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The lace-sheet-weavers—a long story (Araneae: Psecridae: *Psechrus*)

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Abstract

Various publications of the last twelve years have shown that the species richness of the genus *Psechrus* is much higher than was assumed 30 years ago. Based upon trends in the structures of the copulatory organs, for the first time, eight species groups are recognised and, including the present study, 46 species are now known. 20 species are recognised and described as new: *P. ulcus* **sp. nov.**, *P. aluco* **sp. nov.**, *P. decollatus* **sp. nov.**, *P. elachys* **sp. nov.**, *P. norops* **sp. nov.**, *P. arcuatus* **sp. nov.**, *P. laos* **sp. nov.**, *P. inflatus* **sp. nov.**, *P. pakawini* **sp. nov.**, *P. demirror* **sp. nov.**, *P. jaegeri* **sp. nov.**, *P. vivax* **sp. nov.**, *P. obtectus* **sp. nov.**, *P. fuscai* **sp. nov.**, *P. clavis* **sp. nov.**, *P. hartmanni* **sp. nov.**, *P. zygon* **sp. nov.**, *P. tauricornis* **sp. nov.**, *P. crepido* **sp. nov.** and *P. schwendingeri* **sp. nov.** Two species are removed from synonymy with *P. singaporensis* Thorell, 1894: *P. annulatus* Kulczyński 1908 (stat. nov.) and *P. libelti* Kulczyński 1908 (stat. nov.). One junior synonym of *P. tingpingensis* Yin, Wang & Zhang, 1985 is recognised: *P. xinping* Chen, Zhang, Song & Kim, 2002 (syn. nov.). New records are reported: *P. libelti* from Thailand, Malaysia & Brunei; *P. ancoralis* Bayer & Jäger, 2010 from Thailand; *P. himalayanus* Simon, 1906 from Bhutan; *P. ghecuanus* Thorell, 1897 from Laos. Pre-epigynes/pre-vulvae of 20 *Psechrus* species are examined and illustrated. In these species they apparently exhibit consistent and species-specific characters. However, since in several species only one subadult female was available for examination and in 57% of the *Psechrus* species even none at all, the characters of the pre-epigyne/pre-vulva are not included in the *Psechrus* identification key introduced herein. Additional information on the biology of *Psechrus*—for which the trivial name “lace-sheet-weavers” is introduced herein—is provided.

Key words: Taxonomy, revision, identification key, species-groups, copulatory organs, expanded bulb, spination, distribution, South-East Asia, predatory behaviour, mating behaviour, pre-epigyne, pre-vulva.

Introduction

Psechrus species are distributed in South East Asia. Their distribution range reaches from India in the West to the Solomon Islands in the East. In the North it reaches up to the Southern half of Shaanxi Province, China and in the South to the Northern most part of Queensland, Australia. *Psechrus* occurs in shady habitats, mostly in forests, but also in rocky areas, in the entrance areas of caves or at escarpments or road cuts. The representatives of this genus build extensive, slightly dome-shaped sheet webs, which reach a length up to 1.2 metres. As these spiders are cribellate and include cribellate capturing wool into their web, the common name ‘lace-sheet-weavers’ is introduced in the present study. At one side the web merges into a tube-retreat, which is located e.g. in rock crevices, or in holes in the tree trunk, in the compact soil or between roots.

Together with *Fecenia* Simon, 1887 the lace-sheet-weavers belong to the Psechridae Simon, 1890 (Simon 1892; Dalmas 1917; Petrunkevitch 1923, 1928; Lehtinen 1967; Levi 1982; Griswold 1993; Griswold *et al.* 2005; Platnick 2011), which—up to now—have been twice revised. Levi (1982) revised all the world’s Psechridae then known and Wang and Yin (2001) highlighted the Chinese representatives. The conception of Levi’s work was characterised by “lumping” (specific) diversity. He often considered clearly differing structures of copulatory organs as intraspecific variation. Based on that notion in a few cases he synonymised species, e.g. *Psechrus annulatus* Kulczyński, 1908. Further, he matched a *Psechrus* female from Taiwan with the male syntypes of *P. sinensis* Berland & Berland, 1914, although their recorded localities are ca. 1500 km apart and stating that “the conspecificity is not certain” (Levi 1982). After Song *et al.* (1999) synonymised the female types of *P. guiyangensis* Yin, Wang & Zhang, 1985 as being conspecific with *P. sinensis*, it was obvious that the female Levi (1982) described and illustrated sub *P. sinensis* was actually a new species, which was later described as *P. taiwanensis* Wang and Yin, 2001. In *P. himalayanus* Simon, 1906, Levi regarded a subadult female as adult (Bayer