

NEW RECORDS OF CHIGGER MITES (ACARIFORMES, TROMBICULIDAE) FROM THE ARABIAN PENINSULA

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ABSTRACT. First data on the chigger mites of the United Arab Emirates (UAE) are obtained based on the material collected from alcohol-fixed specimens of the Arabian spiny mouse, *Acomys dimidiatus* (Cretzschmar), stored in a museum collection. Four species of chiggers are recorded, three of which were previously known from the nearby provinces of Iran.

KEY WORDS: chigger mites, fauna, United Arab Emirates, Western Asia.

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INTRODUCTION

The Arabian Peninsula belongs to the territories where endemic scrub typhus, a severe disease transmitted exclusively by chigger mites, was first discovered (Izzard *et al.* 2010). In the summer of 2006, 11 days after traveling to Dubai, UAE (and visiting a stable there), a woman had noticed an eschar on her abdomen typical of chigger bites. Later, symptoms of scrub typhus developed. The pathogen isolated from the patient's blood was described as a new species, *Orientia chuto*. At that time, no data on the chiggers of the UAE had been published. Previously, Radford (1954) had described nine species of chiggers from Yemen; Stekolnikov *et al.* (2012) have described one new genus and species from Oman; and Stekolnikov *et al.* (2019b) have reported a diverse chigger fauna from the southwestern part of Saudi Arabia. Several years ago, I have collected and examined a sample of chigger mites from alcohol-fixed specimens of the Arabian spiny mouse, *Acomys dimidiatus* (Cretzschmar), which originated from the UAE and had been deposited in the theriological collection of the Zoological Institute of the Russian Academy of Sciences (ZIN, St. Petersburg, Russia). The results of the identification of the aforementioned mites are presented herein.

MATERIALS AND METHODS

The three individuals of *A. dimidiatus*, examined by me, were initially collected and identified by A. V. Abramov (ZIN) from the UAE, Fujairah, Wadi Wurayah National Park:

Adult (sex not recorded), field No. AVA 17-209, accession No. of the ZIN theriological collection 106504, coordinates of the collection site (obtained by a GPS device) 25°22'34.8" N, 56°15'22.9" E, ~280 m a. s. l., 8 Dec. 2017.

Female adult, field No. AVA 17-221 (ZIN 106508), 25°23'46.5" N, 56°16'10.2" E, ~170 m a. s. l., 15 Dec. 2017.

Male adult, field No. AVA 17-224 (ZIN 106511), other data same as above.

Both collection localities featured the same types of biotope—foot of a rocky slope, in a wadi, with isolated small bushes. The mice were caught using spring-loaded bar mouse traps baited with pieces of bread sprinkled with sunflower oil. Upon capture, the mice were stored in ethyl alcohol. I collected the mites from the alcohol-fixed specimens of *A. dimidiatus* in a laboratory, using tweezers, under a dissecting microscope. The chiggers were stored in plastic tubes with 70% ethyl alcohol and then mounted on microscope slides using Berlese's fluid as both clearing and mounting medium. The slides were exposed in a thermostat for one week at 60 °C and ringed with nail varnish (inner layer) and asphalt lacquer (upper layer). The examination of the specimens was performed on a Leica DM2500 microscope using differential interference contrast. For identification, I relied on: Stekolnikov *et al.*'s (2019a) monograph on Iranian chiggers, a monograph on the chigger mites of East Palaearctics (Kudryashova 1998), and a revision of the *Leptotrombidium* generic complex (Vercammen-Grandjean and Langston 1976). I have also compared the specimens of *Ericotrombidium* Vercammen-Grandjean, 1966 with the species of this genus represented in the ZIN collection (Stekolnikov 2019). The material discussed in this article is currently deposited in the Laboratory of Parasitic Arthropods (ZIN); the accession numbers of mite specimens given below pertain to ZIN's Trombiculidae collection.

SYSTEMATICS

Ericotrombidium jayewickremei (Womersley, 1952)

Distribution and hosts. This species was described from Sri Lanka, ex *Rattus rattus* (L.) [syn. *Rattus rattus kandiyanus* (Kelaart)] and later recorded from India, Pakistan, Tajikistan and Iran (Sistan and Baluchestan Province), ex *Cricetulus migratorius* (Pallas), *Mus* sp., *Nesokia indica* (Gray), *Rattus pycoris* (Hodgson), *R. rattus*, *Tatera indica* (Hardwicke), *Crocidura suaveolens* (Pallas), *Crocidura* sp. and *Suncus* sp. (Kudryashova and Abou-Taka 1986; Kudryashova 1998; Stekolnikov *et al.* 2019a). This article represents the first record of this species from the UAE, as well as from *Acomys dimidiatus*.

Specimens examined. Three specimens (ZIN 15915, 15916, 15918) collected from the back of *A. dimidiatus* No. AVA 17-209, UAE, Fujairah, 8 Dec. 2017.

Ericotrombidium sokolovi (Kudryashova, 1984)

Distribution and hosts. This species was described from Mongolia, ex *Alticola barakschin* Bannikov, *Cricetulus migratorius*, *Phodopus roborovskii* (Satunin), *Meriones meridianus* (Pallas) and *Crocidura suaveolens*. Later, it was recorded from Kazakhstan (Mangystau Region), ex *Meriones lybicus* Lichtenstein and *Rhombomys opimus* (Lichtenstein); and from Turkmenistan, ex *Apodemus sylvaticus* (dubious identification), *C. migratorius* and *R. opimus* (Kudryashova 1984, 1998; Kudryashova and Abou-Taka 1986). This article represents the first record of this species from the UAE, as well as from *Acomys dimidiatus*.

Specimens examined. Seven specimens (ZIN 15911–15913, 15917, 15919–15921), collected from the back of *A. dimidiatus* No. AVA 17-209, UAE, Fujairah, 8 Dec. 2017.

Otorhinophila (Danielia) farhangazadi Kudryashova, Neronov and Mobedi, 1972

Distribution and hosts. This species was described from Iran (Khuzestan and Fars Provinces), ex *Meriones persicus* (Blanford). One additional specimen was collected—ex *Meriones lybicus* or *Tatera indica*. Later, *O. (D.) farhangazadi* was also recorded from the Bushehr Province, ex *M. persicus* (Kudryashova *et al.* 1972, 1978; Stekolnikov *et al.* 2019a). This article represents the first record of this species from the UAE, as well as from *Acomys dimidiatus*.

Specimens examined. Thirteen specimens (ZIN 15922–15934), collected from the ears of *A. dimidiatus* Nos. AVA 17-221 and AVA 17-224, UAE, Fujairah, 15 Dec. 2017.

Schoutedenichia zarudnyi Kudryashova, 1976

Distribution and hosts. This species was described from Iran (Bushehr Province), ex *Meriones persicus*, later recorded from the Fars Province, ex *Tatera indica*, and from Saudi Arabia ('Asir Province), ex *Acomys dimidiatus* (Kudryashova 1976; Kudryashova *et al.* 1978; Stekolnikov *et al.* 2019a, b). This article represents the first record of *S. zarudnyi* from the UAE.

Specimens examined. One specimen (ZIN 15914), collected from the back of *A. dimidiatus* No. AVA 17-209, UAE, Fujairah, 8 Dec. 2017.

DISCUSSION

The collection sites belong to the Emirate of Fujairah, located in the northern part of the country, close to Iran, which is separated from UAE and Oman by a narrow Strait of Hormuz. Therefore, finding chigger species recorded previously from the southern provinces of Iran in that area could be expected. In particular, *Ericotrombidium jayewickremei* was known from the Sistan and Baluchestan Province; *Otorhinophila (Danielia) farhangazadi* was known from the Khuzestan, the Fars and the Bushehr Provinces; and *Schoutedenichia zarudnyi* was known from the Bushehr and the Fars Provinces (Stekolnikov *et al.* 2019a). Of these regions, Khuzestan and Bushehr occupy the seashores of the Persian Gulf, and the Sistan and Baluchestan Province has an Oman Gulf coastline. Chigger mites were never collected from mammal hosts in the Hormozgan Province, which lies directly opposite of the UAE: only chiggers specific to birds were studied in one locality of this province (Vercammen-Grandjean *et al.* 1970). However, the Fars Province also lies close to the Persian Gulf and borders with both the Bushehr and the Hormozgan Provinces.

To conclude, the above three chigger species presumably belong to a common fauna of trombiculids parasitizing on rodents, distributed around the Persian Gulf. Moreover, *S. zarudnyi* was also recorded from Saudi Arabia (Stekolnikov *et al.* 2019b).

Ericotrombidium sokolovi, judging from the fact that it was recorded from Mongolia, Kazakhstan, and Turkmenistan, is a species with a wide

geographic range. It was not known from Iran, but one close species, *Ericotrombidium limpidum* (Kudryashova, 1976), was described from the northwestern part of the country (Kudryashova *et al.* 1978).

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