



Redescription of the poorly known crab spider *Xysticus spasskyi* (Araneae: Thomisidae)

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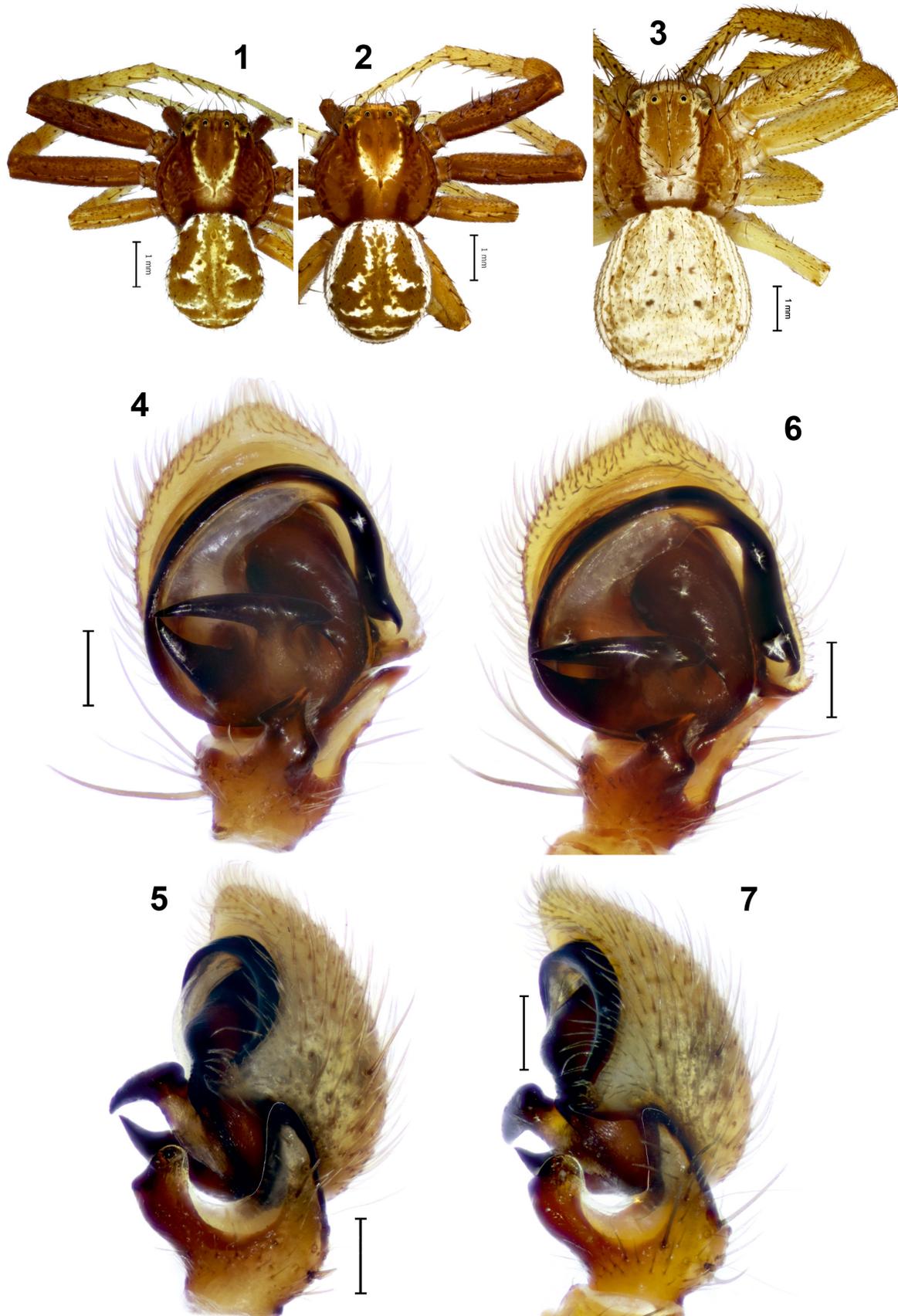
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With 372 species, *Xysticus* C.L. Koch, 1835 is the largest genus in the family Thomisidae (WSC 2016). As with other speciose genera, the genus has never been revised on a global scale and is only thoroughly known in a few parts of the Holarctic, namely Central and Northern Europe, North America, Israel and Japan. Over 200 species are known from one/two taxonomic references only, or from a single illustrated description/redescription (WSC 2016). The fact that 40% of species are known from only one sex (104 females and 54 males) or from juveniles (8 species) (WSC 2016) suggests that *Xysticus* requires revision. During a study of crab spiders of the Caucasus, we experienced difficulties in identifying *Xysticus spasskyi* Utochkin, 1968 due to the lack of detailed figures of the male palp and female epigyne. This species was based on the holotype female collected from an unspecified locality in the coastal part of modern Krasnodar Province (Utochkin 1968). The male of *X. spasskyi* was described as *X. umbrinus* Utochkin, 1968 from Kuban' Region (currently Krasnodar Province). The two species were synonymised by Ovtsharenko (1979). Besides Krasnodar Province, the species has been reported from North Ossetia (Ponomarev & Komarov 2013) and South Ossetia (Ponomarev & Komarov 2015), Georgia, Azerbaijan and the Crimea (Mikhailov 2013; Otto 2015). The illustrations in the descriptions of Utochkin (1968) and Ovtsharenko (1979), are either very small, schematic or provide no diagnostic details. The endogyne (=vulva) of this species has never been illustrated. Here we redescribe this species and compare distant populations.

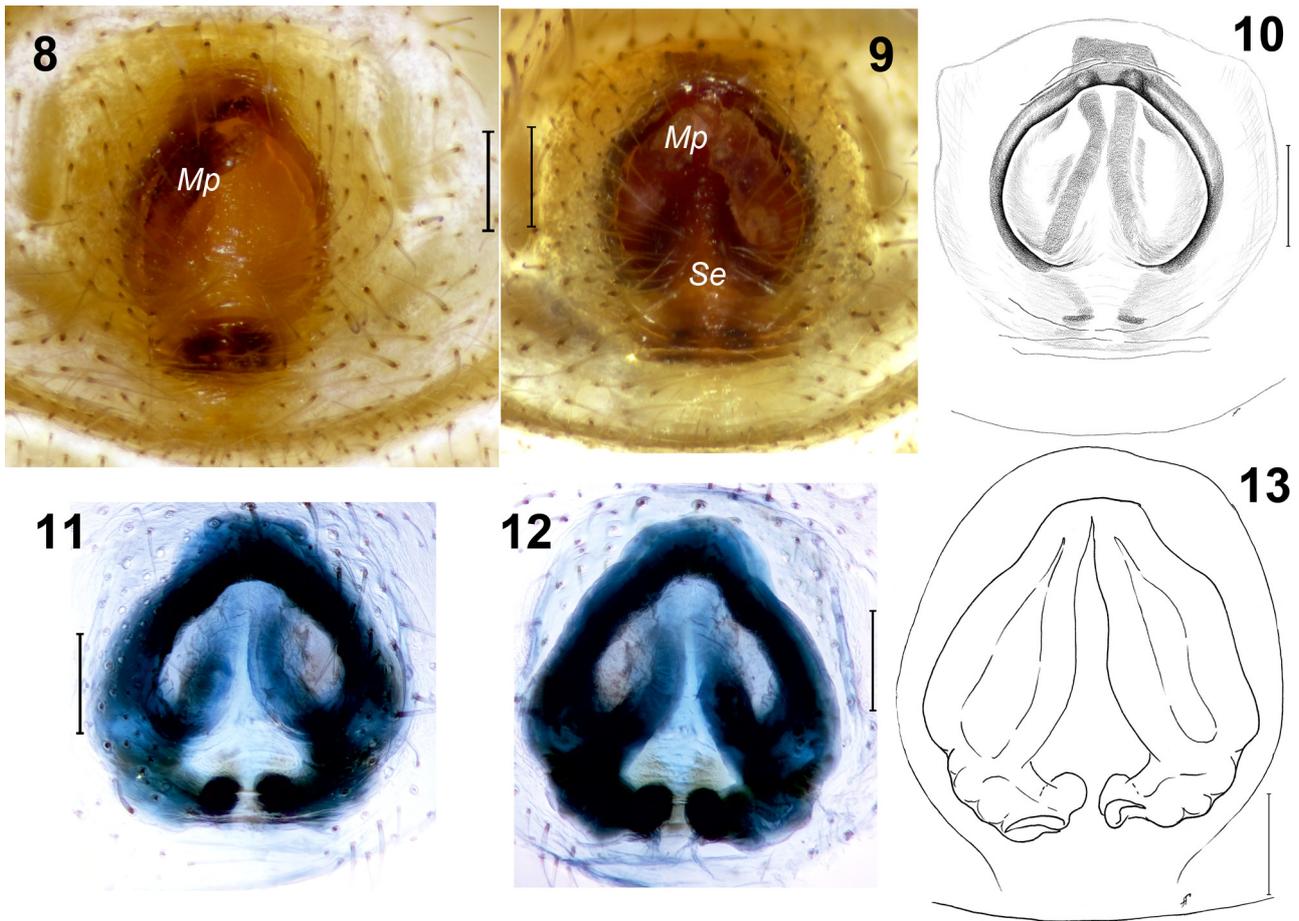
Specimens were photographed using a Canon 70D camera attached to an Olympus SZX16 stereomicroscope and a JEOL JSM-5200 Scanning Electron Microscope at the Zoological Museum, University of Turku. Digital images were prepared using Zerene Stacker image stacking software (<http://zerenesystems.com/cms/stacker>). All measurements are given in millimetres (mm). The epigyne was macerated with NaOH aqueous solution. The distribution was mapped using the online mapping software SimpleMappr (Shorthouse 2010) with slight modifications.

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Abbreviations used in text and tables: d dorsal, Fe femur, Mt metatarsus, Pa patella, p prolateral, r retrolateral, Ta tarsus, Ti tibia, v ventral. Ventral tibial and metatarsal spines are not paired, and first we indicate number of pro- and then retrolateral spines. Museum abbreviations: PSU Department of Invertebrate Zoology and Aquatic Ecology of the Perm State University (Perm, Russia) and ZMMU Zoological Museum of the Moscow State University (Moscow, Russia).



FIGURES 1–7. Habitus and male palp of *Xysticus spasskyi*. 1–3 Habitus dorsal (1–2 male, 3 female); 4–7 Male palp (4, 6 ventral, 5, 7 retrolateral). 1–3, 6–7 specimens from Crimea; 4–5 specimens from Northern Ossetia. Scale = 0.2 mm if not otherwise indicated.



FIGURES 8–13. Epigyne of *Xysticus spasskyi*, specimens from the Crimea. 8–10 intact epigyne, ventral; 11 after maceration, ventral; 12–13 after maceration, dorsal. Scale = 0.2 mm. Abbreviations: *Mp* mating plug; *Se* septum.

Xysticus spasskyi Utochkin, 1968

Figs 1–22

Xysticus spasskyi Utochkin, 1968: 35, figs 79–80 (♀). Ovtsharenko 1979: 40, fig. 21 (♂, synonymy with *X. umbrinus*).

Xysticus umbrinus Utochkin 1968: 25, figs 27–29 (♂). Mcheidze 1997: 157, figs 264–266 (♂).

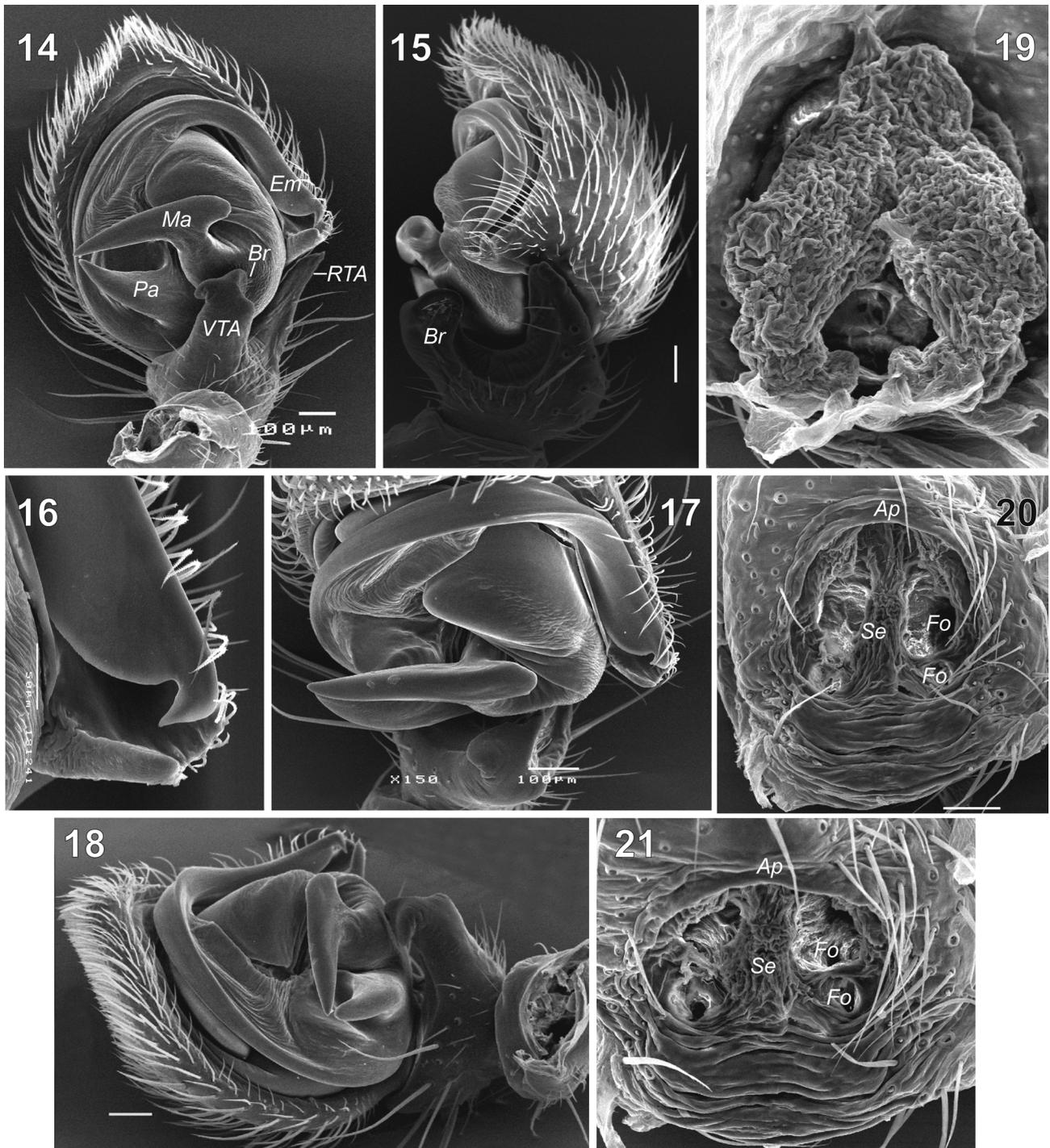
Type material. Holotype of *X. spasskyi*: female, **RUSSIA, Krasnodar Province** [“Chernomorskaya Gouvern”], 1300 m, 12 July 1913, Nasonov (PSU, “Zool. In-t 367–913”, examined). Holotype of *X. umbrinus*: male, **RUSSIA, Krasnodar Province** [“Caucasus, Kuban' Area”], 1915, N. Bogdanov-Kat'kov (PSU, “Zool. In-t 405-929”, examined).

Other material examined. **THE CRIMEA:** 2♂ 2♀, near Yalta, *Pinus pallasiana* forest, ca. 400 m, 44°31'N, 34°14'E, pitfall traps, 25 June–2 July 2000, M.M. Kovblyuk (ZMMU). **RUSSIA: North Ossetia:** 3♂, Ardon River basin, Kasar Canyon, Uiltsa Gorge, 6 km up from Buron Village, meadow in forest belt, 1500 m, ca. 42°43'N, 43°48'E, 31 May–23 July 1985, S.K. Alexeev (ZMMU). **AZERBAIJAN: Naxçivan Area:** 2♂ 1♀, environments of Bichenek Village, oak forest, 2000 m, 39°31.696'N 45°46.6'E, 3 June 2003, Y.M. Marusik & E. Huseynov (ZMMU); **Zagataly District:** 1♂ 1♀, Rochugel, 41°46'N, 46°36'E, 22 June 2003, N. Snegovaya & H. Aliev (ZMMU); **Ismaily District:** 1♀, Velayasi, ca. 40°57'N, 48°10'E, 27 June 2003 (N. Snegovaya & H. Aliev (ZMMU).

Note. Holotypes of *X. spasskyi* or *X. umbrinus* are mentioned by Utochkin (1968) as deposited in the collections of the Zoological Institute of the Russian Academy of Sciences, however they are kept in the Perm State University where Utochkin was working. Although the name *X. umbrinus* has a page priority over *X. spasskyi*, Ovtsharenko (1979) gave priority to the latter name without any explanation, but probably because *spasskyi* is a patronym.

Diagnosis. *Xysticus spasskyi* resembles *X. austrosibiricus* Logunov et Marusik, 1998 (Logunov & Marusik 1998: figs 3–4, 9–10). Males of the two species differ in the shape of median tegular apophysis and embolus. In both *X. spasskyi* and *X. austrosibiricus* the median tegular apophysis is wider than the lateral apophysis but in the former species it is oriented at exactly at 90° to the long axis of the palp whereas in *X. austrosibiricus* it is directed in a slightly posterior

direction at an angle of approximately 45° to the long axis of the palp (Logunov & Marusik 1998: fig. 3). The embolic tip in *X. spasskyi* is modified (widened, Figs 4, 6, 14, 16–17), but not in *X. austrosibiricus*. The males differ also in the shape of the retrolateral apophysis tip, which is blunt in *X. spasskyi* and sharply pointed in *X. austrosibiricus*. The epigynes of the two species differ in the shape of the atrium which is subtriangular with an apical pocket and a well developed septum in *X. spasskyi* (Figs 8–11) and subrectangular with a pair of apical pockets and a short septum in *X. austrosibiricus* (Logunov & Marusik 1998: f. 9). The endogynes (vulvae) of two species are very similar and differ in the position of receptacles which converge anteriorly in *X. spasskyi* and are subparallel in *X. austrosibiricus*.



FIGURES 14–21. *Xysticus spasskyi*, specimens from the Crimea. 14–15, 17–18 Male palp (14 ventral, 15 retrolateral, 17 anterior, 18 ventro-prolateral); 16 tip of embolus and tutaculum, ventral; 19–21 Epigyne (19 after maceration, dorsal, 20 after maceration, ventral; 21 anterior-ventral). Scale = 0.1 mm. Abbreviations: *Ap* anterior pocket; *Br* brush of hairs; *Em* embolus, *Fo* fovea (pit); *Ma* median tegular apophysis; *Pa* prolateral tegular apophysis; *RTA* retrolateral tibial apophysis; *Se* septum; *VTA* ventral tibial apophysis.

Description. Male (from Crimea): Total length 4.9. Carapace 2.7 long, 2.65 wide. Colour and pattern as shown on Figs 1–2, pattern slightly variable on carapace and abdomen. Legs yellow except femora and patellae; femora and patellae I–II brown, femora and patellae III–IV light brown. Leg measurements and spination as in Tables 1 and 2.

TABLE 1. Leg measurements ♂/♀ (specimens from Crimea).

	Fe	Pa	Ti	Mt	Ta	Total
I	2.75/3.25	1.15/1.75	2.0/2.25	2.1/1.95	1.1/1.15	9.1/10.35
II	2.75/3.25	1.15/1.75	2.0/2.25	2.05/1.95	0.85/1.1	8.8/10.3
III	1.95/2.25	0.9/1.2	1.25/1.4	1.2/1.15	0.75/0.8	6.05/6.8
IV	2.05/2.25	0.85/1.0	1.35/1.55	1.3/1.4	0.75/1.85	6.3/8.05

TABLE 2. Male leg spination (specimen from Crimea).

	Fe	Pa	Ti	Mt
I	d4 p10	p1 r1 v0-1	p3 r3 v4-4	p2 r2 v4-3
II	d5 p1	p1 r1 v0-1	p3 3r v4-4	p2 r2 v4-3
III	d4	p1 r1	1d p2 r2 v3-3	p2 r2 v2-2
IV	d5	p1 r1	2d p2 r2 v3-3	p2 r2 v2-2

Palp as in Figs 4–7, 14–18; tibia with 2 apophyses, ventral (*VTA*) and retrolateral (*RTA*); ventral apophysis with brush of short setae (*Br*) on the tip; *RTA* longer than *VTA*, with blunt (not sharply pointed tip). Tegulum with 2 apophyses, massive, hack-like median apophysis (*Ma*) and claw-like prolateral apophysis (*Pa*). Embolus massive, thick, with modified tip (flattened with claw like extension).

Female (from Crimea): Total length 6.75 long, Carapace 3.5 long, 3.4 wide. Colouration and pattern as in Fig. 3; carapace with distinct and abdomen with indistinct pattern; legs uniformly yellow. Leg measurements and spination as in Tables 1 and 3.

TABLE 3. Female leg spination (specimen from Crimea).

	Fe	Ti	Mt
I	p3	p4 r1 v8-6	p3 r2 v5-5
II	d2	p4 r1 v6-6	p3 r2 v5-5
III	d2	d1 p2 r1 v3-3	p3 r3 v2-2
IV	d2	d2 p2 r2 v3-0	p3 r3 v2-2

Epigyne as in Figs 8–13, 19–21; with large egg-shaped atrium, atrium with distinct borders and large septum (*Se*) occupying posterior part, anterior part with one pocket (*Ap*); atrium with 2 pairs of fovea (pits) visible in SEM micrographs but not in light microscopy; receptacles weakly sclerotized, long, fused in anterior part; copulatory ducts indistinct.

Remarks. The male palps from different populations do not vary in their sizes (cf. Figs 4–7), although there are some minor differences in the shape of the embolic tip.

All four intact epigynes examined contained mating plugs. All plugs seemed to be formed by a secretion produced by females. This is the first report of such plugs in the Coriarachninae. Uhl *et al.* (2010) reported on the mating plugs in two members of the subfamily, *Ozyptila claveata* (Walckenaer, 1837) and "*Xysticus* spp., *lanio*" only. In the former species the plug was formed by a part of the palp, and in the latter species it was of unclear origin.

Distribution. The World Spider Catalogue (WSC 2016) lists the distribution of this species as Russia, although it has also been reported from Georgia, Azerbaijan and the Crimea (Fig. 22) (Mikhailov 2013; Otto 2015).



FIGURE 22. Distribution records of *Xysticus spasskyi*.

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