



The subgenus *Pentapedilum* Kieffer (Diptera: Chironomidae) in the Yaeyama Islands, the Ryukyus, Japan

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Abstract

As a result of a multi-year survey, we recognize three *Pentapedilum* species, including a new species, from Iriomote Island, Japan. *Polypedilum* (*Pentapedilum*) *acristylum* **sp. nov.** is described as adult male, and compared with the closest *P. (Pe.) nodosum* Johannsen, 1932.

Pentapedilum iriodeeum Sasa et Suzuki, 2000 is treated as a junior synonym of *P. (Tripodura) tananense* Sasa et Hasegawa, 1988. Since the subgenus *Pentapedilum* Kieffer, 1913 defined solely by the presence of macrotrichia on the wing membrane may not be enough to support monophyly, we suggest the possibility that species with wing macrotrichia restricted to the extreme tips of the membrane, like *Polypedilum* (*Pentapedilum*) *tigrinum* (Hashimoto, 1983), may be placed in the subgenus *Polypedilum* Kieffer, 1912.

Key words: Diptera, Chironomidae, *Pentapedilum*, new species, monophyly, Iriomote Island, Japan

Introduction

The genus *Polypedilum* Kieffer of the subfamily Chironominae is distributed worldwide being one of the most species-rich genera among chironomids. About 440 species have been described so far and more than 100 species reported in Japan (Oyewo & Sæther 2008, Yamamoto 2010). In the adult male, one of the best diagnostic characters is the basal constriction of the eighth tergite producing a triangular shape (Oyewo & Sæther 2008). According to Sæther *et al.* (2010), the genus *Polypedilum* contains eight subgenera: *Polypedilum sensu stricto* Kieffer, 1912, *Pentapedilum* Kieffer, 1913, *Tripedilum* Kieffer, 1921, *Kribionympha* Kieffer, 1921, *Tripodura* Townes, 1945, *Uresipedilum* Oyewo et Sæther, 1998, *Cerobregma* Sæther et Sundal, 1999, and *Probolum* Andersen et Sæther, 2010. The subgenus *Pentapedilum* is similar to *Polypedilum s. str.* in most morphological characters, but is distinct in having macrotrichia on the wing membrane. The subgenus is divided into the following three relatively distinct apical clades based on cladistic analysis: the *convexum* group, the *sordens* group and the apparently paraphyletic *uncinatum* group (Oyewo & Sæther 2008). At present, 15 species belonging to this subgenus have been reported from Japan. Using phylogenetic analysis, Kawai *et al.* (2006) maintained that *Pentapedilum* was not monophyletic based both on 29 morphological characters of the male adult and on mtDNA COI gene sequencing. However, Oyewo and Sæther (2008) considered *Pentapedilum* to be monophyletic on the basis of analysis of 89 characters in 44 species.

Over several years, we have surveyed chironomid fauna in the Ryukyus, especially the Yaeyama Islands, located in the subtropical region in the southernmost part of Japan, between Taiwan and Okinawa Island. Hitherto, 7 species of the genus *Polypedilum* have been recorded from the Yaeyama Islands. These are: *Pentapedilum iriodeeum* Sasa et Suzuki, 2000, *Polypedilum (Pe.) uncinatum* (Goethghebuer, 1921), *P. (Polypedilum) benokiense* Sasa et Hasegawa, 1988, *P. (P.) iriofegeum* Sasa et Suzuki, 2000, *P. (P.) irioegeum* Sasa et Suzuki, 2000, *P. (P.) isigabeceum* Sasa et Suzuki, 2000 and *P. (Tripedilum) nubifer* (Skuse, 1889). Of these species, *Pentapedilum iri-*