

New data on the wolf spiders of Iran (Arachnida: Aranei: Lycosidae), with a description of two new species

Новые данные по паукам-волкам Ирана (Arachnida: Aranei: Lycosidae), с описанием двух новых видов

Sepideh Shafaie¹, Seppo Koponen², Anton A. Nadolny³,
Kadir Boçak Kunt^{4,5}, Omid Mirshamsi^{1,6*}
Сепидех Шафайе¹, Сеппо Копонен², Антон А. Надольный³,
Кадыр Богач Кунт^{4,5}, Омид Миршамси^{1,6*}

¹ Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran.

² Zoological Museum, Biodiversity Unit, FI-20014 University of Turku, Finland.

³ A.O. Kovalevsky Institute of Biology of the Southern Seas of RAS, Nakhimov Ave. 2, Sevastopol 299011 Crimea, Russia.

Институт биологии южных морей им. А.О. Ковалевского РАН, просп. Нахимова, 2, Севастополь, 299011 Крым, Россия.

⁴ Department of Biology, Faculty of Science, Eskişehir Technical University, TR- 26470 Eskişehir, Turkey.

⁵ Cyprus Wildlife Research Institute, Taşkent, Kyrenia, Cyprus.

⁶ Research Department of Zoological Innovations (RDZI), Institute of Applied Zoology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran.

*Corresponding author: mirshams@um.ac.ir

KEY WORDS: Araneae, Iran, Middle East, new records, taxonomy.

КЛЮЧЕВЫЕ СЛОВА: Araneae, Иран, Ближний Восток, новые находки, таксономия.

ABSTRACT. New taxonomic and faunistic data on 25 species in 13 genera of Lycosidae from Iran are provided. Two new species *Alopecosa pekari* sp.n. (♂) and *Trochosa marusiki* sp.n. (♂) are diagnosed and described from West Azerbaijan Province. The genus *Draposa* Kronstedt, 2010 and the species *Draposa oakleyi* (Gravely, 1924), *Evipa eltonica* Dunin, 1994, *Karakumosa turanica* Logunov et Ponomarev, 2020 and *K. zyuzini* Logunov et Ponomarev, 2020 are recorded from Iran for the first time. Thirteen new provincial records are also provided. The known lycosid fauna of Iran contains now 81 species.

How to cite this paper: Shafaie S., Koponen S., Nadolny A.A., Kunt K.B., Mirshamsi O. 2022. New data on the wolf spiders of Iran (Arachnida: Aranei: Lycosidae), with a description of two new species // Arthropoda Selecta. Vol.31. No.2. P.235–245. doi: 10.15298/arthsel. 31.2.12

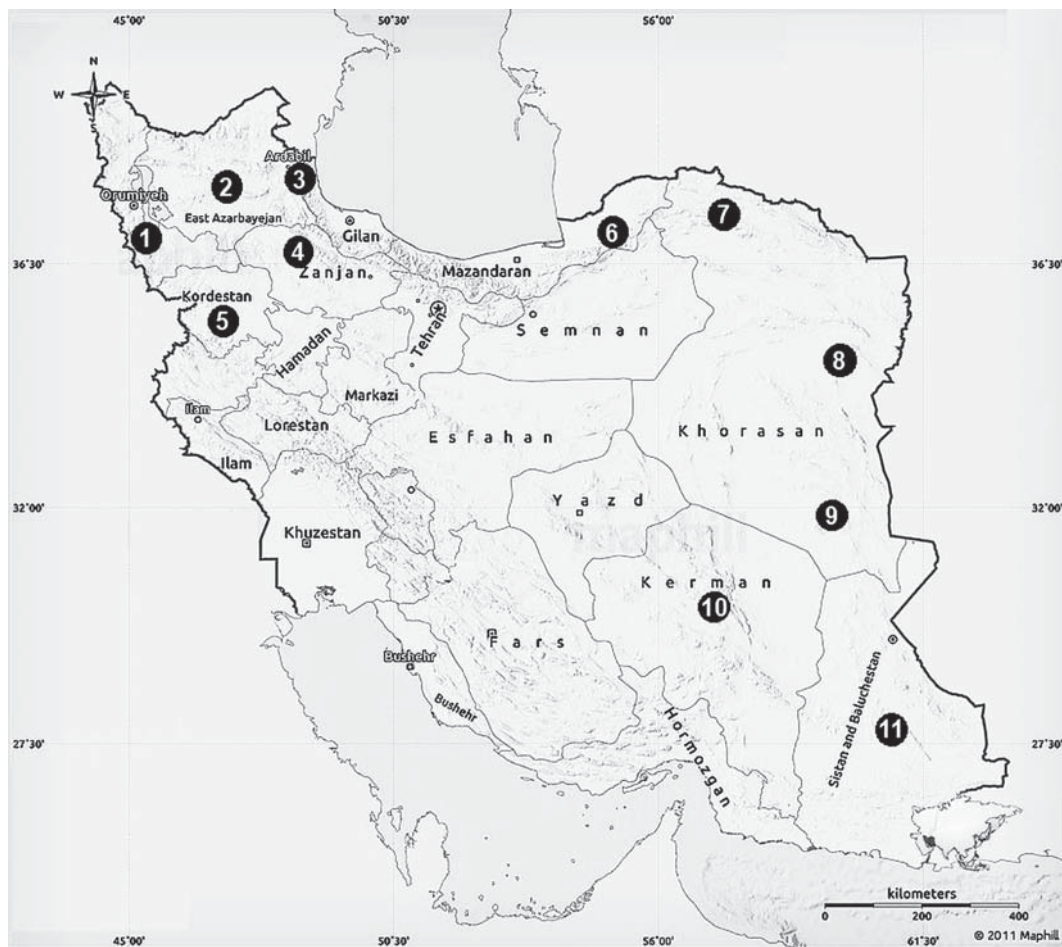
РЕЗЮМЕ. Представлены новые данные по таксономии и фаунистике 25 видов из 13 родов Lycosidae Ирана. Два вида из провинции Западный Азербайджан диагностированы и описаны как новые *Alopecosa pekari* sp.n. (♂) и *Trochosa marusiki* sp.n. (♂). Впервые для фауны Ирана отмечены род *Draposa* Kronstedt, 2010 и виды *Draposa oakleyi* (Gravely, 1924), *Evipa eltonica* Dunin, 1994, *Karakumosa turanica* Logunov et Ponomarev, 2020 и *K. zyuzini* Logunov et Ponomarev, 2020. Приводится 13 новых находок для провинций. Известная фауна ликоид Ирана в настоящий момент насчитывает 81 вид.

Introduction

The cosmopolitan family Lycosidae Sundevall, 1833 (wolf spiders) is one of the most diverse groups of spiders accounting for 2441 described species in 126 genera [World Spider Catalog, 2022]. According to the previous taxonomic studies, only 75 lycosid species have been reported from Iran [Zamani *et al.*, 2022; Shafaie *et al.*, unpublished]. The number of wolf spiders for geographically adjacent to Iran countries is 87 in Turkey, 78 in Azerbaijan, and 27 in Israel [Otto, 2020; Danışman *et al.*, 2021; Zonstein, Marusik, 2013]. In this research, we have studied the wolf spiders based on both museum and newly collected material. Two new species, *Alopecosa pekari* sp.n. (♂) and *Trochosa marusiki* sp.n. (♂), are described; in addition, one genus and four species are reported from Iran for the first time, and 13 new provincial records are given.

Material and Methods

The material treated here were collected from different provinces of Iran (Map 1). All the studied specimens have been deposited in the Zoological Museum of the Ferdowsi University of Mashhad, Iran (ZMFUM). Descriptions were made from specimens preserved in 80% ethanol. Specimens were photographed using an Olympus DP-71 camera attached to an Olympus SZH10 stereomicroscope at the ZMFUM. Compound focus images were montaged using the Helicon Focus software. Length of leg segments is measured on the dorsal side: total length (femur + patella + tibia +



Map 1. Collecting localities for the studied species of Lycosidae: (1) *Alopecosa aculeata*, *A. albofasciata*, *Alopecosa pekari* sp.n., *Pardosa italica*, *P. pontica*, *P. proxima*, *Trochosa hispanica*, *Trochosa marusiki* sp.n., *Xerolycosa miniata*; (2) *Hogna effera*; (3) *Alopecosa farinosa*; (4) *Pardosa aenigmatica*; (5) *Hogna radiata*; (6) *Alopecosa albofasciata*, *Arctosa leopardus*, *Pirata piraticus*, *Trochosa ruficola*; (7) *Bogdocosa kronebergi*, *Evippa eltonica*, *Pirata piraticus*, *Trochosa hispanica*; (8) *Alopecosa cursor*, *Arctosa leopardus*, *Bogdocosa kronebergi*, *Draposa oakleyi*, *Evippa eltonica*, *Lycosa praegrans*, *Trochosa hispanica*, *Wadicosa commoventis*; (9) *Hogna effera*, *Karakumosa zyuzini*; (10) *Draposa oakleyi*, *Evippa fortis*, *Hogna effera*, *Hogna radiata*; (11) *Karakumosa turanica*.

Карта 1. Точки находок изученных видов Lycosidae.

metatarsus + tarsus). All measurements are given in millimeters.

In the Material given below the name of the country (Iran) is omitted. The terminology follows Marusik *et al.* [2018], Otto & Japoshvili [2018] and Marusik & Nadolny [2020]. The abbreviations used in the text and figure legends: *At*, anterior edge of tegular apophysis; *d* — dorsal; *E* — embolus; *Et* — embolic tip; *Fe* — femur; *Mb* — median band; *Mt* — metatarsus; *Or* and *Ov* — retrolateral and ventral outgrowths of tegular apophysis; *p* — prolateral; *r* — retrolateral; *Se* — synembolus; *Ss* — short spine-like setae on the venter of abdomen; *St* — subtegulum; *Ta* — tegular apophysis; *Ti* — tibia; *Tt* — prolateral tip of tegulum; *v* — ventral.

Results

Family Lycosidae Sundevall, 1833

Alopecosa aculeata (Clerck, 1757)

MATERIAL. *West Azerbaijan Prov.*: 4 ♀♀, 1 imm., Urmia City, Sero Rd. (37°38'N, 44°59'E), 1350 m, 12.05.2019, S. Shafaie.

DISTRIBUTION. North America, Europe, Turkey, the Caucasus, Russia (European part to the Far East), Iran, Central Asia, China, Japan [World Spider Catalog, 2022].

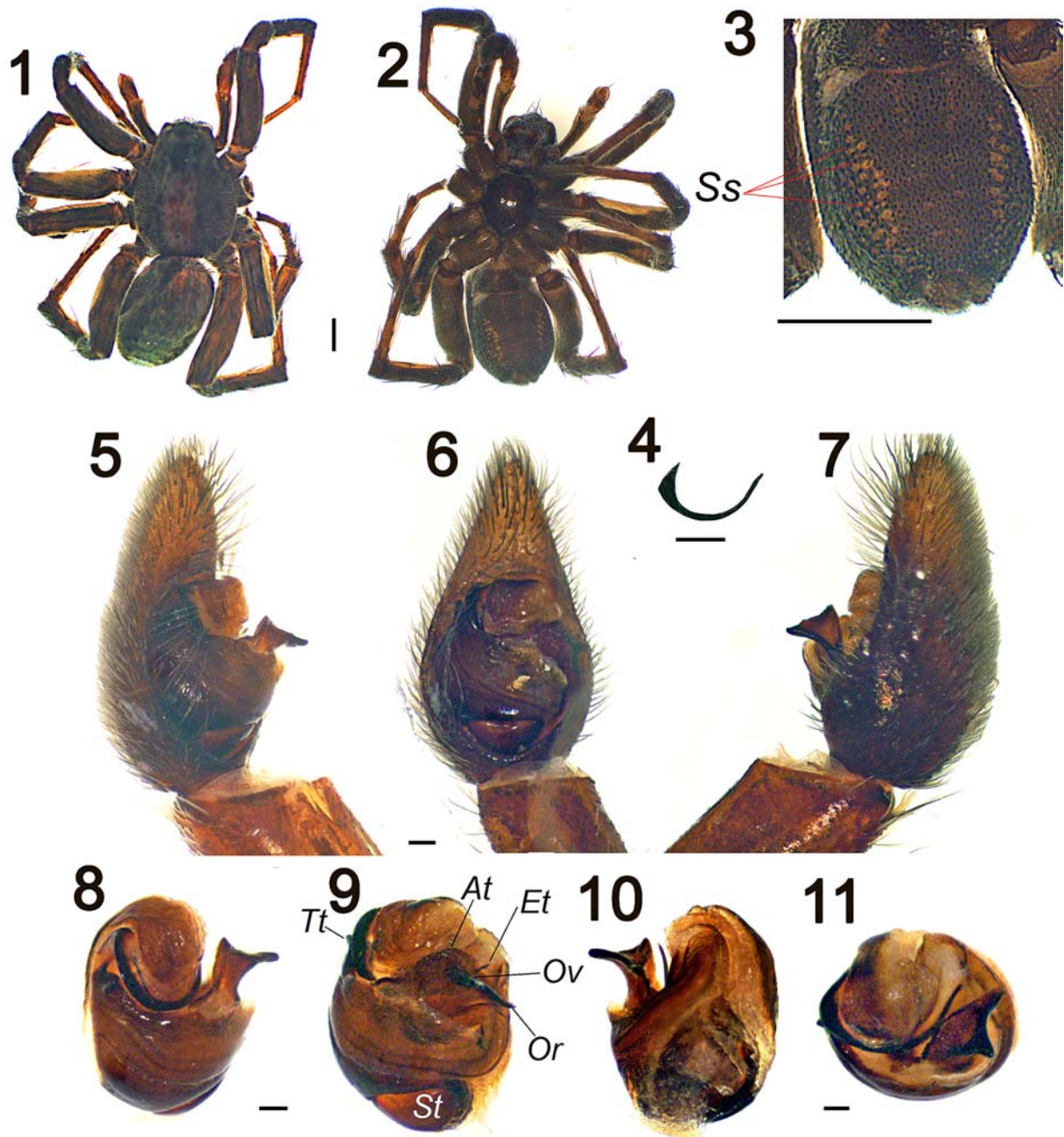
RECORDS IN IRAN. This is the first record of this species from West Azerbaijan Province. The species was previously known from Alborz and Markazi Provinces [Zamani *et al.*, 2022].

Alopecosa albofasciata (Brullé, 1832)

MATERIAL. *Golestan Prov.*: 2 ♀♀, Kordkuy City, Yasaqi Vil. (36°49'N, 54°13'E), 50 m, 6.05.2011, R. Kashefi. *West Azerbaijan Prov.*: 11 ♀♀, 16 ♂♂, 5 imm., Urmia City, Sero Rd. (37°38'N, 44°59'E), 1350 m, 12.05.2019, S. Shafaie & D. Ahmadi.

DISTRIBUTION. The Mediterranean to Central Asia [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species from West Azerbaijan. *A. albofasciata* was formerly known from Golestan, Isfahan, Kurdistan, Tehran and Zanzan Provinces [Zamani *et al.*, 2022].



Figs 1–11. *Alopecosa pekari* sp.n., holotype male. 1 — body, dorsal view; 2 — same, ventral view; 3 — abdomen, ventral view (arrows indicate short spine-like setae); 4 — embolus, anterior view; 5 — palp, prolateral view; 6 — same, ventral view; 7 — same, retrolateral view; 8 — bulb, prolateral view; 9 — same, ventral view; 10 — same, retrolateral view; 11 — same, anterior view. Abbreviations: *At* — anterior edge of tegular apophysis; *Et* — embolic tip; *Or*, *Ov* — retrolateral and ventral outgrowths of tegular apophysis; *Ss* — short spine-like setae on the venter; *St* — subtegulum; *Tt* — prolateral tip of tegulum. Scale bars: 1 mm (1–3), 0.1 mm (4–11).

Рис. 1–11. *Alopecosa pekari* sp.n., голотип-самец. 1 — тело, вид сверху; 2 — то же, вид снизу; 3 — брюшко, вид снизу (стрелки указывают на короткие, шипикообразные щетинки); 4 — эмболюс, вид спереди; 5 — пальпа, вид спереди-сбоку; 6 — то же, вид снизу; 7 — то же, вид сзади-сбоку; 8 — бульбус, вид спереди-сбоку; 9 — то же, вид снизу; 10 — то же, вид сбоку-сзади; 11 — то же, вид спереди. Сокращения: *At* — передний край тегулярного отростка; *Et* — вершина эмболюса; *Or*, *Ov* — ретролатеральный и вентральный выросты тегулярного отростка; *Ss* — короткие, шипикообразные щетинки на вентральной стороне брюшка; *St* — субтегулум; *Tt* — пролатеральная вершина тегулула. Масштаб: 1 мм (1–3), 0,1 мм (4–11).

Alopecosa cursor (Hahn, 1831)

MATERIAL. *Razavi Khorasan Prov.*: 1 ♂, Mashhad City, Kuhsangi Park (36°16'N, 59°33'E), 970 m, 16.03.2013, O. Mirshamsi; 1 ♀, Vicinity of Mashhad City, 9.07.1995, O. Mirshamsi; 1 ♂, Mashhad City, 9.05.2013, S. Saneii.

DISTRIBUTION. Europe, Turkey, the Caucasus, Russia (European part to South Siberia), Iran, Central Asia, China [World Spider Catalog, 2022].

Alopecosa farinosa (Herman, 1879)

MATERIAL. *Ardabil Prov.*: 1 ♀, Parsa Abad City (39°38'N, 47°52'E), 32 m, 30.07.2012, Z. Mahdavi.

DISTRIBUTION. Europe, Turkey, the Caucasus, Russia (European part to the Far East), Kazakhstan, Iran [World Spider Catalog 2022].

RECORDS IN IRAN. This is the first record of this species from Ardabil Province. The species was already known only from Mazandaran Province [Zamani *et al.*, 2022].

Alopecosa pekari sp.n.

Figs 1–11, Map 1

TYPE. Holotype ♂, *West Azerbaijan Prov.*: Urmia City, Qotlu Vil. (37°30'N, 45°08'E), 1308 m, 2.04.2021, S. Shafaie. Paratypes: 2 ♂♂, together with the holotype.

ETYMOLOGY. The specific epithet is given in honour of our friend, the eminent Czechian arachnologist, Stano Pékár (Brno, Czech Republic) on the occasion of his 52nd birthday.

DIAGNOSIS. In having many short and spine-like setae on the ventrum and a discrete prolateral tip of the tegulum (*Tt*) (Figs 3, 6, 9), the males of *A. pekari* sp.n. are most similar to *A. pentheri* (Nosek, 1905). They can be easily distinguished by the following characters: (1) a low curvature on the anterior edge of the tegular apophysis (*At*) (Fig. 9; high in *A. pentheri* [Marusik *et al.*, 2018: figs 2B, 3C]); (2) a smaller tegular apophysis width/height length ratio (Fig. 9; larger in *A. pentheri* [Marusik *et al.*, 2018: fig. 3C]); (3) the median part of the embolus twice as wide as its tip (*Et*) (Fig. 4; five times wider in *A. pentheri* [Marusik *et al.*, 2018: fig. 5L]); and (4) darker colouration of carapace, sternum, abdomen, spinnerets, pedipalp and legs on both sides (Figs 1–3; visibly lighter in *A. pentheri* [Marusik *et al.*, 2018: figs 1F, 1G, 1H, 1J]).

DESCRIPTION. MALE. Total length 6.3, carapace 4.06 long, 3.08 wide. Carapace black with dark brown longitudinal band (Fig. 1). Chelicerae, sternum and mouth parts black. Abdomen dorsally black with a longitudinal, oval mark which is dark brown anteriorly and grey posteriorly (Fig. 1). Ventrally abdomen black with a few light brown spots situated laterally and short, black spine-like setae (Figs 2, 3). Spinnerets black. Length of leg segments: I 9.60 (2.66 + 1.40 + 2.24 + 1.96 + 1.40); II 10.36 (2.80 + 1.40 + 3.08 + 1.82 + 1.26); III 9.94 (2.38 + 1.26 + 2.80 + 2.10 + 1.40); IV 13.16 (3.22 + 1.40 + 3.64 + 3.22 + 1.68). Coxae and tibiae I–IV black; femur and patellae of all legs dark brown with longitudinal black annulations; metatarsi and tarsi I–IV brown (Figs 1–2). Leg I spination: Fe d1-1-1, p1, r1-1; Ti p1-1, r1-1, v2-2-2a; Mt p1-1-1a, r1-1a, v2-2-3a. Length of palp segments 4.20 (1.68 + 0.56 + 0.70 + 1.26). Palp as in Figs 2A–H: sperm duct not smoothly rounded and almost straight above subtegulum (Figs 6, 9); prolateral tip of tegulum (*Tt*) not hidden by embolus (Figs 6, 9); terminal part of tegular apophysis wider than mesal part, anterior edge of tegular

apophysis (*At*) forms a round arch-shaped, both ventral (*Ov*) and retrolateral (*Or*) outgrowths of tegular apophysis closely spaced (in ventral view), the length of both outgrowths almost equal in anterior view, connected by a smooth, rounded lamella (Figs 9, 11); embolus relatively short (Fig. 11).

FEMALE. Unknown.

DISTRIBUTION. Known only from the type locality (Map 1).

Arctosa leopardus (Sundevall, 1833)

MATERIAL. *Razavi Khorasan Prov.*: 2 ♀♀, 1 ♂, Mashhad City, Baze Hur Vil. (35°45'N, 59°22'E), 1718 m, 7.06.2013, S. Saneii; 1 ♀, 1 ♂, Torbat-e Jam City, Yaqutin-e Jadid Vil. (35°16'N, 60°39'E), 906 m, 16.07.2013, B. Jannesar. *Golestan Prov.*: 1 ♀, Gorgan City, Karimabad Vil. (36°52'N, 54°24'E), 123 m, 2.09.2010, R. Kashfi.

DISTRIBUTION. Europe, Turkey, the Caucasus, Russia (European part to South Siberia), Iran, Central Asia [World Spider Catalog, 2022].

Bogdocosa kronebergi (Andreeva, 1976)

MATERIAL. *Razavi Khorasan Prov.*: 2 ♀♀, 1 ♂, 3 imm., Torbat-e Heydariyeh City (35°16'N, 59°13'E), 1450 m, 27.08.2012, O. Mirshamsi; 2 imm., Chenaran County, Dowlatabad Vil. (36°26'N, 59°10'E), 1540 m, 15.09.2012, B. Nikmagham (ZMFUM); 1 ♂, 1 imm., Kakhk City (34°08'N, 58°38'E), 1635 m, 4.07.1997, O. Mirshamsi. *North Khorasan Prov.*: 3 ♀♀, 1 ♂, Sarakhs City, Chenar Sukhteh Vil. (36°24'N, 60°14'E), 1102 m, 21.05.2010, O. Mirshamsi; 1 ♀, Esfarayen City, Baba Ghodrat Holy Shrine (37°04'N, 57°30'E), 1260 m, 13.06.2010, O. Mirshamsi.

DISTRIBUTION. The Caucasus, Central Asia, Iran, Kazakhstan, Uzbekistan, Tajikistan, China [World Spider Catalog, 2022].

Draposa oakleyi (Gravely, 1924)

Figs 12–20.

MATERIAL. *Razavi Khorasan Prov.*: 4 imm., Mashhad City, Baze Hur Vil. (35°45'N, 59°22'E), 1718 m, 7.06.2013, S. Saneii. *Kerman Prov.*: 1 ♂, 3 imm., Jiroft City (28°40'N, 57°44'E), 720 m, 24.04.2013, coll.?

DISTRIBUTION. The UAE, Pakistan, India, Bhutan, Bangladesh, Iran [World Spider Catalog, 2022].

RECORDS IN IRAN. Due to a strong similarities between *Draposa* and *Pardosa*, it is hardly surprising that telling apart these groups cases much confusion. This is the first record of this species from Iran, lying at the northernmost limit of its range [World Spider Catalog, 2022].

Evippa eltonica Dunin, 1994

Figs 21–29.

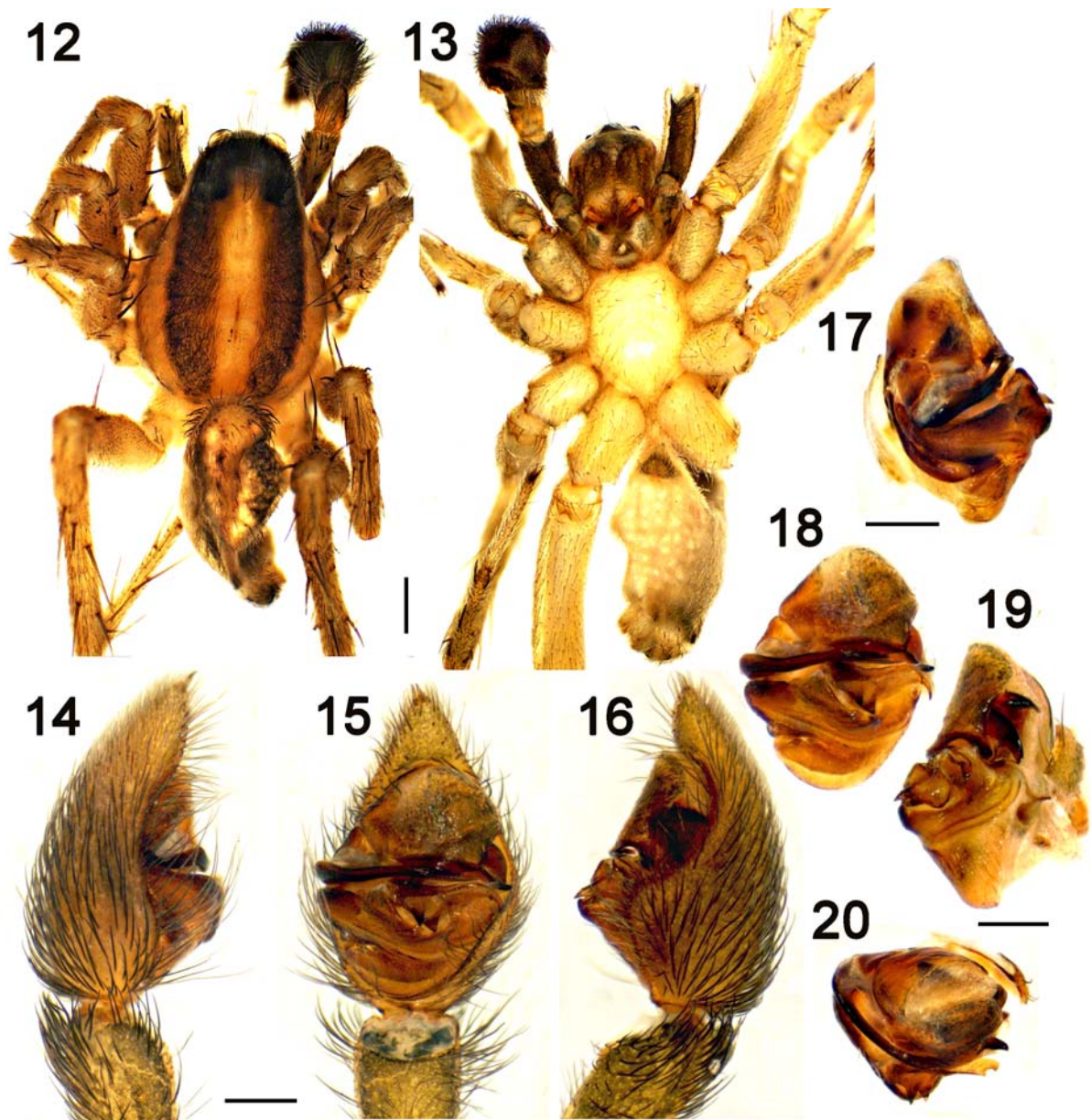
MATERIAL. *Razavi Khorasan Prov.*: 1 ♀, Torqabeh and Shandiz County, Moghan Vil. (36°08'N, 59°22'E), 2910 m, 29.06.2015. *North Khorasan Prov.*: 5 ♀♀, 4 ♂♂, Faruj County, Estarkhi Vil. (36°55'N, 58°08'E), 1829 m, 23.04.2010, E. Jamili.

DISTRIBUTION. Russia (European part), Kazakhstan, Iran [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species from Iran, lying at the southernmost limit of its range [World Spider Catalog, 2022].

Evippa fortis Roewer, 1955

MATERIAL. *Kerman Prov.*: 2 ♀♀, Jiroft City (28°40'N, 57°44'E), 720 m, 2.05.2012, O. Mirshamsi.



Figs 12–20. *Draposa oakleyi* (Gravely, 1924), male. 12 — body, dorsal view; 13 — same, ventral view; 14 — palp, prolateral view; 15 — same, ventral view; 16 — same, retrolateral view; 17 — bulb, prolateral view; 18 — same, ventral view; 19 — same, retrolateral view; 20 — same, anterior view. Scale bars: 1 mm (12–13), 0.1 mm (14–20).

Рис. 12–20. *Draposa oakleyi* (Gravely, 1924), самец. 12 — тело, вид сверху; 13 — то же, вид снизу; 14 — пальпа, вид спереди-сбоку; 15 — то же, вид снизу; 16 — то же, вид сзади-сбоку; 17 — бульбус, вид сбоку-спереди; 18 — то же, вид снизу; 19 — то же, вид сбоку-сзади; 20 — то же, вид спереди. Масштаб: 1 мм (12–13), 0,1 мм (14–20).

DISTRIBUTION. Iran, The UAE [World Spider Catalog, 2022].

Hogna effera (O. Pickard-Cambridge, 1872)

MATERIAL. *South Khorasan Prov.*: 1 ♂, Qaen City (33°43'N, 59°11'E), 1447 m, 2.04.2013, F. Abedi. *Kerman Prov.*: 1 ♂, Baft City (28°54'N, 56°33'E), 2280 m, 10.04.2014, F. Nazari. *East Azerbaijan Prov.*: 1 ♀, 30 km E of Jolfa City (38°56'N, 45°37'E), 710 m, 10.09.2015, coll.?

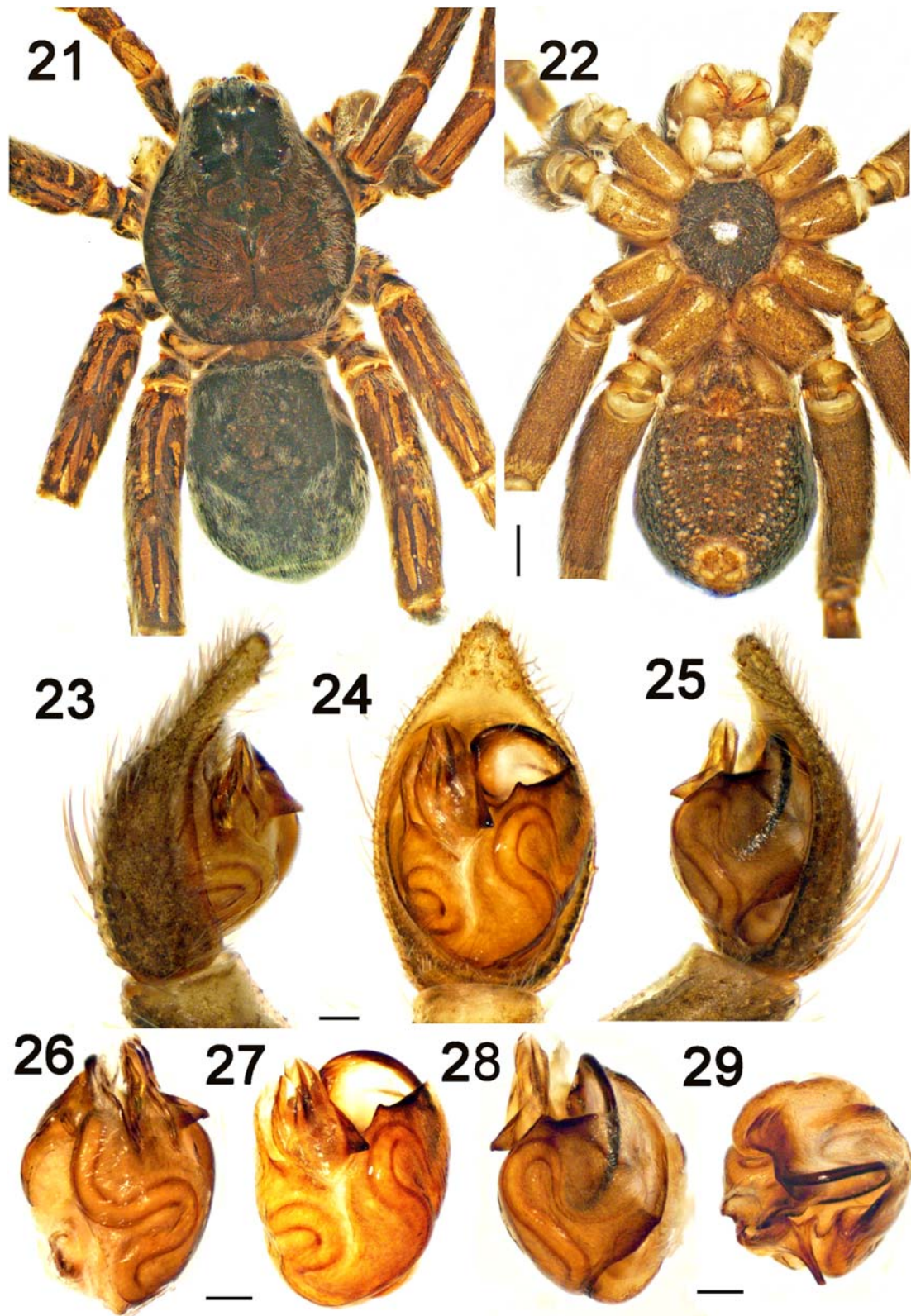
DISTRIBUTION. Greece (Crete), Cyprus, Turkey, Egypt,

Israel, Lebanon, Syria, Yemen (Sokotra), Saudi Arabia, The UAE, Iraq, Iran [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species from South Khorasan Province [Zamani *et al.*, 2022].

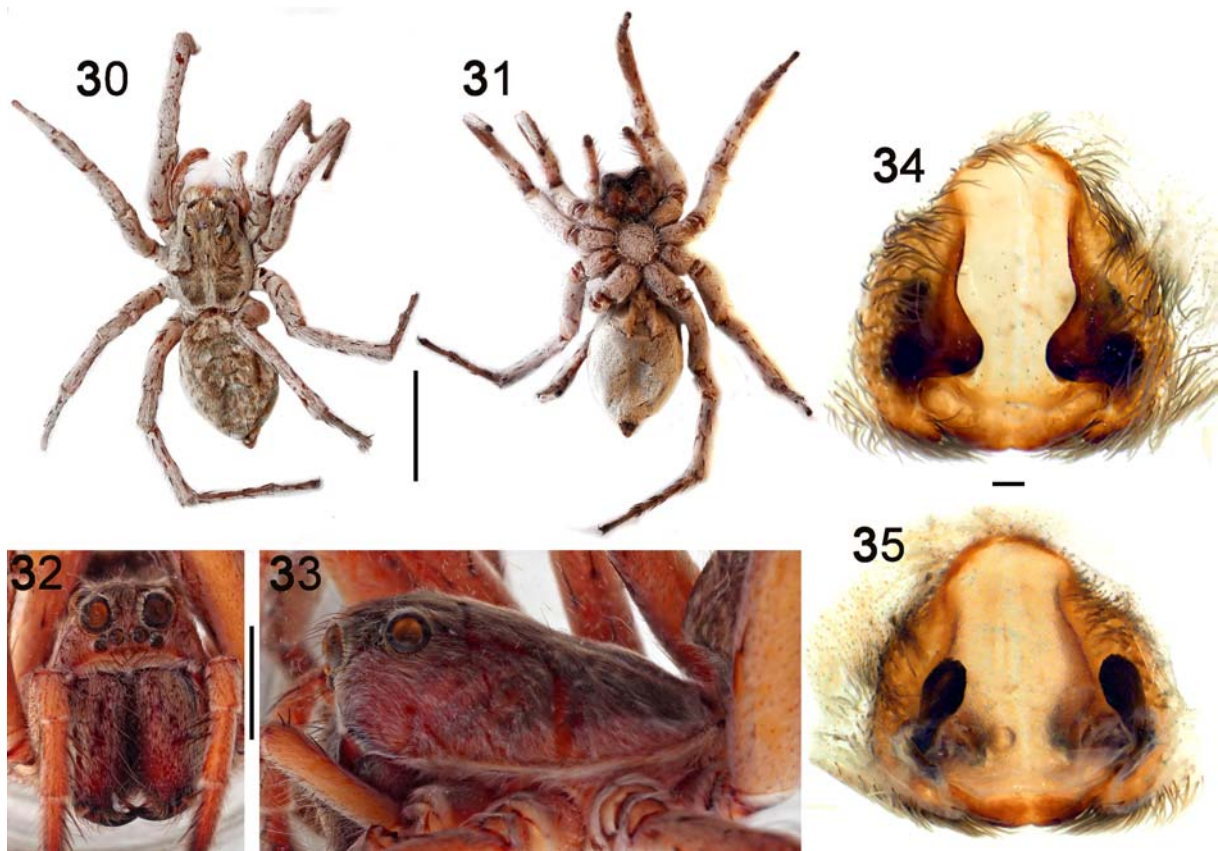
Hogna radiata (Latreille, 1817)

MATERIAL. *Kordestan Prov.*: 1 ♂, Sanandaj City, Abidar Mt. (35°18'N, 46°58'E), 710 m, 20.07.2013, Mohammadi. *Kerman Prov.*: 2 ♀♀, Zarand City (37°48'N, 56°33'E), 1664 m, 15.05.2014, F. Nazari.



Figs 21–29. *Evippa eltonica* Dunin, 1994, male. 21 — body, dorsal view; 22 — same, ventral view; 23 — palp, prolateral view; 24 — same, ventral view; 25 — same, retrolateral view; 26 — bulb, prolateral view; 27 — same, ventral view; 28 — same, retrolateral view; 29 — same, anterior view. Scale bars: 1 mm (21–22), 0.1 mm (23–29).

Рис. 21–29. *Evippa eltonica* Dunin, 1994, самец. 21 — тело, вид сверху; 22 — то же, вид снизу; 23 — пальпа, вид спереди-сбоку; 24 — то же, вид снизу; 25 — то же, вид сзади-сбоку; 26 — бульбус, вид спереди-сбоку; 27 — то же, вид снизу; 28 — то же, вид сзади-сбоку; 29 — то же, вид спереди. Масштаб: 1 мм (21–22), 0,1 мм (23–29).



Figs 30–35. *Karakumosa turanica* Logunov et Ponomarev, 2020, female. 30 — body, dorsal view; 31 — same, ventral v; 32 — prosoma, frontal view; 33 — same, lateral view; 34 — epigyne, ventral view; 35 — vulva, dorsal view view. Scale bars: 1 mm (30–33), 0.1 mm (34–35).

Рис. 30–35. *Karakumosa turanica* Logunov et Ponomarev, 2020, самка. 30 — тело, вид сверху; 31 — тоже, вид снизу; 32 — просома, вид спереди; 33 — тоже, вид сбоку; 34 — эпигина, вид снизу; 35 — вульва, вид сверху. Масштаб: 1 мм (30–33), 0,1 мм (34–35).

DISTRIBUTION. Europe, Turkey, the Caucasus, Russia (European part to South Siberia), Kazakhstan, Iraq, Iran, Central Asia [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species from Kerman Province [Zamani *et al.*, 2022].

Karakumosa turanica Logunov et Ponomarev, 2020
Figs 30–35, Map 1.

MATERIAL. *Sistan & Baluchistan Prov.*: 1 ♀, Zahedan City, Manzelab Vil. (29°49'N, 60°46'E), 1221 m, 24.07.2017, H. Barahouei.

DISTRIBUTION. Turkmenistan, Iran [World Spider Catalog, 2022; present data].

RECORDS IN IRAN. This is the first record of this species from Iran, lying at the southernmost limit of its range [Logunov, Ponomarev, 2020; Logunov, Fomichev, 2021].

NOTE. The identification of this specimen is provisional, needing a confirmation when males from the same locality have been collected.

Karakumosa zyzuzini Logunov et Ponomarev, 2020
Figs 36–41, Map 1.

MATERIAL. *South Khorasan Prov.*: 1 ♀, Khezri City (34°01'N, 58°48'E), 1535 m, 4.07.2018, H. Barahouei.

DISTRIBUTION. Uzbekistan, Iran [World Spider Catalog, 2022; present data].

RECORDS IN IRAN. This is the first record of this species from Iran, lying at the southernmost limit of its range [Logunov, Ponomarev, 2020; Logunov, Fomichev, 2021].

NOTE. The identification of this specimen is provisional, needing a confirmation when males from the same locality have been collected.

Lycosa praegrans C.L. Koch, 1836

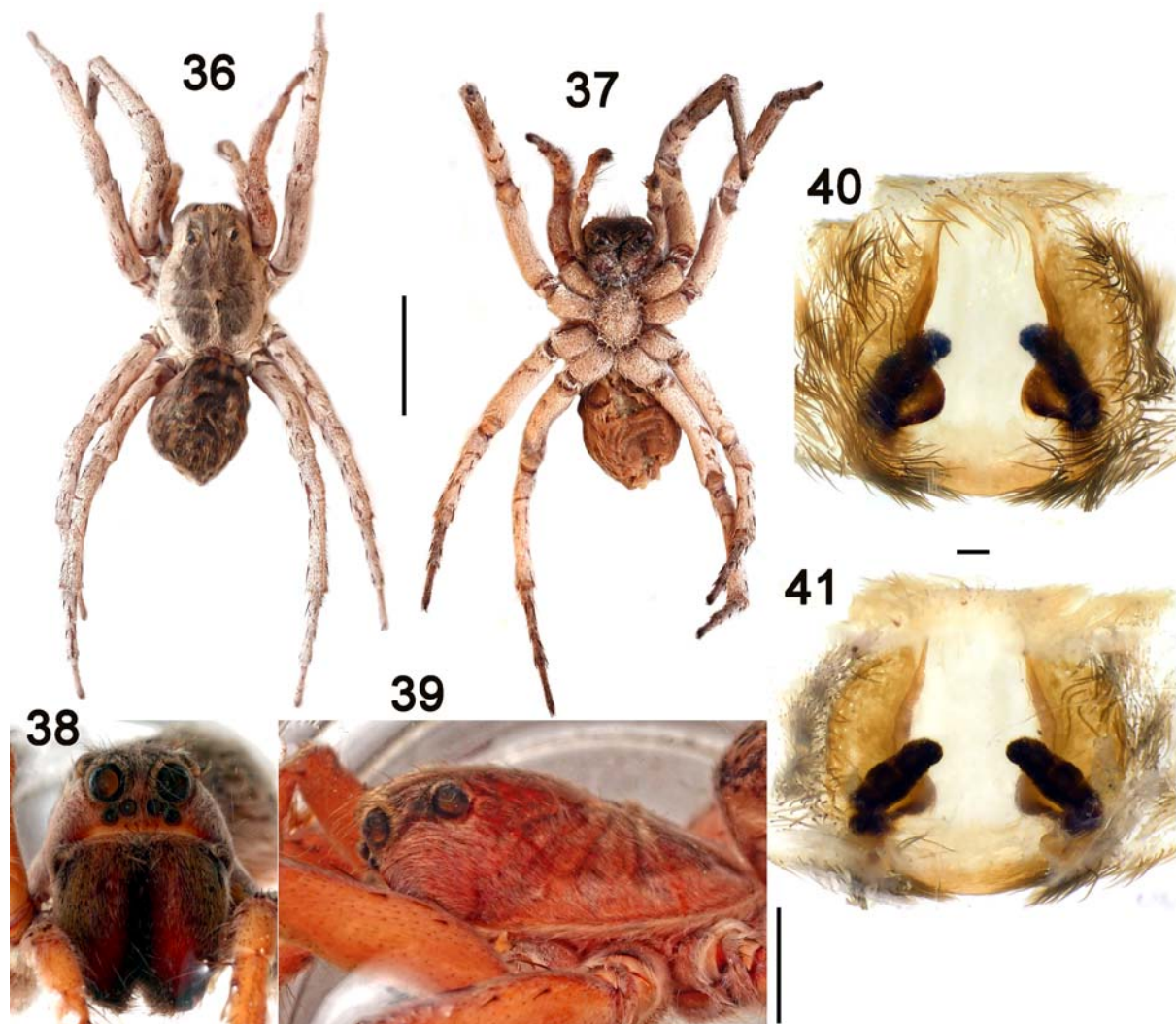
MATERIAL. *Razavi Khorasan Prov.*: 1 ♀, Tous City (36°27'N, 59°34'E), 985 m, 6.03.2013, coll.?

DISTRIBUTION. Albania, North Macedonia, Bulgaria, Greece, Turkey, Ukraine, Russia (European part), the Caucasus, Kazakhstan, Iran, Central Asia [World Spider Catalog, 2022].

Pardosa aenigmatica Tongiorgi, 1966

MATERIAL. *Zanjan Prov.*: 1 ♀, Zanjan City, Efsanaj Vil. (36°48'N, 48°10'E), 1485 m, 24.04.2019, D. Ahmadi.

DISTRIBUTION. Italy, Turkey, Azerbaijan, Israel, Iraq, Iran [World Spider Catalog, 2022].



Figs 36–41. *Karakumosa zyuzini* Logunov et Ponomarev, 2020, female. 36 — body, dorsal view; 37 — same, ventral view; 38 — prosoma, frontal view; 39 — same, lateral view; 40 — epigyne, ventral view; 41 — same, dorsal view. Scale bars: 1 mm (36–39), 0.1 mm (40–41).

Рис. 36–41. *Karakumosa zyuzini* Logunov et Ponomarev, 2020, самка. 36 — тело, вид сверху; 37 — то же, вид снизу; 38 — просома, вид спереди; 39 — то же, вид сбоку; 40 — эпигина, вид снизу; 41 — вульва, вид сверху. Масштаб: 1 мм (36–39), 0,1 мм (40–41).

RECORDS IN IRAN. This is the first record of this species from Zanjan Province, lying at the northernmost limit of its range. The species was previously known from Alborz, Fars, Ilam, Kermanshah and Markazi Provinces [Zamani *et al.*, 2022].

Pardosa italica Tongiorgi, 1966

MATERIAL. *West Azerbaijan Prov.*: 1 ♀, 3 ♂♂, 2 imm., Urmia City, Sero Rd. (37°38'N, 44°59'E), 1350 m, 12.05.2019, S. Shafaie.

DISTRIBUTION. Southern Europe to China [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species in West Azerbaijan. The species was earlier known from Fars, Isfahan, Kermanshah, Kohgiluyeh & Boyer-Ahmad, North Khorasan, Razavi Khorasan, Tehran, and Zanjan Provinces [Zamani *et al.*, 2022].

Pardosa pontica (Thorell, 1875)

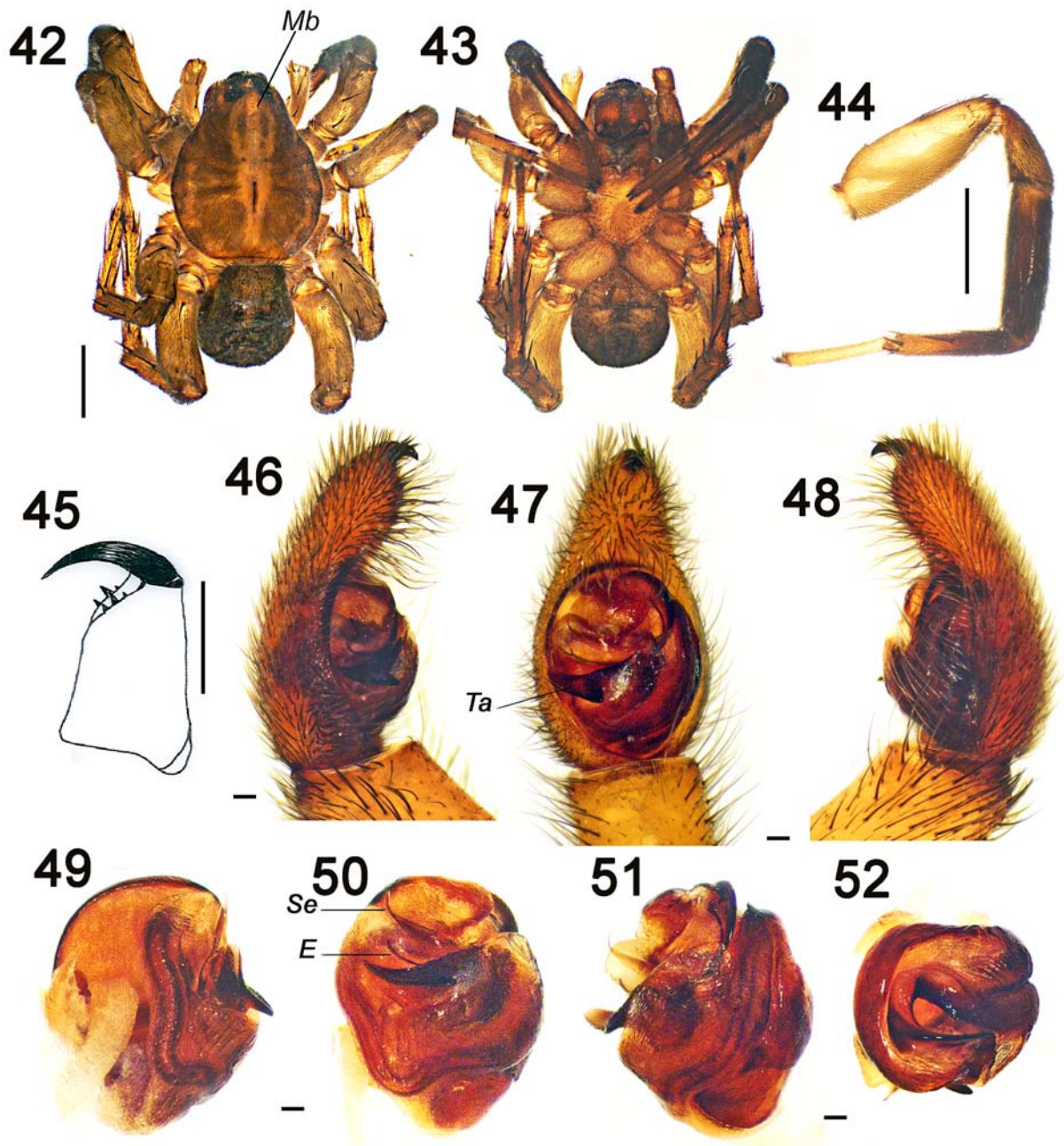
MATERIAL. *West Azerbaijan Prov.*: 1 ♀, 4 ♂♂, 1 imm., Urmia City, Sero Rd. (37°38'N, 44°59'E), 1350 m, 12.05.2019, S. Shafaie.

DISTRIBUTION. Romania, Ukraine, Russia (European part), the Caucasus, Iran, Central Asia [World Spider Catalog, 2022].

Pardosa proxima (C.L. Koch, 1847)

MATERIAL. *West Azerbaijan Prov.*: 26 ♀♀, 34 ♂♂, 3 imm., Urmia City, Sero Rd. (37°38'N, 44°59'E), 1350 m, 12.05.2019, S. Shafaie.

DISTRIBUTION. Macaronesia, northern Africa, Europe, the Caucasus, Russia (European part to Far East), Kazakhstan, Iran, Central Asia, China [World Spider Catalog, 2022].



Figs 42–52. *Trochosa marusiki* sp.n., holotype male. 42 — male body, dorsal view; 43 — same, ventral view; 44 — leg I, lateral view; 45 — chelicera, posterior view (arrow indicates the position of hump); 46 — palp, retrolateral view; 47 — same, ventral view; 48 — same, prolateral view; 49 — bulb, retrolateral view; 50 — same, ventral view; 51 — same, prolateral view; 52 — same, anterior view. Abbreviations: *E* — embolus; *Mb* — median band; *Se* — synembolus; *Ta* — tegular apophysis. Scale bars: 1 mm (42–45), 0.1 mm (46–52).

Рис. 42–52. *Trochosa marusiki* sp.n., голотип-самец. 42 — тело, вид сверху; 43 — то же, вид снизу; 44 — нога I, вид сбоку; 45 — хелицера, вид сзади (стрелка показывает положение вздутия); 46 — палпа, вид сбоку-сзади; 47 — то же, вид снизу; 48 — то же, вид спереди-сбоку; 49 — бульбус, вид сзади-сбоку; 50 — то же, вид снизу; 51 — то же, вид спереди-сбоку; 52 — то же, вид спереди. Сокращения: *E* — эмболюс; *Mb* — медиальная полоса; *Se* — синэмболюс; *Ta* — тегулярный отросток. Масштаб: 1 мм (42–45), 0,1 мм (46–52).

RECORDS IN IRAN. This is the first record of this species in West Azerbaijan. The species was already known from Razavi and South Khorasan Provinces [Zamani *et al.*, 2022].

Pirata piraticus (Clerck, 1757)

MATERIAL. North Khorasan Prov.: 1 ♀, Kopet Dag Mts (38°04'N, 57°22'E), 1560 m, 21.09.2010, Z. Nikmagham. Golestan Prov.: 1 imm., Gorgan City, Karimabad Vil. (36°52'N, 54°24'E), 123 m, 2.09.2010, R. Kashefi.

DISTRIBUTION. North America, Europe, Turkey, the Caucasus, Russia (European part to Far East), Kazakhstan, Iran, Central Asia, China, Japan [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species from North Khorasan Province. According to the Iranian checklist of spiders, the species was previously known from East or West Azerbaijan (?), Gilan, Golestan, Isfahan, Mazandaran and Razavi Khorasan Provinces [Zamani *et al.*, 2022].

Trochosa hispanica Simon, 1870

MATERIAL. *West Azerbaijan Prov.*: 4 ♀♀, 1 ♂, Urmia City, Sero Rd. (37°38'N, 44°59'E), 1350 m, 12.05.2019, S. Shafaie. *Razavi Khorasan Prov.*: 1 ♀, Mashhad City, Kardeh Dam (36°39'N, 59°40'E), 1356 m, 27.11.2013, M. Hatami. *North Khorasan Prov.*: 1 ♀, Esfārayen City, Ordaghan Vil. (37°07'N, 57°44'E), 1256 m, 21.07.2010, E. Jamili.

DISTRIBUTION. The Mediterranean to Central Asia, Iran [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species from West Azerbaijan Province. The species was formerly known from Golestan, Kerman, Lorestan, Mazandaran, North Khorasan, Razavi Khorasan, Tehran and Zanjan Provinces [Zamani *et al.*, 2022].

Trochosa marusiki sp.n. Figs 42–52, Map 1.

TYPES. Holotype ♂, *West Azerbaijan Prov.*: Urmia City, Sero Rd. (37°38'N, 44°59'E), 1350 m, 12.05.2019, S. Shafaie. Paratypes: 2 ♂♂, 1 imm., same locality as that of the holotype, 15.09.2021, N. Mobarrez.

ETYMOLOGY. The specific name is a patronym in honour of the eminent Russian arachnologist, our mentor and friend Yuri M. Marusik (Magadan, Russia) on the occasion of his 60th birthday.

DIAGNOSIS. In the morphology of carapace and palp, the same ratio of cymbial length/width (about 1.27), the absence of cheliceral hump and the same number and size ranges of cheliceral teeth, the male of *T. marusiki* sp.n. is most similar to that of *T. cachetiensis* Mcheidze, 1997. It is also similar to the male of *T. hispanica* in the direction of synembolus tip and the coloration of leg I. The new species differs from the former species in the dark brown colour of entire patellae and tibiae, and of metatarsi proximally (Fig. 44; yellow in *T. cachetiensis* [Otto, Japoshvili, 2018: fig. 40]); the non-cylindrical shape of the tarsi I (Fig. 44; cylindrical in *T. cachetiensis* [Otto, Japoshvili, 2018: fig. 40]); the synembolus tip situated at 12 o'clock, forming a right angle (Fig. 50; at 2 o'clock in *T. cachetiensis* [Otto, Japoshvili, 2018: fig. 54]). From the latter species (*T. hispanica*), *T. marusiki* sp.n. can be distinguished by (1) a smoothly bent embolus (Fig. 50; which is coiled in *T. hispanica* [Marusik, Nadolny, 2020: fig. 5A–D]); (2) chelicerae with no hump (Fig. 45; present in *T. hispanica* [Marusik, Nadolny, 2020: fig. 21]); (3) the cymbial length/width ratio is 1.27 (Figs 47, 50; 1.8 in *T. hispanica* [Marusik, Nadolny, 2020: fig. 4]); and (4) the presence of two pairs of dark mark on the median band (*Mb*) (Fig. 42; a single large pair in *T. hispanica* [Marusik, Nadolny, 2020: figs 2A, 2C]).

DESCRIPTION. **MALE.** Total length 5.88, carapace 3.22 long, 2.38 wide. Carapace brown, with a light brown median band comprising two dark marks: one pair of oval stripes and one pair of small spots laterally, in addition to dark

lateral bands (Fig. 42). Chelicerae with no hump but comprising three teeth situated in two rows, median tooth the largest and apical tooth the smallest (Fig. 45). Chelicerae and mouth parts brown, sternum yellow with a median light brown spot. Abdomen dorsally olive-brown, with a light brown cardiac mark anteriorly and a wedge-shaped mark posteriorly. Ventrally abdomen brown, spinnerets dark brown. Length of leg segments: I 9.38 (2.94 + 1.12 + 1.82 + 1.82 + 1.68); II 8.12 (2.94 + 0.98 + 1.68 + 1.40 + 1.12); III 8.26 (2.80 + 0.98 + 1.54 + 1.82 + 1.12); IV 11.34 (2.80 + 1.12 + 3.22 + 2.52 + 1.68). Legs dorsally including: coxae and femur of all legs in addition to patellae and tibiae II–IV light grey, patellae and tibiae I entirely and metatarsi I proximally black, tibiae I without dorsal white setae; tarsi I brown, tarsi II–IV yellow anteriorly and brown posteriorly. Leg I spination: Fe d1-1-1, p2, r1-1-1; Ti p1-1, r1-1, v2-2-2a; Mt p1-1a, r1-1a, v2-2-3a. Length of palp segments 3.78 (1.26 + 0.56 + 0.84 + 1.12). Palp as in Figs 46–52. Cymbium with stout apical claw. Cymbium brownish dorsally and prolaterally, darker retrolaterally, and yellowish ventrally (Figs 42–43, 46–48); femur, patella and tibia light brown. Embolus and synembolus with bent tip (Fig. 50), median apophysis rather thick (Figs 47, 50, 52).

FEMALE. Unknown.

DISTRIBUTION. Known only from the type locality (Map 1).

Trochosa ruricola (De Geer, 1778)

MATERIAL. *Golestan Prov.*: 1 ♀, 1 imm., Gorgan City, Karimabad Vil. (36°52'N, 54°24'E), 123 m, 2.09.2010, R. Kashefi.

DISTRIBUTION. Europe, Turkey, the Caucasus, Russia (European part to Far East), Kazakhstan, Iran, Central Asia, China, Japan, Korea. Introduced to North America, Cuba, Puerto Rico, Bermuda [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species from Golestan. The species has already been known from Alborz and Mazandaran Provinces [Zamani *et al.*, 2022].

Wadicosa commoventa Zyuzin, 1985

MATERIAL. *Razavi Khorasan Prov.*: 2 ♀♀, 2 ♂♂, Sarakhs City, Khatun Bridge (36°32'N, 61°09'E), 285 m, 1.09.2012, Z. Nikmagham.

DISTRIBUTION. Iran, Turkmenistan [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species from Razavi Khorasan. The species was previously known from Kerman Province [Zamani *et al.*, 2022].

Xerolycosa miniata (C.L. Koch, 1834)

MATERIAL. *West Azerbaijan Prov.*: 2 ♀♀, Urmia City, Sero Rd. (37°38'N, 44°59'E), 1350 m, 12.05.2019, D. Ahmadi.

DISTRIBUTION. Europe, Turkey, the Caucasus, Russia (European part to South Siberia), Kazakhstan, Iran, Central Asia, China [World Spider Catalog, 2022].

RECORDS IN IRAN. This is the first record of this species from West Azerbaijan. The species was formerly known from Mazandaran Province [Zamani *et al.*, 2022].

Discussion

In the present study, 25 lycosid species have been recorded from Iran. Two species, *Alopecosa pekari*

sp.n. (♂) and *Trochosa marusiki* sp.n. (♂), are new to science and four (*Draposa oakleyi*, *Evippa eltonica*, *Karakumosa turanica*, *K. zyuzini*) are new records for Iran. Yet, as shown, the provinces West Azerbaijan (9) and Razavi Khorasan (8) and the genera, *Alopecosa* (5), *Pardosa* (4), and *Trochosa* (3) have the highest species diversity, respectively. By including the present results, the number of Iranian wolf spiders has increased to 81 species [Zamani *et al.*, 2022; Shafaie *et al.*, unpublished]. By reviewing the data provided by Iranian arachnologists, it is obvious that the Iranian wolf spiders remain poorly studied. Based on the checklist by Zamani *et al.* [2022], it is clear that most of western, central and southern regions of Iran have not been surveyed by wolf spider experts. According to Mirshamsi *et al.* [2015], the most obvious reasons for this are as follows: (1) the main collecting method adopted by most of researchers/collectors is still hand-collecting, and (2) a high morphological conservatism of this spider family making it challenging for taxonomic and faunistic studies.

Acknowledgments. We are grateful to all the people who contributed to this study by collecting the material. Financial support for this study was provided by the office of research affairs of the Ferdowsi University of Mashhad, which is gratefully acknowledged. The work of A.A. Nadolny was carried out within the framework of the Russian State research project, registration number 121030100028-0.

References

- Danişman T., Kunt K.B., Özkütük R.S. 2021. The Checklist of the Spiders of Turkey. Version 2019, online at: <http://www.spidersofturkey.info> (accessed 10 February 2022).
- Logunov D.V., Fomichev A.A. 2021. A new species of *Karakumosa* Logunov & Ponomarev, 2020 (Araneae: Lycosidae: Lycosinae) from Tajikistan // *Arachnology*. Vol.18. Pt.7. P.677–680.
- Logunov D.V., Ponomarev A.V. 2020. *Karakumosa* gen. nov., a new Central Asian genus of fossorial wolf spiders (Araneae: Lycosidae: Lycosinae) // *Revue Suisse de Zoologie*. T.127. Fasc.2. P.275–313.
- Marusik Yu.M., Nadolny A.A. 2020. On the identity of *Trochosa hispanica* (Araneae, Lycosidae), with notes on the synonymy of West Palearctic “*Trochosa*” species // *Zootaxa*. Vol.4859. No.1. P.56–80.
- Marusik Yu.M., Nadolny A.A., Koponen S. 2018. A survey of the *Alopecosa cursor* species group (Aranei: Lycosidae) from Asia // *Arthropoda Selecta*. Vol.27. No.4. P.348–362.
- Mirshamsi O., Saneei S., Aliabadian M., Ghassemzadeh F. 2015. New data on the wolf spiders of Iran (Aranei: Lycosidae) // *Arthropoda Selecta*. Vol.24. No.1. P.99–106.
- Otto S. 2020. Caucasian Spiders. A faunistic database on the spiders of the Caucasus. Version 10.2020, online at: <https://caucasus-spiders.info> (accessed 10 February 2022).
- Otto S., Japoshvili G. 2018. The spiders (Arachnida: Araneae) of the Lagodekhi Reserve, Georgia: faunistic results of a transect study and an update checklist // *Arachnology*. Vol.17. Pt.8. P.375–391.
- World Spider Catalog. 2022. World Spider Catalog. Version 23. Natural History Museum Bern, online at <http://wsc.nmbe.ch>, accessed on 31.01.2022. <http://doi.org/10.24436/2>
- Zamani A., Mirshamsi O., Marusik Yu.M., Moradmand M. 2022. Checklist of Spiders of Iran. Version 2022, online at: <http://www.spiders.ir> (accessed 31 January 2022).
- Zonstein S.L., Marusik Yu.M. 2013. Checklist of the spiders (Araneae) of Israel // *Zootaxa*. Vol.3671. No.1. P.1–127.

Responsible editor D.V. Logunov