

New species and records of Filistatidae (Arachnida: Aranei) from Iran

Новые находки и новые виды Filistatidae (Arachnida: Aranei)
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КЛЮЧЕВЫЕ СЛОВА: Araneae, описания, фауна, Ближний Восток, паук, таксономия.

ABSTRACT. Three new species of Filistatidae are described from Iran: *Microfilistata magalhaesi* sp.n. (♂, Isfahan Province, central Iran), *Zaitunia darreshurii* sp.n. (♀, Lorestan Province, southwestern Iran) and *Z. zagrosica* sp.n. (♀, Kohgiluyeh & Boyer-Ahmad Province, southwestern Iran). *Microfilistata* Zonstein, 1990 is recorded from Iran for the first time, and its record lies at the southwesternmost limits of the generic range. Hitherto, the genus included two species described from Uzbekistan and Turkmenistan. New records are provided for *Filistata lehtineni* Marusik et Zonstein, 2014 and *Zaitunia akhanii* Marusik et Zamani, 2015, representing the southernmost localities of the species ranges. Collecting localities of *Microfilistata* and all the Filistatidae occurring in Iran are mapped.

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РЕЗЮМЕ. Описано три новых вида: *Microfilistata magalhaesi* sp.n. (♂, провинция Исфаган, центральный Иран), *Zaitunia darreshurii* sp.n. (♀, провинция Лорестан, юго-западный Иран) и *Z. zagrosica* sp.n. (♀, провинция Кохгилуйе и Бойерахмед, юго-западный Иран). Род *Microfilistata* Zonstein, 1990 впервые указывается для страны, и находка в Исфагане самая юго-западная во всём ареале. Ранее род включал два вида, известные из Туркмении и Узбекистана. Приводятся новые, самые южные находки *Filistata lehtineni* Marusik et Zonstein, 2014 и *Zaitunia akhanii* Marusik et Zamani, 2015, а также карты распространения рода *Microfilistata* и всех видов Filistatidae обитающих в Иране.

Introduction

Filistatidae is a relatively small spider family comprising 161 extant species in 19 genera [WSC, 2018]. Due to several recent taxonomic surveys, the filistatids of Iran are rather well-known [Brignoli, 1982; Marusik *et al.*, 2014; Marusik, Zamani, 2015a,b, 2016; Zamani, Marusik, 2016]. Currently, 12 species in four genera of Filistatidae are known from Iran, but yet collections from remote areas continue to yield more new species and records [Zamani *et al.*, 2018]. The present study of new Iranian spider material has revealed a new species of *Microfilistata* Zonstein, 1990 from central Iran, a genus hitherto not recorded from this country, two new species of *Zaitunia* Lehtinen, 1967 from southwestern Iran and new records of *Filistata lehtineni* Marusik et Zonstein, 2014 and *Zaitunia akhanii* Marusik et Zamani, 2015. The goals of this paper are (1) to describe the three new species, (2) to provide distributional data of *Microfilistata*, and (3) to map collecting localities of all the filistatid species known from Iran.

Material and Methods

The studied specimens were photographed using an Olympus Camedia E-520 camera attached to an Olympus SZX16 stereomicroscope. Digital images were prepared using “CombineZP” image stacking software. The length of leg segments was measured on their dorsal side. All measurements are given in millimeters. Measurements of leg and palp are listed as: total length (femur, patella, tibia, metatarsus, tarsus). Standard abbreviations were used for the eyes: AME — anterior median eyes; ALE — anterior lateral eyes; PME — posterior median eyes; PLE — posterior lateral eyes. The studied/described specimens are deposited in the Entomological Museum of Shiraz University of Medi-

cal Sciences, Iran (EMSUS) and The Manchester Museum of the University of Manchester, UK (MMUE), and Zoological Museum of University of Isfahan (ZMUI).

Taxonomy

Filistatidae Ausserer, 1867

Microfilistata Zonstein, 1990

Microfilistata Zonstein, 1990: 51; 2009: 373.

Type species: *Microfilistata tyshchenkoi* Zonstein, 1990 from Uzbekistan.

DIAGNOSIS. The genus can be easily recognized by the unique conformation of the male palp, with the tegulum being entirely encapsulated in the cylindrical cymbium and only the embolus stretching outside the cymbium. Females (only one species is known from females) can be recognized by the unusually long and slender palps and legs covered with a reduced number of long setae [Zonstein, 2009].

COMMENTS. To date, the genus has been known from two taxonomic entries only [Zonstein, 1990, 2009], consisting of two species: *M. tyshchenkoi* Zonstein, 1990 (the generotype) and *M. ovtchinnikovi* Zonstein, 1990. Only the latter species is known from both sexes. Based on the posterior position of spinnerets and the shape of the female calamistrum, the genus belongs to Filistatinae (see Zonstein, Marusik 2016). So far, two species have known from the type localities only (Map 1): eastern Uzbekistan (*M. tyshchenkoi*) and southern Turkmenistan (*M. ovtchinnikovi*). Incidentally, WSC [2018] incorrectly indicates the distribution of the generotype as Tajikistan. The new species, *M. magalhaesi* sp.n., extends the known generic range significantly (almost by 1000 km) south-westward.

DISTINGUISHING SPECIES. All three species can be easily separated by their sizes, and the relative length of body, carapace and male palp (Table 1).

Microfilistata magalhaesi sp.n.

Figs 1–11, Maps 1–2.

TYPE MATERIAL: Holotype ♂ (MMUE, G7619.11) and paratype 1 ♂ (ZMUI), IRAN: *Isfahan Province*: Najaf Abad, ~32.61°N 51.35°E, July 2015 (M. Saboohi).

ETYMOLOGY. This species is dedicated to our friend and colleague Ivan L. F. Magalhaes (Buenos-Aires, Argentina), in recognition of his contributions to the taxonomy and systematics of the filistatid spiders.

DIAGNOSIS. The new species differs from both its congeners by the longer body size (3.3 vs. 1.55 or 1.61, Table 1), the remarkably long palp (Figs 1–3, 5, 11), almost twice as long as the body length (vs. about body length), and only 2 coils of the sperm duct (vs. 3 or more). Compared to other congeners, *M. magalhaesi* sp.n. has the uniquely elongated cymbium (Figs 7–11) and the modified embolus possessing a kind of lamella (filamentous in two other species).

DESCRIPTION. Male (holotype). Total body length 3.3. Carapace 1.37 long, 1.07 wide. Light colored. Carapace and sternum uniformly light yellowish brown, with no markings, except for the brownish black eye tubercle. Carapace with 3 macrosetae posteriorly along midline, and 3 clypeal macrosetae arranged in a triangle. Maxillae and labium light brown, only slightly darker. Abdomen light greyish, without pattern and with long setae dorsally. Legs uniformly light coloured, without annulations and distinct spines; tibiae and metatarsi darker than femora. Legs very long, leg II 3 times longer than body. Leg II length 10.69 (3.0, 0.5, 3.32, 2.97, 0.9). Eye sizes and interdistances: AME 0.05, ALE 0.12, PME 0.08, PLE 0.12, PME-PME 0.07.

Palp as in Figs 1–2, 5, 7–11; very long, light brownish, darker than legs, aspinose; 5.18 long (2.42, 0.32, 1.97, 0.47); cymbium elongate, cylindrical, slightly bent ventrad, over 3 times longer than wide; bulb encapsulated in cymbium, with only a part of the embolus stretching from it, bulb occupies the anterior half of cymbium; sperm duct forms 2 coils, long tendon (*Te*) is attached to basal bulb sclerite; embolic base very wide, almost as wide as the cymbial aperture; with a kind of keel (*Ek*) in basal 1/3, and gradually tapering from keel to tip.

Female. Unknown.

COMMENTS. This species has the remarkably long palps, being almost twice as long as the body length. The similar long palps are known in *Sahastata sinuspersica* Marusik, Zamani et Mirshamsi, 2014 only [cf. Marusik *et al.*, 2014], another member of the Filistatinae.

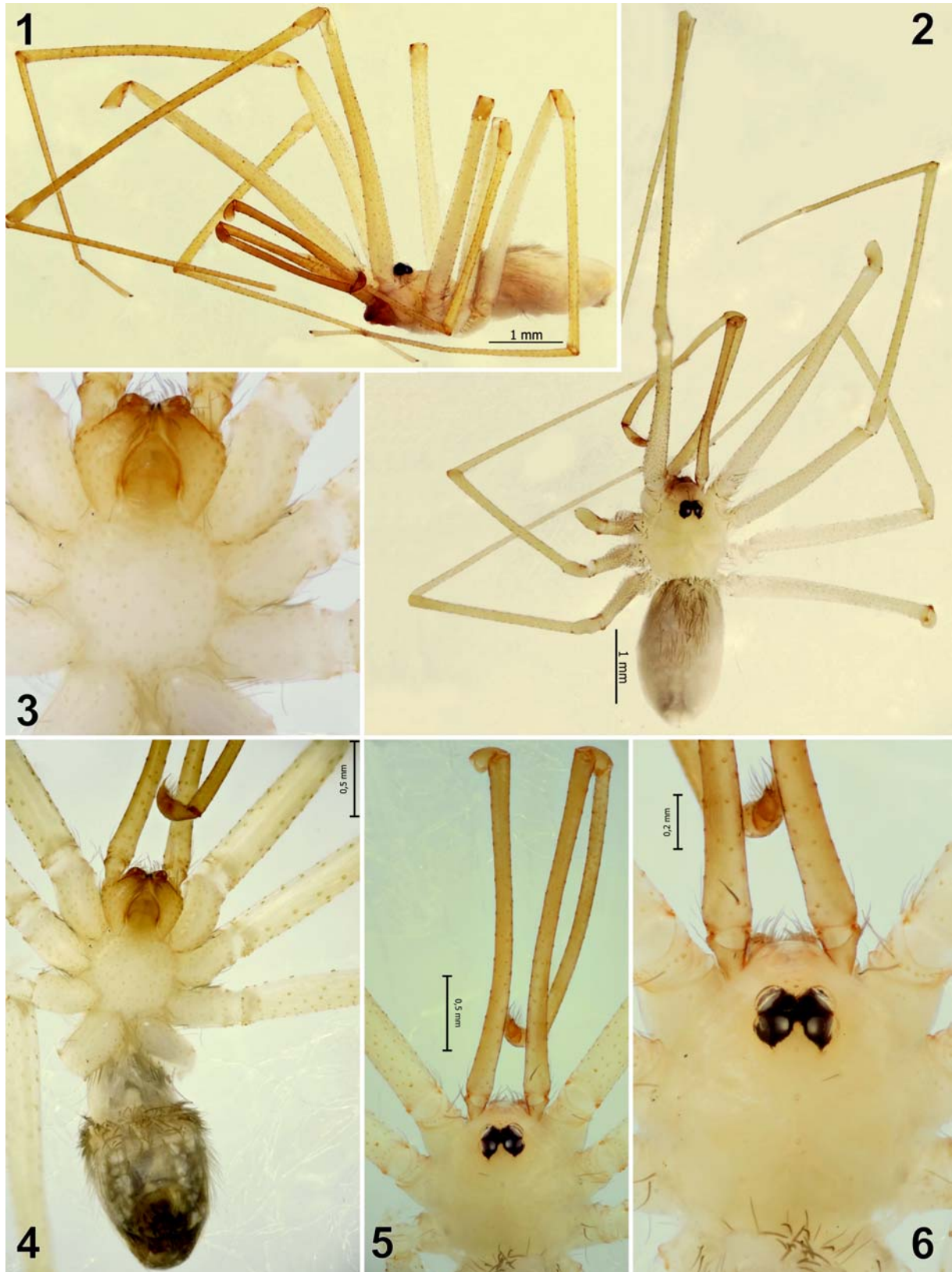
DISTRIBUTION. Known only from the type locality in Isfahan Province, central Iran. This is the first record of this genus in Iran, and the southwesternmost in the whole range (Maps 1–2).

Table 1. Measurements of three *Microfilistata* species.

Таблица 1. Промеры трех видов *Microfilistata*.

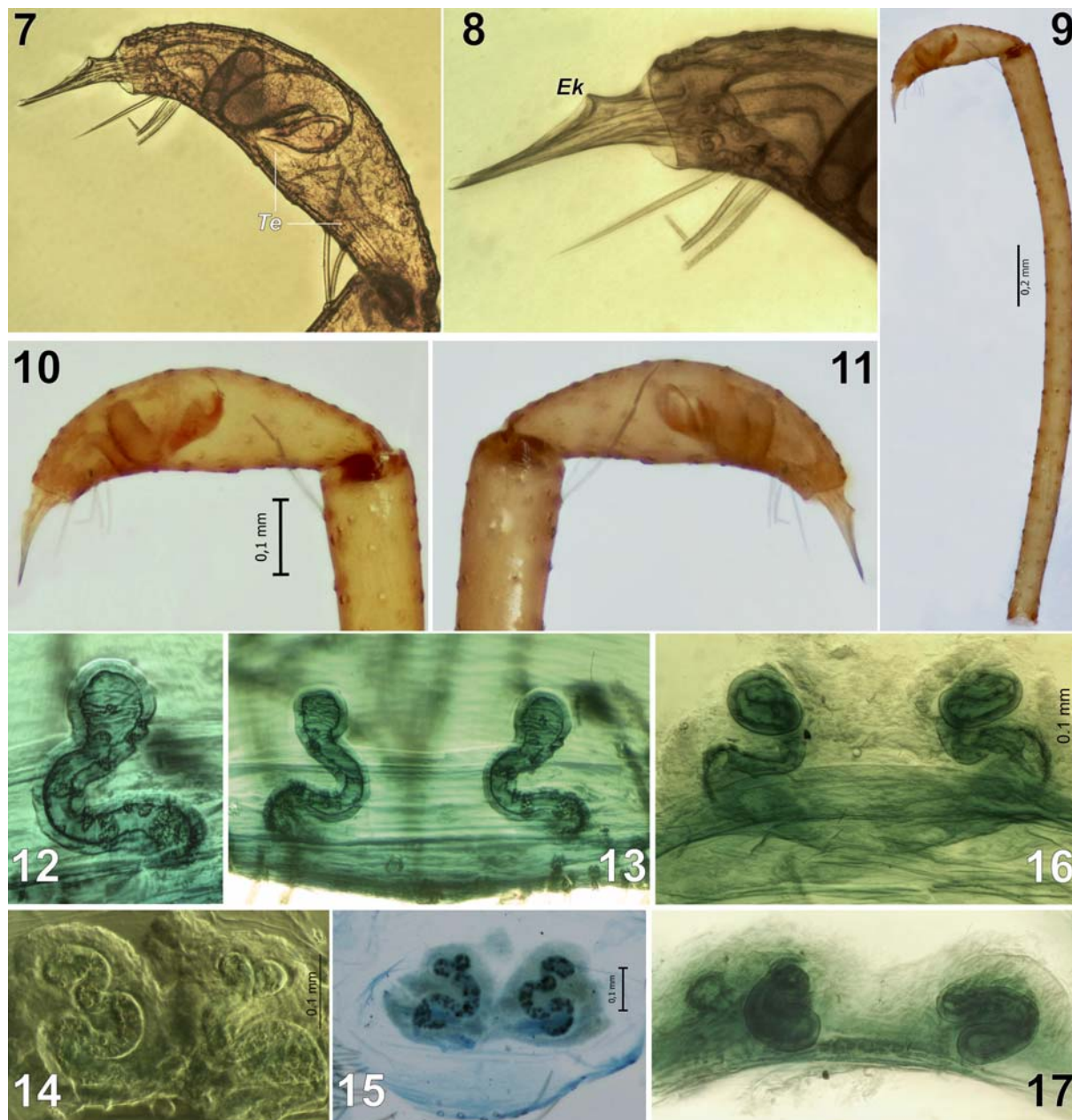
| | TL | CL/CW | Palpal Fe | Cymbium | Palp |
|----------------------------|------|-----------|-----------|---------|------|
| <i>M. magalhaesi</i> sp.n. | 3.3 | 1.37/1.07 | 2.42 | 0.47 | 5.18 |
| <i>M. ovtchinnikovi</i> | 1.61 | 0.68/0.59 | 0.66 | 0.28 | 1.67 |
| <i>M. tyshchenkoi</i> | 1.55 | 0.63/0.52 | 0.53 | 0.26 | 1.37 |

TL — total length; CL/CW — carapace length/width; Fe — femur.



Figs 1–6. General appearance of *Microfilistata magalhaesi* sp.n. (holotype). 1–2 — habitus, lateral and dorsal; 3, 6 — prosoma, ventral and dorsal; 4 — body, ventral; 5 — prosoma and palps, dorsal.

Рис. 1–6. Внешний вид *Microfilistata magalhaesi* sp.n. (голотип). 1–2 — габитус, сбоку и сверху; 3, 6 — головогрудь, снизу и сверху; 4 — тело, снизу; 5 — головогрудь и пальпы, сверху.



Figs 7–16. Copulatory organs of *Microfilistata magalhaesi* sp.n. (7–11), *Zaitunia akhanii* (12–13), *Z. zagrosica* sp.n. (14–15) and *Z. darreshurii* sp.n. (16–17). 7 — cymbium and bulb, prolateral; 8 — terminal part of cymbium and bulb, prolateral; 9 — tibia and cymbium, prolateral; 10–11 — terminal part of male palp, pro- and retrolateral; 12 — receptacle, dorsal; 13–16 — endogyne, dorsal; 17 — endogyne, anterior. Abbreviations: *Ek* — keel of embolus; *Te* — tendon of the bulb.

Рис. 7–16. Копулятивные органы *Microfilistata magalhaesi* sp.n. (7–11), *Zaitunia akhanii* (12–13), *Z. zagrosica* sp.n. (14–15) и *Z. darreshurii* sp.n. (16–17). 7 — цимбиум и бульбус, пролатерально; 8 — верхняя часть цимбиума и бульбуса, пролатерально; 9 — голень и цимбиум, пролатерально; 10–11 — дистальная часть пальпы самца, про- и ретролатерально; 12 — рецептакула, сверху; 13–16 — эндогина, сверху; 17 — эндогина, спереди. Сокращения: *Ek* — киль эмболюса; *Te* — тендон бульбуса.

Zaitunia Lehtinen, 1967

Zaitunia Lehtinen, 1967: 275.

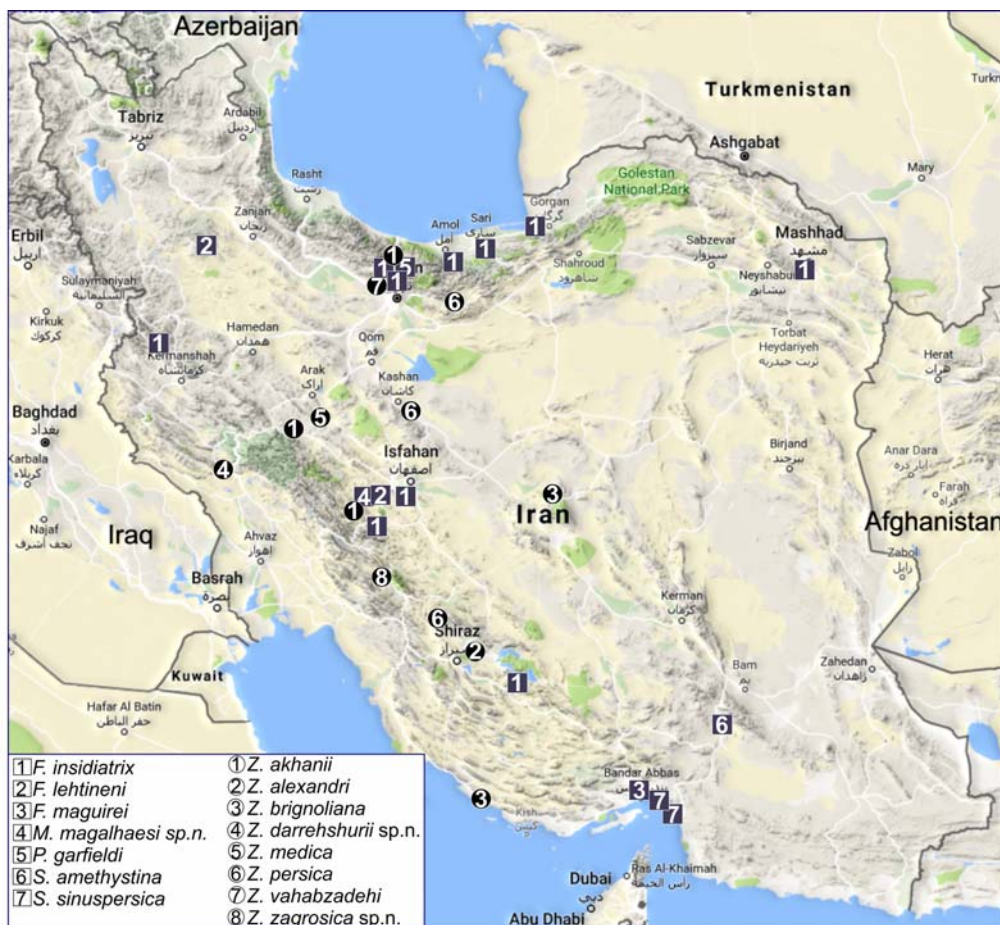
Zaitunia: Zonstein, 2009: 126; Fomichev, Marusik, 2013: 85; Zonstein *et al.*, 2013: 69; Marusik, Zamani, 2015a: 129; Zonstein, Marusik, 2016: 6.

COMMENTS. The genus occurring from the East Mediterranean to Tajikistan was recently revised by

Zonstein & Marusik [2016] and the distribution of *Zaitunia* in Iran was surveyed by Zamani & Marusik [2016]. Until recently, six species of *Zaitunia* have been known from Iran [Zamani, Marusik, 2016], and all of them being known from females only. Although the species diversity of the genus in Iran is higher than elsewhere, two more species new to science have been recently found in the country. Both of them belong to

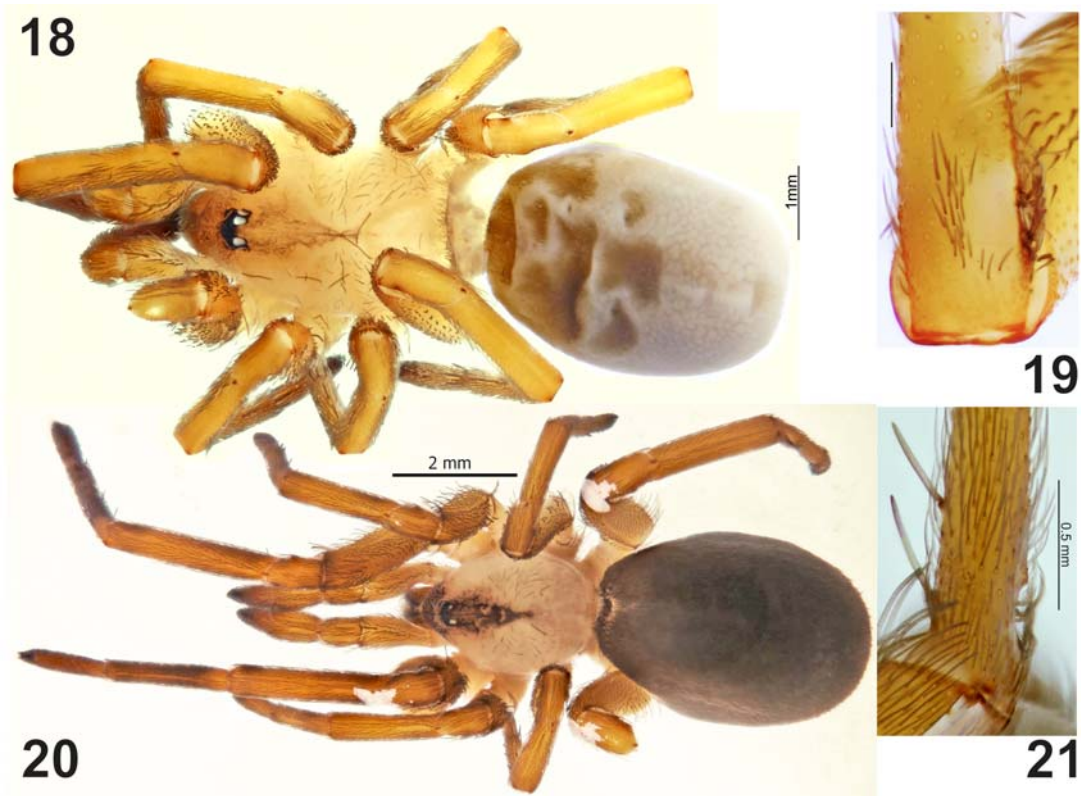


Map 1. Distribution of *Microfilistata* species: *M. magalhaesi* sp.n. (1), *M. ovtchinnikovi* (2) and *M. tyshchenkoi* (3).
 Карта 1. Распространение видов рода *Microfilistata*: *M. magalhaesi* sp.n. (1), *M. ovtchinnikovi* (2) и *M. tyshchenkoi* (3).



Map 2. Collecting localities of Filistatidae in Iran. Squares: *Filistata insidiatrix* (1), *F. lehtineni* (2), *F. maguirei* (3), *Microfilistata magalhaesi* sp.n. (4), *Pritha garfieldi* (5), *Sahastata amethystina* (6) and *S. sinuspersica* (7); circles: *Zaitunia akhanii* (1), *Z. alexandri* (2), *Z. brignoliana* (3), *Z. darreshurii* sp.n. (4), *Z. medica* (5), *Z. persica* (6), *Z. vahabzadehi* (7) and *Z. zagrosica* sp.n. (8).

Карта 2. Места находок видов Filistatidae в Иране. Квадраты: *Filistata insidiatrix* (1), *F. lehtineni* (2), *F. maguirei* (3), *Microfilistata magalhaesi* sp.n. (4), *Pritha garfieldi* (5), *Sahastata amethystina* (6) и *S. sinuspersica* (7); кружки: *Zaitunia akhanii* (1), *Z. alexandri* (2), *Z. brignoliana* (3), *Z. darreshurii* sp.n. (4), *Z. medica* (5), *Z. persica* (6), *Z. vahabzadehi* (7) и *Z. zagrosica* sp.n. (8).



Figs 18–21. Habitus and calamistrum of *Zaitunia darreshurii* sp.n. (18–19) and *Z. zagrosica* sp.n. (20–21). 18, 20 — habitus; 19, 21 — calamistrum, retrolateral.

Рис. 18–21. Габитус и каламиструм *Zaitunia darreshurii* sp.n. (18–19) и *Z. zagrosica* sp.n. (20–21). 18, 20 — габитус; 19, 21 — каламиструм, ретролатерально.

the *persica*-group *sensu* Zonstein & Marusik [2016]. This group is rather formal and unites five species that have one pair of receptacles. All species, including two new species treated here, are known from females only. The new species, as well as *Z. akhanii*, are close to *Z. persica* by having the cylindrical sinuous receptacles lacking distinct heads.

Zaitunia darreshurii sp.n.

Figs 16–19, 23, Map 2.

TYPE MATERIAL: Holotype ♀ (MMUE, G7612.3), IRAN: Lorestan Province: Lorestan, Pol-e Dokhtar, 8 km East of Chameh, 33°09'N 47°43'E, 2.04.2017 (A. Zamani).

ETYMOLOGY. This species is dedicated to the Iranian ecologist and naturalist, Bijan Farhang Darreshuri, in recognition of his contributions to the study of natural history of Iran.

DIAGNOSIS. The new species differs from *Z. persica* by the larger size (carapace 3.25 long vs. 1.41 in *Z. persica*), the shorter receptacles forming 3 bents and with tips bent mesad (Fig. 23) vs. the long receptacles bent 4 times (Fig. 24). *Zaitunia darreshurii* sp.n. is also similar to *Z. zagrosica* sp.n. and differs from it by the larger size (carapace 3.25 vs. 2.7), the shorter receptacles with tips bent mesad vs. the longer recepta-

cles with tips bent laterad, the smaller endogyne and the widely spaced mesal loop receptacles: at least 4 diameters of the receptacles vs. less than 3 in *Z. zagrosica* sp.n. (cf. Figs 23 and 22).

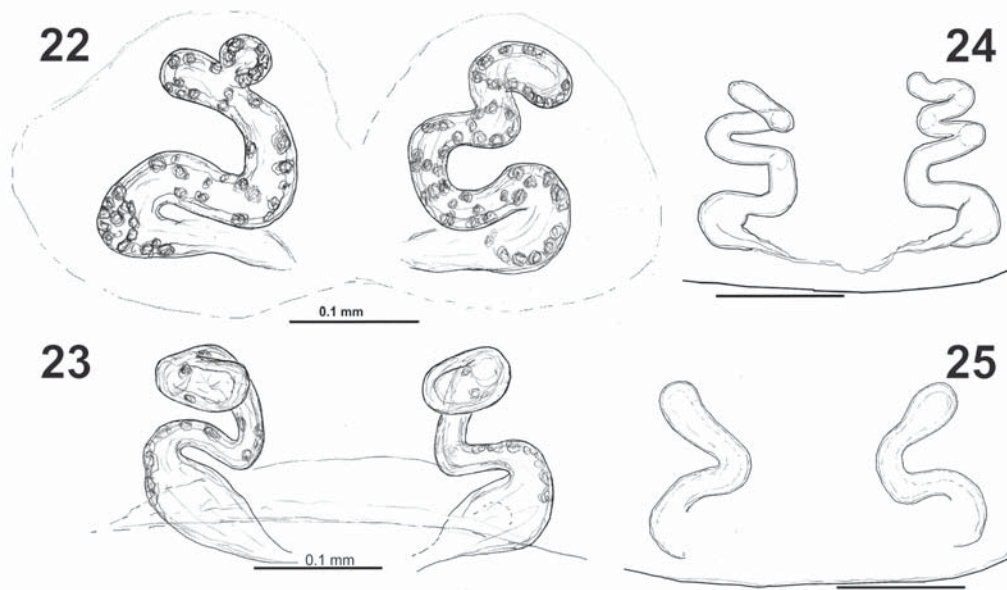
DESCRIPTION. Female (holotype). Total body length 7.6. Carapace 3.25 long, 2.25 wide. Light coloured. Carapace light brownish yellow, with a pale brown median line terminating near vestigial fovea; eye tubercle brownish black; abdomen dorsally brownish and ventrally pale brownish, without any distinct darker pattern, with patches of long setae dorsally (Fig. 18). Legs the same colour as carapace, with only a few spines. Calamistrum as in Fig. 19. Leg I length 10.69 (2.85, 1.15, 2.65, 2.35, 1.25). Eye sizes and interdistances: AME 0.10, ALE 0.20, PME 0.17, PLE 0.17, PME-PME 0.10.

Endogyne as in Figs 16–17, 23; with long, cylindrical, sinuous receptacles spaced by more than 4 diameters; receptacles bent 3 times; terminal part of receptacles bent mesad; pore glands distinct.

NOTE. Receptacles are encapsulated in a substance that could not be dissolved in KOH.

Male. Unknown.

DISTRIBUTION. Known only from the type locality in Lorestan Province, southwestern Iran (Map 2).



Figs 22–25. Dorsal view of endogynes of *Zaitunia zagrosica* sp.n. (22), *Z. darreshurii* sp.n. (23), *Z. persica* (24, holotype) and *Z. akhanii* (25, holotype).

Рис. 22–25. Эндогина *Zaitunia zagrosica* sp.n. (22), *Z. darreshurii* sp.n. (23), *Z. persica* (24, holotype) и *Z. akhanii* (25, голотип).

Zaitunia zagrosica sp.n.

Figs 14–15, 20–21, Map 2.

TYPE MATERIAL: Holotype ♀ (MMUE, G7612.4), IRAN: *Kohgiluyeh & Boyer-Ahmad Province*: Sarasiyab, 31°03'63"N, 50°21'82"E, May 2017 (A. Hosseinpour). Paratype 1 ♀ (EMSUM), IRAN: *Kohgiluyeh & Boyer-Ahmad Province*: Baba Kalan, 30°11'42"N, 50°82'05"E, April 2017 (A. Hosseinpour).

ETYMOLOGY. The specific epithet refers to the Zagros Mts, from where the specimens were collected.

DIAGNOSIS. The new species is similar to *Z. persica* and differs from it by the larger size (carapace 2.7 long, vs. 1.41), by the thinner receptacles with a fewer number of bents (3 vs. 4) and the larger size of endogyne (cf. Figs 22 and 24). *Zaitunia zagrosica* sp.n. differs from the similar *Z. darreshurii* sp.n. by the larger size of receptacles, the smaller distance between them, and the diverging terminal parts of endogyne (vs. converging) (cf. Figs 22 and 23).

DESCRIPTION. Female (holotype). Total body length 7.3. Carapace 2.7 long, 1.95 wide. Light coloured. Carapace light brownish, with a distinct dark brown median line terminating near vestigial fovea; eye tubercle brownish black; abdomen brownish, without any distinct darker pattern (Fig. 20). Legs slightly darker than carapace (distal segments darker), with only a few spines. Calamistrum as in Fig. 21. Leg I length 10.25 (2.9, 1.0, 2.65, 2.30, 1.4). Eye sizes and interdistances: AME 0.12, ALE 0.14, PME 0.12, PLE 0.2, PME-PME 0.15.

Endogyne as in Figs 14–15, 22, with the long, sinuous, cylindrical receptacles spaced by less than 3 diameters (mesal loops); one of the receptacles bifurcated

near its tip; the terminal parts of endogyne diverging; pore glands distinct along whole receptacle.

Note. As in the previous species, the receptacles encapsulated in a substance that could not be dissolved in KOH.

Male. Unknown.

DISTRIBUTION. Known only from the type localities in Kohgiluyeh & Boyer-Ahmad Province, southwestern Iran (Map 2).

New records and data

Filistata lehtineni Marusik et Zonstein, 2014
Map 2.

F. l. Marusik, Zonstein, 2014: 202, f. 4–6, 9–10, 13–14, 17–18, 23–24, 28–30 (♂♀).

MATERIAL: 1 ♂ (ZMUI), IRAN: *Isfahan Province*: Najaf Abad, July 2015 (M. Saboohi).

REMARKS. This species is currently known from Azerbaijan and Iran (Zanjan Province) only. The current material is the southeasternmost record of the species range.

Zaitunia akhanii Marusik et Zamani, 2015
Figs 12–13, 25. Map 2.

MATERIAL: 1 ♀ (ZMUI), IRAN: *Isfahan Province*: Najaf Abad, July 2015 (M. Saboohi).

REMARKS. Here we present new figures of this species to show the differences with sibling species of the *persica*-group which have the sinuous receptacles. It is possible that specimen from Isfahan (the southernmost locality) may belong to a separate species. Al-

though the shape of receptacles is almost identical to that of the holotype, the specimen from Isfahan province has a somewhat widened tip of the receptacle (cf. Figs 12–13 and 25) and more numerous pore glands. This species is currently known from Iran only. The current material represents a new provincial record for this species.

It is noteworthy that we have investigated the receptacles of some captive specimens via their exuviae for several years, and no changes in the number of sinus loops have been observed.

Acknowledgments

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