

Article

The Fauna of Ectoparasites in Livestock in The Karakalpakstan Region

Pulotov F.S.¹, Gaypnazarov S.B.², Eshanova T.M.², Jaqsibaeva U.M.², Worazbaev J.K.³

¹Uzbekistan Veterinary Research Institute, PhD.

²Masters from the Nukus branch of Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology.

³Uzbekistan Veterinary Research Institute, doctoral candidate.

*Correspondence: polatovfaxriddin613@gmail.com, tumarisheshanova@gmail.com.

Citation: Pulotov F.S., Gaypnazarov S.B., Eshanova T.M., Jaqsibaeva U.M., Worazbaev J.K.. The Fauna of Ectoparasites in Livestock in The Karakalpakstan Region. American Journal Of Bioscience And Clinical Integrity 2026, 3(4), 33-37

Received: 10th Jan 2026

Revised: 21th Feb 2026

Accepted: 14th Mar 2026

Published: 09th Apr 2026



Copyright: © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

Introduction

In recent years, due to the increasing pressure of anthropogenic factors, anomalous and technogenic phenomena on nature, serious bioecological shifts and successions are occurring, resulting in the intensified migration of harmful and beneficial species in biocenoses, the disruption of biodiversity, and the emergence of atypical, persistent, mutant, resistant biopathogens, new parasitic systems, exogenous populations, and new faunistic conditions [1]. There have been observed cases of the emergence of highly dangerous transmissible and naturally occurring diseases that were previously reduced or eradicated [2]. Therefore, the increasing incidence of livestock infestation by various ectoparasites today is leading to reduced milk, meat, egg, wool, and feather yields, deterioration in product quality, and mortality among young cattle and poultry (calves, lambs, chick) lag behind in

Abstract: Annotatsiya. Maqolada Qoraqolpog'iston Respublikasining Nukus, Konlikul, Qo'ng'iro't va Chimbay tumanlari hududidagi chorvachilik va parrandachilik xo'jaliklarida, to'qay va yaylovlar sharoitida aholiga qarashli jami 450 boshdan ortiq qoramol va 28000 boshdan ortiq parrandalar vizual usulda araxnoentomologik tekshiruvlar mobaynida aniqlangan ektoparazitlarning faunasi, ekoton va ekotoplar bo'yicha tarqalishi bo'yicha olib borilgan tadqiqot natijalari haqida ma'lumotlar berilgan. Аннотация. В статье приведены данные о результатах исследования, проведённого в животноводческих и птицеводческих хозяйствах районов Нукус, Конлыккул, Кунгирот и Чимбай Республики Каракалпакстан в условиях лесов и пастбищ. В ходе визуальных арахноентомологических обследований всего более 450 голов крупного рогатого скота и более 28 000 голов птицы, находящейся на попечении населения, установлены фауна эктопаразитов и их распространение по экотопам и экотонам. Annotation. The article provides information on the results of a study conducted in livestock and poultry farms in the Nukus, Konlikul, Qo'ng'iro't and Chimbay districts of the Republic of Karakalpakstan under forest and pasture conditions. During visual arachnoentomological examinations of a total of more than 450 head of cattle and over 28,000 head of poultry kept by local households, the fauna of ectoparasites identified and their distribution by ecotopes and ecotones are reported.

Keywords: Argas, bovicola, ixodid, tick, fauna, ecotone, ecotope, ectoparasite, predator, herbivore.

growth and development and die compared to their peers [3]. In addition, ectoparasites (fleas, lice, ticks, etc.) transmit highly dangerous diseases to humans and animals (plague, tick-borne encephalitis, tularaemia, hemorrhagic fever, the Termez and Tomdi fevers, ephemeral fever, tick fever, plague, relapsing and spotted fever, malaria, trypanosomoses, leishmanioses, anthrax, and many others) are considered the vectors and main reservoirs of the pathogens that cause these diseases [4]. Therefore, studying the fauna of ektoparasites prevalent in the territories of the Republic of Karakalpakstan, their distribution by ecotone and ecotope, the dominant species, and the diseases they cause, as well as combating them, is considered one of the important factors [5].

Materials and Methods

These studies include parasitological, faunistic, ecological, phenological, migration, therapeutic, prophylactic, and other investigations accepted in veterinary and medical science (Herbert Ross, Paul De Bach, G.Ya. Bey-Bienko, V.A. Dogel, V.N. Beklemishev, V.V. Yakhontov, S.D. Pavlov, A.R. Ro'zimurodov, M. Akbaev, I. Vasilievich, A. Nikolskiy and other researchers) using methods, manuals and identification keys accepted in veterinary and medical science [6]. The collected ectoparasite species were identified and classified using "Атлас иксодоидных клещей" М. "Kolos", 1968, I.M. Ganiev and other identification guides, books, manuals, and literature [7].

Results and Discussion

Studies were conducted on livestock farms and on private and individual livestock in the territories of the Nukus, Konlikul, Ko'ng'iro't, and Chimbay districts of the Republic of Karakalpakstan, in woodlands and pastures, on a total of five state-owned livestock farms and in private households with over 350 head of cattle and 28,000 head of poultry, during visual arachnentoentomological surveys, the disease agent of arachnosis was detected. from the genera *Hyalomma* (*H.anatolicum*, *H.detrutum*), *Rhipicephalus* (*Rh.bursa*), *Dermacentor marginatus*, *Ixodes* (*I.ricinus*), *Dermanissus gallinae*, *Argas persicus*, entomosis disease vectors, and representatives of the ectoparasite genera *Bovicola bovis* and *Gonicotes hologaster* were widespread; moreover, cattle harbored six ectoparasite species and poultry three species. entomosis disease-causing agents were recorded in all seasons of the year, while the arachnosis disease-causing ectoparasites were predominantly encountered during the warmer seasons (Table 1, pictures 1 and 2) [8].

Table 1. Ectoparasite species found in the territories of the Republic of Karakalpakstan.

№	Identified ectoparasite species.	Affected animal species	Meeting seasons
1.	<i>Hyalomma anatolicum</i>	cattle	In hot seasons
3.	<i>Hyalomma detrutum</i>	cattle	In hot seasons
4.	<i>Rhipicephalus bursa</i>	cattle	In hot seasons
5.	<i>Dermacentor marginatus</i>	cattle	In hot seasons
6.	<i>Ixodes ricinus</i>	cattle	In all seasons
7.	<i>Bovicola bovis</i>	cattle	In all seasons
8.	<i>Dermanissus gallinae</i>	chicken	In all seasons
9.	<i>Argas persicus</i>	chicken	In hot seasons
10	<i>Gonicotes hologaster</i>	chicken	In all seasons



Picture 1. *Bovicola bovis*

Argas persicus

Gonicotes hologaster



Picture 2. *Hyalomma anatolicum*

Rhipicephalus bursa

Bovicola bovis are the most common permanent ectoparasites of cattle worldwide. They are insects belonging to the phylum Arthropoda, class Insecta, order Mallophaga, family Trichodectidae, genus *Bovicola*, and species *Bovicola bovis*. *Bovicola bovis* is a small, wingless insect, 1.0-2.0 mm in size, with an elongated, oval-shaped body and a yellowish color, chewing mouthparts, poorly developed eyes, three pairs of small legs with claw-tipped toes, a segmented abdomen, and covered with scales and bristles adapted to each species [9].

Ticks are arachnids belonging to the arthropod phylum, and they are considered one of the most widespread and diverse groups in the *Arachnida* class. Ticks are widespread in nature, living in soil, vegetation, on animal bodies, and in various ecological habitats. From a veterinary and medical perspective, the most important ticks belong to the *Ixodidae* family. Members of this group are blood-sucking ectoparasites that parasitize animals and humans. Tick species are divided into two main families: *Ixodidae* (hard ticks) and *Argasidae* (soft ticks). Hard ticks are distinguished by the presence of a chitinous shield—the scutum—on the dorsal surface of their body [10]. The development of ixodid ticks involves several stages: egg, larva, nymph, and adult (imago). In the larval stage, they have three pairs of legs, while in the nymph and adult stages, they develop four pairs of legs. During their development, ticks can feed on one or several hosts. For this reason, they are divided into one-host,

two-host, and three-host mites. Several species of Ixodidae ticks are found in Uzbekistan. The most important of these are **Hyalomma anatolicum**, **Hyalomma detritum**, **Rhipicephalus bursa**, and **Dermacentor marginatus**. These ticks parasitize livestock, feed on their blood, and transmit various disease agents. Ixodid ticks are of great veterinary importance, serving as vectors for numerous transmissible diseases. Specifically, they transmit hemoparasitic diseases such as babesiosis, anaplasmosis, and piroplasmosis. These diseases reduce livestock productivity and can sometimes be fatal [11].

Argas persicus, or the Persian tick (4.5–9 mm), is considered a carrier of the agents that cause avian borreliosis, tuberculosis, typhus, and paratyphoid in ducks. The adult female tick can feed several times; after each blood meal she lays up to 130 eggs, which hatch into larvae in 10–14 days. The larvae then parasitize a bird for 3–10 days, fall to the ground, molt into nymphs, and finally become adults. The nymph feeds on blood for 20–60 minutes, then moults into the second and third nymphal stages before moulting again to become an adult. The complete development cycle takes 1–2 years at temperatures above 20 °C. It mainly emerges from crevices at night to attack birds [12].

The entire development cycle of **Gonicotes hologaster's** larvae and mites takes place on birds, and they quickly perish outside of them. Once inside the body, they multiply rapidly and lay eggs beneath the feathers. Feather mites severely irritate birds and cause intense itching. As a result, birds stop eating, lose weight, lay fewer eggs, and chicks may even die. Mites and lice are detected by examining the birds' skin and feathers, especially under the wings and near the vent [13].

Observations in these study areas revealed that the arthropod disease vectors *Bovicola bovis* and *Gonicotes hologaster* are present year-round, while the arachnid disease vectors *Hyalomma* (*H. anatolicum*, *H. detritum*), *Rhipicephalus* (*Rh. bursa*), *Dermacentor marginatus*, *Dermanyssus gallinae*, and *Argas persicus* were mainly seasonal in nature, with activity beginning in the first decade of March as air temperatures rose. By the summer months, all of the livestock examined were found to be infested with ticks.

These ectoparasites cause significant economic losses in livestock farming. Therefore, measures to combat them—sanitizing pastures, regularly inspecting livestock, treating animals with insecticidal acaricide preparations, and conducting epizootiological monitoring—are of great importance in controlling the spread of ectoparasites [14].

Conclusion

As a result of research conducted in the ecotones and ecotopes of the Republic of Karakalpakstan, it was determined that over 450 head of cattle and more than 28,000 poultry were infested with 10 species of ectoparasites.

In the conditions of the Republic of Karakalpakstan, cattle were mainly infested with 6 species - *Hyalomma anatolicum*, *H. detritum*, *Rhipicephalus bursa*, *Dermacentor marginatus*, *Ixodes ricinus*, and *Bovicola bovis*, and in poultry, 3 species - *Dermanyssus gallinae*, *Argas persicus*, and *Gonicotes hologaster* - were recorded as parasitic.

It was determined that the ectoparasites that cause arachnoses in cattle and poultry are present in the spring and summer months, while the ectoparasites that cause entomoses are present year-round, and they cause significant economic losses to livestock [15].

REFERENCES

- [1] F. S. Pulatov, M. Y. Rakhimov, A. S. Ismoilov, D. M. Boltayev, and A. A. Djalolov, "Prevalence of ecto- and endoparasites in animals," Middle European Scientific Bulletin.
- [2] F. S. Pulatov et al., "Fauna and phenoecology of zooparasites," Annals of Forest Research, vol. 65, no. 1, pp. 854–863, 2022.
- [3] F. S. Pulatov et al., "Ecogenesis of ecto- and endoparasites in animals," Journal of Survey in Fisheries Sciences, vol. 10, pp. 2238–2245, 2023.
- [4] F. S. Pulatov and I. A. Sh, "Fauna of zooparasites," in Proc. Int. Consortium on Academic Trends in Education and Science, Euro-Asia Conf., 2021, pp. 3–4.

- [5] F. S. Pulatov, "Application of cypermethrin against ecto- and endoparasites," in Proc. Modern Science: Problems and Prospects, pp. 99–103, 2017.
- [6] S. I. Mavlanov et al., "Seasonal dynamics and impact of tick infestation on livestock in Karakalpakstan," International Journal of Environmental Sciences, vol. 11, pp. 1131–1138, 2025.
- [7] S. Mavlanov, A. Kamalova, F. Pulotov, and A. Ismoilov, "Study of residues of 'ALFA-SHAKTI' 10% EC in cow's milk," Library, vol. 2, no. 2, pp. 201–205, 2024.
- [8] S. Mavlanov and A. Kamalova, "Experimental study of ixodidosis disease in cattle," Science and Innovation, vol. 2, Special Issue 8, pp. 1755–1761, 2023.
- [9] F. Pulatov et al., "Fauna and phenoecology of zooparasites," Library, vol. 22, no. 4, pp. 855–863, 2022.
- [10] A. Sh. Ismoilov et al., "Estrus disease and effectiveness of treatment using bioinsecticide," Ustozlar uchun, vol. 1, no. 1, pp. 79–83, 2024.
- [11] F. S. Pulatov and I. A. Sh, "Fauna of zooparasites," in Proc. Int. Consortium on Academic Trends in Education and Science, Euro-Asia Conf., 2021, pp. 3–4.
- [12] A. Ismoilov, "Zoophilic insects in biocenoses," in Proc. Modern Trends in Agricultural Development, pp. 1044–1045, 2016.
- [13] A. A. Dzhulolov, F. S. Pulotov, and A. S. Ismailov, "Insecticidal property of bioinsecticide against *Bovicola ovis*," European Journal of Learning on History and Social Sciences, vol. 1, no. 7, pp. 159–163, 2024.
- [14] S. Gaypnazarov and F. S. Pulotov, "Phenology of cattle lice (literature review)," Yangi O'zbekiston ustozlari, vol. 2, no. 29, pp. 78–81, 2024.
- [15] S. B. Gaypnazarov and F. S. Pulotov, "Distribution of ectoparasites among cattle," Education, Science and Innovative Ideas in the World, vol. 83, no. 2, pp. 410–416, 2025.