created for the development of various invertebrates, in particular, freshwater mollusks *(Lymnaea , Planorbis , Gyraulus , Anisis* , etc.) and dipteran insects *(Musca , Lyperozia , Stamoxus , Aedes* , etc.), helminths of the genera *Fasciola , Calicophoron , Gastrothylax* , Orientobilharzia , *Parabronema , Setaria* , etc., related to them, have spread, causing epizootic outbreaks of trematodosis and nematodosis among susceptible animals (Matchanov, 1981).

The foothill-mountain zone occupies 24.5% of the territory of Uzbekistan and these zones, like pastures, are significantly higher in productivity than the

plains. The main place here is occupied by herbs. These are excellent pastures for all kinds of farm animals. In the foothill-mountain zone, with its significantly rugged relief, high humidity and lush vegetation, animal husbandry is developed, mainly meat and dairy. and meat-wool directions (cattle, sheep of fat-tailed and meat-wool breeds, goats, horses).

As can be seen from the above, the natural and economic conditions and the system of animal husbandry in the foothill-mountain ecosystems of Uzbekistan are specific, which, of course, affects the formation of both the fauna of the animal world and its helminths.

helminth fauna of small cattle in the foothill-mountain landscape of Uzbekistan is represented by 102 species. The main core of the complex is 25 species: *Moniezia expansa , M. _ benedeni , Taenia hvdatigena (larvae), Echinococcus granulosus (larvae), Dicrocoelium dendriticum , Trichocephalus ovis , T. _ skrjabini , Bunostomum trigonocephalum , B. _ phlebotomum , Chabertia ovina , Oesophagostomum venulosum , Dictyocaulus filaria , Protostrongylus raillieti , P. skrjabini , Muellerius capillaris , Trichostrongylus axei , T . vitrines , Grosspiculagia occidentalis , Marshallagia marashalli , Nematodirus helvetianus , N. _ spathiger , N. _ oiratianus , Teladorsagia circumcincta , Gongylonema pulchrum , Setaria labiatopapillosa .*

Echinococcus cestodes are widespread here. *granulosus (larvae)* and *Taenia hvdatigena (larvae)* , for which small ruminants act as an intermediate host. Mature forms of these worms are parasites of the small intestine of carnivores. Of the representatives of trematodes, the distribution of *Dicrocoelium should be noted. dendriticum* , developing with the participation of terrestrial molluscs and ants.

In the foothill-mountain landscape, nematodes are quite widely represented in small cattle, mainly moisture-loving species from the group *Trichocephalus , Chabertia , Bunostomum , Oesophagostomum , Trichostrongylus , Nematodirus* and etc.).

The richness of the fauna of helminths of small cattle of the foothill-mountain complex is due to the great diversity of landscapes, vegetation, fauna and its high density. Consequently, there are favorable conditions for the development of terrestrial molluscs - intermediate hosts of dicrocelia , oribatid mites - intermediate hosts of anoplocephalates , carnivorous and agricultural animals - definitive and intermediate hosts of teniate .

Of the total number of helminths, 61 species were noted in small cattle of both the plain and foothill-mountain complexes. This indicates a high degree of adaptation of most helminth species to various environmental conditions. There is a characteristic confinement of helminths of small cattle to certain zones of Uzbekistan.

The distribution and interchange between parasitic worms and various animal species is influenced by the transhumance system of livestock grazing.

The presented materials clearly demonstrate the role of landscape diversity, taking into account their inhabitants (invertebrates and vertebrates), in the formation of the helminth fauna of small cattle in Uzbekistan.

Consequently, the extraordinary diversity of the natural and climatic conditions of Uzbekistan, of course, leaves its mark on the formation and distribution of the fauna of helminths of small cattle, as well as on their circulation in the biogeocenoses of this region.

The basis for protecting animals from helminthiases is a set of sanitary and hygienic measures to improve the external environment from pathogens of invasions, which must be carried out both on pastures and directly in livestock buildings. At the same time, a mandatory combination of pasture prophylaxis with deworming of animals is necessary. It is also necessary to pay special attention to the protection of the environment from pathogens of helminthic diseases in specific areas of the Republic.

Conclusion. Thus, as a result of studying a huge factual material and analyzing literature data, the species composition of helminths of small cattle in various regions of Uzbekistan has been established. At the same time, 110 species

of helminths have been registered in small cattle of Uzbekistan. Of these, 106 species belong to sheep, 74 species to goats. Of the 106 species of helminths listed in the sheep of the Republic, *Marshallagia uzbekistanica* was described by us as a new species for science, and 2 species *(Marshallagia uzbekistanica* and *Spiculocaulus kwongi*) were noted by us for the first time in the CIS and 8 species (*Moniezia alba, Marshallagia uzbekistanica, Cystocaulus vsevolodovi, Spiculocaulus kwongi, Neosrongylus linearis, Varestrongylus pneumonicus, Cooperia punctata, C. pectinata*) - for the first time in Uzbekistan. Also, out of 74 species of helminths identified in goats of the Republic, Marshallagia uzbekistanica is described by us as new to science, and 4 species (*Protostrongylus rufescens, Spiculocaulus kvongi, S. leuckarti, S. austriacus*) are recorded by us for the first time in the CIS and 9 species (*Protostrongylus rufescens , P. caprae, P. davtiani, Spiculocaulus kvongi, S. leuckarti, S. austriacus, Cystocaulus vsevolodovi, Neosrongylus linearris, Varestrongylus pneumonicus*) are registered for the first time in Uzbekistan.

Among the identified parasitic worms of small cattle in Uzbekistan, 6 7 species develop in a direct way, i.e. they develop without the participation of intermediate hosts. The remaining 43 species of helminths develop with the participation of intermediate and additional hosts. Their intermediate and additional hosts are freshwater and land mollusks, ants, dipterous insects, oribatid mites, predatory mammals, and humans.

Considering the structure of the fauna of helminths of small ruminants, depending on the landscape and climatic conditions, two helminth fauna complexes were distinguished - plain and foothill-mountain. Studies have shown that the helminth fauna of small cattle of the plains is represented by 69 species, consisting of trematodes, cestodes and nematodes. The main core of the helminth fauna complex of small cattle in the plain zone of Uzbekistan is 23 species. The helminth fauna of small cattle in the foothill-mountain landscape of Uzbekistan is represented by 102 species. The main core of the complex is 25 species.

The presented materials clearly demonstrate the role of landscape diversity, taking into account their inhabitants (invertebrates and vertebrates), in the formation of the helminth fauna of small cattle in Uzbekistan.

data obtained are not sufficient for a final judgment about the fauna, ecology, especially about the biological characteristics of helminths in small ruminants. All this requires further comprehensive studies of helminths in small ruminants, as well as the development of methods and means for regulating the population of pathogenic species of parasites.

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