

Two Species of *Thienemanniella* Kieffer from Oriental China (Diptera: Chironomidae: Orthocladiinae)

YUE FU¹, XIANGLIANG FANG¹ & XINHUA WANG^{2*}

¹Key Laboratory of Biologic Resources Protection and Utilization of Hubei Province, Biological Scientific and Technical College of HuBei Minzu University, EnShi City 445000, China. E-mail: fuyue2007915@yahoo.com

²College of Life Sciences, Nankai University; Tianjin 300071, China

*Corresponding author: E-mail: xhwang@nankai.edu.cn

Abstract

A new species from Oriental China, *Thienemanniella curva* sp. n. is described and illustrated as adult males. *T. nipponica* which belong to eye bare species group in *Thienemanniella* from Guangdong Province is re-described. A revised key to known males of the world is provided.

Introduction

Thienemanniella Kieffer 1911, is world-wide in distribution. *Thienemanniella* and *Corynoneura* Winnertz are the main genera within the tribe of *Corynoneurini*, with the largest number of species. During the most recent years, the revised research work on *Thienemanniella* in several biogeographic regions have been completed, including the Nearctic (Hestenes & Sæther 2000; Fu & Sæther 2012); the Afrotropical (Fu, Hestenes & Sæther 2010), the Palearctic, the Oriental (Fu, Sæther & Wang 2010) and the Neotropical region (Wiedenbrug *et al.* 2013).

Presently 53 species have been recorded (excluding dubious records). Thirty-one species are recorded from the Palaearctic, 9 from the Nearctic, 8 from the Neotropical, 15 from the Oriental, 6 from the Afrotropical and 1 from the Australasian Region (Fu, Hestenes & Sæther 2010; Fu, Sæther & Wang 2010; Fu & Sæther 2012; Hestenes & Sæther 2000; Makarchenko *et al.* 2005, Makarchenko & Makarchenko 2006; Schlee 1968; Wang 2000; Wiedenbrug *et al.* 2013; Yamamoto 2004; Ashe & O'Connor 2012).

Before the present study, Fu, Sæther & Wang (2010) examined the material from Oriental China, 14 species of *Thienemanniella* were recorded, namely *T. absens* Fu *et al.*, *T. clavicornis* Kieffer, *T. ginzanquerea* Sasa *et al.* Suzuki, *T. ginzanquinta* (Sasa *et al.* Suzuki), *T. hainanensis* Fu *et al.*, *T. nipponica* Tokunaga, *T. obscura* Brundin, *T. sichuanica* Fu *et al.*, *T. triangula* Fu *et al.*, *T. togamijika* Sasa *et al.* Okazawa, *T. tusimufegea* Sasa *et al.* Suzuki, *T. wuyiensis* Fu *et al.*, *T. xena* Roback, *T. yakysetea* Sasa *et al.* Suzuki. Based on the distribution of adult males in Oriental China, *Thienemanniella* species have been recorded only in five provinces of Oriental China (Map 1).

In the present study the material from Guangdong Province is examined for the first time; a new species, *T. curva* sp. n. is described as male, while *T. nipponica* (Tokunaga, 1936) is redescribed; the presence of bare eyes in this species is emphasized. Most species of *Thienemanniella* have pubescent or hairy eyes and this was considered a very important generic diagnostic character able in separating *Thienemanniella* from other genera in *Corynoneura* group, where bare eyes are more common: at present five bare eyes species have been recorded in *Thienemanniella*, these species were close related with the genus *Onconeura* (Fu, Sæther & Wang 2010), on the opposite several hairy eyes species have been recorded in *Corynoneura* (Wiedenbrug *et al.* 2011), so this value of this character in separating genera must be reconsidered.

43. Antenna with 13 flagellomeres; AR more than 0.50 (Kieffer 1912)..... *T. acuticornis* (Kieffer)
 – Antenna with 12 flagellomeres; AR 0.30 (Fu, Sæther & Wang 2010, Fig 10)..... *T. ogasaquardecima* Sasa et Suzuki
 44. Ultimate flagellomere of antenna longer than combined length of preceding eight.... flagellomeres; AR about 0.85(Edwards 1924; Makarchenko & Makarchenko 2006, Fig 28)..... *T. majuscula* (Edwards)
 – Ultimate flagellomere of antenna shorter than combined length of preceding eight flagellomeres; AR about 0.65 (Edward 1924)..... *T. lutea* (Edwards)
 45. Body color very pale, AR more than 0.60 (Sasa & Suzuki 2000, Fig 18) *T. gotopallida* Sasa et Suzuki
 – Body color relatively dark, AR usually about 0.50..... 46
 46. Fore trochanter large, inferior volsella angle-like near apex (Hestenes & Sæther 2000, Fig 6, 71)..... *T. xena* (Roback)
 – Fore trochanter small, inferior volsella rounded near apex (Edwards 1924) *T. vittata* (Edwards)

Note: *T. spreta* group (according to Wiedenbrug et al. 2013) including *T. ginzanquerea* Sasa & Suzuki, *T. liae* Paggi, *T. spreta* (Roback), *T. sanctivincenta* Sæther, *T. oyabedilata* Sasa, Kawai et Ueno (Fu, Sæther & Wang 2010, Fig 13), *T. tubatuba* Wiedenbrug et al., *T. sancticaroli* Wiedenbrug et al..

Acknowledgments

We are much indebted to Dr. Hongqu Tang for the material. The project was supported by the National Natural Science Foundation of China (NSFC) (Grant No. 31101624; 31272284, 31201739, J1210005), the Fourth open Foundation of Key Laboratory of Biologic Resources Protection and Utilization of Hubei Province (Grant No. PKLHB1305, PKLHB1326), the First Level Disciplines of Forestry, the Natural Science Foundation of Education Bureau of Hubei Province, China (Grant No. Q20111904) and the Scientific Research Starting Foundation for Doctor, Hubei Minzu University (Grant No. MY2010B010).

Reference

- Ashe P. & O'Connor, J.P. (2012) A world catalogue of Chironomidae (Diptera), Part 2. Orthocladiinae (Section B). *The Irish Biogeographical Society in association with The National Museum of Ireland*, 469–968.
- Brundin, L. (1949) Chironomiden und andere Bodentiere der südschwedischen Urgebirgsseen. Ein Beitrag zur Kenntnis der bodenfaunistischen Charakterzüge schwedischer oligotropher Seen. *Institute of Freshwater Research, Drottningholm, Report*, 30, pp. 914.
- Edwards, F.W. (1924) Some British species of *Corynoneura* (Diptera-Chironomidae). *Entomologist's monthly Magazine*, 60, 182–189.
- Edwards, F.W. (1929) British non-biting midges (Diptera, Chironomidae). *Transactions of the Royal Entomological Society of London*, 77, 279–430.
- Edwards, F.W. (1931) Diptera of Patagonia and South Chile based mainly on material in the British Museum (Natural History). -Part II, Fascicle 5, Trustees of the British Museum, London. *Chironomidae*, 233–331.
- Fu, Y., Hestenes, T.C. & Sæther, O.A. (2010) Review of Afrotropical *Thienemanniella* Kieffer (Diptera: Chironomidae: Orthocladiinae). *Zootaxa*, 2338, 1–22.
- Fu, Y., Sæther, O.A. & Wang, X. (2010) *Thienemanniella* Kieffer from East Asia, with a systematic review of the genus (Diptera: Chironomidae: Orthocladiinae). *Zootaxa*, 2431, 1–42.
- Fu, Y. & Sæther, O.A. (2012) *Corynoneura* Winnertz and *Thienemanniella* Kieffer from the Nearctic region (Diptera: Chironomidae: Orthocladiinae). *Zootaxa*, 3536, 1–61.
- Hestenes, T.C. & Sæther, O.A. (2000) Three new Nearctic *Thienemanniella* Kieffer species with a review of the Nearctic species. In: Hoffrichter, O. (Ed.): *Late 20th Century Research on Chironomidae: an Anthology from the 13th International Symposium on Chironomidae*, pp. 103–127. Shaker Verlag, Aachen.
- Kieffer, J.J. (1911) Nouveaux Tendipédides du groupe *Orthocladius* (Dipt.). 2. note. *Bulletin de la Société entomologique de France*, 8, 199–202.
- Kieffer, J.J. (1912) Quelques nouveaux Tendipédides obtenus d'éclosion. *Bulletin de la Société entomologique de France*, 1912, 101–103.
- Kikuchi, M. & Sasa, M. (1994) Parts 5. The Chironomid species collected from fountain waters in Akagi and Kannami. *Research Report Toyama Prefectural Environmental Pollution Research Center*, pp.112–124.
- Lehmann J. (1979) Chironomidae (Diptera) aus Fließgewässern Zentralafrikas (Systematik, Ökologie, Verbreitung und Produktionsbiologie), I. Teil: Kivu-Gebiet, Ostzaire. *Spixiana Supplement*, 3, 1–144.
- Makarchenko, E.A., Makarchenko, M.A., Zorina, O.V. & Sergeeva, I.V. (2005) Preliminary data on fauna and taxonomy of Chironomids (Diptera, Chironomidae) of the Russian Far East. *Vladimir Ya. Levanidov's Biennial Memorial Meetings*. pp. 394–420.

- Makarchenko, E.A. & Makarchenko, M.A. (2006) Chironomids of the genera *Corynoneura* Winnertz, 1846 and *Thienemanniella* Kieffer, 1919 (Diptera, Chironomidae, Orthocladiinae) of the Russian Far East. *Euroasian Entomological Journal*, 5 (2), 151–162.
- Sæther, O.A. (1969) Some Nearctic Podonominae, Diamesinae and Orthocladiinae (Diptera: Chironomidae). *Bulletin of the Fisheries Research Board of Canada*, 170, 1–154.
- Sæther, O.A. (1980) Glossary of Chironomid morphology terminology (Diptera: Chironomidae). *Entomologica scandinavica*, Supplement 14, 1–51.
- Sasa, M. & Suzuki, H. (2000) Studies on the chironomid collected on Goto Islands, Western Japan. *Tropical Medicine*, 42, 141–174.
- Schlee, D. (1968) Vergleichende Merkmalsanalyse zur Morphologie und Phylogenie der *Corynoneura*-Gruppe (Diptera: Chironomidae). Zugleich eine allgemeine Morphologie der Chironomiden-Image (♂). *Stuttgarter Beiträge zur Naturkunde*, 180, 1–150.
- Sublette, J.E. & Sasa, M. (1994) Contribution to the systematics of the Chironomidae (Insecta, Diptera), M, F, Pex. Guatemala. *Spixiana*, Supplement, 20, 1–60.
- Tokunaga, M. (1936) Japanese *Cricotopus* and *Corynoneura* species (Diptera: Chironomidae). *Tenthredo*, 1, 9–52.
- Wang, X. (2000) A revised checklist of Chironomidae from China (Diptera). In: Hoffrichter, O. (Ed.), *Late 20th century research on Chironomidae. An anthology from 13th international symposium on Chironomidae*. Shaker Verlag, Aachen, pp. 629–652.
- Wiedenbrug, S. & Trivinho-Strixino, S. (2011) New species of the genus *Corynoneura* Winnertz (Diptera, Chironomidae) from Brazil. *Zootaxa*, 2822, 1–40.
- Wiedenbrug, S., Lamas, C.E. & Trivinho-Strixino, S. (2013) A review of the Netropical species in *Thienemanniella* Kieffer (Diptera: Chironomidae). *Zootaxa*, 3670 (2), 215–237.
<http://dx.doi.org/10.11646/zootaxa.3670.2.7>
- Yamamoto, M. (2004) A catalog of Japanese Orthocladiinae (Diptera: Chironomidae). *Acta Dipterologica*, 21, 1–121.