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ECTOPARASITISM OF IXODID TICKS (*IXODIDAE*) IN DOMESTIC ANIMALS IN KARAKALPAKSTAN

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ABSTRACT

The investigation deals with the ixodid ticks parasitizing domestic animals and the identification of the main hosts, due to the aridization of the Aral Sea region, where the extension and parasitization of ticks is apparently influenced by ecological factors.

KEYWORDS: *Ixodidae, ticks, parasitism, hosts, animals*

INTRODUCTION

Parasitism is a universal fact of nature, and as an ecological phenomenon, it emerged in different ways. Diverse organisms can live a parasitic way of life, most of them are found among blood-sucking ixodid ticks, these are parasites of vertebrate animals and are ubiquitous, their most distinctive habitats are steppe zones, deserts, semi-deserts of Central Asia.

Currently, in many countries, the authors pay great attention to the study of (ixodidae) ticks - the main parasites and vectors of infection in vertebrate animals Balashov (1967,2016), Berdeyev (1974), Kolonin (1984), Filippova (1977).

The features of ecology and the extension of ixodid ticks in biogeocenoses were studied in Uzbekistan Akramova et al (2016) and Mirzaev (2017).

Studies conducted in the XX century by academician E.N. Pavlovsky (1961) and his numerous students showed the great importance of ixodid ticks not only as vectors, but also as long-term keepers of a number of dangerous infections as tick-borne encephalitis, tularemia, tick-borne rickettsiosis, pyroplasmosis in animals.

The family of ticks - (*Ixodidae*) from the order (*Ixodida*), superorder parasitiformes (*Parasitiformes*) are found everywhere. They are quite large, the length of the female in a hungry state is 3-4 cm, from blood saturation it increases to 10 mm. The oral apparatus is represented by a complex long proboscis, which includes chelicerae, pedipalps performing olfactory, tactile functions. The female chelicerae are armed with 3 teeth, the structure of the male chelicerae claw is unique, which allows us to distinguish from other ticks - *Parasitiformes*.

The tick passes the stages in its development: eggs and 3 active stages of the larva,

nymph and adult imago. A larva emerges from the egg, having three pairs of legs, followed by the nymph stage, which is much larger than the larvae. The nymph turns into an adult stage after molting, differing in large size and a developed sexual system.

Ixodid ticks have two-host, three-host life cycles, and the hosts of adult ticks are always all types of farm animals. Ixodid ticks are an understudied group of parasitic arthropods in faunal terms in the Republic of Karakalpakstan

The task of this work was to clarify the types of blood-sucking ticks, and the damage done to pets, to identify the main hosts, due to the aridization of the Aral Sea region, where the spread and parasitization of ticks may be influenced by ecological factors.

MATERIALS AND METHODS

The work was carried out from March to December 2020 in Shortanbay farm of Nukus region, the Republic of Karakalpakstan in agricultural (for grazing) land, with dense herbaceous vegetation, in places with tall shrubs. Samples were taken according to the generally accepted method of parasitology. The ticks were collected from pastures and from 20 cows, 12 goats and 5 dogs of the farm owner.

RESULTS AND DISCUSSION

During the observation, it was noted that 3 species of ticks parasitized in all animals examined in the pasture area of the farm, among which the dominant species is *Ixodes ricinus*, and *Hyalomma scupense*, *Boophilus kohksi* were sporadic.

Tick - *Ixodes ricinus* (imago), parasitized in all examined animals, on the udder of cows, especially on the body of dogs. The species

(*Hyalomma scupense*) willingly preferred cows in the autumn period and was less likely to parasitize goats, and another species (*Boophilus kohksi*) parasitized only on goats, although for them cattle are the main

host. These are small, one-host ticks, their development runs from the larva to the imago on the body of the host (Fig).



Figures illustrating the collection of ticks from the body of animals

In our observations, the tick (*Ixodes ricinus*) infected dogs and cattle (cows) more often with its bite. Perhaps this is due to the tick nutrition including grass leaves, the branches of the shrubs on which they are located, and as a result leads to the development of tularemia, tick-borne encephalitis in animals. Unfortunately, when the encephalitis virus is

released along with raw milk, and when consumed, a person becomes infected, since it can have pathogens (Table).

Table

Discovered species of ixodid ticks of agricultural (pasture) land of the farm "Shortanbay" of Nukus district of the Republic of Karakalpakstan

Species of ticks	Parasitizing ticks on animals		
	<i>Dogs</i>	<i>cows</i>	<i>goats</i>
<i>Ixodes ricinus</i>	++++	++	-
<i>Hyalomma scupense</i>	-	++++	+
<i>Boophilus kohksi</i>	-	-	+++

Parasitization (*Ixodes ricinus*) began from March to September months, but individual species were found in mass numbers in May-June, and in optimal temperature conditions they parasitized to a small extent in winter. At this time, the body length of hungry individuals was 2-3 mm, and blood-pumped mites took the shape of a ball, greatly increased in size to 15 mm, and the body color reached from red-brown to dark brown. Hosts in adult ticks are almost all types of domesticated

animals, and ixodid ticks are vectors and reservoirs of infectious diseases for cattle, goats, dogs, and other vertebrates. Ixodid ticks are blood-sucking parasites, and when a tick infected with encephalitis bites, the virus with saliva enters the blood, secreting with the milk of a warm-blooded animal. Apparently, the circulation of tick-borne encephalitis virus, like other obligate-transmissible pathogens, is under the control of external environment factors that act through the body of carriers.



CONCLUSION

During the work, it was noted that ticks (*Ixodes ricinus*) of the genus *Hyalomma* - the largest in the family *Ixodidae*, infected dogs and cattle with their bite. Therefore, the control of blood-sucking ticks is one of the leading links in the system of anti-epidemic measures, where it is necessary to keep animals in accordance with veterinary and sanitary standards, and aerosols should be used in the premises and on pastures to eliminate ticks, but the complete destruction of parasitic ticks in nature is difficult for environmental reasons. The use of chemical drugs is the leading method of protection, but the biological method of control remains the most rational, harmless to the environment, for biogeocenosis, biological method remains in natural conditions and settlements.

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