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## A review of the genus *Bullanga* Navás, 1917 (Neuroptera: Myrmeleontidae)

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### Abstract

A review of genus *Bullanga* Navás, 1917 is presented. All three species of *Bullanga* are redescribed and illustrated in detail. The female of *Bullanga florida* is described for the first time. A key to *Bullanga* species is also provided.

**Key words:** *Bullanga*, China, Myrmeleontidae

### Introduction

The small antlion genus *Bullanga* was erected by Navás (1917) for a single species, *Bullanga binaria*, from Chapa, Tonkin. Stange (2004) reported that the species is distributed in China, but actually this district belongs to Vietnam other than China. Banks (1941) considered *Bullanga* is a synonym of *Nuglerus*. However, Stange (1976) thought that *Bullanga* was a valid genus which was comprised of three valid species: *Bullanga binaria*, *Bullanga insolita* (Banks, 1940). *Bullanga indecisa* (Banks, 1913). Later *B. indecisa* was placed into the genus *Mossega* by New (1985). Then Stange (2004) placed the species *Dendroleon florida*, which was originally described in genus *Glenurus* by Navás (1913), into the genus *Bullanga*. Thus the genus currently comprises three valid species which are distributed in China and Vietnam now. According to Stange (2004), the genus *Bullanga* belongs to tribe Dendroleontini, and subtribe Dendroleontina.

The genus *Bullanga* is similar to the genus *Dendroleon*. It can be distinguished by tarsal claws and 2A vein in forewing. The genus *Bullanga* species have tarsal claws opposable on the tarsus. Also, the distal vein of the 2A in the forewing of *Dendroleon* species is simple but in *Bullanga* species this region of the 2A is branched. Since Navás erected the genus in 1917, no additional descriptions of the genus *Bullanga* have been provided, despite the fact that two species were assigned to this genus since the type species was described. Without a detailed description of the genus and excellent photos to help aid in determinations, some specimens belonging to *Bullanga* were probably misidentified. For example, the identification of *D. javanus* distributed in China is erroneous (Yang 1997; 1999). These specimens were actually *Bullanga florida* (Zhan *et al.* 2012). Because of this confusion, the description of the genus is in need of revision. In this study, three species of the genus *Bullanga* are redescribed and illustrated in detail.

### Material and methods

Preparations of male and female genitalia were made by macerating the apex of the abdomen in 10% KOH for 5–6 hours. Photographs of partial morphological characteristics were taken using a Canon® EOS 500D digital camera connected with Olympus® U-CTR30-2 microscope and UV-C (Application Suite) applied software by United Vision Ltd. Photographs of whole specimens were taken using a Nikon COOLPIX4500 digital camera. Figures were processed using Adobe Photoshop® CS5. Terminology of wing venation follows Wang *et al.* (2003), while male genitalia and female terminalia terminology follows Wang *et al.* (2012).

black setae and three longitudinal dark stripes; mesothorax and metathorax yellow with a black stripe in the middle, each side with two black lines; **wings**: hyaline with no large markings, veins yellow and black; forewing costal area simple, widened towards apex, several disconnected spots in subcostal area, Rs arises before CuA fork; 3 presectoral crossveins before original of Rs; 28 veins from origin of Rs to hypostigmatic cell; anterior Banksian line distinct, posterior Banksian line absent; 13 cross-veins in prefork area; a dark spot in anastomosis of CuA and CuP+1A, a dark mark in rhexma area; 2A with several branches running in a fairly even curve toward to 3A vein; hind wing costal area simple, Rs arises before CuA fork, a single presectoral cross-vein before origin of Rs; anterior Banksian line distinct, posterior Banksian line absent; several small spots in apical area; 13 cross-veins in prefork area; **legs**: yellow with black, foreleg first femur mostly black and with dense short setae, hind femora mostly dark, but a pale stripe each side. tibial spurs longer than the long basal joint of tarsus; **abdomen**: yellow, dark on sides and at end of joints; darker at tips of joints.

**Typed material examined.** Holotype: 1♀, Dong Men Wai, 10 miles west of Weichow, Szechwan, China, 5600–8500 feet, 1933.VII. 8., Graham.

**Distribution.** China: Sichuan Province

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## References

- Banks, N. (1940) Report on certain groups of Neuropteroid insects from Szechwan, China. *Proceedings of the United States National Museum*, 88, 173–220.  
<http://dx.doi.org/10.5479/si.00963801.88-3079.173>
- Banks, N. (1941) Some new and interesting Neuroptera in the American Museum of Natural History. *American Museum Novitates*, 1143, 1–5.
- Navás, L. (1913) Bemerkungen über die Neuropteren der Zoologischen Staatssammlung in München. *V. Mitteilungen der Münchener Entomologischen Gesellschaft*, 4, 9–15.
- Navás, L. (1917) Insecta nova. II Series. *Memorie dell'Accademia Pontifica dei Nuovi Lincei, Rome*, Series 2, 3, 13–22.
- Navás, L. (1933) Névroptères et insectes voisins. Chine et pays environnants. Cinquième [V] série. *Notes d'Entomologie Chinoise*, 1 (13), 1–10.
- New, T.R. (1985) A revision of the Australian Myrmeleontidae (Insecta: Neuroptera). II. Dendroleontini. *Australian Journal of Zoology. Supplementary Series*, 105, 1–170.  
<http://dx.doi.org/10.1071/ajzs105>
- Stange, L.A. (1976) Clasificación y catálogo mundial de la tribu Dendroleontini con la redescrición del género *Voltor* Navás (Neuroptera: Myrmeleontidae). *Acta Zoologica Lilloana*, 31, 261–320.
- Stange, L.A. (2004) A systematic catalog, bibliography and classification of the world antlions (Insecta: Neuroptera: Myrmeleontidae). *Memoirs of the American Entomological Institute*, 74, 1–565.
- Wang, X.L., Bao, R. & Wan, X. (2003) Study on terminology of wing venation of Myrmeleontidae (Neuroptera). *Journal of China Agricultural University*, 8, 21–25.
- Wang, X.L., Ao, W.G., Wang, Z.L. & Wan, X. (2012) Review of the genus *Gatzara* Navás, 1915 from China (Neuroptera: Myrmeleontidae). *Zootaxa*, 3408, 34–46.
- Yang, C.K. (1997) Neuroptera: Myrmeleontidae. In: Yang, X.-K. (Chief Ed.), *Insects of the Three Gorge Reservoir area of Yangtze river. Vol. 1*. Publishing House, Chongqing, China, pp. 613–620.
- Yang, C.K. (1999) Myrmeleontidae. In: Huang, B.-K. (Ed.), *Fauna of Insects Fujian Province of China. Vol. 3*. Fujian Science and Technology Press, Fuzhou, China, pp. 143–154, 165–167.
- Zhan, Q.B., Wang, Z.L., Abraham, L. & Wang, X.L. (2012) A new species of *Dendroleon* Brauer, 1866 (Neuroptera, Myrmeleontidae) from China. *Zootaxa*, 3547, 64–70.