REVIEW

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A Review of Parasitic Acarians (Acari: Trombidiformes, Parasitiformes) of Racerunners (Lacertidae: *Eremias* Fitzinger, 1834) in the Caucasus and Adjacent Territories

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Abstract Our article presents the most comprehensive data on ticks and mites parasitizing lizards of the genus *Eremias*. We provide the revised data on both host and ectoparasite taxonomy according to the most up-to-date information. Nine species of ectoparasites have been documented in the Caucasus region and Iran, including *Haemaphysalis punctata*, *Haem. sulcata*, *Haem. parva*, *Hyalomma marginatum*, *Hyal. aegyptium* (reported for the first time), *Ophionyssus saurarum*, *Odontacarus armeniensis*, *Ericotrombidium caucasicum*, *Pentidionis angulata*. Compared to lizards of the genus *Darevskia* and *Lacerta*, racerunners exhibit approximately equal levels of infestation.

Keywords Caucasus, ectoparasites, *Eremias*, Gamasina, Parasitiformes, Trombidiformes

1. Introduction

Racerunners of the genus *Eremias* Fitzinger, 1834 are among the most widespread genera of lacertid lizards, with a distribution spanning Europe and Asia. It spreads from the Western Black Sea in Romania to the Korean Peninsula and North-Eastern China (Ananjeva *et al*., 2006). The genus *Eremias* belongs to the Tribe Eremiadini within the Subfamily Lacertinae, a group primarily composed of sub-Saharan species with the greatest diversity found in Africa (Arnold *et al*., 2007). *Eremias* is one of the most species-rich genera within Lacertinae, with currently about 45 extant species recognized, a number that continues to grow (www.lacerta.de). As a rule, racerunners can be found in deserts covered with sand and clay, rocks, steppes, and other open areas, rarely occurring in regions occurring in areas with dense woody or shrubby vegetation (Szczerbak, 1974).

The Caucasus ecoregion (further the Caucasus), historically considered an isthmus between the Black, Azov, and Caspian Seas, has an area of 580 000 km^2. It encompasses Abkhazia, Armenia, Azerbaijan, and Georgia, the North Caucasus region of the Russian Federation, South Ossetia, northeastern Türkiye, and northwestern Iran. This unique region has always been one of the most attractive places for herpetological research. Despite the extensive history of study, some issues still remain unresolved, including those related to the parasitic fauna. The Caucasus is included among 25 biodiversity hotspots of the world, in which species diversity is associated with a high degree of vulnerability to environmental degradation (Zazanashvili *et al*., 2004).

Currently, the extinction of psammophilous reptile species, including racerunners, has been documented in the Caucasus (Lotiev and Bathiev, 2019). This decline is caused by the loss of suitable habitats due to overgrowing of sands and transformation of deserts and semi-deserts into steppes, uncontrolled coastal development along the Black and Caspian Seas, overgrazing, etc. Some racerunner species are under protection (Red Data Book). These developments highlight the urgent need for study and conservation of the

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biodiversity underlying this paper.

Literary data on the ectoparasite fauna of the genus *Eremias* spp. are fragmented and largely inaccessible (Table 1). To date, reviews of racerunner parasites have been conducted for species of Central Asia (Markov and Bogdanov, 1961) and specifically for *Eremias arguta* (Pallas, 1773) (Kotenko, 1993). In a monograph focusing on racerunners (Szczerbak, 1974), information about ticks is not consolidated and is presented only in fragments.

The taxonomy of ticks (Parasitiformes: Ixodida), anthropods that feed on blood, consists of three families comprising 19 genera with 900 species (Barker and Murrell 2008). Their distribution is world-wide, and practically all terrestrial vertebrates can be their hosts. The most widely spread genus of the Western Palearctic is Ixodes (44 species), followed by *Haemaphysalis* (19 species), *Dermacentor* (13 species), *Rhipicephalus* and *Hyalomma* (each with 7 species).

The family Macronyssidae (Parasitiformes: Mesostigmata: Gamasina) is made up of predominantly obligate ectoparasites of different animal orders with 240 species in 34 genera (Radovsky, 2010). The genus *Ophionyssus* Mégnin, 1884 consists of 16 species spread all over the world (Beron, 2014). Unlike other groups of mesostigmatic Acari, reptile-parasiting mites are understudied, especially in Europe and Russia.

Trombiculidae Ewing, 1929 sensu Kudryashova (1998), Shatrov and Kudryashova (2008), comprising about 3 300 species (Liu *et al.* 2013), is the most species-rich and widely spread terrestrial Parasitengona family. Mammals are common hosts for larval instars of chiggers.

Ticks, mites, and chiggers (Trombiculidae larvae) parasitizing reptiles can be harmful for their hosts and play an important part in the transmission of dangerous local infection. What makes ixodid ticks noteworthy is their pathogenic potential targeted at host animals and humans (Barnard and Durden, 2000). For instance, the hard-bodied tick *Hyalomma aegyptium* is known as the vector of mortally dangerous to humans Crimean-Congo hemorrhagic fever (Taylan-Ozkan, 2020) and the haemogregarine *Hemolivia mauritanica* (Castro *et al.*, 2019).

In lizards, ectoparasitic mites (especially chiggers) are located in so-called mite pockets (acarinarium), in small skin folds in the neck, armpit, inguinal region, or tail base. All ectoparasitic mites can cause dermatitis (dark-coloured plaques, erythema, swelling, ulcers), and hence the name "black skin disease" is commonly used. In heavy infestations, dysecdysis, anaemia, and debilitation are common (Mader, 2005; Farmaki *et al.*, 2013). These mites can also play a role in the transmission of blood parasites (*Schellackia* or *Hepatozoon*).

In severe cases, dysecdysis, anaemia, and debilitation can develop. In addition, these mites can transmit blood parasites. As a result of irritation caused by chiggers, or self-trauma, or both of these impacts, oedema and urinary retention can ensue (Castro *et al.*, 2019). Moreover, the trombiculids are deemed to be vectors of such bacteria as *Anaplasma* sp., *Borrelia* sp., *Orientia* sp., and *Rickettsia*. It is known that *Leptodrombidum* spp. (in Asia) and *Neotrombicula* spp. (in Europe) transmit spirochetes and bacilli (Fernández-Soto *et al.*, 2001; Frances *et al.*, 2001; Kampen *et al.*, 2004; Miťková *et al.*, 2015).

This article aims to review parasitic acarians associated with lizards belonging to the genus *Eremias* in the Caucasus with an assessment of epidemiological significance, and to revise previous data on hosts and parasite taxonomy.

2. Materials and Methods

The alcohol preserved host specimens from Dagestan are deposited at the Dagestan State University, Russian Federation, DSU; those from Armenia, Azerbaijan, and Iran are deposited at the Zoological Institute of the Russian Academy of Sciences, ZISP. They span the period from 1896 to 2022. In 2024, we carefully examined a total of 1 109 lizard specimens from 40 localities representing the following species: 486 individuals of *E. arguta* (the region is inhabited by *E. a. deserti* and *E. a. transcaucasica* – Szczerbak, 1974); 31 individuals of *E. persica* Blanford, 1874; 91 individuals of *E. pleskei*; 183 individuals of *E. strauchi* Kessler, 1878; 318 individuals of *E. velox* (the region is inhabited by *E. v. velox* and *E. v. caucasia* – Szczerbak, 1974). The systematic classification of species and subspecies within the genus *Eremias* raises controversy among specialists and is regularly revised. Thus, for much of the 20th century, *E. velox caucasica* Lantz, 1928 was reported in the North Caucasus (Tertyshnikov, 2002), but phylogenetic studies have since shown that these populations belong to the nominative subspecies *E. v. velox* (Pallas, 1771) (Liu *et al.*, 2018). We provide revised data on the host species taxonomy according to Uetz *et al.* (2025).

Acarians were found still attached to their lizard hosts, thereby excluding potential museum cross contamination (Figure 1). Tick and chigger mite specimens were mounted on permanent microscopic slides in Faure-Berlese's mounting medium. Morphological identification of ectoparasites was conducted by the first author using identification keys by Filippova (1997), Apanaskevich and Filippova (2007), Estrada-Peña *et al.* (2017) for ixodid ticks, and Kudryashova (1998) for chiggers. The specimens were examined under a compound microscope (AxioImager A2, Zeiss, Germany), and the slide-mounted specimens were deposited in ZISP. Taxonomy of ectoparasites is given in accordance with Estrada-Peña *et al.* (2017) for ixodid ticks, Radovsky (2010) for gamasid mites,

Table 1 Host and distribution of mites and ticks parasitizing on *Eremias* spp. in the Caucasus and adjacent territories.

Host	Country	Tick or mite species	References
Eremias arguta deserti	Russia, Dagestan	*Haemaphysalis punctata*	This article
		Hyalomma aegyptium	This article, new host-parasite association
	Russia, Stavropol Krai	*Ericotrombidium caucasicum* (as *Leptotrombidium caucasicum*)	Markov *et al.*, 1974; Tertyshnikov, 1992, 2002
		Haem. punctata	
		Haem. sulcata	
		Ophionyssus saurarum (as *Sauronyssus saurarum*)	
Eremias arguta transcaucasica	Azerbaijan	*O. saurarum* (as *S. saurarum*)	Gadzhiev *et al.*, 1982
		Haem. sulcata	
		Hyal. marginatum (as *Hyal. plumbeum*)	
		Haem. punctata	This article
		Haem. sulcata	Alekperov, 1978
	Iran	*Haem. sulcata*	This article
Eremias persica	Iran	*Haem. punctata*	This article, new host-parasite association
	Without locality	*Haem. sulcata*	Filippova, 1997
Eremias pleskei	Armenia	*Haem. sulcata*	Darevsky, 1953
	Azerbaijan	*Haem. punctata*	This article, new host-parasite association
	Without locality	*Haem. sulcata*	Serdyukova, 1956
Eremias strauchi	Armenia	*Haem. sulcata*	Darevsky, 1953
		Haem. punctata	This article, new host-parasite association
		Odontacarus armeniensis	Kudryashova, 1998
	Azerbaijan	*Haem. sulcata*	Alekperov, 1978; this article
		Haem. punctata	This article, new host-parasite association
		Pentidionis angulata	Kudryashova, 1998
	Iran	*Haem. punctata*	This article, new host-parasite association
	Without locality	*Haem. sulcata*	Filippova, 1997
Eremias velox velox	Iran	*Haem. punctata*	This article
	Russia, Dagestan	*Haem. punctata*	Zolotarev, 1949
		Haem. sulcata	
		Haem. parva (as *Haem. otophila*)	
		Hyal. aegyptium	This article, new host-parasite association
	Russia, Stavropol Krai	*O. saurarum* (as *S. saurarum*)	Tertyshnikov, 1992, 2002
		Haem. punctata	
		Haem. sulcata	
		Haem. parva (as *Haem. otophila*)	
Eremias velox caucasia	Azerbaijan	*O. saurarum* (as *S. saurarum*)	Gadzhiev *et al.*, 1982
		Haem. sulcata	
		Hyal. marginatum (as *Hyal. plumbeum*)	
		Haem. punctata	This article
	Georgia	*Haem. punctata*	Mukhelishvili, 1970
		Haem. sulcata	



Figure 1 *Eremias strauchi* from Azerbaijan (ZISP 12595) with attached ticks *Haemaphysalis punctata* (scale bar = 5 mm).

and Kudryashova (1998) for chiggers. Differential diagnosis is considered according to Filippova (1997), Apanaskevich (2003), and Apanaskevich and Filippova (2007) for ticks and Kudryashova (1998) for chiggers.

We recorded and processed data from earlier publications, Russian-language printed sources among them. We also collected the most comprehensive epidemiological data on all tick species with the studied lizards as hosts.

The prevalence index (P) was calculated as the proportion of infested individuals as relation of infested individuals and the total number of hosts. The mean intensity index (MI) was calculated as the average number of ticks per infected host. L denotes larva (immature stage with six legs), N denotes nymph (immature stage with eight legs).

A total of 208 tick and chigger specimens were collected from the 67 lizard individuals. Literature data on acarians associated with racerunners are summarized in Table 1.

3. Results

An annotated species list is provided below.

Superorder Parasitiformes Reuter, 1909

Order Ixodida Leach, 1915

Family Ixodidae C.L. Koch, 1844

Genus *Haemaphysalis* C.L. Koch, 1844

Haemaphysalis sulcata Canestrini et Fanzago, 1878

Identification: tick *Haem. sulcata* is the most similar to *Haem. punctata*. Differential diagnosis. Nymph: scutum oval vs. scutum round (in *Haem. punctata*); base of gnathosoma dorsally trapezoidal without lateral projections vs. base of gnathosoma dorsally hexagonal with sharp lateral projections (in *Haem. punctata*). Larva: base of gnathosoma dorsally like in nymph, palp segment III without any projection vs. palp segment III with a distinct dorsal projection (in *Haem. punctata*).

Material: 2 L ex *E. a. transcaucasica* from Azerbaijan, Baku, 40°20′ N 49°45′ E, date and collectors are unknown, (ZISP 14868); N ex *E. persica* from Iran, Esfahan Province, Karavan-sarai Gebrabad (= Gabr Abad), 33.77° N 51.48° E, 27.04.1904, leg. N.A. Zarudny (ZISP 10252); 2 L ex *E. a. transcaucasica* from Iran, Ardabil Province, Mount Bagrov-Dag, east of Sanabad village (= Sangabad, Sanava, Sanjabad, Sendzhava), 37°45′ N 48°21′ E, 04.07.1914, leg. S.N. von Wick (ZISP 12778); 4 L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, between the villages of Chinabad (= Chananab, Channab) and Disar (= Bashkand, Bashkend), 38°58′ N 45°55′ E, 30.05.1933, leg. V.A. Fokanov (ZISP 13405); 5 L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, Mount Dary-Dag, 38°57′ N 45°47′ E, 13.06.1929, leg. A.B. Schelkownikow (ZISP 15375); N ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, vicinity of Julfa, 38°54′ N 45°35′ E, 21.05.1923, leg. A.B. Schelkownikow (ZISP 15502); 10 L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, gorge of the Syangar-Dara river on the Dary-Dag Ridge, 38°57′ N 45°47′ E, 24.05.1914, legs. N.P. Voronov, I.B. Volchanetsky (ZISP 18518); L ex *E. pleskei* from Azerbaijan, Nakhchivan Autonomous Republic, vicinity of Julfa, 13.06.1974, 38°54′ N 45°35′ E, leg. I.S. Darevsky (ZISP 18480); 8 L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, Julfa, 38°55′ N 45°36′ E, 04.06.1923, leg. A.B. Schelkownikow (ZISP 12595); N ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, valley of the Araks River south of Ardubad, 38°52′ N 46°00′ E, 10-12.05.1933, leg. A.V. Afanasiev (ZISP 13406); 4 L ex *E. strauchi* from Iran, West Azerbaijan Province, Northwestern shore of Lake Urmia, slope above the pier of Peter and Paul, 38°15′ N 45°03′ E, 19.05.1916, Urmia expedition of the Caucasian Museum (ZISP 15053); 3 L ex *E. strauchi* from Iran, Ardabil Province, North-west of Dasht-Moghan (= Dasht-e-Moghan), 39°26′ N 48°01′ E, 1965, leg. M. Latifi (ZISP 18002); 2 L ex *E. strauchi* from Azerbaijan, Jabrayil District, Qumlaq village (the village was flooded by Khudaferin reservoir), 39°10′ N 46° 54′ E, 05.06.1974, leg. I.S. Darevsky (ZISP 18442); N ex *E. strauchi* from Azerbaijan, Lerik district, Kyalvaz, 38°37′ N 48°21′ E, 29.05.1974, leg. I.S. Darevsky (ZISP 18447); N, 10 L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, Chananay, 39°00′ N 45°54′ E, 11.06.1974, leg. I.S.

Darevsky (ZISP 18416); L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, gorge of the Syangar-Dara river on the Dary-Dag Ridge, 38°57′ N 45°47′ E, 24.05.1914, legs. N.P. Voronov, I.B. Volchanetsky (ZISP 18518); 2L ex *E. strauchi* from Armenia, Ararat Province, Goravan village, 39°54′ N 44°43′ E, 22.04.1971, leg. V.V. Sosnovsky (ZISP 19163); L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, vicinity of Negram village, 39°07′ N 45°28′ E, 15.05.1923, leg. A.B. Schelkownikow (ZISP 15376); 4 L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, Aza-Yukhary village, 38°55′ N 45°49′ E, 07.06.1924, leg. A.B. Schelkownikow (ZISP 15512); 5 L ex *E. strauchi* from Armenia, Ararat Province, vicinity of Armash village, 39°46′ N 44°48′ E, 07.06.1930, leg. A.B. Schelkownikow (ZISP 15514); 2 N ex *E. strauchi* from Iran, West Azarbaijan Province, vicinity of Tabriz, 38°05′ N 46°20′ E, 29.04.1916, Urmia expedition of the Caucasian Museum (ZISP 15515); 2 L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, Julfa, 38°55′ N 45°36′ E, 14.05.1914, leg. L.A. Lantz (ZISP 16685); L ex *E. v. velox* from Iran, Semnan province, Chahardeh (= Dibaj), 36°25′ N 54°13′ E, 1869, leg. Th. Bienert (ZISP 3024); 6 L ex *E. v. caucasia* from Azerbaijan, Baku, 40°20′ N 49°45′ E, exact date not specified, range 1896-1904, leg. N. A. Zarudny (ZISP 6468); L ex *E. v. caucasia* from Azerbaijan, Nakhchivan Autonomous Republic, road from Uatuni village to Tivi village, 39°05′ N 45°54′ E, 27-28.07.1933, leg. Petrov (ZISP 13394); L ex *E. v. caucasia* from Azerbaijan, former Areshevsky uezd, Karaja-Dag ridge, the current administrative position and coordinates are difficult to determine, 19.04.1915, leg. A.B. Schelkownikow (ZISP 15517); L, N ex *E. a. deserti* from Russia, Dagestan, Babayurt district, biological station DSU "Terskaya", 43°43′ N 47°08′ E, 11-04.07.2001, leg. L.F. Mazanaeva (DSU E2).

Distribution: Southern Europe, Southern Russia (Crimea, Dagestan) (Zolotarev, 1949), Caucasus, Middle East (Keskin *et al*., 2013), Southern Asia (India), Northern Africa (Pomerantzev, 1950; Filippova, 1997).

Racerunner hosts: *E. a. transcaucasica*, *E. a. deserti*, *E. persica*, *E. pleskei*, *E. strauchi*, *E. v. velox*, *E. v. caucasia* (Darevsky, 1953; Filippova, 1997; this article).

Other hosts: larvae and nymphs parasitize reptiles and birds, while large mammals, including cattle and sheep, are major hosts for adults of *Haem. sulcata* (Keskin *et al*., 2013).

Pathogen transmission: *Babesia* sp. and *Theileria* sp. (Hoogstraal *et al*., 1981), *Anaplasma ovis* (Walker *et al*., 2003), *A. phagocytophilum* (Aktas *et al*., 2012), *Rickettsia monacensis* (Orlova *et al*., unpubl. data).

Haemaphysalis punctata Canestrini et Fanzago, 1878

Distribution: Europe (from Sweden to Greece) (Raad *et al*., 2020), Caucasus (Mukhelishvili, 1970; Orlova *et al*., 2023), Middle East and Northern Africa (Raad *et al*., 2020).

Racerunner hosts: *E. v. velox* (Serdyukova, 1956), *E. v. caucasica* (Mukhelishvili, 1970), *E. a. deserti* (Markov *et al*., 1974).

Other hosts: many species of lizards, birds, small mammals. Adults mainly feed on wild and domestic ungulates (sheep, goats), domestic dogs, red foxes, mustelids, lagomorphs and hedgehogs, humans (Estrada-Peña *et al*., 2017).

Pathogen transmission: *Babesia bigemina*, *B. major*, *B. motasi*, *Brucella* spp., *Rickettsia sibirica*, *R. helvetica*, *R. massiliae*, *R. hoogstraalii*, *R. monacensis-like Rickettsia*, *Anaplasma bovis*, *A. centrale*, *A. phagocytophilum*, *Coxiella burneti*, *Theileria* spp., *Borrelia burgdorferis*, *Francisella tularensis* (Estrada-Peña *et al*., 2017).

Haemaphysalis parva (Neumann, 1897)

Distribution: Southern Europe, Caucasus, Middle East, and Northern Africa (Estrada-Peña *et al*., 2017).

Racerunner hosts: *E. v. velox* (as *E. v. caucasica* – Tertyshnikov, 2002).

Other hosts: *Haem. parva* larvae and nymphs feed on lizards, birds, small mammals (hedgehogs, hares); adults mainly feed on cattle, sheep, and goats, as well as wild ungulates, potentially targeting humans (Estrada-Peña *et al*., 2017).

Pathogen transmission: *Babesia ovis*, *Coxiella burnetii* (the causative agent of Q fever), *Francisella tularensis* (Filippova, 1997), *Rickettsia hoogstraali* (Orkun *et al*., 2014), Candidatus "*Rickettsia goldwasserii*" (Keysary *et al*., 2011).

Genus *Hyalomma* Koch, 1844

Hyalomma marginatum Koch, 1844

Distribution: Southern and Eastern Europe, Northern Africa, Middle East, and Central Asia (Estrada-Peña *et al*., 2017).

Racerunner hosts: *E. v. caucasia* (as *Hyal. plumbeum* – Gadzhiev *et al*., 1982)

Other hosts: adults feed on a wide variety of mammals, mainly wild and domestic ungulates, particularly bovines (Pomerantzev, 1950; Berezin, 1971; Hoogstraal, 1979; Apanaskevich, 2004). Larvae and nymphs are specific to small mammals (leporids and insectivores) and to various birds inhabiting the ground (Apanaskevich, 2004). Numerous cases of this tick biting humans have been reported in the literature (Petrova-Piontkovskaya, 1947; Karaer *et al*., 2011; Santos-Silva *et al*., 2011).

Pathogen transmission: Crimean-Congo hemorrhagic fever virus (Hoogstraal, 1979; Ergonul, 2006), West Nile virus (under laboratory conditions) (Formosinho and Santos-Silva, 2006), *Anaplasma marginale* (De la Fuente *et al*., 2004), *A. phagocytophylum* (Keysary *et al*., 2007), *Babesia bigemina*, *B. bovis* (Iori *et al*., 2010), *B. caballi* (Estrada-Peña *et al*., 2004), *B.*

occultans (Ioniță *et al*., 2013), *Borrelia lusitaniae* (De Michelis *et al*., 2000), *Coxiella burnetii* (Hoogstraal, 1956), Dhori virus (Filipe and Casals, 1979), *Rickettsia aeschlimannii* (Beati *et al*., 1997), *Theileria annulata* (Georges *et al*., 2001), *T. equi* (Iori *et al*., 2010) and *T. orientalis/sergenti/buffeli* group (Ioniță *et al*., 2013).

Hyalomma aegyptium (Linnaeus, 1758)

Identification. Larva. Posterior margin of scutum extended backwards, (length to width ratio 0.62–0.75); posterolateral notches not expressed; eyes located in the middle of scutum length. Setae of alloscutum are serrated. Differential diagnosis. Larva. Apex of posterior margin of scutum straightened vs. rounded posterior margin in other species *Hyalomma* spp. inhabiting study area (more details from Apanaskevich and Filippova 2007); the teeth of cox I are equilateral triangular with rounded tops; the teeth of coxae II and III are large and clearly defined vs. coxal teeth weakly developed (rudimentary) in other species *Hyalomma* spp. inhabiting study area.

Material: 4 LL ex *E. v. velox* from Russia, Dagestan, Kayakent district, Kayakent village, 42°22′ N 47°54′ E, 26-31.05.2002, leg. L.F. Mazanaeva (DSU E1, E3); L ex *E. a. deserti* from Russia, Dagestan, Karabudakhkent district, biological station of Moscow State University, 42°48′ N 47°42′ E, 22.06.2022, leg. U.A. Gichikhanova (DSU E1, E3), L ex *E. v. velox* from Russia, Dagestan, Kayakent district, Papas (= Aghy) lake, 42°21′ N 48° 03′ E, 16-17.09.2016, leg. U.A. Gichikhanova (DSU E25); 7 LL ex *E. a. deserti* from Russia, Dagestan, Kayakent district, Papas (= Aghy) lake, 42°21′ N 48°03′ E, 18-20.05.2017, leg. U.A. Gichikhanova (DSU E6, E8); 3 LL ex *E. v. velox* from Russia, Dagestan, Kayakent district, Papas (= Aghy) lake, 42°21′ N 48° 03′ E, 21-22.05.2022, leg. U.A. Gichikhanova (DSU E4, E5).

Distribution: Northern Africa, Balkan countries, Middle East, Caucasus, Central Asia, Afghanistan, and Pakistan (Akveran *et al*., 2020).

Racerunner hosts: *E. a. deserti* (this article, the first record), *E. v. velox* (this article, the first record).

Other hosts: the main host is *Testudo graeca* and many tortoise species. Occasionally, tick immature stages are found on birds, snakes, lizards, and other animals and humans (Kar *et al*., 2017).

Pathogen transmission: Crimean-Congo hemorrhagic fever virus, *Borrelia turcica*, *B. burgdorferi* s.l., *Anaplasma phagocytophilum*, *Ehrlichia canis* and *Coxiella burnetii*, *Rickettsia aeschlimannii*, *Hemolivia mauritanica*, *Hepatozoon kisrae* (Akveran *et al*., 2020).

Order Mesostigmata Canestrini, 1891

Family Macronyssidae Oudemans, 1936

Genus *Ophionyssus* Megnin, 1883

Ophionyssus saurarum (Oudemans, 1901)

Distribution: Europe, Caucasus, Central Asia, Far East, Africa (Micherdziński 1980).

Racerunner hosts: *E. arguta*, *E. v. caucasia* (Micherdziński, 1980).

Other hosts: many species of lizards, accidentally rodents (Micherdziński, 1980).

Pathogen transmission: *Karyolysus* spp. (Haklová-Kočikova *et al*., 2014)

Order Trombidiformes Reuter, 1909

Suborder Prostigmata Kramer, 1877

Family Trombiculidae Ewing, 1929

Genus *Ericotrombidium* Vercammen-Grandjean, 1960

Ericotrombidium caucasicum Schluger, 1967

Distribution: Russia (Stavropol Krai, Volgograd region), Ukraine (Kudryashova, 1998).

Racerunner hosts: *E. arguta* (Shluger, 1967; Kotenko, 1993).

Other hosts: *Lacerta agilis* (Kudryashova, 1998).

Genus *Odontacarus* Ewing, 1929

Odontacarus armeniensis Schluger, 1967

Identification. Larva. Sub-pentagonal shield, with 3 pairs of scutal setae (2AM, 2AL, 2PL), pair of flagellate sensilla with varying degrees of pubescence and medial outgrowth on anterior margin (Nasus). Differential diagnosis. Larva. Sub-pentagonal shield with clear posterior projection vs. trapezoidal shield in other species of genus *Odontacarus*. All angles rounded vs. angles expressed in most of the other *Odontacarus* spp.

Material: L ex *E. strauchi* from Azerbaijan, Nakhchivan Autonomous Republic, between the villages of Chinabad (= Chananab, Channab) and Disar (= Bashkand, Bashkend), 38° 58′ N 45°55′ E, 30.05.1933, leg. V.A. Fokanov (ZISP 13405).

Distribution: Caucasus (Azerbaijan, Armenia) (Schluger, 1967; Kudryashova, 1998; this article).

Racerunner hosts: *E. strauchi* (Kudryashova, 1998).

Other hosts: *Phrynocephalus horvathi* (as *Ph. helioscopus* – Schluger, 1967; Kudryashova, 1998).

Genus *Pentidionis* Vercammen-Grandjean et Loomis 1967

Pentidionis angulata (Schluger et Belskaja, 1966)

Distribution: Caucasus (Azerbaijan), Central Asia (Turkmenistan) (Kudryashova, 1998).

Racerunner hosts: *E. strauchi* (Kudryashova, 1998).

Other hosts: birds, reptiles (Kudryashova, 1998).

4. Discussion

Nine species of ectoparasites have been registered for lizard species of the genus *Eremias* in the Caucasus: five belong to ixodid ticks, three to trombiculid mites, and one to gamasid mites.

Approximately 60 species of ixodid ticks are specific to reptiles, while among the remaining 600 species, some parasitize reptiles during their preimaginal stages (Kolonin,

2004). Of the five ixodid tick species recorded for racerunners, only *Hyalomma aegyptium* and *Hyal. marginatum* are specific to reptiles. The remaining three species (*Haemaphysalis sulcata*, *Haem. punctata*, *Haem. parva*) parasitize reptiles during their larval stage. However, species of the genus *Hyalomma* are primarily specific to turtles rather than lizards. Our findings of *Hyal. aegyptium* on *Eremias* species are due to their proximity to Lake Papas (Aghy), where the turtles *Testudo graeca* live. The core of the parasite fauna obviously consists of *Haem. sulcata* and *Haem. punctata*. However, the detection of *Hyal. aegyptium* on racerunners may indicate the involvement of this genus in the transmission cycle of severe infections such as Crimean-Congo fever, requiring further research.

The overall infestation rate of the examined pool of *Eremias* spp. specimens by ixodid ticks is P = 6.0%, MI = 1.9. For comparison, in *Lacerta* spp. P is 7.9, MI is 4.1 (Orlova *et al*., 2023); in *Darevskia* spp. P is 7.1, MI is 2.9 (Orlova *et al*., 2022). Thus, the infestation rates of these three lizard genera in the Caucasus are approximately equal.

It should be noted that while racerunners in the Caucasus and adjacent territories harbor only 9 ectoparasite species (including 5 ixodid tick species), *Darevskia* spp. in the same area host 14 ectoparasite species (6 ixodid tick species) based on 352 individuals examined (Orlova *et al*., 2022), and *Lacerta* spp. harbor 14 ixodid tick species based on 1 189 individuals examined (Orlova *et al*., 2023). This discrepancy may be due to the differing levels of research into these genera. On the other hand, differences in infestation may be related to the habitat preferences of both ixodid ticks and their hosts, because ticks are temporal ectoparasites and have a relatively pronounced attachment to their habitat. Species of the genus *Lacerta* occupy a large variety of habitats, and therefore might become hosts to a wide range of ixodid ticks. Tick *Ixodes ricinus* Linnaeus, 1758 is associated with deciduous and coniferous woodland and mixed forests. This tick species is common to *Lacerta* spp. and *Darevskia* spp. inhabiting forest landscapes, but has never been registered for *Eremias* spp., which are arid inhabitants (mainly deserts and semi-deserts). In the same way, the species *Haem. parva* prefer humid habitats and have the only record of *Eremias* lizard. A presence of *Hyalomma* spp. marks the syntopy zones between lizards and turtles. Further studies are needed to better understand the ectoparasite fauna of racerunners in the Caucasus and other regions. Another important point is the lack of data on infections dangerous to humans associated with *Eremias* spp., which makes it difficult to assess the medical significance of this group of lizards (i.e., participation in the circulation of dangerous infections).

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References

Aghasyan A., Danielyan F. 2010a. Steppe runner – *Eremias arguta transcaucasica* Darevsky, 1953. 206. In Agasyan A., Kalashyan M. (Eds.), The Red Book of Animals of the Republic of Armenia. Invertebrates and Vertebrates. 2nd edition. Yerevan: Ministry of Nature Protection of the Republic of Armenia

Aghasyan A., Danielyan F. 2010b. Transcaucasian racerunner – *Eremias pleskei* Bedriaga, 1907. 207. In Agasyan A., Kalashyan M. (Eds.), The Red Book of Animals of the Republic of Armenia. Invertebrates and Vertebrates. 2nd edition. Yerevan: Ministry of Nature Protection of the Republic of Armenia

Aktas M., Altay K., Ozubek S., Dumanli N. 2012. A survey of ixodid ticks feeding on cattle and prevalence of tick-borne pathogens in the Black Sea region of Turkey. Vet Parasitol, 187: 567–571

Akveran G. A., Karasartova D., Keskin A., Comba A., Celebi B., Mumcuoglu K. Y., Taylan-Ozkan A. 2020. Bacterial and protozoan agents found in *Hyalomma aegyptium* (L., 1758) (Ixodida: Ixodidae) collected from *Testudo graeca* L., 1758 (Reptilia: Testudines) in Corum Province of Turkey. Ticks Tick-Borne Dis, 11(5): 101458

Alekperov A. M. 1978. Amphibians and Reptiles of Azerbaijan. Baku: ELM (In Russian)

Ananjeva N. B., Mazanaeva L. F. 2021. *Eremias velox caucasica* Lantz, 1928. 453–455 In Red Data Book of the Russian Federation, Vol. Animals. 2nd edition. Moscow: FGBU VNII Ecology (In Russian)

Ananjeva N. B., Orlov N. L., Khalikov R. G., Darevsky I. S., Ryabov S. A., Barabanov A. V. 2006. The Reptiles of Northern Eurasia, Taxonomic Diversity, Distribution, Conservation Status. (Pensoft Series Faunistica, Vol. 47). Sofia: Pensoft Publishers

Apanaskevich D. A. 2003. To diagnostic of *Hyalomma* (*Hyalomma*) *aegyptium* (Acari: Ixodidae). Parazitologiia, 37(1): 47–59 (In Russian)

Arnold E. N., Arribas O., Carranza S. 2007. Systematics of the Palearctic and Oriental lizard tribe Lacertini (Squamata: Lacertidae: Lacertinae), with descriptions of eight new genera. Zootaxa, 1430(1): 3–86

Barker S. C., Murrell A. 2008. Systematics and evolution of ticks with a list of valid genus and species names. In Bowman A. S., Nuttall P. (Eds.), Ticks: Biology, Disease and Control. Cambridge: Cambridge University Press. 1–39

Barnard S. M., Durden L. A. 2000. A Veterinary Guide to the Parasites of Reptiles – Vol. 2: Arthropods (Excluding Mites). Malabar: Krieger Publ Comp

Beati L., Meskini M., Thiers B., Raoult D. 1997. *Rickettsia aeschlimannii* sp. nov., a new spotted fever group rickettsia associated with *Hyalomma marginatum* ticks. Int J Syst Bacteriol, 47: 548–554

Berezin V. V. 1971. Investigation of the Ecology of Arboviruses in River Deltas of the Caspian and Azov Sea Basins. Ph.D. Thesis. Moscow: Moscow State University. 146 pp (In Russian)

Beron P. 2014. Acarorum Catalogus. III. Parasitiformes: Opilioacarida, Holothyrida, Mesostigmata. Sofia: Pensoft

Castro P. D. J., Pietzsch M., Pantchev N. 2019. Ectoparasites in captive reptiles. The Veterinary Nurse, 10(1): 33–41

Darevsky I. S. 1953. Ecological and Faunistic Essay on Reptiles of Armenia. Diploma Thesis. Lomonosov Moscow State University. 222 pp

De la Fuente J., Vicente J., Höflea U., Ruiz-Fons F., Mera I., Van Den Bussche R., Kocan K., Gortazar C. 2004. Anaplasma infection in free-ranging Iberian red deer in the region of Castilla-La Mancha, Spain. Vet Microbiol, 100: 163–173

De Michelis S., Sewell H. S., Collares-Pereira M., Santos-Reis M., Schouls L. M., Benes V., Holmes E.C., Kurtenbach K. 2000. Genetic diversity of *Borrelia burgdorferi* sensu lato in ticks from mainland Portugal. J Clin Microbiol, 38: 2128–2133

Ergonul O. 2006. Crimean-Congo haemorrhagic fever. Lancet Infect Dis, 6: 203–214

Estrada-Peña A., Bouattour A., Camicas J. L., Walker A.R. 2004. Ticks of Domestic Animals in the Mediterranean Region. A Guide to Identification of Species. Spain, Zaragoza: University of Zaragoza

Estrada-Peña A., Mihalca A. D., Petney T. N. 2017. Ticks of Europe and North Africa: A Guide to Species Identification. Berlin/Heidelberg, Germany: Springer

Farmaki R., Simou C., Papadopoulos E., Koutinas A. F., Saridomichelakis M. N. 2013. Effectiveness of a single application of 0.25% fipronil solution for the treatment of hirstiellosis in captive green iguanas (*Iguana iguana*): An open-label study. Parasitology, 140(9): 1144–1148

Fernández-Soto P., Pérez-Sánchez R., EncinasGrandes A. 2001. Molecular detection of *Ehrlichia phagocytophila* genogroup organisms in larvae of *Neotrombicula autumnalis* (Acari: Trombiculidae) captured in Spain. J Parasitol, 87: 1482–1483

Filipe A. R., Casals C. 1979. Isolation of Dhori from Hyalomma marginatum ticks in Portugal. Intervirol, 11: 124–127

Filippova N. A. 1997. Ixodid ticks of subfamily Amblyomminae. The Fauna of Russia and Neighboring Countries. New Series No. 145, Arachnoidea. St. Petersburg: Nauka (In Russian)

Formosinho P., Santos-Silva M.M. 2006. Experimental infection of Hyalomma marginatum ticks with West Nile virus. Acta Virol, 50: 175–180

Frances S. P., Watcharapichat P., Phulsuksombati D. 2001. Vertical transmission of *Orientia tsutsugamushi* in two lines of naturally infected *Leptotrombidium deliense* (Acari: Trombiculidae). J Medical Entomol, 30: 17–21.

Gadzhiev A. T., Mustafaeva Z. A., Dzhafarova S. G. 1982. Ectoparasites of lizards (Sauria, Reptilia) of Azerbaijan. Parasitol Res Azerbaijan, 155–161 (In Russian)

Georges K., Loria G. R., Riili S., Greco A., Caracappa S., Jongejan F., Sparagano O. 2001. Detection of haemoparasites in cattle by reverse line blot hybridisation with a note on the distribution of ticks in Sicily. Vet Parasitol, 99: 273–286

Haklová-Kočíková B., Hižňanová A., Majláth I., Račka K., Harris D. J., Földvári G., Tryjanowski P., Kokošová N., Malčeková B., Majláthová V. 2014. Morphological and molecular characterization of *Karyolysus* – A neglected but common parasite infecting some European lizards. Parasite Vector, 7: 555

Hoogstraal H. 1956. African Ixodoidea. Vol. 1. Ticks of the Sudan, Navy Dept. Bureau of Medicine and Surgery, United States. Washington DC, USA: Naval Medical Research Unit

Hoogstraal H. 1979. The epidemiology of tick-borne Crimean-Congo hemorrhagic fever in Asia, Europe, and Africa. J Med Entomol, 15: 307–417

Hoogstraal H., Wassef H.Y., Bunniker W. 1981. Ticks (Acarina) of Saudi Arabia. Fam. Argasidae, Ixodidae. Fauna Saudi Arabia, 3: 25–110

Ioniţă M., Mitrea I. L., Pfister K., Hamel D., Silaghi C. 2013. Molecular evidence for bacterial and protozoan pathogens in hard ticks from Romania. Vet Parasitol, 196: 71–76

Iori A., Gabrielli S., Calderini P., Moretti A., Pietrobelli M., Tampieri M. P., Galuppi R., Cancrini G. 2010. Tick reservoirs for piroplasms in central and northern Italy. Vet Parasitol, 170: 291–296

Jafarova S. 2023. *Eremias pleskei* Bedriaga, 1907. 132. In Red Data Book of the Republic of Azerbaijan. Rare and endangered animal species. 3rd edition. Baku: Imak

Kampen H., Schöler A., Metzen M., Oehme R., Hartelt K., Kimmig P., Maier W. A. 2004. *Neotrombicula autumnalis* (Acari, Trombiculidae) as a vector for *Borrelia burgdorferi* sensu lato? Exp Appl Acarol, 33: 93–102

Kar S., Yilmazer N., Akyildiz G., Gargili A. 2017. The human infesting ticks in the city of Istanbul and its vicinity with reference to a new species for Turkey. Syst Appl Acarol, 22: 2245–2255

Karaer Z., Guven E., Nalbantoglu S., Kar S., Orkun O., Ekdal K., Kocak A., Akcay A. 2011. Ticks on humans in Ankara, Turkey. Exp Appl Acarol, 54: 85–91

Keskin A., Bursali A., Kumlutas Y., Ilgaz C., Tekin S. 2013. Parasitism of immature stages of *Haemaphysalis sulcata* (Acari: Ixodidae) on some reptiles in Turkey. J Parasitol, 99: 752–755

Keysary A., Eremeeva M. E., Leitner M., Din A. B., Wikswo M. E., Mumcuoglu K. Y., Inbar M., Wallach A. D., Shanas U., King R., Waner T. 2011. Spotted fever group rickettsiae in ticks collected from wild animals in Israel. Am J Trop Med Hyg, 85: 919–923

Keysary A., Massung R.F., Inbar M., Wallach A. D., Shanas U., Mumcuoglu K. Y., Waner T. 2007. Molecular evidence for *Anaplasma phagocytophilum* in Israel. Emerg Infect Dis, 13: 1411–1412

Kolonin G. V. 2004. Reptiles as hosts of ticks. Rus J Herp, 11(3): 177–180

Kotenko T. I. 1993. Ectoparasites. 210 –212. In Szczerbak N. N. (Ed.), Steppe Runner. Kiev: Naukova Dumka (In Russian)

Kudryashova N. I. 1998. Chiggers (Acariformes, Trombiculidae) of Eastern Palaearctic. Moscow: KMK Scientific Press LTD (In Russian)

Liu J., Guo X., Chen D., Li J., Yue B., Zeng X. 2018. Diversification and historical demography of the rapid racerunner (*Eremias velox*) in relation to geological history and Pleistocene climatic oscillations in arid Central Asia. Mol Phyl Evol, 130: 244–258

Lotiev K. Yu., Bathiev A. M. 2019. Degradation of the Turan herpetofaunal complex in the Terek sand massif (Eastern Ciscaucasia). Izvestiya vysshih uchebnyh zavedeniy. Povolzhskiy region. Estestvennye Nauki, 2: 115–128 (In Russian)

Mader D. R. 2005. Reptile Medicine and Surgery. 2nd edition. Elsevier Saunders

Markov G. S., Bogdanov O. P. 1961. Parasite fauna of Central Asian racerunners. Scientific notes of the Stalingrad State Pedagogical Institute named after A. S. Serafimovich, 13: 101–123 (In Russian)

Markov G. S., Tertyshnikov M. F., Reznik P. A. 1974. Materials on the Parasite Fauna of the Common Lizard Species in the Central Ciscaucasia. Parasitology of Animals in the Southeastern USSR. Volgograd: Volgograd State Pedagogical Institute. 54–63 (In Russian)

Micherdzinski W. 1980. Eine Taxonomische Analyse der Familie Macronyssidae Oudemans, 1936. I. Subfamilie Ornithonyssinae Lange, 1958 (Acarina, Mesostigmata). Polska Akademia Nauk: Warszawa

Miťková K., Berthová L., Kalúz S., Kazimírová M., Burdová L., Kocianová E. 2015. First detections of *Rickettsia helvetica* and *R. monacensis* in ectoparasitic mites (Laelapidae and Trombiculidae) infesting rodents in south-western Slovakia. Parasitol Res, 114: 2465–2472

Moraza M. L., Irwin N. R., Godinho R., Baird S. J. E., de Bellocq J. G. 2009. A new species of *Ophionyssus* Mégnin (Acari: Mesostigmata: Macronyssidae) parasitic on *Lacerta schreiberi* Bedriaga (Reptilia: Lacertidae) from the Iberian Peninsula, and a world key to species. Zootaxa, 2007: 58–68

Muskhelishvili T. A. 1970. Reptiles of Eastern Georgia. Tbilisi: Metzniereba (In Russian)

Orkun O., Karaer Z., Cakmak A., Nalbantoglu S. 2014. Spotted fever group rickettsiae in ticks in Turkey. Ticks Tick-Borne Dis, 5: 213–218

Orlova M. V., Doronin I. V., Doronina M. A., Anisimov N. V. 2023. A review of ixodid ticks (Acari: Ixodidae) associated with *Lacerta* spp. (Reptilia: Lacertidae) from the Caucasus and adjacent territory. Diversity, 15: 1026

Orlova M. V., Doronin I. V., Klimov P. B., Anisimov N. V. 2022. A review of mites and ticks parasitizing rock lizards (Lacertidae: *Darevskia*). J Vector Ecol, 47(1): 19–28

Petrova-Piontkovskaya S. P. 1947. Biological and ecological data on the tick *Hyalomma marginatum* Koch in the northwestern Crimean hemorrhagic fever focus. (Russian, Translation 864, Medical Zoology Department, United States Naval Medical Research Unit No. 3, Cairo, Egypt). Nov Med, 5: 21–24

Pomerantzev B. I. 1950. Fauna of U.S.S.R. Arachnida, Vol. IV(2), Ixodid Ticks (Ixodidae). Leningrad: Academy of Sciences USSR (In Russian)

Raad M., Azar D., Perotti A. M. 2020. First report of the ticks *Haemaphysalis punctata* Canestrini & Fanzago, 1878, *Haemaphysalis parva* (Neumann, 1897) and *Dermacentor marginatus* (Sulzer, 1776) (Acari, Amblyommidae) from humans in Lebanon. Acta Parasitol, 65: 541–545

Radovsky F. J. 2010. Revision of Genera of the Parasitic Mite Family Macronyssidae (Mesostigmata: Dermanyssoidea) of the World. West Bloomfield: Indira Publishing House

Santos-Silva M. M., Beati L., Santos A. S., De S. R., Nuncio M. S., Melo P., Santos-Reis M., Fonseca C., Formosinho P., Vilela C., Bacellar F. 2011. The hard-tick fauna of mainland Portugal (Acari: Ixodidae): An update on geographical distribution and known associations with hosts and pathogens. Exp Appl Acarol, 55: 85–121

Schluger E. G. 1967. New species of chiggers of South of Europe part of USSR. Vestnik Zoologii, 3: 47–50 (In Russian)

Serdyukova G. V. 1956. Ixodid Ticks of USSR Fauna. Keys to the Fauna of the USSR. Academy of Sciences of the USSR, Vol. 64. Leningrad, Moscow: Publishing House Acad. of Sciences of the USSR (In Russian)

Shatrov A. B., Kudryashova N. I. 2008. Taxonomic ranking of major trombiculid subtaxa with remarks on the evolution of host-parasite relationships (Acariformes: Parasitengona: Trombiculidae). Annales Zoologici, 58: 279–287

Szczerbak N. N. 1974. Racerunners of the Palaearctic. Kiev: Naukova Dumka (In Russian)

Tertyshnikov M. F. 1992. Reptiles of the Ciscaucasia: Fauna, Taxonomy, Ecology, Significance, Protection, Genesis. Doc Diss Stavropol State Pedagog Inst. 383 pp (In Russian)

Tertyshnikov M. F. 2002. Reptiles of the Central Ciscaucasia. Stavropol: Stavropolservisshkola (In Russian)

Tuniyev B. S., Kukushkin O. V. 2021. *Eremias arguta deserti* (Gmelin, 1789). Red Data Book of the Russian Federation, Vol. Animals. 2nd edition. Moscow: FGBU «VNII Ecology». 449–451 (In Russian)

Uetz P., Freed P, Aguilar R., Reyes F., Kudera J., Hošek J. 2025. The Reptile Database. Retrieved from http://www.reptile-database.org

Walker A. R., Bouattour A., Camicas J. L., Estrada-Pena A., Horak I. G., Latif A., Pegram R. G., Preston P. M. 2003. Ticks of Domestic Animals in Africa: A Guide to Identification of Species. Edinburgh: Bioscience Reports

Zazanashvili N., Sanadiradze G., Bukhnikashvili A., Kandaurov A., Tarkhnishvili D. 2004. Caucasus. In Hotspots Revisited. Earth's biologically richest and most endangered terrestrial ecoregions. Mexico City: CEMEX/Agrupacion Sierra Madre. 148–152

Zolotarev N. A. 1949. The importance of reptiles and amphibians in the development of ticks in Dagestan. Proceedings of the sector of zoology and animal husbandry of the Dagestan scientific research base of the Academy of Sciences of the USSR, 2: 67–78 (In Russian)

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