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First record of the spider *Oecobius ferdowsii* Mirshamsi, Zamani & Marusik, 2017 (Araneae, Oecobiidae) in Kazakhstan

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Abstract

The first record from Kazakhstan of the oecobiid spider *Oecobius ferdowsii* Mirshamsi, Zamani & Marusik, 2017 is presented. This species was previously known only from Iran. A single male specimen was collected on the Ustyurt Plateau in southwestern Kazakhstan, approximately 900 km north from the closest known locality in northern Iran. A redescription, photographs, and distribution map are provided.

Keywords

Aranei, biodiversity, Central Asia, distribution, redescription, Ustyurt Plateau

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Introduction

Oecobiidae Blackwall, 1862 is a small spider family comprising 120 extant species placed in three subfamilies and six genera (Jocqué and Dippenaar-Schoeman 2006; WSC 2021). The family has an almost worldwide distribution but is absent from the Asian part of Russia and polar regions (WSC 2021). To date, only two genera have been recorded from Central Asia: *Oecobius* Lucas 1846 and *Uroctea* Dufour, 1820 (Mikhailov 2021); both have also been reported from the Ustyurt Plateau (Zyuzin and Tarabaev 1993). *Oecobius* is the largest genus of the family (90 species; WSC 2021). Most *Oecobius* species are known from the Mediterranean, and the greatest diversity occurs in the Canary Islands (Marusik et al. 2015). Only two species of *Oecobius* have been recorded from post-Soviet countries of Central Asia: *O. nadiae* (Spassky, 1936) and *O. tadzhikus* Andreeva & Tyshchenko, 1969 (Mikhailov 2021). Both species are well known: *O. nadiae* is widespread, known from Azerbaijan in the west through Iran, Afghanistan, and Central Asia to the Sichuan Province of China in the east (Song et al. 1999; WSC 2021), while *O. tadzhikus* is confidently known only from Tajikistan; it was recently redescribed by Marusik et al. (2015). While studying recently collected spiders from the Ustyurt Plateau (the Mangystau Oblast of Kazakhstan), I found a single male of *Oecobius ferdowsii* Mirshamsi, Zamani & Marusik, 2017. This species is closely related to *O. tadzhikus* and was previously known only from Iran (Zamani et al. 2017). Here I provide the first record of *O. ferdowsii* from Kazakhstan and an illustrated redescription of this species, as well as a compilation of all known localities of *O. ferdowsii* and its sibling species *O. tadzhikus*.

Methods

A single specimen was collected by hand and preserved in 70% ethanol. The specimen was photographed using an Olympus DP74 camera attached to an Olympus SZX16 stereomicroscope at the Altai State University. Photographs were taken in a dish with white or black cotton on the bottom and filled with alcohol. SEM images were produced using a Hitachi TM-1000 scanning microscope at the Institute of Systematics and Ecology of Animals (Novosibirsk, Russia). Digital images were montaged using Helicon Focus software. The distribution map was produced using the online mapping application SimpleMappr (Shorthouse 2010). All measurements are in millimeters. Length of leg segments were measured on the dorsal side. Leg measurements are shown as: femur, patella, tibia, metatarsus, tarsus (total length). The terminology and format of description follows Marusik et al. (2015) and Baum (1972). Material examined is deposited in the Institute of Systematics and Ecology of Animals SB RAS, Novosibirsk, Russia (ISEA; curator G.N. Azarkina). Abbreviations: eyes: ALE = anterior lateral eye, AME = anterior median eye, PLE = posterior lateral eye, PME = posterior median eye; copulatory organs: At = anterior part of the tegulum, Al = loop of the spermophor on anterior part of the tegulum, Ce = claw-like extension of Ta, Pl = loop of the spermophor on prolateral part of the tegulum, Ra = radical apophysis, Rh = hook of the Ra, Ta = terminal apophysis.

Results

Oecobius ferdowsii Mirshamsi, Zamani & Marusik, 2017

Figures 1, 3

Oecobius ferdowsii Mirshamsi, Zamani & Marusik in Zamani et al. 2017: 333, figs 2A–D, 3A–D (♂♀).

Oecobius ferdowsii—Zamani and Bosselaers 2020: 45, fig. 3A (♀, habitus only).

Material examined. KAZAKHSTAN – **Mangystau Oblast** • Ustyurt Plateau, Ustyurt Nature Reserve, Mamekkazgan Guard Post, near Karazhar Well; 43° 24′28″N, 054°33′34″E; 80 m alt.; 14.IV.2018; A.A. Fomichev leg.; inside the building, collected by hand; 1 ♂, ISEA 001.8831.

Identification. The male of *O. ferdowsii* resembles that of *O. tadzhikus* in having a similar strongly developed anterior part of tegulum (At) and a loop of spermophor (Pl) on prolateral part of the tegulum. *Oecobius ferdowsii* can be distinguished from *O. tadzhikus* by having a thicker and shorter claw-like extension of the terminal apophysis (Ce), which is almost straight in lateral view (vs. strongly curved in *O. tadzhikus*); the retrolateral extension of the terminal apophysis (Re) as long as the claw-like extension (vs. twice shorter in *O. tadzhikus*); significantly curved proximal part of the spermophore on prolateral side of the terminal apophysis (vs. almost straight in *O. tadzhikus*) (cf. Fig. 1C–H and Fig. 2B–E).

Redescription. Male. Total length 2.18. Carapace wider than long: 0.88 long, 0.9 wide. Prosoma and all limbs beige. Eye field black. Cymbium light brown. Abdomen white, dorsally with brown cruciform pattern anteriorly and with pair of brown spots posteriorly. Spinnerets beige. Eye sizes: ALE 0.1, AME 0.1, PLE 0.07, PME 0.13. Leg measurements: I: 1.0, 0.4, 0.79, 0.8, 0.7 (3.69). II: 1.07, 0.36, 0.86, 0.91, 0.76 (3.96). III: 1.14, 0.39, 0.87, 1.01, 0.69 (4.1). IV: 1.2, 0.4, 0.99, 1.13, 0.7 (4.42). Palp as in Figure 1C–H; bulb as large as cymbium; tegulum with enlarged anterior part; spermophor remarkably long, embracing the whole tegulum and forming 2 round loops (Al) on the anterior part of tegulum and stretched loop in the prolateral-proximal part of tegulum; terminal apophysis (Ta) with square basal part and 2 extensions. Radical apophysis (Ra) with strong hook (Rh) anteriorly.

Distribution. This species was known from the Zagros Mountains, and from the Alborz Mountains to the Kopetdag Mountains in Iran (Zamani et al. 2017). The new record on the Ustyurt Plateau in southwestern Kazakhstan represents the northernmost locality of this species, considerably expanding its range (Fig. 3).

Habitat. The specimen was collected inside a building in the Ustyurt Reserve.

Taxonomic remarks. Marusik et al. (2015) stressed that *O. tadzhikus*, which possesses a rather unusual male palp and an epigyne with a number of features unknown in other congeners (i.e., strongly developed anterior part of tegulum equal in size to the "embolic division" and having a loop of spermophore on the prolateral part, very large receptacles, and transverse fertilization chambers) most likely belongs to a different, undescribed genus. Considering the close relationship between *O. ferdowsii* and *O. tadzhikus*, it is possible that both species will be transferred to a new genus in future.

Comments. The original description of *O. ferdowsii* by Zamani et al. (2017) was lacking the ventral view of the male palp. I provide digital and SEM images of the male palp in ventral view for the first time (Fig. 1D, G). Interestingly, the newly collected male (Fig. 1A, B) is much paler in body coloration than the type, as illustrated by Zamani et al. (2017: fig. 2A, B).

Discussion

Before the present report, *Oecobius ferdowsii* was known only from Iran where it is quite widespread (provinces of Khorasan-e Razavi, Semnan, Lorestan, and Tehran; Zamani et al. 2017). The new locality of this species in southwestern Kazakhstan is 900 km away from the closest previously known locality in Iran and forms a significant disjunction. It should be noted that *O. tadzhikus* (the closest species to *O. ferdowsii*) originally described from Tajikistan, was reported also from Kopetdag Mountains

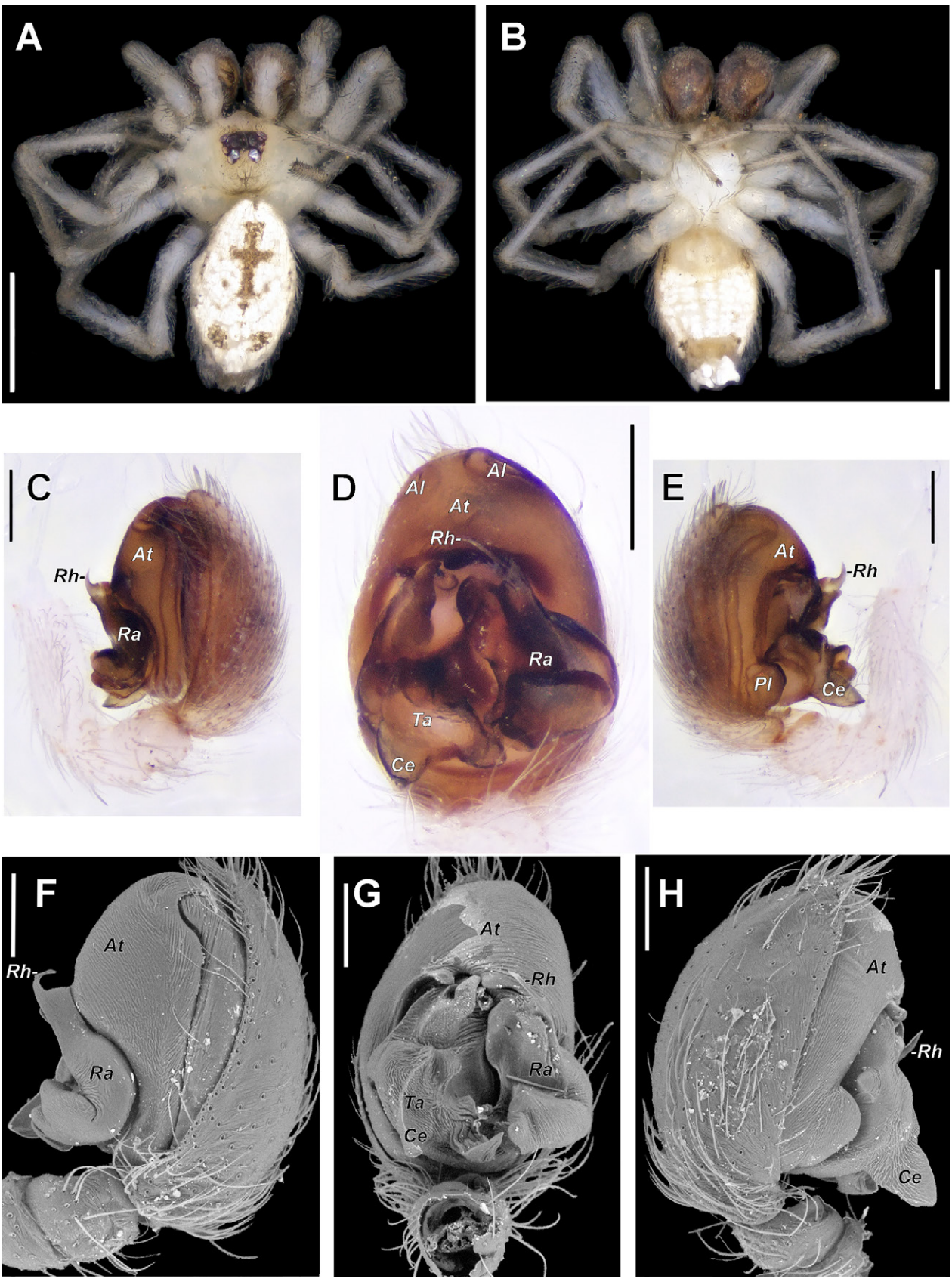

Figure 1. *Oecobius ferdowsii*, male. **A, B.** Habitus, dorsal and ventral. **C, F.** Palp, retrolateral. **D, G.** Ditto, ventral. **E, H.** Ditto, prolateral. Abbreviations: At = anterior part of the tegulum, Al = loop of the spermophore on anterior part of the tegulum, Ce = claw-like extension of Ta, Pl = loop of the spermophore on prolateral partof the tegulum, Ra = radical apophysis, Rh = hook of the Ra, Ta = terminal apophysis. Scale bars: A, B = 1 mm, C–H = 0.2 mm.

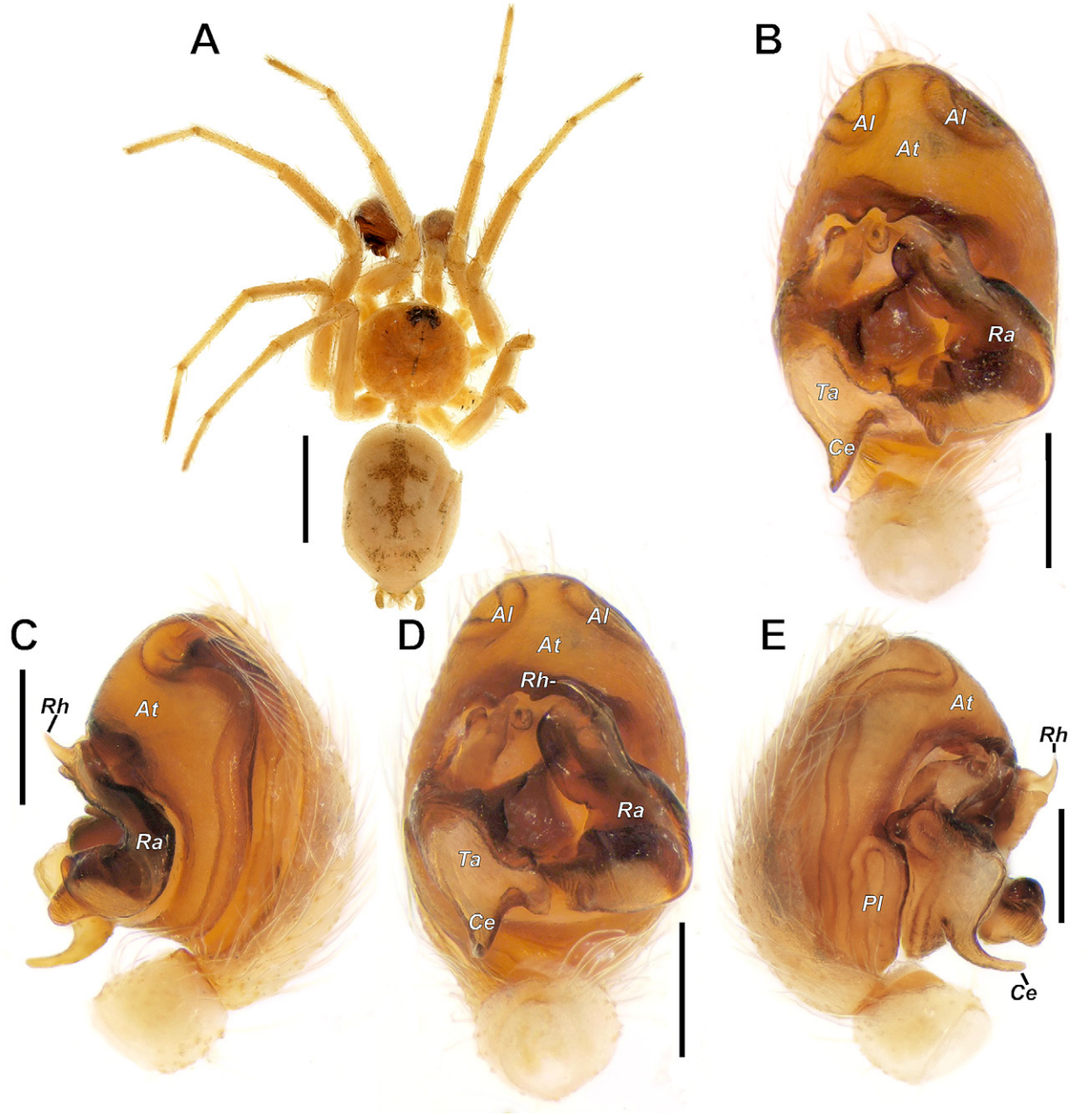

Figure 2. *Oecobius tadzhikus*, male. **A.** Habitus, dorsal. **B, D.** Palp, ventral. **C.** Ditto, retrolateral. **E.** Ditto, prolateral. Abbreviations: At = anterior part of the tegulum, Al = loop of the spermophore on anterior part of the tegulum, Ce = claw like extension of Ta, Pl = loop of the spermophore on prolateral part of the tegulum, Ra = radical apophysis, Rh = hook of the Ra, Ta = terminal apophysis. Scale bars: A = 1 mm, B–E = 0.2 mm. **A–E** reproduced after Marusik et al. (2015).

in southwestern Turkmenistan (Mikhailov and Fet 1994). Turkmenistan is located midway between Iran and southwestern Kazakhstan. Marusik et al. (2015) noted that the records of *O. tadzhikus* from Turkmenistan are doubtful and could refer to another species. Zamani et al. (2017) had a similar point of view, suggesting that the doubtful records of *O. tadzhikus* from Turkmenistan could belong to *O. ferdowsii*. The reliably identified find of *O. ferdowsii* from the Ustyurt Plateau in southwestern Kazakhstan confirms this assumption. Thus, it can be assumed that *O. tadzhikus* is endemic to southwestern Tajikistan, and that *O. ferdowsii* is more widespread, occurring in Iran, Turkmenistan, and Kazakhstan. It should be noted that *O. tadzhikus* was previously reported from Kazakhstan by Logunov and Gromov (2012), but without indicating any material and locality. *Oecobius tadzhikus* dwells under stones on the slopes of Beshkent Valley in Tajikistan (Andreeva and Tystshenko 1969; Andreeva 1975 1976). In the Kopetdag Mountains of Turkmenistan, the suspected *O. ferdowsii* (reported as *O. tadzhicus*; see above) were found on the surface of rocks and on moss cushions in the mountain-forest belt (Fet 1985). On the Ustyurt Plateau, *O. ferdowsii* was collected indoors. In the northern part of its range, it probably is synanthropic, like many others representatives of the genus (Nentwig et al. 2022).

Figure 3. Map, showing distribution records of *Oecobius* spp. Circle = new record of *O. ferdowsii* in south-western Kazakhstan, square = records of *O. ferdowsii* in Iran, triangle = records of *O. tadzhikus*, diamond = doubtful records of *O. tadzhikus* in Turkmenistan.

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