

## Revalidation of *Xysticus tuberosus* Thorell, 1875 (Aranei: Thomisidae) with notes on the related species

### Восстановление валидности *Xysticus tuberosus* Thorell, 1875 (Aranei: Thomisidae) с заметками о близких видах

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KEY WORDS: *Xysticus*, *Ozyptila*, Caucasus, Southeastern Europe, Middle Asia, Central Asia, new combination.

КЛЮЧЕВЫЕ СЛОВА: *Xysticus*, *Ozyptila*, Кавказ, Юго-восточная Европа, Средняя Азия, Центральная Азия, новая комбинация.

ABSTRACT. Revision of the types of *Xysticus lugubris* Kroneberg, 1875 (now considered in *Ozyptila*) and *X. tuberosus* Thorell, 1875, thought to be a junior synonym of *X. lugubris*, and a study of recently collected material reveals that two names are not synonyms. A new combination, *Ozyptila tuberosa* comb.n., is suggested for *X. tuberosus*. Males of two species show clear differences in the shape of the embolus tip, although females are indistinguishable. Both species are illustrated and their copulatory organs are described. In addition, we illustrate *Ozyptila inaequalis* (Kulczyński, 1901), a species closely related to both *O. lugubris* and *O. tuberosa*. All these three species are not related to the types species of both *Ozyptila* and *Xysticus* and deserve the status of a separate genus.

How to cite this paper: Marusik Yu.M., Mikhailov K.G. 2021. Revalidation of *Xysticus tuberosus* Thorell, 1875 (Aranei: Thomisidae) with notes on the related species // Arthropoda Selecta. Vol.30. No.1. P.119–124. doi: 10.15298/arthscl.30.1.11

РЕЗЮМЕ. Ревизия типовых экземпляров *Xysticus lugubris* Kroneberg, 1875 (ныне в роде *Ozyptila*) и *X. tuberosus* Thorell, 1875, который рассматривали как синоним предыдущего вида, и изучение недавно собранного материала показали, что эти два названия не являются синонимами. Для *X. tuberosus* предложена новая комбинация *Ozyptila tuberosa* comb.n. У самцов этих видов выявлены четкие различия в форме вершины эмболюса, тогда как самки неразличимы. Оба вида проиллюстрированы, даны описания их копулятивных органов. Дополнительно проиллюстрирован *Ozyptila inaequalis* (Kulczyński, 1901), вид, близкий к *O. lugubris* и *O. tuberosa*. Все эти три вида не род-

ственны типовым видам родов *Ozyptila* и *Xysticus* и заслуживают выделения в отдельный род.

### Introduction

Two important papers dealing with spiders from the southern regions of the Russian Empire were published in the same year: Kroneberg [1875] and Thorell [1875], in which 45 and 64 new species, respectively, were described. Therefore, it was hardly surprising that some of the species were found to be synonymous: *Micaria modesta* Kroneberg, 1875 and *M. rossica* Thorell, 1875, or *Xysticus lugubris* Kroneberg, 1875 (currently considered in *Ozyptila* Simon, 1864) and *X. tuberosus* Thorell, 1875 (see WSC [2021]).

In a study of thomisid spiders from Middle Asia, Marusik & Logunov [1990] illustrated two types of the *Ozyptila lugubris* male palp. Specimens from the western part of Kazakhtsan showed the embolus bent near the tip, while material from the eastern regions had a straight embolus.

Recently, we have got the opportunity to revise the types of both species to find out that their males differ in embolus structure, while females have indistinguishable epigynes. The objective of this paper is to revalidate *X. tuberosus*, providing a new combination, to demonstrate the differences between the sibling species, as well as to briefly discuss their assignments.

### Material and methods

Specimens were photographed using an Olympus Camera E-520 camera attached to an Olympus SZX16 stereo microscope. Scanning electron micrographs were taken with a SEM JEOL JSM-5200 scanning electron microscope at

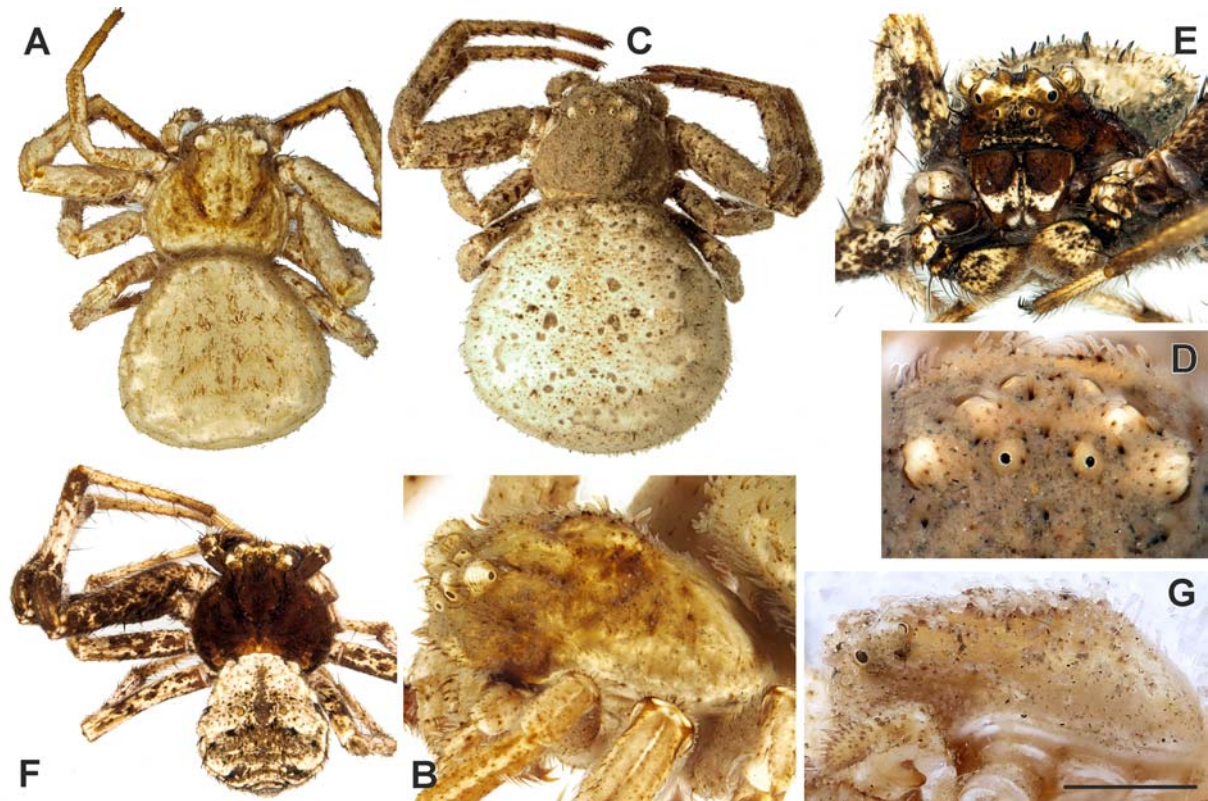


Fig. 1. Somatic characters of *Ozyptila tuberosa* (A–B — paralectotype ♀, E–F — ♂, Zhanybek), *O. lugubris* (C–D, ♀, Almaty Area) and *O. inaequalis* (G, ♀, China).

A, C — female habitus, dorsal; B, G — female prosoma, lateral; D — female carapace covered with sand grains; E–F — male habitus, frontal and dorsal. G — courtesy Yejie Lin & Shuqiang Li.

Рис. 1. Соматические признаки *Ozyptila tuberosa* (A–B — паралектотип ♀, E–F — ♂, Джаныбек), *O. lugubris* (C–D, ♀, Алматинская область) and *O. inaequalis* (G, ♀, Китай).

A, C — внешний вид самки, дорсально; B, G — головогрудь самки, латерально; D — карапакс самки, покрытый песчинками; E–F — внешний вид самца, спереди и дорсально. G — любезно предоставлено Yejie Lin и Shuqiang Li.

the Zoological Museum of the University of Turku, Finland. Digital images were prepared using CombineZP image stacking software. Geographical names in Central Asia are spelled like in the labels. Depositories: ISEA — Institute for the Ecology and Systematics of Animals (Novosibirsk, Russia); NRS — Naturhistoriska Riksmuseet (Stockholm, Sweden); TNU — Taurian National University (Simferopol, Crimea); ZMMU — Zoological Museum of the Moscow State University (Moscow, Russia); ZMUH — Zoological Museum of University of Helsinki (Finland);

## Taxonomic survey

### *Ozyptila lugubris* (Kroneberg, 1875) Figs 1C–D, 2F, 3A–C.

*Xysticus lugubris* Kroneberg, 1875: 35, pl. 3, f. 23a–f (♂♀).

*Oxyptila lugubris*: Simon, 1889: 381 (transferred to *Ozyptila*).

*Ozyptila lugubris*: Utochkin, 1960: 49, f. 1–3 (♂♀).

"*Ozyptila*" *lugubris*: Marusik, Logunov, 1990: 51, f. 52–53, 55–56 (♂♀, figs 50–51, 54 refer to *O. tuberosa*).

*Ozyptila lugubris*: Mcheidze, 1997: 139, f. 216–217 (♂ not ♀, ♂ figure seems copy from Utochkin [1960]).

Non *Oxyptila lugubris*: Kulczyński, 1901: 316 (synonymized with *X. tuberosus*).

TYPES: Holotype ♀ with the museum number (ZMMU Ta-1300) and label 'Туркестанская Учёная Экспедиция Императорского Общества Любителей Естественной Истории. [А.П.] Федченко. Самарканд' (Turkestan Scientific Expedition by the Imperial Society for Friends of Natural Sciences. A.P. Fedchenko, Samarkand). Other material from Sarepta mentioned in the text of the original description is absent from the ZMMU collection, possibly lost or handed over to NHRS, but not listed there as a "sp.n." (see below, under *O. tuberosa*).

OTHER MATERIAL EXAMINED: KAZAKHSTAN: 2 ♂♂ (ISEA), *Jambyl* Area, environs of Furmanovka, 16.IX.1983 (Ch.K. Tarabaev, Yu.M. Marusik). 2 ♂♂ (ISEA), *Almaty* Area, Balkhash Distr., N of Bakanas, 15.IX.1989 (S.I. Ibraev); 2 ♂♂ (ISEA), Panfilov Distr., 40 km SW of Panfilov Town, Kumkala Desert, 8.X.1989 (S.I. Ibraev, A.A. Zyuzin); 6 ♂♂, 6 ♀♀ (ISEA), Panfilov Distr., Kurnkala Clay Desert, 7.X.1989 (A.A. Zyuzin). TURKMENISTAN: 1 ♂ (ZMMU), environs of Ashgabad, Berzengi (37°51'N 58°21'E), 25.XI.–I.XII.1980 (G.T. Kuznetsov).

NOTE. The original species description is based on a female specimen from Samarkand, collected by A.P. Fedchenko [Kroneberg, 1875: 35] and additional specimens of both sexes from Sarepta, collected by A. Becker (his female specimens were also used as syntypes of *X. tuberosus*). It is noteworthy that the figure of the male palp of *X. lugubris* presented by Kroneberg agreed well with the specimens known from the central and eastern parts of Middle Asia, although he had male specimen from Saratov (that should



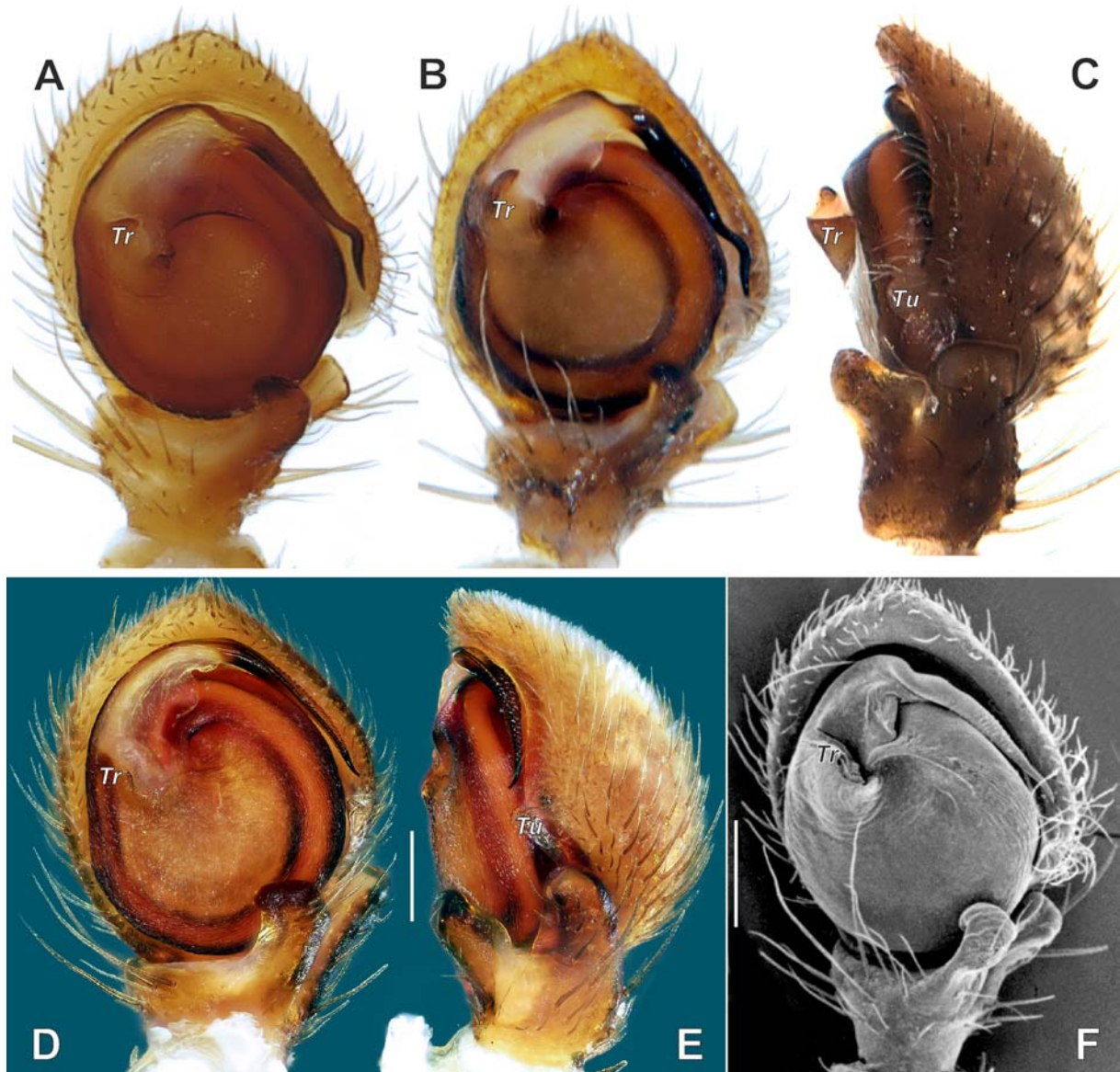


Fig. 2. Male palp of *Ozyptila tuberosa* (A — lectotype ♂, B–C — from Zhanybek), *O. inaequalis* (D–E) and *O. lugubris* (F, Almaty Area).

A–B, D, F — ventral; C, E — retrolateral. D–E — courtesy by Yejie Lin & Shuqiang Li; F — courtesy by Pekka Lehtinen. Abbreviations: *Tr* — tegular ridge; *Tu* — tutaculum. Scale = 0.2 mm if indicated.

Рис. 2. Пальпа самца *Ozyptila tuberosa* (A — лектотип ♂, B–C — из Джаныбека), *O. inaequalis* (D–E) и *O. lugubris* (F, Алматинская область).

A–B, D, F — вентрально; C, E — ретролатерально. D–E — любезно предоставлено Yejie Lin и Shuqiang Li; F — любезно предоставлено Pekka Lehtinen. Сокращения: *Tr* — тегулярный гребень; *Tu* — тутакulum. Масштаб 0,2 мм, если указан.

belongs to *X. tuberosus*). Most likely, Kroneberg overlooked the small turn of the embolus tip. Kulczyński [1901] provided no arguments to favour the species' transfer from *Xysticus* to *Ozyptila*. Most likely, the reason was the clavate numerous setae on the body and legs that are only known in *Ozyptila*.

**DIAGNOSIS.** The male of *O. lugubris* differs well from that of *O. tuberosa* by a straight embolus (vs. with a bent tip). Females have no distinct differences.

**DESCRIPTION.** For a somatic description, see Kroneberg [1875] and Marusik & Logunov [1990]. Kroneberg

[1875] did not mention that the female abdomen was covered with sand grains.

Male palp with 2 tibial apophyses, both abrupt, not tapering; cymbium 1.2 times longer than wide, with a distinct and non-pointed tutaculum (*Tu*) in about a 4 o'clock position; tegulum lacking apophyses; tegular ridge located in a 10 o'clock position; pars pendula almost as wide as long (length/width ratio, 1.2); embolus originating in an almost 12 o'clock position (ca. 11:45), straight, gradually tapering, with fine transverse ridges.

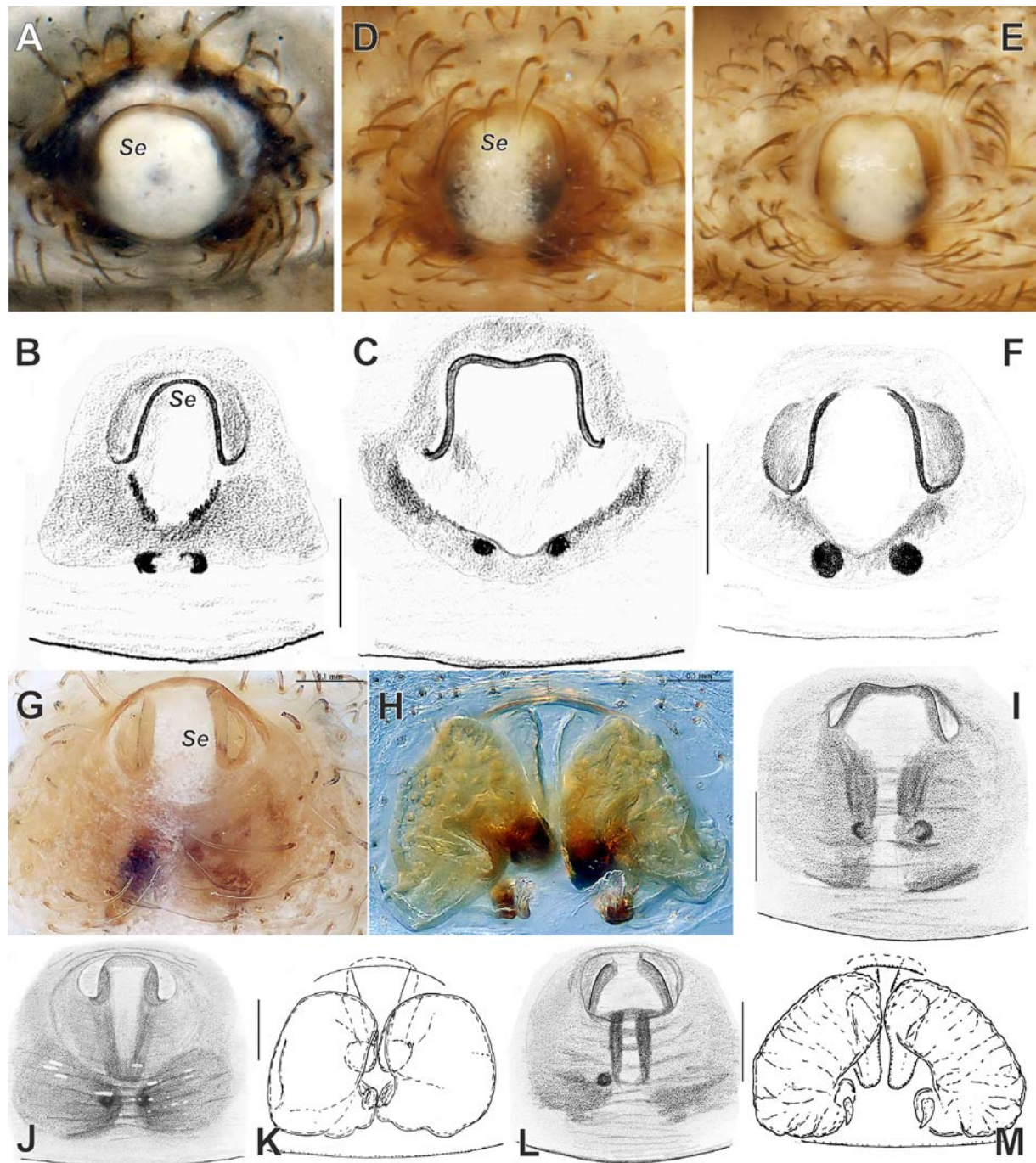


Fig. 3. Epigyne of *Ozyptila lugubris* (A–C), *O. tuberosa* (D–F) and *O. inaequalis* (G–M).

A–G, I, J, L — ventral; H, K, M — dorsal. A–C, I, M — from Almaty Area; D–E — paralectotypes; G–H — from Shanxi; F — from Ustyurt; J, K — from Chimkent Area. G–H — courtesy by Yejie Lin & Shuqiang Li; A–C — after Marusik & Logunov [1990]; I–M — after Marusik & Logunov [1995]. Abbreviation: *Se* — septum. Scale = 0.2 mm if not otherwise indicated.

Рис. 3. Эпигина *Ozyptila lugubris* (A–C), *O. tuberosa* (D–F) и *O. inaequalis* (G–M).

A–G, I, J, L — вентрально; H, K, M — дорсально. A–C, I, M — из Алматинской области; D–E — паралектотипы; G–H — из Шаньси; F — с Устыурта; J, K — из Чимкентской области. G–H — любезно предоставлено Yejie Lin и Shuqiang Li; A–C — по Marusik & Logunov [1990]; I–M — по Marusik & Logunov [1995]. Сокращение: *Se* — септум. Масштаб 0,2 мм, если не указано иное.



Epigyne with a septum raised over epigynal plate, rounded or abrupt anteriorly, slightly longer than wide; copulatory opening located on lateral sides of septum. Endogyne not studied.

**DISTRIBUTION.** This species seems to range from South Kazakhstan to northern Iran, in West Kazakhstan being replaced with *O. tuberosa*. We checked the figures of the male recorded as *O. lugubris* from South Khorasan [Zamani *et al.*, 2014] and found out that it had the same embolus as that from the Jambyl *O. lugubris*

*Ozyptila tuberosa* (Thorell, 1875), **comb.n.**,  
**sp.revalid.**

Figs 1A–B, E–F, 2A–C, 3D–F.

*Xysticus tuberosus* Thorell, 1875a: 88 (♂♀).

*Xysticus tuberosus*: Thorell, 1875b: 128 (♂♀).

*Ozyptila lugubris*: Kulczyński, 1901: 316 (synonymized with *X. tuberosus*).

“*Ozyptila lugubris*: Marusik, Logunov, 1990: 51, figs 50–51, 54 (♂♀, figs 52–53, 55–56 refer to *O. lugubris*).

*Ozyptila lugubris* Demir, Seyyar, 2020: 228, f. 2A–B (♂, misidentification).

**TYPES:** Lectotype ♂ (designated herewith) and paralectotypes: 3 ♀♀, 5 juveniles, labeled “Sarepta, Orianda, Sympheropol 1861, A. Becker” (Ent. etiketti 261), ZMUH. Paralectotypes: 1 ♂, 2 ♀♀, labeled “Rossia merid.” (A. v. Nordmann) in NHRS (Collectio Thorell 201/1144a); 1 ♀ from Sarepta in NHRS (Collectio Thorell 201/1144b).

**OTHER MATERIAL EXAMINED:** CRIMEA: 2 ♂♂ (TNU-1582/4 & TNU-1582/4), Saki Distr., near Pribrezhnaya Railway Station (45°09′N 33°30′E, wet salina and steppe, 27.08.–21.09.2000 (M.M. Kovblyuk). KAZAKHSTAN: *WestKazakhstan* Area, 4 ♂♂ (ZMMU), Zhanybek Field Station, 2–20.IX.1982 (K.G. Mikhailov); 1 ♂, 1 ♀ (ISEA), *Mangyshlak* Area, Yeraliyev Distr., Novyi Uzen’ Town, 11.V.1989 (A.A. Raikhanov, S.I. Ibraev, A.A. Zyuzin); 9 ♂♂, 2 ♀♀ (ISEA), Yeraliyev Distr., Ust’yurt Plateau, Ust’yurt Nature Reserve, Baskargan Camp, 25.V.1989 (A.A. Raikhanov, S.I. Ibraev).

**COMMENTS.** Revision of the syntypes of *Xysticus tuberosus* and the material from Middle Asia identified as *Ozyptila lugubris* reveals that they are not conspecific, as it was erroneously treated by several authors [Kulczyński, 1901; Charitonov, 1932; Marusik, Logunov, 1990; Mikhailov, 2013; WSC, 2021]. Kulczyński [1901] synonymized the two names without comments. He indicated that he had studied the female from Saratov. Most probably, part of the *O. lugubris* original type series (from Sarepta; not labelled as “sp.n.” = not indicated as types) which is kept in NHRS belongs to *O. tuberosa*.

**DIAGNOSIS.** Males of both sibling species, *O. tuberosa* and *O. lugubris*, differ by the shapes of the embolus tip (bent, vs. straight, cf. Figs. 2A–B and 2F) and retroventral tibial apophysis. Females of these closely related species are indistinguishable.

**DESCRIPTION.** For a somatic description, see Thorell [1875a, b] and Marusik & Logunov [1990].

Male palp with 2 tibial apophyses, both abrupt, non-tapering; cymbium 1.2 times longer than wide, with a distinct and not pointed tutaculum (*Ti*) in about a 4 o’clock position; tegulum lacking apophyses; tegular ridge located in a 10 o’clock position; pars pendula almost as wide as long (length/width ratio, 1.2); embolus originating in a 12 o’clock position, straight, gradually tapering, bent in terminal ¼, covered with fine transverse ridges.

Epigyne with a septum raised over epigynal plate, rounded or abrupt anteriorly, slightly longer than wide; copulatory

opening located on lateral sides of septum. Endogyne not studied.

**DISTRIBUTION.** The species seems to range from Crimea to the Ustyurt Plateau, and south to Turkey. Records of *O. lugubris* from the Caucasus (Dagestan, Georgia and Azerbaijan) [Otto, 2021] most probably refer to this species. Based on the figures of *O. lugubris* reported from Turkey [Demir, Seyyar, 2020], the samples undoubtedly belong to *O. tuberosa*. A single record from the environs of Varna, Bulgaria by Drensky [1936] cannot be verified in the lack of figures. If that was no misidentification, this record should belong to *O. tuberosa*.

## Discussion

Both species considered in the paper, *O. lugubris* and *O. tuberosa*, are close to each other and differ from the type species of *Xysticus* C.L. Koch, 1835 (*Aranea audax* Schrank, 1803) or *Ozyptila* Simon, 1864 (*Thomisus claveatus* Walckenaer, 1837) by the shape of the copulatory organs. From all other genera of Coriariachninae, they differ by the female carapace and abdomen being covered with sand grains (a character unknown in other genera) and a raised cephalic part (vs. non-elevated). Establishing a new genus for *O. lugubris* was proposed by V.Ya. Fet (in litt.) back in the 1980’s. Since the 1990’s, some papers referred to the name “*Ozyptila*” for *O. lugubris* in quotation marks. There is one more species, *O. inaequalis* (Kulczyński, 1901), related to both *O. tuberosa* and *O. lugubris*. It was described based on the holotype female from “Khalgan” (= Kalgan, currently Zhangjiakou), China. It is known range from Eastern Kazakhstan [Marusik, Logunov, 1995] to Hebei [Li, Lin, 2016]. Since the male palp of this species has never been properly illustrated, we do so here and also provide the first digital photographs of the epigyne. The specimens illustrated in Figs 1G, 2D–E, 3G–M are from China, Shanxi, 4.IX.1980 (IZCAS-Ar.1812). The epigynes of specimens from the Almaty Area (Fig. 3I, M) agree well with those from China and have spaced fertilization ducts, while the female from Chimkent shows fertilization ducts touching each other (Fig. 3J–K). This may indicate that they belong to different species.

**Acknowledgments.** We thank Shuqiang Li and Yejie Lin (Beijing, China) for supplying us with figures of *O. inaequalis*, Mykola M. Kovblyuk (Simferopol) and Alexander V. Ponomarev (Rostov-on-Don) for information about the distribution records and material of *O. tuberosa* in Crimea and the northern Caucasus. Omid Mirshamsi (Mashhad, Iran), Seppo Koponen (Turku, Finland) and Torbjörn Kronstedt (Stockholm, Sweden) for the help in getting access to the syntype series of “*Xysticus tuberosus*”. We also thanks Mikhail M. Omelko (Vladivostok, Russia) for reviewing our manuscript. The English of the final draft was kindly edited by Sergei Golovatch (Moscow). The work of the second author (KM) is supported by MSU Zoological Museum State Program.

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Responsible editor S. Koponen