



<http://dx.doi.org/10.11646/zootaxa.3905.4.3>

<http://zoobank.org/urn:lsid:zoobank.org:pub:489B8CE1-6AEF-4D31-8CB6-4CD94B81CBE6>

Some *Willowsia* from Nepal and Vietnam (Collembola: Entomobryidae) and description of one new species

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Abstract

Willowsia bartkei Stach, 1965 and *W. pseudosocia* Stach, 1965 from Vietnam are redescribed based on type material. *Willowsia cassagnai* sp. nov. from Nepal is described here and is similar to another Nepalese species, *W. ieti* Yosii, 1971, but differs from the latter in colour pattern and mouthparts. Additions are given here to the original description of *W. ieti*.

Key words: colour pattern, scales, chaetotaxy

Introduction

As a member of the tribe, Willowskiini *sensu* Yoshii & Suhardjono, 1989, the genus *Willowsia* has 8+8 eyes, bidentate mucro, and scales mostly pointed with rough sculpture of very short spinules to long ribs (Zhang *et al.*, 2011). Its monophyly, as well as that of Willowskiini, has recently been questioned (Zhang *et al.*, 2014a, b). Yoshii & Suhardjono (1989) doubted the monophyly of *Willowsia* without further explanation. Zhang *et al.* (2011) reviewed the status of the genus *Willowsia* and related genera, *Janetschekbrya* and *Americabrya*, and considered that *Willowsia* was probably paraphyletic. The recent molecular phylogeny of the family, Entomobryidae, demonstrated that both Willowskiini and *Willowsia* were polyphyletic (Zhang *et al.*, 2014a). Dividing those taxa is one of the most important tasks in the systematics of “Willowskiini”. So far, 25 species of the genus have been described worldwide (Zhang *et al.*, 2011; Zhang *et al.*, 2014c). Among them, *Willowsia bartkei* Stach, 1965 and *Willowsia pseudosocia* Stach, 1965 have been recorded from Vietnam, *Willowsia ieti* Yosii, 1971 and *Willowsia nivalis* Yosii, 1971 from Nepal.

Many species of the genus were poorly described so that it is difficult to provide detailed comparisons between all species. A large collection from tropical regions stored in the collections of Muséum National d’Histoire Naturelle, Paris and Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków included a number of new species. Four of them, from Vietnam and Nepal, are described or redescribed here. *W. bartkei* Stach, 1965 and *W. pseudosocia* Stach, 1965 from Vietnam are redescribed. One new species from Nepal, *Willowsia cassagnai* sp. nov., is described, and additions to the description of another Nepalese species, *W. ieti* Yosii, 1971, is given.

Material and methods

Specimens were mounted in Marc André II solution after clearing in lactic acid, and were studied using a Leica DMLB microscope. Photographs were taken with a ProgRes camera mounted on a Leica DMLB microscope and were enhanced with Photoshop CS2 (Adobe Inc.). Labial chaetae are named following Gisin (1967). Tergal chaetae are designated following Szeptycki (1979). The number of macrochaetae is given by half-tergite in the descriptions. Material is deposited in the collections of the Museum National d’Histoire Naturelle (MNHN), Paris, France, the Institute of Systematics and Evolution of Animals (ISEA), Polish Academy of Sciences, Kraków,

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