

## Three new species of spiders (Aranei) from Iran

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**Abstract.** Three new species of spiders are described from different provinces in Iran: *Shaitan angramainyu* sp. n. (Gnaphosidae) related to *Sh. elchini* Kovblyuk, Kastrygina et Marusik, 2013 known from Azerbaijan to Kazakhstan, *Piratula raika* sp. n. (Lycosidae) related to *P. logunovi* Omelko, Marusik et Koponen, 2011 known from Eastern Siberia, and *Orthobula mikhailovi* Marusik, sp. n. (Trachelidae) related to the widespread *O. charitonovi* (Mikhailov, 1986). This is the first record of the previously monotypic genus *Shaitan* Kovblyuk, Kastrygina et Marusik, 2013 in Iran, as well as its southernmost known locality. All species, including the closely related ones, are illustrated.

**Key words:** Araneae, Gnaphosidae, Lycosidae, Trachelidae, new species, Iran.

### Три новых вида пауков (Aranei) из Ирана

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**Резюме.** Описаны три новых вида пауков из разных регионов Ирана: *Shaitan angramainyu* sp. n. (Gnaphosidae), близкий к *Sh. elchini* Kovblyuk, Kastrygina et Marusik, 2013 (распространен от Азербайджана до Казахстана), *Piratula raika* sp. n. (Lycosidae), близкий к *P. logunovi* Omelko, Marusik et Koponen, 2011, известному из Восточной Сибири, и *Orthobula mikhailovi* Marusik, sp. n. (Trachelidae), близкий к широко распространенному от Израиля и Турции до Кыргызстана *O. charitonovi* (Mikhailov, 1986). Впервые для Ирана отмечен род *Shaitan* Kovblyuk, Kastrygina et Marusik, 2013, ранее считавшийся монотипичным. Иран – самая южная точка нахождения рода. Все новые виды детально проиллюстрированы, кроме того, приведены фотографии наиболее близких к ним видов.

**Ключевые слова:** Araneae, Gnaphosidae, Lycosidae, Trachelidae, новые виды, Иран.

Currently, 903 species of 322 genera and 55 families of spiders are known from Iran [Zamani et al., 2021]. Although the number of Iranian spider species has sextupled over the past two decades, the araneofauna of this country remains inadequately known and new species and records are found regularly. In this paper we describe three new species of spiders from different provinces in northern and south-central Iran, one of which represents the first Iranian record of a previously monotypic genus as well as its southernmost locality across its known range.

### Material and methods

Specimens were photographed using a Canon EOS 7D camera, attached to an Olympus SZX16 stereomicroscope or to the eye piece of an Olympus BH2 transmission microscope, and a JEOL JSM-5200 scanning electron microscope at the Zoological Museum of the University of Turku (Finland). Digital images were montaged using CombineZP and Helicon focus 3.10 image stacking softwares, and edited using CorelDraw graphic design softwares. Lengths of leg segments were measured on the dorsal side and listed as: total length (femur, patella, tibia, metatarsus, tarsus). All measurements are given in millimeters. Terminology of *Shaitan* Kovblyuk, Kastrygina

et Marusik, 2013 follows Nadolny, Kovblyuk [2011] and Kovblyuk et al. [2013], and that of *Piratula* Roewer, 1960 follows Omelko et al. [2011].

Abbreviations: eyes: ALE – anterior lateral eye, AME – anterior median eye, PLE – posterior lateral eye, PME – posterior median eye.

Depositories:

MHNG – Muséum d'histoire naturelle (Genève, Switzerland, P.J. Schwendinger and L. Monod);

MMUE – Manchester Museum of the University of Manchester (United Kingdom, D.V. Logunov);

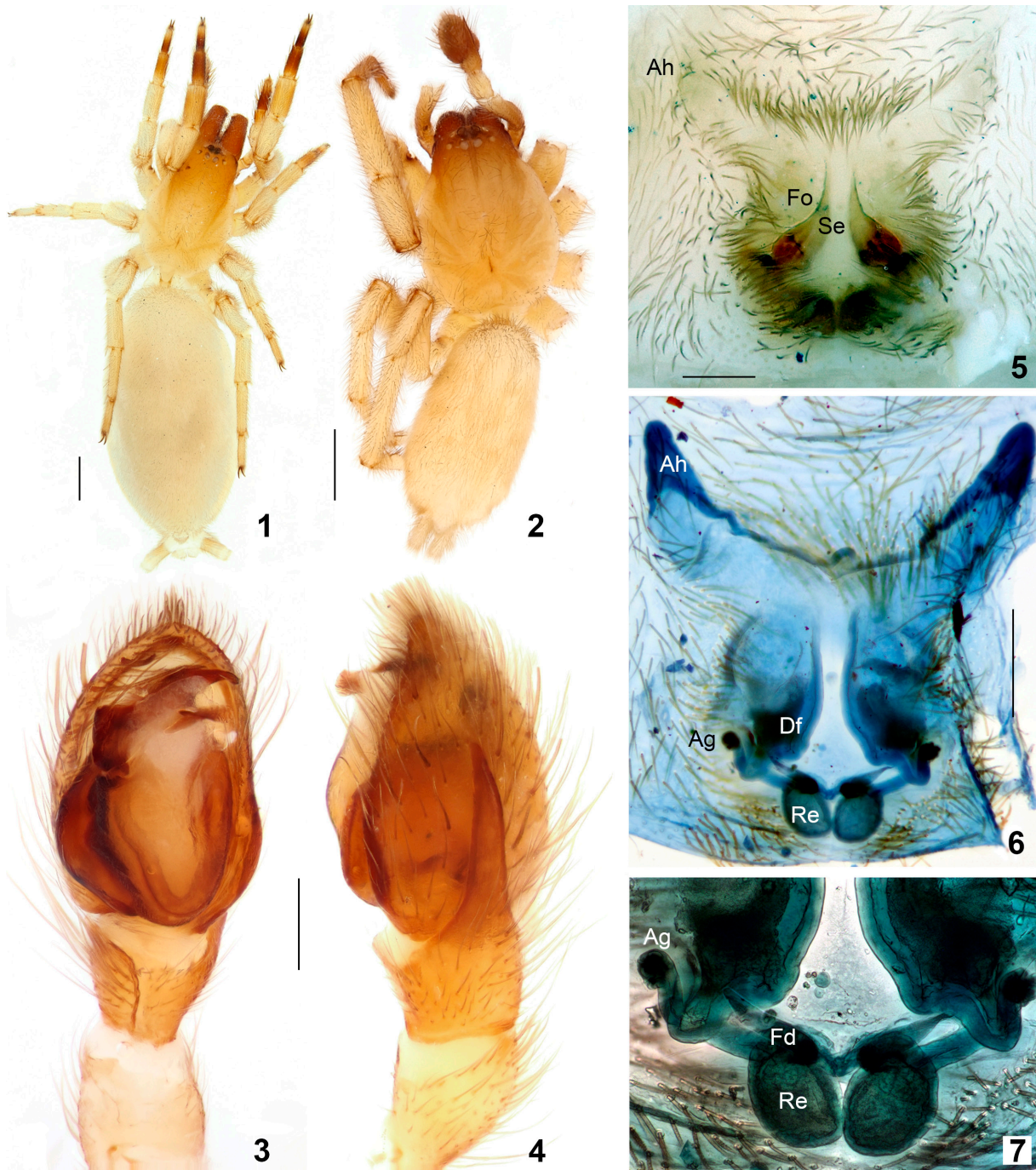
NHMW – Natural History Museum of Vienna (Austria, C. Hörweg);

ZMMU – Zoological Museum of Moscow University (Russia, K.G. Mikhailov).

### Family Gnaphosidae Banks, 1892 Genus *Shaitan* Kovblyuk, Kastrygina et Marusik, 2013

*Shaitan* Kovblyuk, Kastrygina et Marusik, 2013: 145 (type species *Sh. elchini* Kovblyuk, Kastrygina et Marusik, 2013).

This genus is currently monotypic, with the type species described based on two males from Kazakhstan and one female from Azerbaijan. The new species described here extends the known range of the genus about 1400 km to the south. Accounting this new Iranian



Figs 1–7. *Shaitan angramainyu* sp. n., general view and copulatory organs.

1–2 – habitus, dorsal view: 1 – female, 2 – male; 3–4 – male palp, ventral and retrolateral views; 5 – epigyne, ventral view; 6 – macerated epigyne, dorsal view; 7 – posterior part of epigyne, dorsal view. Ag – accessorial gland; Ah – anterior hood; Df – deep fold; Fd – fertilization duct; Fo – fovea; Re – receptacle; Se – septum. Scale bars: 1–2 – 1 mm; 3–6 – 0.2 mm.

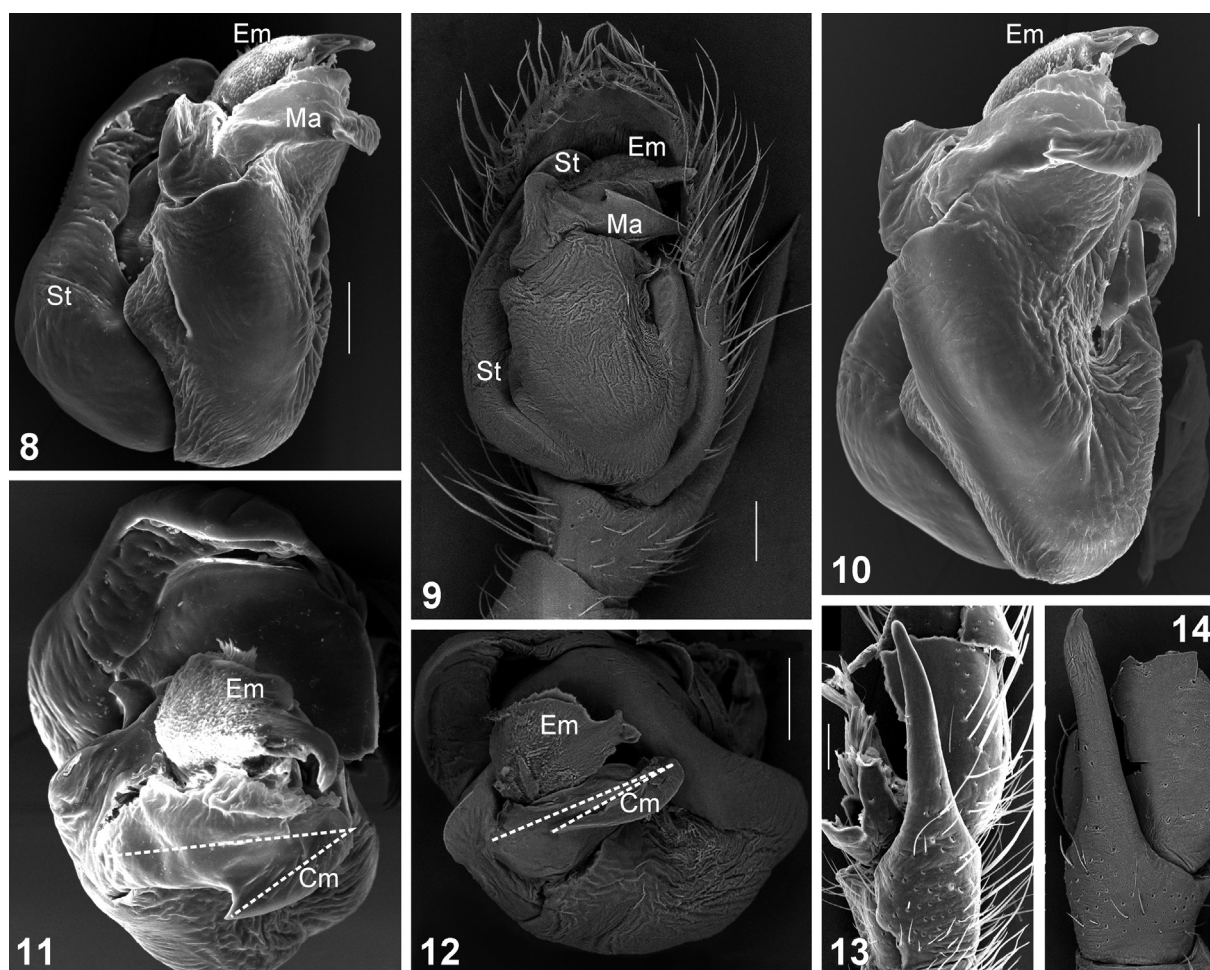
Рис. 1–7. *Shaitan angramainyu* sp. n., общий вид и копулятивные органы.

1–2 – габитус, вид сверху: 1 – самка, 2 – самец; 3–4 – пальпа самца, вид снизу и ретролатерально; 5 – эпигина, вид снизу; 6 – эпигина мацерированная, вид сверху; 7 – задняя часть эпигины, вид сверху. Ag – железа; Ah – передний карман; Df – глубокая складка; Fd – оплодотворительный канал; Fo – ямка эпигины; Re – рецептакула; Se – септум. Масштабные линейки: 1–2 – 1 мм; 3–6 – 0.2 мм.

species, it is possible that the paratype female of *Sh. elchini* from Absheron Peninsula is not conspecific with the holotype male from Kazakhstan, and may belong to either *Sh. angramainyu* sp. n. or another currently undescribed species.

*Shaitan angramainyu* sp. n.  
(Figs 1–8, 10, 11, 13)

**Material.** Holotype, ♂ (NHMW): Iran, Kerman Province, 110 km S Kerman (K. Bilek). Paratype: 1♀ (NHMW), same province, 41 km SE Sirjan, 18.04.1972 (K. Bilek).



Figs 8–14. Species of the genus *Shaitan*, male palps.

8, 10–11, 13 – *Sh. angramainyu* sp. n.; 9, 12, 14 – *Sh. elchini*. 8, 10 – bulb, meso-ventral and ventral view; 9 – palp, ventral view; 11–12 – bulb, anterior view; 13–14 – tibia, retrolateral view. Cm – claw of median apophysis; Em – embolus; Ma – median apophysis; St – subtegulum. Scale bars 0.1 mm. 9, 12, 14 – after Kuzmin, Esyunin [2016].

Рис. 8–14. Виды рода *Shaitan*, пальпы самцов.

8, 10–11, 13 – *Sh. angramainyu* sp. n.; 9, 12, 14 – *Sh. elchini*. 8, 10 – бульбус, мезовентрально и вентрально; 9 – пальпа, вид снизу; 11–12 – бульбус, вид спереди; 13–14 – голень, ретролатерально. Cm – коготь медиального отростка; Em – эмболюс; Ma – медиальный отросток; St – субтегулюм. Масштабные линейки 0.1 мм. 9, 12, 14 – по [Kuzmin, Esyunin, 2016].

**Diagnosis.** The new species differs from *Sh. elchini* (Figs 9, 12, 14) by the shape of retrolateral tibial apophysis (compare Figs 13 and 14), proportion of the claw of median apophysis (Cm) (2 times shorter than apophysis vs. 1.4), bent tip of embolus (vs. not bent), oval and longer than wide receptacles (vs. globular and wider than long), and shape of accessory glands (compare Figs 6, 7 and Figs 11–13 in Kovblyuk et al. [2013]).

**Description.** Male. Habitus as in Fig. 2. Total length 3.35. Carapace 1.6 long, 1.2 wide. Eye sizes: ALE: 0.07, AME: 0.09, PLE: 0.05, PME: 0.1. Carapace and sternum light yellowish-brown, without any pattern. Chelicerae, maxillae and labium reddish brown. Abdomen beige, without any pattern and dorsally covered with scattered long setae. Legs coloured as carapace (metatarsus and tarsus I slightly darker), with few spines and without annulations. Lengths of leg segments: I: 4.04 (1.16, 0.66, 0.91, 0.79, 0.52), II: missing, III: 3.14 (0.81, 0.45, 0.59, 0.74, 0.55), IV: 4.38 (1.15, 0.59, 0.96, 1.06, 0.62).

Palp as in Figs 3, 4, 8, 10, 11, 13; tibia wider than long, with long RTA almost 2 times longer than tibia, tibia together with RTA almost as long as cymbium (ca. 0.9 of cymbium's length),

RTA gradually tapering, its tip not pointed; bulb oval, with large subtegulum (St), longer than tegulum (Fig. 8); embolus with large base covered with fine denticles (Figs 8, 10, 11), tip cylindrical, slightly bent.

Female. Habitus as in Fig. 1. Total length 5.7. Carapace 1.95 long, 1.2 wide. Eye sizes: ALE: 0.06, AME: 0.1, PLE: 0.06, PME: 0.1. Colouration as in male, with darker cephalic region. Lengths of leg segments: I: 3.06 (0.93, 0.64, 0.59, 0.51, 0.39), II: 2.81 (0.85, 0.63, 0.50, 0.45, 0.38), III: 2.57 (0.72, 0.45, 0.48, 0.48, 0.44), IV: 3.71 (1.07, 0.65, 0.75, 0.70, 0.54).

Epigyne as in Figs 5–7; plate almost as long as wide, with distinct septum (Se) and almost indistinct anterior hoods (Ah, in intact epigyne); lateral margins of fovea almost indistinct (Fig. 5); septum as long as wide, with stem as long as base; anterior hoods triangular, very long, longer than wide; lateral margins of fovea with deep folds (Df); posterior part of fold with accessory gland (Ag), glands with cylindrical stem and clavate head, stems directed almost anteriorly (antero-laterally); receptacles small, only slightly longer than accessory glands, oval, longer than wide, not spaced; fertilization ducts directed antero-laterally, as long as receptacle's width.



Figs 15–18. *Piratula raika* sp. n., male, holotype, general view and details of structure.

15–16 – habitus, dorsal and ventral view; 17 – prosoma, anterior view; 18 – bulb, ventral view. Scale bars: 16 – 0.5 mm; 17 – 0.2 mm.

Рис. 15–18. *Piratula raika* sp. n., самец, голотип, общий вид и детали строения.

15–16 – габитус, вид сверху и снизу; 17 – головогрудь, вид спереди; 18 – бульбус, вид снизу. Масштабные линейки: 16 – 0.5 мм; 17 – 0.2 мм.



Figs 19–20. *Piratula raika* sp. n., male, holotype, palp.

19 – retrolateral view; 20 – ventral view. Scale bars 0.2 mm.

Рис. 19–20. *Piratula raika* sp. n., самец, голотип, пальпа.

19 – ретролатерально; 20 – снизу. Масштабная линейка 0.2 мм.

**Distribution.** Known only from the listed localities in Kerman Province, southeastern Iran.

**Etymology.** The specific epithet is a noun in apposition, referring to the Avestan-language name of Zoroastrianism's hypostasis of the "destructive/evil spirit".

**Family Lycosidae Sundevall, 1833**  
**Genus *Piratula* Roewer, 1960**

*Piratula* Roewer, 1960: 677.

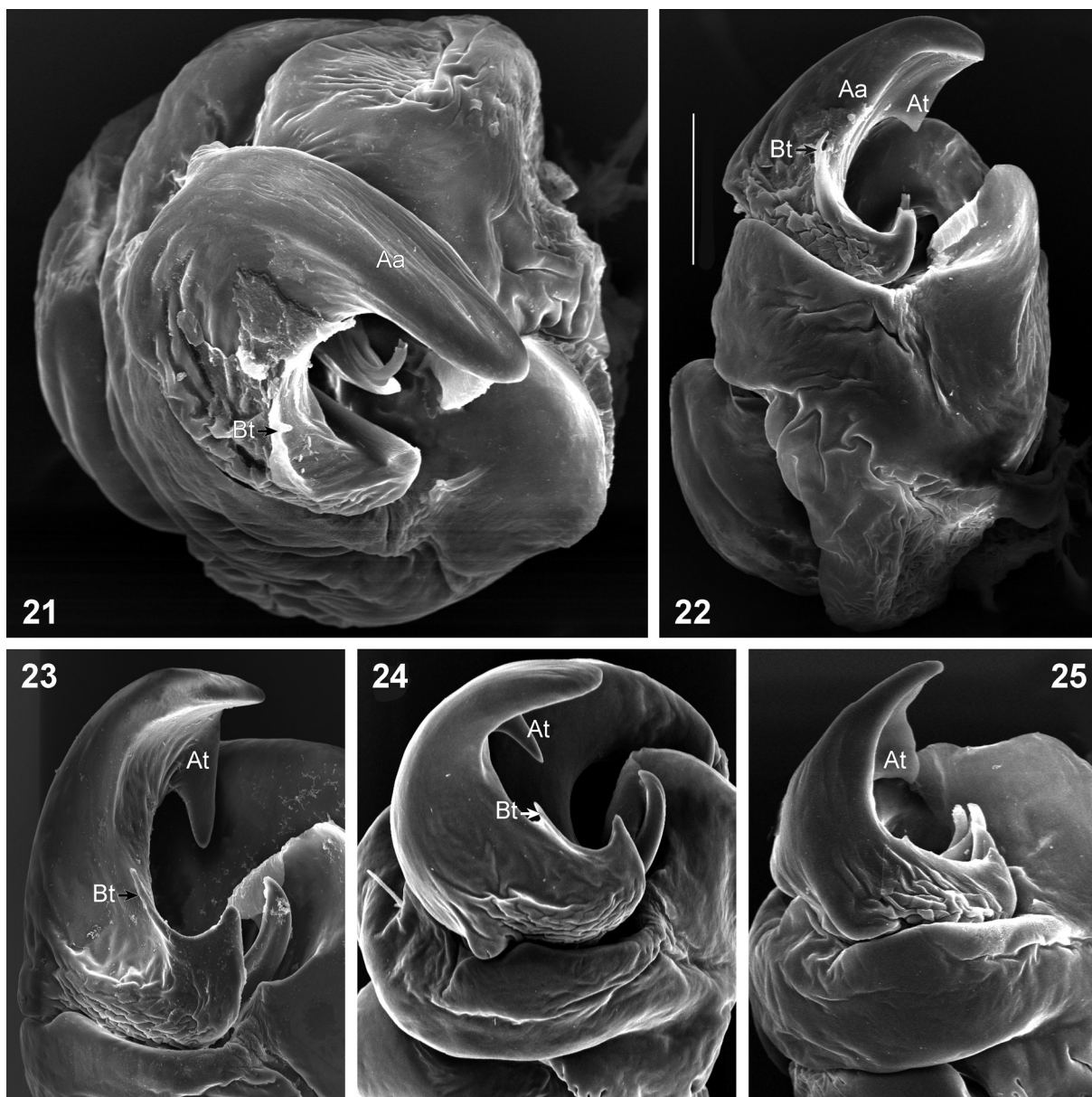
*Piratula*: Omelko et al., 2011: 213.

Currently, 27 species distributed in the Holarctic are considered in *Piratula*. Of them, only one species, *P. latitans* (Blackwall, 1841) is known from Iran [Zamani et al., 2021] and also recorded from the adjacent Azerbaijan and Armenia [Otto, 2020]. One more species, *P. insularis* Emerton, 1885 has been reported from Lenkoran District in Azerbaijan [Otto, 2020], although this record is doubtful and may belong to the new species described here.

***Piratula raika* sp. n.**  
(Figs 15–22)

**Material.** Holotype, ♂ (MHNG): Iran, Gilan Province, Galugah, 37°31'N / 49°19'E, 12.06.1975 (A. Senglet).

**Diagnosis.** The new species is similar to *P. canadensis* (Dondale et Redner, 1981), *P. insularis* and *P. logunovi* Omelko, Marusik et Koponen, 2011 (Figs 23–25) by having similar tegular apophysis. It differs from the first two species



Figs 21–25. Species of the genus *Piratula*, bulbs.

21–22 – *P. raika* sp. n.; 23 – *P. canadensis*; 24 – *P. insularis*; 25 – *P. logunovi*. 21 – anterior view; 22–25 – retrolateral-ventral view. Aa – anterior arm of tegular apophysis; At – anterior tooth; Bt – basal tooth. Scale bar 0.1 mm. 23–25 – after Omelko et al. [2011].

Рис. 21–25. Виды рода *Piratula*, бульбусы.

21–22 – *Piratula raika* sp. n.; 23 – *P. canadensis*; 24 – *P. insularis*; 25 – *P. logunovi*. 21 – вид спереди; 22–25 – ретролатерально-вентрально. Аа – передняя ветвь тегулярного отростка; Аt – передний зубец; Bt – базальный зубец. Масштабная линейка 0.1 мм. 23–25 – по [Omelko et al., 2011].

by having anterior tooth (At) of the tegular apophysis wider than long (Figs 21–25), and from *P. logunovi* by having basal tooth (Bt) (vs. lacking).

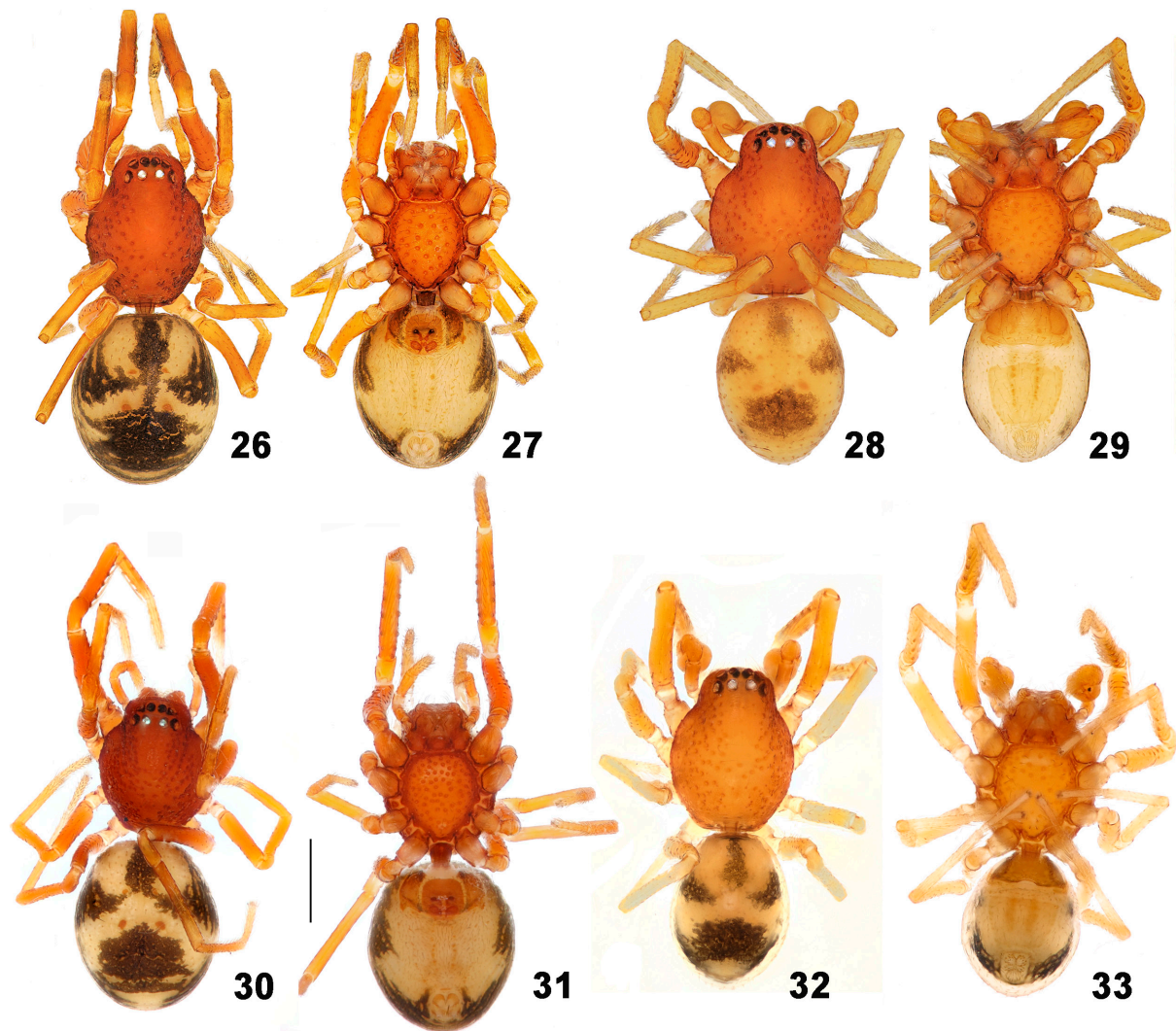
**Description.** Male. Habitus as in Figs 15, 16. Total length 4.03. Carapace 2.11 long, 1.47 wide. Eye sizes: ALE: 0.08, AME: 0.12, PLE: 0.2, PME: 0.23. Chelicera with 3 retromarginal teeth. Carapace light brown, with dark marginal stripes, wider than light submarginal band; submedian dark bands wider than lateral and sublateral altogether, post ocular dark bands extending to fovea (Fig. 15). Sternum light brown, lacking distinct pattern, with darker spots near coxae, and 2 submedian broken dark stripes. Chelicerae, maxillae, labium and sternum light brown, without any marking. Legs light brown, without annulations.

Abdomen dark grey dorsally, with a lighter cardiac mark and several transversal bands; ventrally light grey, with fade darker markings. Measurements of leg segments: I: 5.72 (1.52, 0.66, 1.3, 1.41, 0.83), II: 5.85 (1.67, 0.72, 1.22, 1.43, 0.81), III: 5.72 (1.53, 0.65, 1.23, 1.52, 0.79), IV: 5.83 (2.15, 0.6, 1, 1.36, 0.72).

Palp as in Figs 18–22; tibia elongate, 1.75 times longer than wide, as long as bulb, 1.7 times shorter than cymbium; cymbium 2 times longer than wide, tip almost 1/3 of cymbium's length, as long as wide; tegular apophysis with basal fine tooth (Bt), anterior tooth (At) of anterior arm (Aa) wider than long.

Female. Unknown.

**Distribution.** Known only from the type locality in Gilan Province, northern Iran.



Figs 26–33. Species of the genus *Orthobula*, habitus. 26–29 – *O. charitonovi* (Tehran, Iran); 30–33 – *O. mikhailovi* Marusik, **sp. n.** 26–27, 30–31 – female; 28–29, 32–33 – male; 26, 30, 28, 32 – dorsal view; 27, 31, 29, 33 – ventral view.

Рис. 26–33. Виды рода *Orthobula*, габитус.

26–29 – *O. charitonovi* (Тегеран, Иран); 30–33 – *O. mikhailovi* Марусик, **sp. n.** 26–27, 30–31 – самка; 28–29, 32–33 – самец; 26, 30, 28, 32 – вид сверху; 27, 31, 29, 33 – вид снизу.

**Etymology.** The specific epithet is a Persian given masculine name (from Gilaki, a language spoken in Iran's Gilan Province) meaning “beloved” or “adored”.

**Family Trachelidae Simon, 1897**  
**Genus *Orthobula* Simon, 1897**

So far, 18 nominal species distributed in the Palaearctic (in Asia), Oriental and Sub-Saharan regions are considered in *Orthobula* [World Spider Catalog, 2021]. The genus has never been globally revised and its taxonomic position is doubtful: before being classified in Trachelidae, it had been previously considered as a member of Clubionidae, Liocranidae, Corinnidae [Bosselaers, Jocqué, 2002] and Phrurolithidae [Ramírez, 2014].

Only one species, *O. charitonovi* (Mikhailov, 1986) was previously known in the East Mediterranean and Central Asia [Marusik et al., 2013; World Spider Catalog, 2021].

***Orthobula mikhailovi* Marusik, **sp. n.****  
(Figs 30–37, 41–43)

*Orthobula charitonovi*: Marusik et al., 2013: 158, figs 1–7, 11–23 (♂♀, in part, records from Fars).

**Material.** Holotype, ♀ (ZMMU): Iran, Fars Province, Shiraz, nearby Quran gate, 29°38'08.0"N / 52°33'42.0"E, 19.12.2013 (Y.M. Marusik). Paratypes: 11♀ (ZMMU), same data as for the holotype; 1♂, 3♀ (MMUE), Iran, Fars Province, Shiraz, 29°36'25.2"N / 52°31'58.8"E, 18–26.05.2000 (Y.M. Marusik).

**Comparative material.** *Orthobula charitonovi* (Mikhailov, 1986): 1♂, 4♀ (ZMMU), Iran, Tehran Province, Plant Protection Organization Park, 35°40'22.8"N / 51°24'50.4"E, 7–22.06.2000 (Y.M. Marusik).

**Note.** A female specimen was chosen as the holotype because the epigyne has more differential characters, allowing a better diagnosis of the two sibling species.

**Diagnosis.** The new species is very similar to *O. charitonovi* by pattern, size (compare Figs 26–29 and 30–33) and shape of copulatory organs (compare Figs 34–37 and 38–40). Male of *O. mikhailovi* Marusik, **sp. n.** can be



Figs 34–40. Species of the genus *Orthobula*, male palps.

34–37 – *O. mikhailovi* Marusik, **sp. n.**; 38–40 – *O. charitonovi* (Tehran, Iran). 34, 38 – ventral view; 35 – meso-ventral view; 36, 39 – retrolateral view; 37, 40 – prolateral view. Arrows indicate difference in relative length of spermophor.

Рис. 34–40. Виды рода *Orthobula*, пальпы самцов.

34–37 – *O. mikhailovi* Marusik, **sp. n.**; 38–40 – *O. charitonovi* (Тегеран, Иран). 34, 38 – снизу; 35 – мезовентрально; 36, 39 – ретролатерально; 37, 40 – пролатерально. Стрелки показывают разницу в длине спермофора.

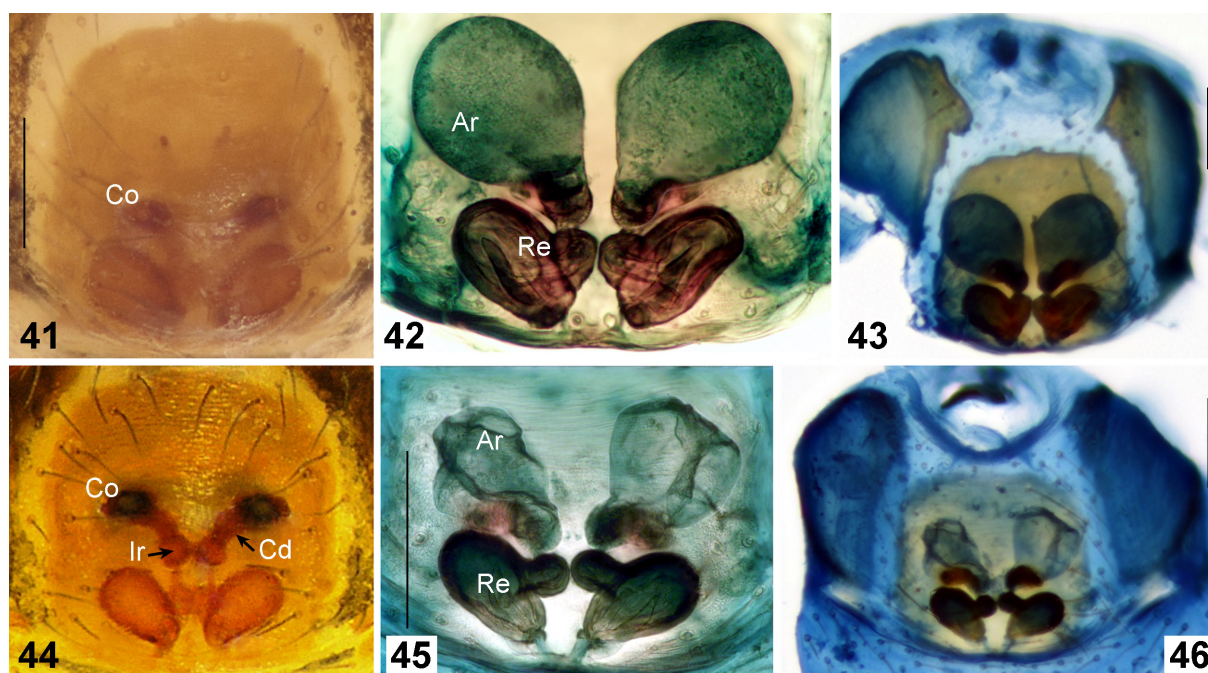
separated from that of *O. charitonovi* by shorter spermophor (Figs 34, 38), while the female can be distinguished by relatively larger epigyne (compare Figs 41–43 and 44–46), copulatory openings separated from receptacles by copulatory duct's width (Fig. 41) (vs. more) (Fig. 44), lack of intermediate "receptacle" (Ir) (vs. present), and span of copulatory openings 1.3 times shorter than span of receptacles (vs. spans of receptacles and copulatory opening subequal).

**Description.** Male. Habitus as in Figs 32, 33. Total length 1.5. Carapace 0.75 long, 0.57 wide. Eye sizes: ALE: 0.05, AME: 0.04, PLE: 0.06, PME: 0.06. Carapace and sternum light reddish brown, with distinct granulation. Legs slightly lighter than carapace, without annulations. Abdomen light cream-coloured, dorsally with dark gray patches and 4 brown sigilla, ventrally with epigastric scutum. Measurements of leg segments: I: 1.91

(0.56, 0.21, 0.47, 0.39, 0.28), II: 1.68 (0.49, 0.19, 0.38, 0.35, 0.27), III: 1.52 (0.45, 0.17, 0.32, 0.33, 0.25), IV: 1.95 (0.51, 0.18, 0.45, 0.5, 0.31).

Palp as in Figs 34–37; tibia short, ca. 3.1 times shorter than cymbium, RTA small, spine-like, length shorter than tibia's radius; cymbium droplet-shaped; bulb as long as cymbium, bulged posteriorly; spermophor in lateral view as long as bulb's maximal width in ventral view; embolic part long, almost as half as bulb's length; embolus gradually tapering, free part about as long as tibia's width.

Female (Holotype). Habitus as in Figs 30, 31. Total length 1.9. Carapace 0.85 long, 0.65 wide. Eye sizes: ALE: 0.06, AME: 0.05, PLE: 0.06, PME: 0.06. Colouration generally as in male, with slightly darker carapace and larger dark abdominal patches. Measurements of leg segments: I: 2.19 (0.66, 0.24, 0.54, 0.46, 0.29), II: 1.89 (0.57, 0.22, 0.42, 0.40, 0.28), III: 1.79 (0.51, 0.2, 0.38, 0.42, 0.28), IV: 2.32 (0.58, 0.23, 0.55, 0.6, 0.36).



Figs 41–46. Species of the genus *Orthobula*, epigynes.

41–43 – *O. mikhailovi* Marusik, *sp. n.*; 44–46 – *O. charitonovi* (Tehran, Iran). 41, 44 – intact, ventral view; 42, 43, 45, 46 – macerated, dorsal view. Ar – anterior receptacle; Cd – copulatory duct; Co – copulatory opening; Ir – intermediate 'receptacle'; Re – receptacle. Scale bars 0.1 mm.

Рис. 41–46. Виды рода *Orthobula*, эпигины.

41–43 – *Orthobula mikhailovi* Marusik, *sp. n.*; 44–46 – *O. charitonovi* (Тегеран, Иран). 41, 44 – intactные, вид снизу; 42, 43, 45, 46 – мацерированные, вид сверху. Ar – передняя рецептакула; Cd – копулятивный канал; Co – копулятивное отверстие; Ir – промежуточная «рецептакула»; Re – рецептакула. Масштабные линейки 0.1 мм.

Epigyne as in Figs 41–43; plate almost square-shaped, slightly longer than wide; copulatory openings (Co) located in posterior half, span of opening less than span of receptacles (Re); copulatory ducts almost indistinct in ventral view; anterior receptacles (Ar) hyaline, as wide as receptacle's length.

**Distribution.** Known only from the listed localities in Fars Province, southern Iran.

**Etymology.** This species is named in honor of our colleague and friend, Dr Kirill G. Mikhailov (Moscow, Russia).

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