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On three dubious *Thanatus* species described by Władisław Kulczyński from Siberia (Aranei: Philodromidae)

О трёх малоизученных видах пауков рода *Thanatus* описанных Владиславом Кульчинским из Сибири (Aranei: Philodromidae)

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КЛЮЧЕВЫЕ СЛОВА: Araneae, Азия, лектотип, новый синоним, паук, синтип.

ABSTRACT. The types of three species of *Thanatus* C.L. Koch, 1837 with uncertain taxonomic status, described by Władisław Kulczyński from Siberia, have been studied and all three names are synonymized: *Thanatus mediocris* Kulczyński, 1908 syn.n. from NE Yakutia = *T. arcticus* Thorell, 1872, *T. nigromaculatus* Kulczyński, 1885 syn.n. from Kamchatka = *T. formicinus* (Clerck, 1757) and *T. sibiricus* Kulczyński, 1901 syn.n. from West Siberia = *T. sabulosus* (Menge, 1875). The holotype female of *T. nigromaculatus* is illustrated. A lectotype females are designated for *T. mediocris* and *T. sibiricus*.

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РЕЗЮМЕ. Переизучены типы трёх малоизвестных видов пауков рода *Thanatus* C.L. Koch, 1837, описанных Владиславом Кульчинским из Сибири. Все три вида синонимизированы: *Thanatus mediocris* Kulczyński, 1908 syn.n. из Северовосточной Якутии = *T. arcticus* Thorell, 1872, *T. nigromaculatus* Kulczyński, 1885 syn.n. из Камчатки = *T. formicinus* (Clerck, 1757) и *T. sibiricus* Kulczyński, 1901 syn.n. из юга Западной Сибири = *T. sabulosus* (Menge, 1875). Голотип-самка *T. nigromaculatus* проиллюстрирована. Самки были выделены как лектотипы для *T. mediocris* и *T. sibiricus*.

Introduction

Thanatus C.L. Koch, 1837 is the second largest genus of the family with 105 valid species names, of which 6 are considered as *nomina dubia*. Most of species are known from the Holarctic and Subsaharan Africa, three species are known from Peru (and are most likely misplaced) and five species described from India are also probably misplaced [WSC, 2023]. The Holarctic species are relatively well studied, particularly those from Siberia due to a revision by Logunov [1996]. Only three species from Siberia, all described by Władisław Kulczyński, have uncertain status. In total, Kulczyński described nine species of *Thanatus*. All occur in the Palaearctic of which four species are from West Palaearctic and the rest are from Siberia. The species currently of uncertain status are: *T. mediocris* Kulczyński, 1908, *T. nigromaculatus* Kulczyński, 1885 and *T. sibiricus* Kulczyński, 1901. Types of the latter species from Western Siberia was not found [Logunov, 1996]. According to Logunov [1996] *T. mediocris* was described based on subadult females (from Yakutia) and the holotype of the *T. nigromaculatus* (from Kamchatka) is represented by female similar to those of *T. coloradensis* Keyserling, 1880 [Logunov, 1996]. The revision of Logunov [1996] was prepared when fauna of Siberia was not properly known and therefore it was hard to decide to which species the juvenile syntypes of *T. mediocris* could be assigned, or the taxonomic placement of *T. nigromaculatus*.

Recently, we got opportunity to restudy types of Kulczyński's *Thanatus* species from Eastern Siberia and also relocated the syntypes of *T. sibiricus*. The aims of this paper are to provide clarity and comments on these names.

Material and methods

Specimens were photographed using a Canon EOS 7D camera attached to an Olympus SZX16 stereomicroscope in

Figs 1–4. Syntypes of *Thanatus mediocris* and type labels. 1 — epigaster of subadult female; 2 — subadault female; 3 — original figure of epigyne (ventral) by Kulczyński [1908]; 4 — syntype labels. Scale = 0.2 mm if not otherwise indicated.

Рис. 1–4. Синтипы *Thanatus mediocris* и типовые этикетки. 1 — эпигаструм субадультной самки; 2 — субадультная самка; 3 — оригинальный рисунок эпигины у Kulczyński [1908]; 4 — этикетки синтипов. Масштаб 0,2 мм если не указано иначе.

Zoological Museum University of Turku and with a TUCSEN TrueChrome Metrics digital camera attached to a Nikon Eclipse E200 in the Department of Ecology, University of Veterinary Medicine Budapest. Digital images were montaged using CombineZP and Helicon focus 3.10 and 7.0 image stacking software and edited using CorelDraw graphic design software. The epigyne of the lectotype of *Thanatus sibiricus* was macerated with pancreatic enzyme.

Species survey

Thanatus arcticus Thorell, 1872
Figs 1–4.

Thanatus arcticus Thorell, 1872: 157 (juv.).

Thanatus mediocris Kulczyński, 1908: 66, pl. 2, f. 70 (♀). **Syn.n.**

Thanatus mediocris: Logunov, 1996: 135 (considered as *nomen dubium*).

For complete list of taxonomic references see WSC [2023].

MATERIAL EXAMINED: Syntypes 2 juveniles: "Siberia: Jakucia, nad rz Adyča, między Ulachan Sullar i uisciem 18-23VII1885 et nad rz Bytantai 30.VII.1885 leg A. Bunge et E. Toll" (Fig. 4) (=Siberia: Yakutia, on Adycha River between Ulakhan Sullar and mouth; and on Bytantai River) 222846–222847 from the from the Institute of Zoology of the Polish Academy of Sciences, examined.

COMMENTS. *Thanatus arcticus* was described based on the juvenile specimen from Disko, Greenland and it is the sole species of Philodromidae found in Greenland [Marusik *et al*., 2006]. *Thanatus mediocris* was described based on specimens from 5 localities in northeastern Yakutia. Kulczyński [1908] mentioned female and juvenile specimens that may belong to the same species. The epigyne of this species was illustrated [Kulczyński, 1908: pl. 2, f. 70]. When Kulczyński described *T. mediocris*, *T. arcticus* was only known from a very schematic figure provided by Lenz [1897].

Logunov [1996] studied the syntypes of *T. mediocris* housed in Warsaw which were found to be juveniles. He examined an adult female from the Zoological Institute in St. Petersburg labeled as *T. mediocris* from "Jana, Domulakh (Dolgulach in Kulczyński [1908]) 23.07–11.08.1885" and considered it as a misidentified specimen of *T. arcticus* and not being the type. In fact, this label matches to the label of the adult female described and depicted by Kulczyński [1908: fig. 70 on plate 2, see Fig. 4) and represents a single adult specimen among syntype series. Based on the Kulczyński's figure and the identification of the syntype as *T. arcticus* by Logunov [1996], it is safe to conclude that *T. mediocris* is a junior synonym of *T. arcticus*. The syntype of *T. mediocris* from St. Petersburg has been designated as the lectotype and corresponding label has been added by Dmitri Logunov on our request.

Thanatus formicinus (Clerck, 1757)
Figs 5–11.

Araneus formicinus Clerck, 1757: 134, pl. 6, f. 2 (♀).

Thanatus nigromaculatus Kulczyński, 1885: 49, pl. 11, f. 29 (♀). **Syn.n.**

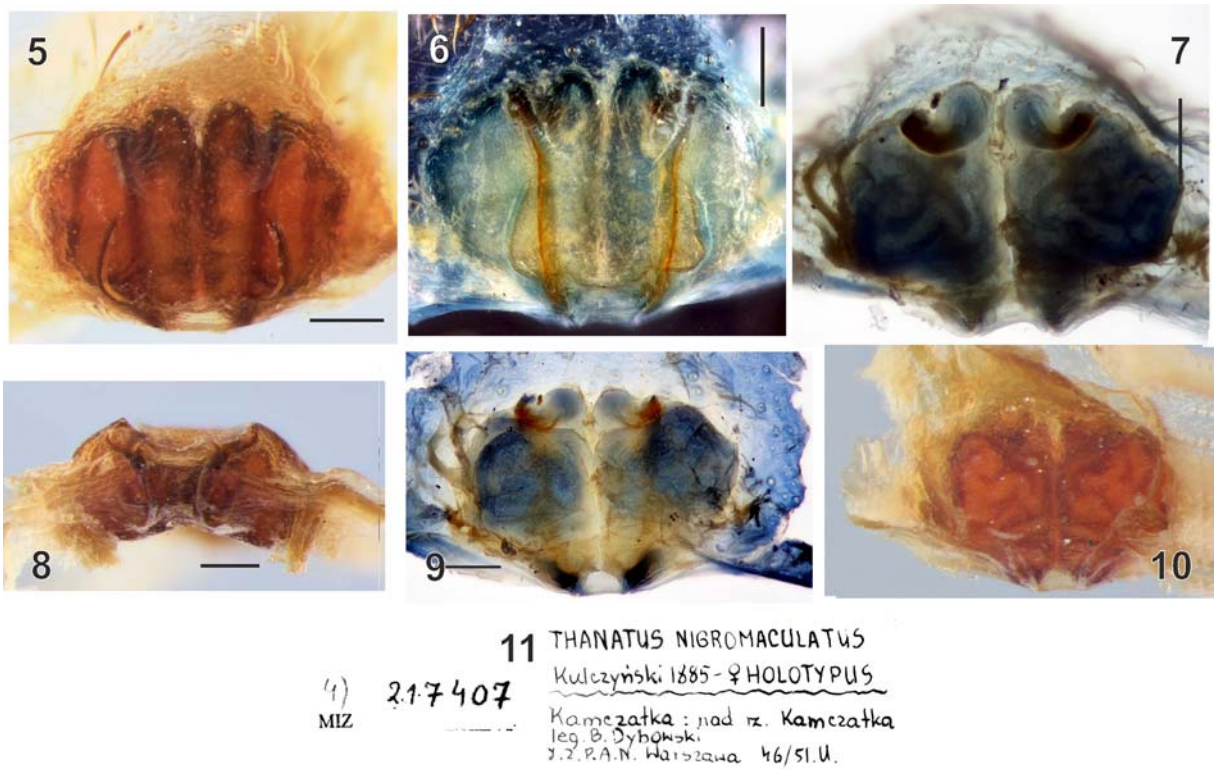
Thanatus sp.: Kulczyński, 1926: 35 (faunistic record from Kamchatka).

Thanatus nigromaculatus: Logunov, 1996: 160, f. 91–92 (♀).

For complete list of taxonomic references see WSC [2023].

MATERIAL EXAMINED: Holotype ♀ with geographical label: "Kamczatka: nad rz Kamczatka, leg. B. Dybowski" (Fig. 11) [=Kamchatka: on Kamchatka River], 217407 from the Institute of Zoology of the Polish Academy of Sciences, examined.

COMMENTS. Logunov [1996] was the first to redescribe the holotype of *T. nigromaculatus*. He compared this species with *T. coloradensis*. Re-examination of the epigyne (Figs 5–10) and comparison with figure 91 in Logunov [1996] reveals that proportions of Logunov's illustration of the epigyne are slightly different. In our opinion, the shape of epigyne and endogyne well fit to that of *T. formicinus* and therefore two names are here synonymized. It is worth mentioning that according to Mikhailov's catalog [2013, 2021] *T. formicinus* is not known from Kamchatka while it was reported by Kulczyński [1926: 35] *Thanatus* sp., exemplum non adultum., *Thanato formicino* (Clerck) simile, a *Th. nigromaculato* Kulcz. probabiliter distinctum) and by Sy-



Figs 5–11. Holotype of *Thanatus nigriventris*: epigyne and type labels. 5 — dissected epigyne, ventral; 6 — macerated epigyne, ventral; 7 — macerated epigyne, antero-dorsal; 8 — dissected epigyne, posterior; 9–10 — macerated and not macerated epigyne, dorsal; 11 type labels. Scale = 0.2 mm.

Рис. 5–11. Голотип *Thanatus nigriventris*: эпигина и типовые этикетки. 5 — отпрепарированная эпигина, снизу; 6 — мацерированная эпигина, снизу; 7 — мацерированння эпигина, антеро-дорзально; 8 — отпрепарированная эпигина, сзади; 9–10 — мацерированная и нет эпигина сверху; 11 — типовые этикетки. Масштаб 0,2 mm.

tshevskaja [1935]. This species is common is coastal parts of Magadan area [Marusik *et al*., 1992; Marusik, 2005].

Thanatus sabulosus (Menge, 1875)
Figs 12–18.

Philodromus sabulosus Menge, 1875: 411, pl. 69, f. 232 (♂♀).
Thanatus sibiricus Kulczyński, 1901: 337, pl. 13, f. 9 (♂♀).
Syn.n.
Thanatus sabulosus: Logunov, 1996: 177, f. 143–145, 153–157 (♂♀).

For complete list of taxonomic references see WSC [2023].

MATERIAL EXAMINED: Lectotype ♀ (designated here) from Minusinsk in West Siberia in HNHM ARA6005 (Fig. 11), and paralectotype ♂ lacking both palps from Zima Town (Fig. 18) HNHM ARA6007 kept in Natural History Museum in Budapest, examined.

COMMENTS. This species is known from a single taxonomic work. It was described based on a female from Minusinsk and a probable conspecific male from Zima Town [Kulczyński, 1901]. The male paralectotype is missing both palps, probably this is the reason, why Kulczyński illustrated only epigyne. This species was not revised by Logunov [1996] because the types were not found by him. Recently, we rediscovered the syntypes of this species which are stored in the Natural History Museum in Budapest. Although Kulczyński [1901] mentioned two syntypes, there are three specimens which are labeled as *Thanatus sibiricus* (Figs 17–19). One was adult female from Zima (Fig. 17), one an adult male lacking both palps (Fig. 18) and the third was juvenile from "Urga" (Fig. 19) (=Ulaanbaatar now). In Kulczyński's text specimen from Urga was mentioned as *Thanatus* sp. Study of the epigyne reveals that *T. sibiricus* should be synonymized with *T. sabulosus*, a species known in West Siberia [see Logunov, 1996]. This species has rather variable shape in the epigyne [Logunov, 1996], but it can be easily recognized due to the short lateral pockets of the fovea, more than twice as short as the receptacle length. All other species with similar receptacles have lateral pockets as long as the fovea.

Compliance with ethical standards

Conflict of interest: The authors declare that they have no conflict of interest.

Ethical approval: No ethical issues were raised during our research.

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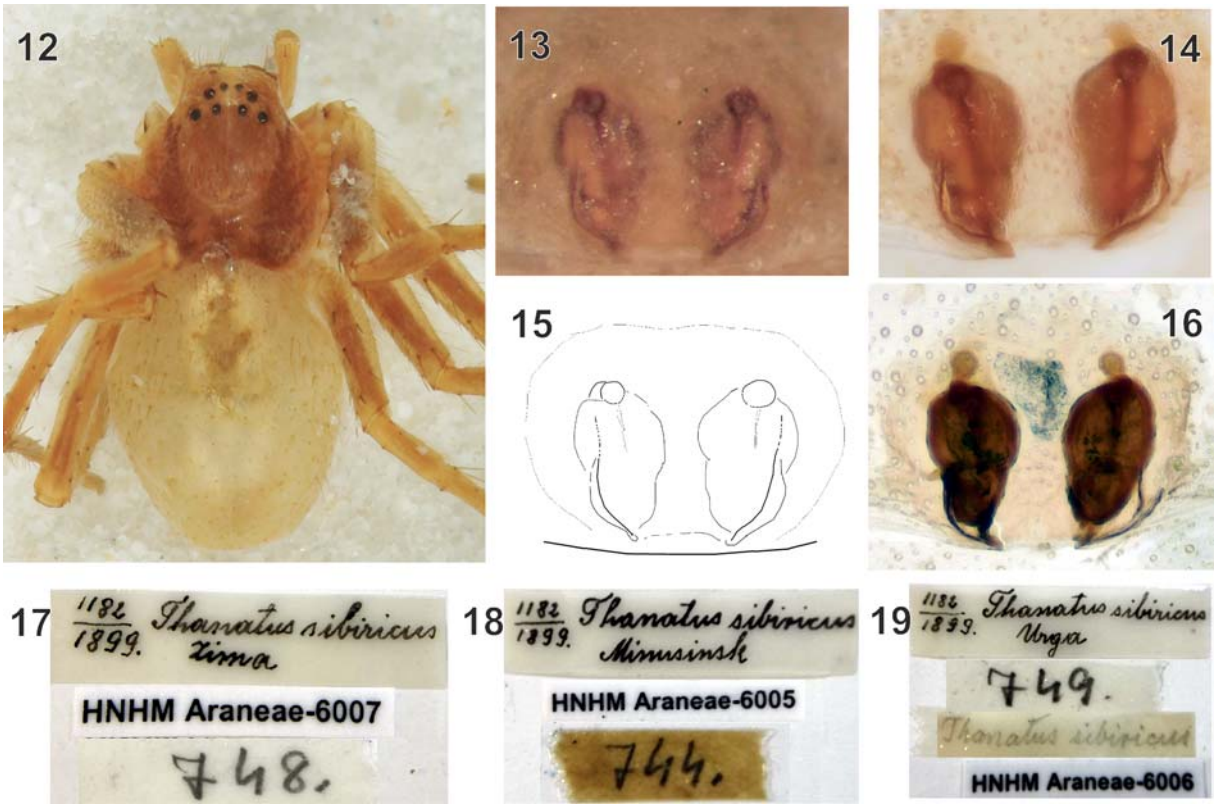

Figs 12–19. Lectotype female of *Thanatus sibiricus* and type labels. 12 — female, dorsal; 16 — intact epigyne, ventral; 17 — macerated epigyne, ventral; 15 — schematic drawing of epigyne, ventral; 16 — macerated epigyne, dorsal; 17 — labels of paralectotype male; 18 — labels of lectotype female; 19 — labels of juvenile specimen from Urga that marked as *T. sibiricus*, but was not mentioned as syntype in Kulczyński [1901].

Рис. 12–19. Самка-лектотип *Thanatus sibiricus* и типовые этикетки. 12 — самка, сверху; 16 — интактная эпигина, снизу; 17 — мацерирования эпигина, снизу; 15 — схематический рисунок эпигины, снизу; 16 — мацерирования эпигина, сверху; 17 — этикетки паралектотипы самца; 18 — этикетки лектотипа; 19 — этикетки ювенильного экземпляра из Урги маркированные как *T. sibiricus*, но не упомянутого как синтип в работе in Kulczyński [1901].

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