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## ***Spathius* Nees, 1818 (Hymenoptera: Braconidae, Doryctinae) from China with a key to species**

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## Abstract

One hundred and twenty-nine Chinese species of *Spathius* Nees, 1819 are recognized, of which thirty-five species are described as new to science: *S. aciculatus* sp. nov., *S. albithorax* sp. nov., *S. angustalatus* sp. nov., *S. aspratilloides* sp. nov., *S. basalis* sp. nov., *S. beatoides* sp. nov., *S. cephalus* sp. nov., *S. clavator* sp. nov., *S. daweiensis* sp. nov., *S. ferrugineus* sp. nov., *S. flavicarpus* sp. nov., *S. gutianensis* sp. nov., *S. hainanicola* sp. nov., *S. longulator* sp. nov., *S. macrurus* sp. nov., *S. moscoides* sp. nov., *S. nehebrus* sp. nov., *S. neleiformis* sp. nov., *S. parallelus* sp. nov., *S. parimbecillus* sp. nov., *S. proximoscus* sp. nov., *S. pseudaphareus* sp. nov., *S. pseudido* sp. nov., *S. pseudocritolaus* sp. nov., *S. quasiasander* sp. nov., *S. rectangulus* sp. nov., *S. rugosivertex* sp. nov., *S. spinosus* sp. nov., *S. striolatiformis* sp. nov., *S. subcyparissus* sp. nov., *S. suberymanthus* sp. nov., *S. tanae* sp. nov., *S. virgulatus* sp. nov., *S. wuae* sp. nov., and *S. xui* sp. nov. Twenty-eight species are recorded from China for the first time: *S. amoenus* Belokobylskij, 1998; *S. capys* Nixon, 1943; *S. cavus* Belokobylskij, 1998; *S. cyparissus* Nixon, 1943; *S. depressithorax* Belokobylskij, 1998; *S. fasciatus* Walker, 1874; *S. femoralis* (Westwood, 1882); *S. galinae* Belokobylskij et Strazanac, 2012; *S. habui* Belokobylskij et Maeto, 2009; *S. hephaestus* Nixon, 1943; *S. hikoensis* Belokobylskij, 1998; *S. ibarakius* Belokobylskij et Maeto, 2009; *S. ishigakus* Belokobylskij, 2009; *S. konishii* Belokobylskij, 2009; *S. kunashiri* Belokobylskij, 1998; *S. leschii* Belokobylskij, 1998; *S. longipetiolus* Belokobylskij et Maeto, 2009; *S. melpomene* Nixon, 1943; *S. nixonii* Belokobylskij et Maeto, 2009; *S.*

*paramoenus* Belokobylskij et Maeto, 2009; *S. parochus* Belokobylskij et Maeto, 2009; *S. piperis* Wilkinson, 1931; *S. planus* Belokobylskij, 1998; *S. pseudaspersus* Belokobylskij, 2009; *S. pumilio* Belokobylskij, 2009; *S. rubidus* (Rossi, 1794); *S. testaceitarsis* (Cameron, 1908), and *S. vladimiri* Belokobylskij, 1998. The following new synonyms are proposed: *S. crebristriatus* Chao, 1978 and *S. mundus* Chao, 1978 with *S. araeceri* Nixon, 1943; *S. tanycoleosus* Shi et Chen, 2004 with *S. exarator* Chao, 1978; *S. fukienensis* Chao, 1957 with *S. japonicus* Watanabe, 1937; *S. changbaishanensis* Chen et Shi, 2004 with *S. oriens* Belokobylskij, 1998 (stat. nov.); *S. applanatus* Chen et Shi, 2004 with *S. phymatodis* Fischer, 1966; *S. bellus* Chao, 1957 and *S. agrili* Yang, 2005 with *S. sinicus* Chao, 1957; *S. lunganjiding* Chao, 1977 and *S. shennongensis* Chen et Shi, 2004 with *S. verustus* Chao, 1977. The records of *S. brevicaudis* Ratzeburg, *S. esakii* Watanabe, *S. ruficeps* (Smith) and *S. labdacus* Nixon in China are considered as invalid.

**Key words:** *Spathius*, Doryctinae, new species, new record, new synonym, key, China

## Introduction

*Spathius* Nees, 1818 is the largest and almost cosmopolitan (except for South America) genus of the tribe Spathiini in the subfamily Doryctinae. At present, about 390 valid species of this genus have been described predominantly from the Oriental and Australasian regions (Shenefelt & Marsh 1976, Belokobylskij & Maeto 2009, Yu *et al.* 2012).

Members of *Spathius* are idiobiont ectoparasitoids mainly of the larvae of beetles. Some species in the genus is also reported to parasitize lepidopteran (Pyrilidae, Sesiidae, Tineidae and Tortricidae) and hymenopteran (Xiphidiidae and Cynipidae) larvae (Belokobylskij & Maeto 2009, Yu *et al.* 2012).

Seventy-five species of *Spathius* were already recorded from China prior to this study (Chao 1957, 1977, 1978, Chao & Chen 1965, Belokobylskij 1996, Chen & Shi 2004, Yang *et al.* 2005). However, the following four species previously recorded from China are doubtful. Additional careful study of the description of *S. brevicaudis* Ratzeburg (its type is lost) showed that the record of this species from Taiwan (Belokobylskij, 1996) was mistaken and this material belongs to *S. generosus* Wilkinson. The descriptions and figures presented by Chen & Shi (2004) shows clearly that *S. esakii* Watanabe was erroneously recorded from China (see for comparison the redescription of *S. esakii* by Belokobylskij 2003). Material determined by Chen & Shi (2004) as *S. ruficeps* (Smith) is also undoubtedly misidentified, because these specimens have the temple smooth, the first subdiscal cell of the fore wing closed behind level of m-cu vein, CU1a vein of the fore wing postfurcal, transverse diameter of eye half length of temple, petiole 1.5 × longer than propodeum and ovipositor sheath as long as metasoma. The above listed characters are definitely different from those of *S. ruficeps*. To our surprise, material of *S. labdacus* Nixon observed by Chen & Shi (2004) was based exclusively on males, but the matching figures clearly show they are females having the ovipositor sheath. Additionally, in this species transverse diameter of eye 0.9 × length of temple, median length of second and third tergites combined 1.4 × as long as their maximum width and length of setae of hind tibia equal to maximum width of tibia. As a result, this clearly showed that these specimens did not belong to *S. labdacus*, the holotype of which was studied by the first author. We tried to examine the types of species described by Chao (kept in the collection of the IZCAS), but only types of 22 species have been found to date: *S. alternicoloratus*, *S. aspersus*, *S. colophon euros*, *S. crebristriatus*, *S. deplanatus*, *S. euthyradius*, *S. hainanensis*, *S. jilinensis*, *S. longicornis*, *S. lunganjiding*, *S. magnus*, *S. montivagans*, *S. mundus*, *S. nanpingensis*, *S. nigripetiolus*, *S. nungdaensis*, *S. omiensis*, *S. sedulus*, *S. subtilis*, *S. verustus*, *S. xanthocephalus* and *S. yunnanensis*. The types of other 11 species probably are lost.

In this study, 129 species of the genus *Spathius* Nees are described or recorded from China. A key to all Chinese species is provided except for doubtful species mentioned above. This paper is one of the series works for providing the illustrated key for identification of Doryctinae taxa of the Chinese fauna (Belokobylskij & Chen 2002, 2004a, 2004b, 2005, 2006; Belokobylskij *et al.* 2005, 2012, 2013a, 2013b, 2013c, Tang *et al.*, 2010, 2011, 2012a, 2012b, 2013a, 2013b, 2014, Wang *et al.*, 2009, 2010).

## Material and methods

This study is mainly based on the specimens preserved in the Parasitic Hymenoptera Collection of the Institute of Insect Sciences, Zhejiang University (ZJUHS) which contains about 0.6 million pinned specimens and about same number of alcohol specimens collected from all over the country.