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Ixodid ticks *(Acari, Ixodidae)* of the Irtysh River floodplain

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Abstract. Blood-sucking ticks are an integral part of the ecosystems and play a key role in the transfer of viruses, bacteria and protozoa from one organism to another. All over the world there is a problem of zoonotic infections, including vector-borne ones. In Kazakhstan, there are several foci of vector-borne infections transmitted by ixodid ticks. In the eastern region of the republic, these are natural foci of tularemia, tick-borne encephalitis, rickettsiosis, and borreliosis in humans, and blood-parasitic diseases of domestic animals, the main vectors of which are ixodid ticks. Despite the important epidemiological and epizootological significance of ixodid ticks, the acarofauna of the Irtysh region has remained poorly studied until now. Research conducted in 2023 in the floodplain of the Irtysh River, in the Pavlodar and East Kazakhstan regions, found 8 species of ixodid ticks belonging to 4 genera. Ticks were mainly collected from households and in the vicinity of populated areas. A comparative description of the faunas of the two regions was carried out and some differences were identified. The fauna of ticks in East Kazakhstan region was represented by four species: *Hyalomma scupense, Dermacentor marginatus, D. nuttalli, Haemaphysalis punctata. H. scupense* turned out to be dominant in numbers. While in Pavlodar region, 5 species were noted: *Dermacentor marginatus, D. reticulatus, Haemaphysalis concinna, H. erinacei, Rhipicephalus pumillio*. Remarkably that *H. concinna* was dominating in numbers, and 2 species have been found for the first time here: *Hyalomma scupense* – for East Kazakhstan region and *H. erinacei* – for Pavlodar region.

Keywords: Ixodid ticks, vectors, ectoparasites, bloodsucking arthropods, acarofauna of the Irtysh region

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Introduction

Ixodid ticks are vectors of pathogens of many infectious and invasive diseases such as tularemia, tick-borne encephalitis, Crimean-Congo hemorrhagic fever, borreliosis, rickettsiosis, etc. The territory of the eastern part of Kazakhstan is unfavorable for such vector-borne diseases as tularemia, tick-borne encephalitis, and blood-sucking ticks are reservoirs and vectors of the causative agents [1]. The territory of the Pavlodar region is located in the northeast of Kazakhstan and is characterized by cold, long winters and short, hot summers. The East Kazakhstan region is located in the east of the Republic and is characterized by hot and dry summers and cold, snowy winters. The main water artery of both regions is the river. Irtysh. The Irtysh floodplain is home to a large number of species of rodents, including predators, insectivores, artiodactyls, chiropterans, lagomorphs, birds, farm and domestic animals. The climate, vegetation and a wide variety of mammals create favorable conditions for the habitat of blood-sucking arthropods, including ticks.

Despite the presence of active foci of vector-borne infections and harm caused to farm animals, today the acarofauna of Eastern Kazakhstan remains poorly studied. There is only fragmentary information about findings in the middle of the last century in the East Kazakhstan region of *Dermacentor marginatus, D. niveus, D. nuttalli, D. reticulatus, Haemaphysalis punctata, Ixodes crenulatus, I. persulcatus, I. ricinus, Rhipicephalus pumilio, Rh. sanguineus, Rh. turanicus* [1-7]. The following species of ticks are known for the territory of the Pavlodar region: *Ixodes crenulatus, I. lividus, I. persulcatus, I. laguri, Dermacentor marginatus, D. reticulatus, Haemaphysalis concinna* [8]. Unfortunately, we do not have complete data on the current state of the acarofauna of northeastern and eastern Kazakhstan. In this connection, the purpose of our research was to clarify the current state of the ixodid tick fauna of the Irtysh floodplain, to identify their biotopical distribution and determine the seasonal abundance on domestic animals, to give a comparative description of the species composition of ticks in the East Kazakhstan and Pavlodar regions.

Materials and methods

Tick have been collected on the territory of the East Kazakhstan region in the floodplain of the Black Irtysh River from April 25 to May 12, 2023 and on the territory of the Pavlodar region in the floodplain of the Irtysh River from May 26 to June 14, 2023 (Table 1).

Table 1

Collection points and sampling coordinates for ixodid ticks (Ixodida) (April – June 2023)

Point number	Date	Model site	Gathering place	Coordinates	
					longitude
1	27.04.2023	Black Irtysh	near the border Alkabek outpost, right bank, on the flag	48.01525	85.40967
2	29.04.2023	Black Irtysh	near the border Alkabek outpost, right bank, 1 Meriones tamariscinus	48.01525	85.40967

3	29.04.2023	Black Irtysh	near the border Alkabek outpost, right bank, 2 horses	48.01525	85.40967
4	29.04.2023	Black Irtysh	near the border Alkabek outpost, right bank, 4 cattle	48.01525	85.40967
5	29.04.2023	Black Irtysh	near the border Alkabek outpost, right bank, 1 cattle	48.01525	85.40967
6	29.04.2023	Black Irtysh	near the border Alkabek outpost, right bank, 3 horses	48.01525	85.40967
7	29.04.2023	Black Irtysh	near the border Alkabek outpost, right bank, 4 cattle	48.01525	85.40967
8	9.05.2023	Black Irtysh	Boran village, right bank, 7 cattle	48.00127	85.16068
9	9.05.2023	Black Irtysh	Boran village, right bank, 5 cattle	48.00127	85.16068
10	9.05.2023	Black Irtysh	Boran village, right bank, 5 cattle	48.00127	85.16068
11	9.05.2023	Black Irtysh	Aygyrkum sands, left bank, 5 cattle	47.99387	85.16150
12	9.05.2023	Black Irtysh	Aygyrkum sands, left bank, 1 horse	47.99387	85.16150
13	9.05.2023	Black Irtysh	Aygyrkum sands, left bank, 2 horses	47.99387	85.16150
14	9.05.2023	Black Irtysh	Aygyrkum sands, left bank, 1 cattle	47.99387	85.16150
15	9.05.2023	Black Irtysh	Aygyrkum sands, left bank, 1 horse	47.99387	85.16150
16	9.05.2023	Black Irtysh	Aygyrkum sands, left bank, 1 horse	47.99387	85.16150
17	9.05.2023	Black Irtysh	Aygyrkum sands, left bank, 1 sheep	47.99387	85.16150
18	9.05.2023	Black Irtysh	Aygyrkum sands, left bank, 1 cattle	47.99387	85.16150
19	27.05.2023	Pavlodar Irtysh region	Big Akzhar village, left bank, on the flag	50.812367	78.454336
20	29.05.2023	Pavlodar Irtysh region	Kyzyl Enbek village, left bank, on the flag	51.290651	77.968192
21	31.05.2023	Pavlodar Irtysh region	Kyzylzhar village, left bank, on the flag	52.474690	76.783095
22	5.06.2023	Pavlodar Irtysh region	Michurina village, right bank, on the flag	52.482584	76.799913
23	7.06.2023	Pavlodar Irtysh region	Beregovoye village, right bank, flag	53.616969	75.189289
24	31.05.2023	Pavlodar Irtysh region	Isa Baizakova village, left bank, 4 cattle	53.572976	75.145990

During the field work, the banks of the Black Irtysh and the floodplain of the river in the Pavlodar Irtysh region, channels and floodplain lakes were examined on foot and by transport routes. In total, 737 km of the route were covered (including 390 on foot), both river banks were examined in Zaisan and Kurshim districts of East Kazakhstan and in Irtysh and Pavlodar districts of the Pavlodar region. For ease of designation, studied areas were designated as the model area "Black Irtysh" – the study area in the East Kazakhstan region and the model area "Pavlodar Pre-Irtysh" – the study area in the Pavlodar region.

During the work, 20 horses, 96 cattle, 2 small cattle were examined, ticks were collected and studied from 1 wild rodent (Tamarisk jird – *Meriones tamariscinus* Pall.). A total of 683 specimens of Ixodid ticks were collected.

The identification of tick species was carried out according to morphological characteristics using identification tables [9-11], their number and age (larva, nymph and adult) were noted. As a result, 8 species of ixodid ticks belonging to 4 genera *(Hyalomma, Dermacentor, Haemaphysalis, Rhipicephalus)* were identified.

Results

In the semi-desert zone of the Black Irtysh floodplain (the first model area), 568 specimens of ticks belonging to 4 species and 3 genera have been collected: *Dermacentor marginatus* Sulzer, 1776, D. *nuttalli* Olenev, 1928, *Hyalomma scupense* Schulze, 1918, *Haemaphysalis punctata* Canestrini and Fanzago, 1878. The research results are shown in Table 2.

Table 2

Taxonomic composition and number of ixodid ticks (Ixodida) collected in model areas of the Irtysh basin, April – June 2023

Taxon name	Individuals collected							
	Total	Black Irtysh			Pavlodar Irtysh			
		Profiles						
		1	2	3	4	5	6	7
Hyalomma scupense	1	289	138	–	–	–	–	–
Dermacentor marginatus	3	41	71	–	7	–	2	10
D. nuttalli		–	22	–	–	–	–	–
D. reticulatus		–	–	–	–	1	5	–
Haemaphysalis concinna	3	–	–	–	78	5	5	–
H. erinacei		–	–	–	1	–	–	–
H. punctata		1	6	–	–	–	–	–
Rhipicephalus pumillio	1	–	–	–	1	–	–	–
Total by profile		331	237	0	87	6	12	10
Total	8	683						

As it is shown in Table 2, the most abundant species at the first model area was H. scupense (427 specimens). The next most abundant species were D. *marginatus* (112 specimens), D. *nuttalli* (22 specimens), and *Haemaphysalis punctata* (7 specimens). *Nymphs* of D. *marginatus* ticks were found only on the Tamarisk jird (*Meriones tamariscinus* Pall.).

On the profiles of the first model site, the greatest species diversity was noted at profile 2 (4 species). On profile 1-3 species were revealed, while profile 3 had no ticks at all. We attribute the absence of ticks in the latter case to regular disinfestation, which is carried out by the owners of a large farms located on the right and left banks of the river. In addition, the soil in this area is heavily trampled by large and small livestock.

At the second model area - Pavlodar Pre-Irtysh, 115 specimens of ixodid ticks belonging to 5 species and 4 genera were collected (D. *marginatus,* D. *reticulatus Fabricius*, 1794, H. *erinacei Pavesi*, 1884., H. *concinna Koch*, 1844., *Rhipicephalus pumillio* Schulze, 1935). The most abundant in the collections were H. *concinna* and D. *marginatus* (88 and 19 specimens, respectively). D. *reticulatus* had 6 specimens, while Rh. *pumillio* and H. *erinaceid* were represented only by 1 specimen each, and last one in a nymphal stage.

The highest species diversity of ticks in the Pavlodar Pre-Irtysh was revealed at profile 4 (4 species). And lowest diversity was at profile 7 (1 species). Profiles 5 and 6, had 2 and 3 species respectively.

Of the 7 species of ticks of the genus *Hyalomma* that live in Kazakhstan, only 1 species was found in the study area – *Hyalomma scupense* Schulze, 1918 (see Figure 1). It is a pasture-stall parasite with a one- or two-host development cycle. Widely distributed in Kazakhstan (West Kazakhstan, Atyrau, Aktobe, Kyzylorda, Turkestan, Zhambyl, Almaty, Zhetysu regions). It was found in the East Kazakhstan region for the first time. Since there is no information about the discovery of this species in the territory of the East Kazakhstan region, we can assume that this species is new to the region due to the expansion of its range in the eastern direction.

Material: 138 ♀♀ and 108 ♂♂ (246 specimens) were collected on 04/29/2023 from cattle and 39 ♀♀ and 4 ♂♂ (43 specimens) from horses near the Alkabek border post, 35 ♀♀ and 47 ♂♂ (82 specimens) – from cattle 05/09/2023 in the Boran village of the Kurchum district (Black Irtysh, right bank); 13 ♀♀ and 43 ♂♂ (56 specimens) collected from cattle in Aygyrkum sands at the Zaisan district, East Kazakhstan region (Figure 1). The species has important epidemiological and epizootological significance. In natural foci it is a vector of Crimean-Congo hemorrhagic fever, West Nile fever, tick-borne typhus, Syrdarya valley fever, Burnet's rickettsia, theileria, etc. [12-16].

Male Female

Figure 1. Adults of Hyalomma scupense collected from cattle in the East Kazakhstan region

Of the 6 species of ticks of the genus *Dermacentor* known for Kazakhstan, we found 3 in the study area: D. *marginatus,* D. *nuttalli,* D. *reticulatus.*

Dermacentor marginatus Sulzer, 1776 (see Figure 2) is a three-host pasture parasite. Vector of tick-borne encephalitis, Q-fever, tick-borne typhus of North Asia, tularemia, brucellosis, Crimean hemorrhagic fever, piroplasmosis and nuttaliosis of horses, piroplasmosis of dogs, nuttaliosis of hedgehogs, babesiosis, anaplasmosis, theileriosis and brucellosis of sheep [17-23]. Widely distributed in the steppe and foothill zones of Kazakhstan: in West Kazakhstan, Aktobe, Kustanai, North Kazakhstan, Akmola, Pavlodar, Abay, East Kazakhstan, Karaganda, Zhetysu, Almaty, Zhambyl, Turkestan and Kyzylorda (eastern part) regions [1 -8, 15, 20-22]. In the East Kazakhstan region, the species was previously known in the Ulan, Bukhtarma, Bolshenyrym, Zaisan, Samara and Shemonaikha regions, and in the Pavlodar region - in the Pavlodar, Terenkol (formerly Maximo-Gorkovsky) and Sherbaktinsky (formerly Tsyuryupinsky) regions [5-7, 22]. We discovered the species in both Pavlodar and East Kazakhstan regions.

Male Female

Figure 2. Dermacentor marginatus adults collected from cattle in the East Kazakhstan region

Material: 1 ♀, 3 ♂♂ (4 specimens) caught for the flag on April 27, 2023, 18 ♀♀, 8 ♂♂ (26 specimens) taken from cattle, 5 ♀♀, 5 ♂♂ (10 specimens) collected from horses on 04/29/2023 and 1 N taken from a *Meriones tamariscinus* on 04/29/2023 near the Alkabek border post, 20 ♀♀, 32 ♂♂ (26 specimens) collected on 05/09/2023 from cattle in the Boran village of the Kurchum district; 2 ♀♀, 9 ♂♂, 3 LL (26 specimens) taken from horses, 5 ♀♀ taken on 05/09/2023 from cattle in the sands of Aygyrkum of the Zaisan district, East Kazakhstan region.

6 ♀♀, 1 ♂♂ collected on the flag on May 27, 2023 near the Bolshoi Akzhar village of the Maysky district, 10 ♀♀ taken from cattle on May 31, 2023 in the Isa Baizakov village of the Irtysh region; 2 ♂♂ caught on the flag on 06/07/2023 near the Beregovoe village of the Terenkol district, Pavlodar region.

Dermacentor nuttalli Olenev, 1928. Pasture parasite with a three-host development cycle. Vector of tick-borne encephalitis, tick-borne typhus of North Asia, tularemia, rickettsiosis, brucellosis, borreliosis, coxielliosis, babesiosis, nuttaliosis and equine piroplasmosis [24-29]. In this regard, there is a risk of tick-borne rickettsiosis in humans when visiting biotopes where *D. nuttalli* lives.

In Kazakhstan, it lives in the southeastern part of the Zaisan depression and the foothills of the Saur ridge, confined to steppes and deserts. The adult feeds on livestock, wild ass, and dogs; immature ticks feed on rodents, hares, dogs, and cats. We found ticks on cattle in the Zaisan district of the East Kazakhstan region.

Material: 3 ♀♀, 4 ♂♂ (7 specimens) taken from cattle, 5 ♀♀, 4 ♂♂ (9 specimens) – from horses, 2 ♀♀, 4 ♂♂ (6 specimens) – from small cattle 05/09/2023, in Aygyrkum sands of the Zaisan district.

Dermacentor reticulatus Fabricius, 1794. A pasture parasite with a three-host development cycle. Vector of pathogens of piroplasmosis, nuttaliosis and infectious encephalomyelitis of horses, piroplasmosis of dogs, tick-borne encephalitis, Q fever, tick-borne typhus of North Asia, tularemia, brucellosis [30-35]. Widely distributed in Kazakhstan in steppe and foothill regions. In the East Kazakhstan region, it is known in the Shemonaikha district and is widespread in the Pavlodar region [7,8].

Material: 1 ♀ caught on a flag on May 29, 2023 in the vicinity Kyzylenbek village (5 profile) of the Maysky district and 1 ♀, 1 ♂ (2 specimens) were collected for the flag on May 31, 2023 in the vicinity of the Kyzylzhar village (Aksu city); 3 ♀♀ was caught on the flag in the vicinity of Michurin village (6 profile) in Pavlodar region.

Among the genus Haemaphysalis 5 species of ticks live in Kazakhstan, and 3 species have been found in the study area.

Haemaphysalis concinna Koch, 1844. A pasture parasite with a three-host development cycle. It feeds on all types of animals living in the species' range and also attaches itself to humans. Vector of the causative agent of typhus of North Asia, tularemia, etc. [36-41]. In the Pavlodar region it was previously known from the Akkul and Shcherbaktinsky districts, and in the East Kazakhstan region – in the Shemonaikha district [7,8].

Material: 35 ♀♀, 43 ♂♂ (78 specimens) was collected for the flag on May 27, 2023 near the Bolshoi Akzhar village (profile 4) and 3 ♀♀, 2 ♂♂ (5 specimens) were collected for the flag 29 May 2023 in the vicinity of the Kyzylenbek village (5 profile) of the Maysky district 3 ♀♀, 2 ♂♂ (5 specimens) was collected for the flag on May 31, 2023 in the vicinity of Kyzylzhar village (6 profile) of the Pavlodar region.

Haemaphysalis erinacei Pavesi, 1884. A burrow parasite that feeds mainly on small and medium-sized mammals that live in burrows. The epidemiological and epizootological significance of the species has been poorly studied; there is only information about the presence of pathogens of the genus Rickettsia and Babesia in ticks [42-44]. Due to the fact that ticks at all stages of development live in burrows and feed on wild burrowing mammals, they pose virtually no danger to people and domestic animals. However, there is information in the literature about the presence and persistence of the plague pathogen in the body.

Material: 1 nymph was caught by us on the flag on May 27, 2023 near the Bolshoi Akzhar village of the Maysky district in Pavlodar region (4th profile).

Haemaphysalis punctata Canestrini et Fanzago, 1878. Three-host pasture parasite. Widely distributed in Kazakhstan, especially in large river basins. It feeds on mammals and birds, and also attacks humans. It is a vector of Borrelia, Rickettsia, Babesia, etc. [45-48].

Material: 1 ♂ taken by us on April 29, 2023 from one of the four examined cows near the Alkabek border post (1 profile); 5 ♀♀ and 1 ♂ were taken on May 9, 2023 from 4 studied cows in the Boran village (2 profile) of the Kurchum district of East Kazakhstan region.

Rhipicephalus pumillio Schulze, 1935. Three-host pasture parasite. It feeds on wild and domestic animals and attacks humans. Widely distributed in Kazakhstan. Vector of pathogens of rickettsiosis, tick-borne encephalitis, etc. [49-51].

Material: 1 ♀ caught by us on the flag on May 27, 2023 near the Big Akzhar village (4 profile) of the Maysky district of Pavlodar region.

When comparing the faunas of the surveyed profiles, the greatest similarity was found between profiles 1 and 2, located on the first model site, which are grouped into one cluster with profile 7, and profiles 5 and 6 from the second model site, united into a cluster with profile 4 from the same region (see Figure 3). Only one species (*D. marginatus*) is common between the model areas, while *H. scupense, D. nuttalli, H. punctata* were not recorded by us outside the East Kazakhstan region, and *D. reticulatus, H. concinna, H. erinacei, Rh. pumillio* outside the Pavlodar Pre-Irtysh region. Detection of such species as *D. nuttalli* (profile 2), *H. erinacei* and *Rh. pumillio* in only one point. (profile 4), in our opinion, is due to the seasonal characteristics of the biology of these species and climatic anomalies of the current year (long cold spring, drought). Usually, all these species are widespread.

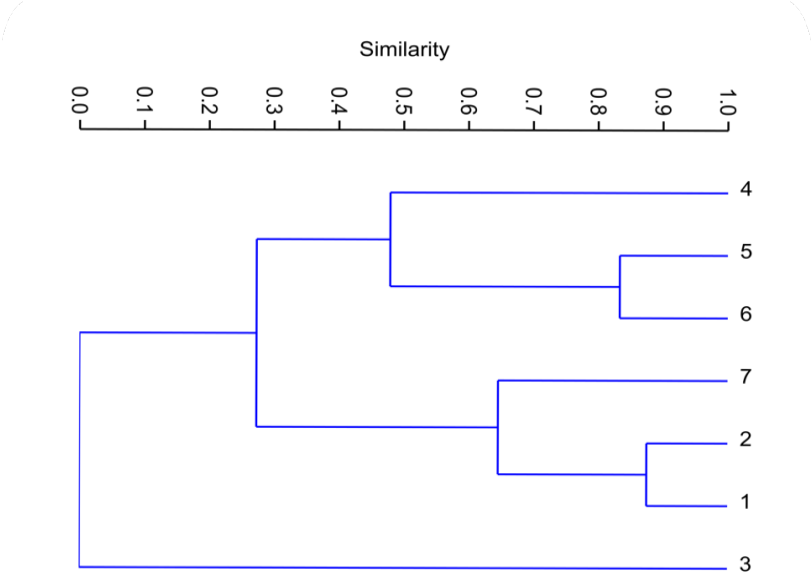

Figure 3. Dendrogram of the similarity of the ixodid tick fauna of the studied profiles (Kulchinsky Index, UPGMA method)

Almost all species identified during our work were previously recorded in the surveyed areas. It has been established that in the semi-desert, with its sparse vegetation, ticks are not widespread, as in the conditions of closed grass of the steppes, but inhabit the burrows of numerous rodents here or gravitate towards shrub and herbaceous formations. Almost all the species we collected are found in river floodplains. *H. erinacei* ticks sometimes crawl out of the burrows and remain on the soil surface near the burrow entrance. It is possible that cases of attacks on humans and cattle are associated with this biological feature of the burrowing *H. erinacei*.

We assume that the low number of ticks is largely due to the insignificant thickness of the snow cover in winter and the long, cold spring. These factors could have greatly reduced the ixodid population, and hot and dry summer exacerbated their impact. However, if conditions are favorable, the tick population will quickly recover, which will inevitably lead to the spread of tick-borne diseases that pose a threat to humans and animals.

Conclusion

In model areas in the floodplain of the Black Irtysh River and the Pavlodar Irtysh region, we identified 8 species of ticks belonging to four genera: *Hyalomma, Dermacentor, Haemaphysalis, Rhipicephalus.* New species for the region have been identified: *Hyalomma scupense* – not recorded in the East Kazakhstan region before our research and *Haemaphysalis erinacei* – new for the Pavlodar region. Ixodid tick activity was relatively low throughout. The low number of ticks is presumably due to the long and cold spring, abnormally hot and dry summer, and the disinfestation process carried out during our collections. One of the components of the task of combating and preventing infections transmitted by blood-sucking arthropods is the study of the fauna, biology and ecological characteristics of these parasites. However, constant monitoring of the numbers, distribution and ecology of these bloodsuckers is necessary, since the main goal of all the work being done is to preserve human health.

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Conflict of interest

The authors declare that they have no conflict of interest.

Authors' contribution

Sayakova Z.Z.: conceptualization, research, preparation and editing of the manuscript.
Eszhanov A.B.: conceptualization, approval of the final manuscript.
Asylbek A.M.: conceptualization, research, approval of the final manuscript.

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З.З. Саякова, А.М. Асылбек, А.Б. Есжанов
Қазақстан Республикасы Ғылым және жоғары білім министрлігінің «Зоология институты» республикалық мемлекеттік қазыналық кәсіпорны, Алматы қ., Қазақстан

Ертіс өзені жайылмасының иксодты кенелері (Acari, Ixodidae)

Аңдатпа. Қансорғыш кенелер биоценоздың құрамдас бөлігі болып табылады және вирустарды, бактерияларды және қарапайымдыларды бір организмнен екінші организмге тасымалдауда рөл атқарады. Бүкіл әлемде зооноздық инфекциялар, соның ішінде тасымалдаушы инфекциялар мәселесі бар. Қазақстанда иксодты кенелері арқылы таралатын бірнеше тасымалдаушы инфекция ошақтары бар. Республиканың шығыс аймағында бұл туляремияның, кене энцефалитінің, риккетсиоздың, адамдағы боррелиоздың және үй жануарларының қан-паразиттік ауруларының табиғи ошақтары, олардың негізгі тасымалдаушылары иксоидтық кенелер. Иксодты кенелердің маңызды эпидемиологиялық және эпизоотологиялық маңызына қарамастан, Ертіс өңірінің акарофаунасы осы уақытқа дейін жете зерттелмеген. 2023 жылы Ертіс өзенінің жайылмасында, Павлодар және Шығыс Қазақстан облыстарында жүргізілген зерттеулерде 4 тұқымдасқа жататын иксодты кенелердің 8 түрі анықталды. Кенелер негізінен үй шаруашылықтарынан және елді мекендердің маңайынан жиналды. Екі аймақтың фаунасына салыстырмалы сипаттама жүргізіліп, кейбір айырмашылықтары анықталды. Шығыс Қазақстан облысының кене фаунасы төрт түрмен ұсынылған: Hyalomma scupense, Dermacentor marginatus, D. nuttalli, Haemaphysalis punctata. H. scupense сан жағынан басым болып шықты. Павлодар облысында 5 түрі атап өтілді: *Dermacentor marginatus, D. reticulatus, Haemaphysalis concinna, H. erinacei, Rhipicephalus pumillio. H. concinna* саны бойынша басым болды. Облыс үшін екі жаңа түрі анықталды: *Hyalomma scupens*e – Шығыс Қазақстан облысында және *H. erinacei* – Павлодар облысында.

Түйінді сөздер: Иксодты кенелер, таратушылар, эктопаразиттер, қансорғыш буынаяқтылар, Ертіс өңірінің акарофаунасы

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Иксодовые клещи (Acari, Ixodidae) поймы реки Иртыш

Аннотация. Кровососущие клещи являются неотъемлемой частью биоценоза и играют роль в переносе вирусов, бактерий и простейших от одного организма к другому. Во всем мире существует проблема зоонозных инфекций, в том числе и трансмиссивных. В Казахстане функционируют несколько очагов трансмиссивных инфекций, передающихся иксодовыми клещами. В восточном регионе республики это природные очаги туляремии, клещевого энцефалита, риккетсиозов, боррелиозов людей и кровепаразитарных заболеваний домашних животных, основными переносчиками которых являются иксодовые клещи. Несмотря на важное эпидемиологическое и эпизоотологическое значение иксодовых клещей акарофауна Прииртышья до настоящего времени оставалась слабоизученной. Исследованиями, проведенными в 2023 году в пойме реки

Иртыш, на территории Павлодарской и Восточно-Казахстанской области были обнаружены 8 видов иксодовых клещей, принадлежащих к 4 родам. Клещи, в основном, были собраны с домашних и в окрестностях населенных пунктов. Была проведена сравнительная характеристика фаун двух регионов и выявлены некоторые отличия. Фауна клещей Восточно-Казахстанской области была представлена четырьмя видами: Hyalomma scupense, Dermacentor marginatus, D. nuttalli, Haemaphysalis punctata. Доминирующим по численности оказался H. scupense. В Павлодарской области было отмечено 5 видов: *Dermacentor marginatus, D. reticulatus, Haemaphysalis concinna, H. erinacei, Rhipicephalus pumillio.* Доминировал по численности H. concinna. Выявлено два новых для территории областей вида: *Hyalomma scupense* – в Восточно-Казахстанской области и *H. erinacei* – в Павлодарской области.

Ключевые слова: иксодовые клещи, переносчики, эктопаразиты, кровососущие членистоногие, акарофауна Прииртышья

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