



<http://dx.doi.org/10.11646/zootaxa.3895.1.7>

<http://zoobank.org/urn:lsid:zoobank.org:pub:CCE214DE-FF77-4A48-A3EA-3802BF904914>

## New species of small scaly crickets of genus *Micrornebius* (Orthoptera: Mogoplistidae; Mogoplistinae) from Singapore

MING KAI TAN

Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543, Republic of Singapore.  
E-mail: orthoptera.mingkai@gmail.com

### Abstract

The small and cryptic scaly crickets of the genus *Micrornebius* from Singapore are reviewed. The Henningian species concept was applied and morphology was used to estimate species boundaries. Three new species are described: *Micrornebius distinctus* sp. n., *Micrornebius eclipsus* sp. n. and *Micrornebius mandai* sp. n. This increases the number of species *Micrornebius* from Singapore to five. A tentative key to the species of *Micrornebius* from Singapore is provided.

**Key words:** Mogoplistidae, *Micrornebius*, new species, key, Singapore

### Introduction

The scaly crickets from Singapore have attracted taxonomic interest recently (Ingrisch, 2006; Tan & Ingrisch, 2013). Currently 10 species are known (Tan & Ingrisch, 2013). Although there are several recent publications to document the existence of scaly crickets in different parts of Singapore (Tan, 2010, 2012; Tan *et al.*, 2012; Tan & Wang, 2012), more species previously unknown were discovered due to intensive collecting. Three species of *Micrornebius* Chopard, 1969 discovered during those investigations proved to be new to science. They are described in this paper as *Micrornebius distinctus* Tan sp. n., *Micrornebius eclipsus* Tan sp. n. and *Micrornebius mandai* Tan sp. n. These scaly crickets are small and often well camouflaged. This explains why they remain cryptic until recently. Here, the Henningian species concept was applied and morphology was used to estimate species boundaries. The new finding rises the number of *Micrornebius* species recorded from Singapore to five, and the total number of scaly cricket species known from Singapore to 13. A tentative key to the species of *Micrornebius* from Singapore is also provided.

### Material and methods

Opportunistic collection and sweep-netting were carried out in Singapore. Photographic images were done using a digital SLR camera with compact macro lens and the Visionary Digital System. Scales given with the images are approximate as the image taken with different equipment had to be adapted to size. Specimens were preserved by drying and pinning or in absolute alcohol. Measurements of specimens were made using a 0.05 mm vernier caliper. Dissections of male genitalia were done with softened specimens. Genitalia were observed, after cleaning with cold KOH, using a binocular microscope Leica MZ16 at magnifications up to 160×, and subsequently kept in glycerine in vials. Terminology for male genitalia was used according to Ingrisch (2006). Photographs of male genitalia were done using Visionary Digital System.

For the measurements, the following abbreviations are used: BL = body length; PL = pronotum length; PW = pronotum width; HFL = hind femur length; HTL = hind tibia length; HML = hind metastarsus length; OL = ovipositor length.

Depositories: ZRC—Zoological Reference Collection, Lee Kong Chian Natural History Museum (former Raffles Museum of Biodiversity Research), National University of Singapore.

feebly surpassing dorsal apical valve; with apices of valves rounded; with long strong hairs at apices of dorsal and ventral valves (Fig. 4E).

**Colouration.** Similar to *Micrornebius mandai* sp. n.: generally brown when naked with scales brown and silvery in fresh specimens. Head brown, eyes dark; scapus and basal antennal segments pale yellow brown and partly black; maxillary palps mostly brown, joints between segments a little pale. Pronotum generally brown when naked. Mesosternum and metasternum pale yellow. Fore and middle femora mostly dark brown; tibiae pale with dark rings. Hind femora and tibiae black with pale variegation. Abdominal tergites mostly black when naked with scales brown and silvery; abdominal sternites and subgenital plate brown. Cerci brown with pale variegation towards the apex. Ovipositor brown.

**Measurements.** See Table 3.

**Etymology.** This species name refers to the long male paraproct process and distinct female ovipositor with ventral apical valve feebly surpassing dorsal apical valve; derived from the Latin word *distinctus* (= distinct, masculine).

**Life history.** This species inhabits tree trunks, often hiding within crevices and beneath tree bark.

**TABLE 3.** Measurements of *Micrornebius distinctus* sp. n. (in mm, mean values in brackets).

	BL	PL	PW	HFL	HTL	HML	OL
Male holotype	4.4	1.7	2.0	2.4	1.1	0.4	-
Female (n = 1)	3.6	1.9	1.4	2.4	1.2	0.5	? (curled)

## Acknowledgements

The author is grateful of Dr. Sigfrid Ingrisch for helping with the review of the manuscript and providing valuable advice. The author thanks Huiqing Yeo and Robin Wen Jiang Ngiam for assistance in the collection of specimens. The collection of material in the Central Catchment Nature Reserve and Bukit Timah Nature Reserve was granted by the National Parks Board, Singapore (NP/RP10-073).

## References

- Chopard, L. (1969) Grylloidea. In: Sewell, R.B.S. [Ed.]. *The fauna of India and the adjacent countries. Orthoptera Volume 2.* Zoological Survey of India and Baptist Mission Press, Calcutta, i-xviii + 421 + 1 pp.
- Gorochoy, A.V. (1992) Four new grylloid species (Orthoptera, Grylloidea) from Vietnam. In: Medvedev, L.N. (Eds.), *Systematics and ecology of Vietnam insects.* Nauka, Moscow, pp. 264.
- Ingrisch, S. (2006) New taxa and notes on some previously described species of scaly crickets from South East Asia (Orthoptera, Grylloidea, Mogoplistidae, Mogoplistinae). *Revue Suisse de Zoologie*, 113 (1), 133–227.
- Sjöstedt, Y. (1910) 17. Orthoptera. 5. Grylloidea. In Sjöstedt Y. (ed.). *Abteilung 15–22. Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru und den umgebenden Massaisteppe Deutsch-Ostafrikas, 1905–1906 unter Leitung von Prof. Dr. Yngve Sjöstedt*, 3, 91–123.
- Tan, M.K. (2010) Orthoptera in Pulau Ubin. *Nature in Singapore*, 3, 245–268.
- Tan, M.K. (2012) *Orthoptera in the Bukit Timah and Central Catchment Nature Reserves (Part 2): Suborder Ensifera.* Raffles Museum of Biodiversity Research, National University Singapore, Singapore, 70 pp.
- Tan, M.K. & Ingrisch, S. (2013) New taxa and notes of some described species of scaly crickets (Orthoptera: Mogoplistidae: Mogoplistinae) from Singapore. *Zootaxa*, 3637 (1), 17–28.  
<http://dx.doi.org/10.11646/zootaxa.3637.1.2>
- Tan, M.K. & Nizam, K.K. (2013) New species of scaly crickets (Orthoptera: Mogoplistinae) from Bukit Fraser, Malay Peninsula. *Zootaxa*, 3721 (3), 258–264.  
<http://dx.doi.org/10.11646/zootaxa.3721.3.2>
- Tan, M.K. & Robillard, T. (2012) Two new cricket species (Orthoptera: Gryllidae and Mogoplistidae) from the mangrove areas of Singapore. *The Raffles Bulletin of Zoology*, 60 (2), 411–420.
- Tan, M.K. & Wang, L.K. (2012) The Orthoptera of Semakau Landfill, Singapore: A Project Semakau checklist. *Nature in Singapore*, 5, 309–318.

- Tan, M.K., Ngiam, R.W.J. & Ismail, M.R.B. (2012) A checklist of Orthoptera in Singapore parks. *Nature in Singapore*, 5, 61–67.
- Yang, J. & Yen, F. (2001) Morphology and character evaluation of scales in scaly crickets (Orthoptera: Grylloidea: Mogoplistidae). *Zoological Studies*, 40, 247–253.