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Autor: Breitling, Rainer

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Linyphia bilobata Roy & al., 2015, is a junior synonym of *Chrysso scintillans* (Thorell, 1895) (Araneae: Linyphiidae, Theridiidae)

Rainer Breitling

ABSTRACT Contrib. Nat. Hist. 30: 1–7

***Linyphia bilobata* Roy, Sen, Saha & Raychaudhuri, 2015, was recently described as a newly discovered linyphiid species known only from West Bengal, India. The detailed description and figures show that *L. bilobata* is actually identical to *Chrysso scintillans* (Thorell, 1895), a widespread theridiid species of Southeast Asia (syn. nov.). The status of other *Linyphia* species described from India is examined, and the following provisional generic transfers are suggested for species currently placed in *Linyphia*: *Chrysso urbasae* (Tikader, 1970), comb. nov., *Chrysso sikkimensis* (Tikader, 1970), comb. nov., *Tylorida nicobarensis* (Tikader, 1977), comb. nov., *Lepthyphantes stramineus* (O. Pickard-Cambridge, 1885), comb. nov., and *Lepthyphantes peramplus* (O. Pickard-Cambridge, 1885), comb. nov.**

Keywords: Araneae, spiders, Linyphiidae, Theridiidae, new combinations, synonymy

Introduction

When van Helsdingen published his world-wide revision of the genus *Linyphia* Latreille, 1804, and its allies, he did not report any species of *Linyphia* from India (van Helsdingen 1969, 1970). The latest checklist for India, however, mentions 5 species in the genus, all of them considered endemic (Siliwal & al. 2005). A sixth species was recently described from West Bengal as *Linyphia bilobata* Roy, Sen, Saha & Raychaudhuri, 2015. This new addition to the list of Indian *Linyphia* species motivated a re-examination of the genus on the subcontinent.

The identity of *Linyphia bilobata*

The description of *Linyphia bilobata* by Roy & al., based on 8 female specimens, is very detailed and accompanied by excellent illustrations, including habitus drawings, details of the chelicerae, maxillae, labium and sternum, the epigyne and internal genitalia, as well as a colour photograph of the holotype female. Together, this information allows a clear identification of *L. bilobata* as being identical to *Chrysso scintillans* (Thorell, 1895) (**syn. nov.**). *C. scintillans* is a theridiid species that is widespread and common throughout Southeast Asia, with published records from Japan, China, Korea, and the Philippines (Amalin & Barrion 1990, Namkung 2002, Song & al. 1999, Yoshida 2009), in addition to the type locality in Tharawaddy, Myanmar, about 1,200 km southeast of the type locality of *L. bilobata*.

Chrysso scintillans has been described repeatedly under various names (*Physcoa scintillans* Thorell, 1895; *Argyria venusta* Yaginuma, 1957; and *Chrysso bidens* Xing, Gao & Zhu, 1994). Its rather isolated position amongst *Chrysso* species led to its repeated assignment as the type species of a new genus (*Physcoa* Thorell, 1895 and *Argyria* Yaginuma, 1957 = *Argyroaster* Yaginuma, 1960). Numerous detailed descriptions and illustrations are available to support the identification of *L. bilobata* with this species (e.g., Levi 1962, Levi & Levi 1962, Namkung 2002, Shinkai 2006, Song & al. 1999, Xing & al. 1994, Yaginuma 1957, 1960, Yoshida 2001, 2003, 2009, Zhu 1998). A few selected details should suffice to illustrate the excellent agreement between the species described by Thorell (1895) and Roy & al. (2015). They also highlight the lasting quality of Thorell's eloquent descriptions.

The ocular quadrangle is described by Roy & al. as "nearly square", corresponding to Thorell's slightly more detailed "Area oculorum mediorum paullulo (parum) latior antice quam postice, et aeque longa ac lata antice" ("area of the middle eyes very slightly (hardly) broader in the front than in the back, and as long as broad in the front"). This description matches the figure in Roy & al. exactly. The anterior eye row is described as "strongly recurved... as viewed dorsally", which could be considered a literal translation of Thorell's "series oculorum antica desuper visa fortiter recurva est."

The maxillae of *L. bilobata* are "nearly twice as long as wide", which Thorell describes as "saltem dimidio sed non duplo longiores quam latiores" ("at least by half, but not twice longer than wide"); the labium is "wider than long" (Thorell: "paullo latius quam longius", "a bit broader than long").

The cephalothorax is "yellow brown" (Thorell: "luteo-testacea"). The legs are of the same colour, but are "banded". Thorell's detailed description of this banding matches the photograph of the holotype in all details. The picture

	Leg I	Leg II	Leg III	Leg IV
P. scintillans	11 ⅔ (1.00)	7 ¼ (0.62)	plus 4 (0.36)	paene 8 (0.67)
L. bilobata	15.00 (1.00)	8.40 (0.56)	5.60 (0.37)	9.00 (0.60)
C. bidens	15.52 (1.00)	8.40 (0.54)	5.04 (0.32)	8.88 (0.57)
A. venusta	18.80 (1.00)	10.50 (0.56)	5.70 (0.30)	10.70 (0.57)

Table 1. Absolute leg length in mm (and relative leg length compared to leg I) in the female type material of the four species here considered as synonyms of *Chrysso scintillans*, according to the data in the original descriptions.

shows dark reddish-brown bands at the end of the femora, and black rings at the ends of the tibiae, metatarsi of legs I, II, and IV, as well as red brown rings in middle of femora I, II, IV, and tibia I. Thorell describes this as "in reliquis pedibus (3ii exceptis) femora, tibiae et metatarsis apice sat late nigra sunt" ("in the other legs, except the third, the femora, tibiae and metatarsi are broadly black at their tips") and "femora praetera (ut tibiae 1i paris) annulo nigro versus basin cincta" ("moreover, the femora, as well as the tibiae I, are banded with a black ring towards the base"). The legs are further described as "clothed with pale brown moderate hairs", while Thorell more precisely refers to "pili pallide testacei, excepto in annulo nigro apicali tibiarum saltem 4i paris, ubi nigra sunt" ("pale brown hairs, except in the black apical bands of the tibiae, especially of leg IV, where they are black"); a detail that is clearly visible in the photo of the holotype of *L. bilobata*.

Table 1 shows the detailed agreement in the relative length of the legs in the female type material of *Physcoa scintillans, Linyphia bilobata, Chrysso bidens* and *Argyria venusta*. The same consistency is also found in the relative lengths of the individual leg segments (not shown, as they are not reported in the original description by Thorell). In all cases, the observed differences are well within the range of measurement uncertainty and inter-individual variation.

The shape of the opisthosoma is "sub pentagonal" in *L. bilobata*, while "desuper visum breviter pentagono-ovatum fere est abdomen" ("viewed from above the abdomen is quite shortly pentagonal-oval") in *C. scintillans*. The colour pattern of the "off white" abdomen "widest at the middle, each end marked by a black hump, tip black, blunt and round" is again described in some more detail by Thorell (1895), who refers to "macula magna humerali nigra vel maculis ejusmodi binis utrinque" ("a large black shoulder spot or two such spots on each side") with "apice coni apicalis nigro" ("black tip of the apical cone"). The illustrations by Roy & al. again match Thorell's description in all details.

In *L. bilobata*, the "epigynal plate [is] marked by 2 transverse nearly parallel lines"; these lines are clearly visible, e.g., in the illustration in Levi (1962), while Thorell states that "vulva ex sulco transverso lato et forti constat, ... et ita foveas duas transversas plus minus discretas format": "the epigyne consists of a strong and broad transverse groove, and in this way forms two more or less distinct transverse lines".

Thorell did not examine the internal genitalia of *Chrysso scintillans*, but the bilobed spermathecae after which *L. bilobata* has been named are also a distinct feature of the former. Illustrations are provided, e.g., in Xing & al. (1994) and Yoshida (2001) and also show the short fertilization duct mentioned by Roy & al.

Other Indian species of *Linyphia*

The misidentification of *Linyphia bilobata* can most likely be traced back to the work of Tikader, who described three species of *Linyphia* from India in 1970 and 1977. One of these, *Linyphia urbasae* Tikader, 1970, was first reported from Sikkim, India, but is widespread and rather common in Southeast Asia, as evidenced by numerous photos of this distinctively coloured species from India, Malaysia, Singapore and Taiwan, which can be found on the internet. The species is certainly a theridiid, as can be seen from the schematic illustration of the epigyne in the original description, but most importantly from its habitus, which indeed closely resembles that of *Chrysso scintillans*. As documented repeatedly on the internet, the species also shows the maternal care behaviour reported for other species of theridiids, including members of *Chrysso* (Miller & Agnarsson 2005, Shinkai 2006). While the exact generic affiliation within Theridiidae remains doubtful without studying authentic material of *L. urbasae*, the available evidence supports a provisional transfer to the genus *Chrysso*, as *Chrysso urbasae* (Tikader, 1970), **comb. nov.** The genus *Chrysso*, as currently used, is certainly a heterogeneous polyphyletic assemblage (Deeleman-Reinhold 2009), and a confident placement of *C. urbasae* will require a careful revision of the entire group.

In the same publication, which is well-known for its dubious generic assignments (Brignoli 1976), Tikader described a second species of *Linyphia*, *L. sikkimensis* Tikader, 1970, which he considers to be highly similar to *C. urbasae*. This species also seems to be rather common (the type series included 13 female and 3 male specimens). The illustrations of the male and female genitalia certainly exclude any affinity with *Linyphia*, but the correct placement is difficult to determine. Considering the close similarity to *C. urbasae* men-

tioned in the original description, it would seem reasonable to very tentatively transfer the species to *Chrysso*, as *Chrysso sikkimensis* (Tikader, 1970), **comb. nov.**, with the strong caveat that even the family affiliation is not quite clear in this case.

The heterogeneity of Tikader's concept of *Linyphia* is illustrated by his third Indian species placed in this genus, *Linyphia nicobarensis* Tikader, 1977. In this case, the description and illustrations leave no doubt that this species is very closely allied and probably even identical to the common *Tylorida striata* (Thorell, 1877), a member of Tetragnathidae. This species was also described by Tikader as being similar to *L. urbasae*, but size, shape, colour and markings all exactly match *T. striata*, which was already reported from the Nicobar Islands by Thorell (1891), from a location no more than 30 km from the type locality of *L. nicobarensis*. The illustration of the epigyne is, however, difficult to match to the epigyne of *T. striata*. While this may be due to the highly schematic nature of the drawing, it justifies provisional treatment of *L. nicobarensis* as a distinct species, *Tylorida nicobarensis* (Tikader, 1977), **comb. nov.**

Two further species of *Linyphia* were described from British India by O. Pickard-Cambridge (1885). *Linyphia perampla* from the Sind Valley, India, was described as "very nearly allied to *Linyphia collina*, L. Koch" (=*Megalepthyphantes collinus* (L. Koch, 1872)); *Linyphia straminea* from Murree, Pakistan, was considered as "in its form and general structure... very like *Linyphia ericaea*, Bl." (= *Palliduphantes ericaeus* (Blackwall, 1853)). In both cases, there is no indication of a close relationship with *Linyphia* in the modern sense. The two species are therefore provisionally transferred to the genus *Lepthyphantes sensu lato*, as *Lepthyphantes stramineus* (O. Pickard-Cambridge, 1885), **comb. nov.**, and *Lepthyphantes peramplus* (O. Pickard-Cambridge, 1885), **comb. nov.**

"*Linyphia striata*", a species described by Sebastian & al. (2009) without valid assignment of a holotype, has recently been identified as probably being identical to *Theridion zonulatum* Thorell, 1890 (Ehrler & al. 2014).

In conclusion, the genus *Linyphia*, as defined by van Helsdingen (1969), seems to be absent from the Indian subcontinent.

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Address of the author:

Rainer Breitling
Faculty of Life Sciences
University of Manchester
M1 7DN Manchester
United Kingdom

E-mail: rainer.breitling@manchester.ac.uk

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