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A Taxonomic Review of the Genus *Parapolybia* Saussure from China, with a Key to All Known Species*

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Abstract: [**Purposes**]To systematically review the genus *Parapolybia* from China. [**Methods**]The traditional morphological classification based on morphological features. [**Findings**]*Parapolybia* from China includes eight species, of which *Parapolybia flava* Saito-Morooka is newly recorded from China; some variable marks of *Parapolybia varia* Fabricius are provided and compared in detail; a key to all known species of the genus *Parapolybia* is updated. [**Conclusions**]The genus *Parapolybia* includes 13 known species in the world, of which eight species are from China.

Keywords: Hymenoptera; Vespidae; Polistinae; *Parapolybia*; new record; China

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The genus *Parapolybia* was established by de Saussure (1854)[1] and the type species *Parapolybia indica* (de Saussure, 1854) was designated subsequently by Bingham (1897)[2]. So far, the genus includes 13 species with one subspecies worldwide, which occur in the Middle East, the Indo-Papuan region and East Asia, from Turkey in the west to New Guinea in the east, and to the Korean Peninsula and Honshu Island of Japan in the northeast[3]. These species were described or reviewed by Fabricius (1787)[4], de Saussure (1854)[1], Cameron (1900)[5], Meade-Waldo (1911)[6], Sonan (1944)[7], van der Vecht (1966)[8], and Saito-Morooka (2015)[3], respectively. Above all, Van der Vecht (1966) and Saito-Morooka (2015) provided a good foundation for further study of *Parapolybia*. Before this study, seven species of the genus were recorded fragmentarily from China[1,7-10], and a systematic research on the Chinese *Parapolybia* is absent. Based on the foregoing researches, eight species of the genus from China were collected and recognized, of which one species is newly recorded. Because the marks of *P. varia* are usually variable and easily misidentified, its variations from China are listed. Based on the examination of specimens and the information extracted from literature, a key to all known species of *Parapolybia* is updated.

1 Material and methods

The specimens examined are deposited in the Institute of Entomology and Molecular Biology, Chongqing Normal University, Chongqing, China (CQNU). The morphological and color characters were observed under a stereomicroscope (Olympus SZ61). All drawings were taken with a stereomicroscope (LY-WN-YH) attached

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to a computer installed with Leica Application Suite version 2. 1. 0 software. The ratios used in description were measured in the same amplifying multiple and measurements were taken as the maximal length of body parts measured. In the descriptions of morphological characters, the following abbreviations are used: T1 for metasomal tergum1, T2 for metasomal tergum 2, T3 for metasomal tergum 3, S1 for metasomal sternum 1, S2 for metasomal sternum 2, S3 for metasomal sternum 3 and so on. The terminology principally follows van der Vecht (1966)[8] and Saito-Morooka (2015)[3].

2 Taxonomy

2.1 Genus *Parapolybia* de Saussure, 1854

Parapolybia Saussure, 1854: 207[1]; Schulthess, 1913: 152[11]; Vecht, 1966: 5, 21-40[8]; Gadagkar, 1991: 149-190[12].

Type species: *Polybia indica* de Saussure, 1854, by subsequent designation of Bingham, 1897: 382.

Diagnosis: Antennae 12 segments (♀), 13 segments (♂); pronotal carina incomplete, present at middle and obliterated at lateral face; transverse carina in front of tegula distinct; length of apical orifice on propodeum almost 2×its maximum width; T1 slender and long, much narrower than segment 2 and distinctly swollen posteriorly.

2.2 Key to all known species of the genus *Parapolybia* (The characters are applicable to both sexes unless the sex is specified)

1. T1 slender and long, about equal to the combination length of head and mesosoma or just equal to mesosoma[6] …… 2

- T1 moderately long, less than the length of mesosoma …… 3

2. T1 about equal to the combination length of head and mesosoma, posterior part broader than anterior one; T2 length equal to its maximum width[6] …… *P. persica* Meade-Waldo

- T1 equal to the length of mesosoma, posterior part as wide as anterior one; T2 1. 25×its maximum width[6] …… *P. escalera* Meade-Waldo

3. Occipital carina complete, extending to base of mandible (Fig. 1a-f on the inside front cover of the issue) …… 4

- Occipital carina incomplete, not extending to base of mandible (Fig. 1g-h on the inside front cover of the issue) …… 12

4. Body brown to dark brown (Fig. 2a on the inside front cover of the issue); propodeum with obvious transverse furrows; T1 broadening and swollening strongly in the posterior half (Fig. 3a-b on the inside front cover of the issue) …… *P. tinctipennis* Cameron

- Body, at least of head and mesosoma, pale black, ivory white, yellow to light brown or orange; propodeum with shallow transverse furrows; T1 weakly to moderately swollening along the posterior half …… 5

5. Body orange, except S1, T2 and following segments dark brown; propleura with distinct longitudinal furrows[8] …… *P. fulvinerva* Cameron

- Body not orange; propleura without or with indistinct longitudinal furrows …… 6

6. T2 and following segments almost black, color of T2 and T3 not as that of mesosoma, with a pair of yellow spots, respectively (Fig. 2b on the inside front cover of the issue); antennae and legs distinctly elongated (Fig. 4a-d on the inside back cover of the issue) …… *P. bioculata* Vecht

- T2 and following segments not entirely black, color of T2 and T3 as that of mesosoma; antennae and legs less elongated …… 7

7. T2 strongly concave sublaterally (Fig. 5c-d on the inside back cover of the issue); gena developed and visible in front view, in lateral view broader than eye (Fig. 1c on the inside front cover of the issue) ……

…… *P. fava* Saito-Morooka, Nguyen & Kojima

– T2 barely or weakly concave sublaterally; gena undeveloped and invisible in front view, in lateral view as broad as or narrower than eye …… 8

8. Body ivory white, clypeus distinctly with a pair of dark brown spots[3] ……
…… *P. abide* Saito-Morooka, Nguyen & Kojima

– Body not ivory white, clypeus without a pair of dark brown spots …… 9

9. T1 in lateral view nodulated posteriorly (Fig. 3g-h on the inside front cover of the issue) ……
…… *P. takasagona* Sonan

– T1 smoothly swollen apically …… 10

10. Flat area of vertex behind posterior ocelli narrow[3] …… *P. nana* Saito-Morooka, Nguyen & Kojima

– Flat area of vertex behind posterior ocelli wide …… 11

11. T2 without or with indistinctly uninterrupted spots (Fig. 5f on the inside back cover of the issue); parameral spine slender entirely and narrow basally (♂) (Fig. 4e-f on the inside back cover of the issue) …
…… *P. indica* Saussure

– T2 with distinctly interrupted spots (Fig. 5g on the inside back cover of the issue); parameral spine short entirely and broad basally (♂) (Fig. 4g-h on the inside back cover of the issue) ……
…… *P. crocea* Saito-Morooka, Nguyen & Kojima

12. Metanotum with a dark brown or black spot posteriorly (Fig. 2g on the inside front cover of the issue), posterior portion of T1 broad, its length 2.5× maximum width and 3× maximum height (Fig. 3m-n on the inside front cover of the issue) …… *P. nosoda* Vecht

– Metanotum without spots or with a spot medially (Fig. 2h on the inside front cover of the issue), posterior portion of T1 slightly narrow, its length 2.3× maximum width and 2.7× maximum height (Fig. 3o-p on the inside front cover of the issue) …… *P. varia* Fabricius

2.3 *Parapolybia tinctipennis* (Cameron, 1900) (Fig. 1a, Fig. 2a, and Fig. 3a-b on the inside front cover of the issue; Fig. 5a on the inside back cover of the issue)

Icaria tinctipennis Cameron, 1900: 503[5].

Parapolybia indica tinctipennis: van der Vecht, 1966: 29[8]; Das & Gupta, 1984 (1983): 429[13]; 1989: 179[14].

Parapolybia tinctipennis: Saito-Morooka, 2015: 223-225[3].

Diagnosis: This species is distinguished from the other species by the following characters: body dark reddish brown, except T2 and following segments black (Fig. 2a on the inside front cover of the issue); occipital carina complete, extending to base of mandible (Fig. 1a on the inside front cover of the issue); propodeum with strongly transverse furrows; T1 strongly swollen along the posterior half, its length 2.2× maximum width and 2.4× maximum height (Fig. 3a-b on the inside front cover of the issue). These structures and coloration of the specimens from China are almost similar to those described in Cameron (1900).

Specimens examined: 3 ♀♀, China, Guangxi Zhuang Autonomous Region, Jinxiu County, 24-VII-2015, LI Ting-jing; 2 ♀♀, China, Guizhou, Danzhai County, 16-VI-2009, ZHANG X L; 1 ♀, China, Jiangxi, Chongyi County, 18-VI-2014, LI Ting-jing.

Distribution: Guangxi, Guizhou, Jiangxi. Abroad: India; Laos; Vietnam.

2.4 *Parapolybia bioculata* (van der Vecht, 1966) (Fig. 1b, Fig. 2b, and Fig. 3c-d on the inside front cover of the issue; Fig. 4a-d and Fig. 5b on the inside back cover of the issue)

Parapolybia indica bioculata van der Vecht, 1966: 26-29[8]; Li, 1982: 98, 100[9]; 1985: 55[10]; Das & Gupta, 1984: 429[13]; 1989: 179[14].

Polybia indica: Bingham, 1897: 383-384[2].

Parapolybia bioculata: Saito-Morooka, 2015: 220-222[3].

Diagnosis: The species was described as a subspecies of *P. indica* in foregoing literature, and then upgraded to an isolated species by Saito-Morooka et al. (2015). This species is distinguished from the other species of the genus by the following characters: body yellow, except T2 and following segments black (Fig. 2b on the inside front cover of the issue); occipital carina complete, extending to base of mandible (Fig. 1b on the inside front cover of the issue); median area of metanotum slightly concave; T2 and T3 with a pair of yellow spots, respectively; antennae and legs distinctly elongated (Fig. 4a-d on the inside back cover of the issue). These structures and coloration of the specimens from China are almost similar to those described in Saito-Morooka et al. (2015), except the following characters: clypeus with one large brown spot and T1 dark brown (Fig. 3c-d on the inside front cover of the issue).

Specimens examined: 4 ♀♀, China, Guangxi Zhuang Autonomous Region, Jinxiu County, 24-VII-2015, LI Ting-jing; 2 ♀♀, China, Guangxi Zhuang Autonomous Region, Jinxiu County, 20-VII-2015, DU Shi-jie; 1 ♀, China, Guangxi Zhuang Autonomous Region, Shiwandashan, 17-VIII-2011, YAN Cheng-jin; 1 ♀, China, Guangxi Zhuang Autonomous Region, Wuming County, 12-VIII-2011, LIU Zheng.

Distribution: Guangxi. Abroad: Myanmar; Vietnam; Laos.

2.5 *Parapolybia flava* (Saito-Morooka, Nguyen & Kojima, 2015) new record(Fig. 1c, Fig. 2c, and Fig. 3e-f on the inside front cover of the issue; Fig. 5c-d on the inside back cover of the issue)

Parapolybia indica indica (de Saussure): van der Vecht, 1966: 29[8].

Parapolybia flava: Saito-Morooka, 2015: 225-227[3].

Diagnosis: This species was described as *P. indica indica* in Vecht (1966), and upgraded to an isolated species by Saito-Morooka et al. (2015). It is distinguished from the other species of the genus by the following characters: body yellow (Fig. 2c on the inside front cover of the issue); occipital carina complete, extending to base of mandible (Fig. 1c on the inside front cover of the issue); gena developed and visible in front view, in lateral view slightly broader than eye; T2 strongly concave sublaterally (Fig. 5c-d on the inside backt cover of the issue). These structures and coloration of the specimens from China are almost similar to those described in Saito-Morooka (2015).

Specimens examined: 3 ♀♀, China, Guangxi Zhuang Autonomous Region, Jinxiu County, 26-VII-2015, LI Ting-jing.

Distribution: Guangxi (new record). Abroad: Vietnam.

2.6 *Parapolybia takasagona* (Sonan, 1944) (Fig. 1d, Fig. 2d, and Fig. 3g-h on the inside front cover of the issue; Fig. 5e on the inside back cover of the issue)

Parapolybia takasagona Sonan, 1944: 344[7]; Starr, 1992: 112[24]; Yamane, 1995: 75[25].

Parapolybia takasagona: Saito-Morooka, 2015: 223[3].

Diagnosis: This species is distinguished from the other species by the following characters: body yellow (Fig. 2d on the inside front cover of the issue); occipital carina complete, extending to base of mandible (Fig. 1d on the inside front cover of the issue); T1 in lateral view nodulated posteriorly, its length 2.5×maximum width and 2.9×maximum height (Fig. 3g-h on the inside front cover of the issue). These structures and coloration of the specimens from China are almost similar to those described in Saito-Morooka et al. (2015).

Specimens examined: 1 ♀, China, Guizhou, Tongzi County, 10-VII-2015, HUANG Zeng-hui.

Distribution: Guizhou, Taiwan. Abroad: Japan.

2.7 *Parapolybia indica* (de Saussure, 1854) (Fig. 1e, Fig. 2e, and Fig. 3i-j on the inside front cover of the issue; Fig. 4e-f and Fig. 5f on the inside back cover of the issue)

Polybia indica de Saussure, 1854: 207[1].

Stelopolybia indica: du Buysson, 1913: 298[22].

Parapolybia indica: von Schulthess 1913: 153-154[19].

Parapolybia indica indica: van der Vecht, 1966: 26[8].

Parapolybia indica: Saito-Morooka, 2015: 217-220[3].

Diagnosis: This species is distinguished from the other species of the genus by the following characters: body yellow (Fig. 2e on the inside front cover of the issue); occipital carina complete, extending to base of mandible (Fig. 1e on the inside front cover of the issue); clypeus with a pair of paler brown spots; wings with black short setae; T2 somewhat concave, without or only with indistinct spots (Fig. 5f on the inside back cover of the issue); in male, parameral spine slender entirely and narrow basally; ventral margin of digitus with fine punctures (Fig. 4e-f on the inside back cover of the issue). It is similar to *P. crocea*, but can be distinguished by without or only with indistinct spots on T2 and wings with black short setae. These structures and coloration of the specimens from China are almost similar to those described in Saito-Morooka et al. (2015).

Specimens examined: 14 ♀♀ 2 ♂, China, Guangxi Zhuang Autonomous Region, Daming Mountain, 8-VIII-2011, YAN Cheng-jin; 3 ♀♀, China, Guizhou, Leishan County, 25-VI-2015, LI Ting-jing; 1 ♀, China, Guizhou, Libo County, 20-VI-2015, LI Ting-jing; 13 ♀♀, China, Sichuan, Emei Mountain, 7-VIII-2011, LI Ting-jing; 1 ♀, China, Yunnan, Mengla County, 9-VII-2011, ZHOU Xin; 3 ♀, China, Chongqing, Jinyun Mountain, 22-IX-2007, CHEN Bin.

Distribution: Guangxi, Guizhou, Sichuan, Yunnan, Chongqing, Taiwan. Abroad: India; Myanmar; Borneo; Democratic People's Republic of Korea; Japan.

2.8 *Parapolybia crocea* (Saito-Morooka, Nguyen & Kojima, 2015) (Fig. 1f, Fig. 2f, and Fig. 3k-l on the inside front cover of the issue; Fig. 4g-h and Fig. 5g on the inside back cover of the issue)

Parapolybia indica: Yamane, 1995: 75[25]; Yamane, 1999: 452[28].

Parapolybia indica indica: van der Vecht, 1966: 26[8].

Parapolybia crocea: Saito-Morooka, 2015: 227-229[3].

Diagnosis: The species was described as *P. indica* in foregoing literature, and then upgraded to an isolated species by Saito-Morooka (2015). It is distinguished from the other species of the genus by the following characters: body yellow (Fig. 2f on the inside front cover of the issue); occipital carina complete, extending to base of mandible (Fig. 1f on the inside front cover of the issue); wings with yellow setae; T2 somewhat concave, with a pair of distinct yellow spots sublaterally (Fig. 5g on the inside back cover of the issue); T3 also with a pair of yellow spots; in male, parameral spine short entirely and broad basally; digitus somewhat bulged and ventral margin with fine punctures (Fig. 4g-h on the inside back cover of the issue). These structures and coloration of the specimens from China are almost similar to those described in Saito-Morooka et al. (2015).

Specimens examined: 4 ♀♀, China, Guangxi Zhuang Autonomous Region, Daming Mountain, 12-VIII-2011, LIU Sheng; 8 ♀♀ 1 ♂, China, Guangxi Zhuang Autonomous Region, Tianlin County, 22-VIII-2014, LI Xiang; 6 ♀♀, China, Guizhou, Leishan County, 24-VI-2015, MA Zheng-xia; 4 ♀♀, China, Sichuan, Chongzhou County, 17-VIII-2011, LI Ting-jing; 6 ♀♀, China, Chongqing, Kaixian, 10-VIII-2015, LI Ting-jing; 1 ♀, China, Hunan, Pingjiang County, 28-V-2007, BAI Yuan.

Distribution: Guangxi, Guizhou, Sichuan, Chongqing, Hunan, Taiwan. Abroad: Japan; Republic of Korea; Thailand; Laos; Vietnam.

2.9 *Parapolybia nodosa* (van der Vecht, 1966) (Fig. 1g, Fig. 2g, and Fig. 3m-n on the inside front cover of the issue; Fig. 5h on the inside back cover of the issue)

Parapolybia nodosa van der Vecht, 1966: 25, 39[8]; Yamane, 1979: 4, 15, 32[27]; Das & Gupta, 1984 (1983): 432[13]; Starr, 1992: 113[24]; Yamane, 1995: 75, 77[25].

Diagnosis: This species is distinguished from the other species by the following characters: body white, except metasoma dark brown (Fig. 1g on the inside front cover of the issue); occipital carina incomplete, not

extending to base of mandible (Fig. 2g on the inside front cover of the issue); metanotum with a dark brown spot posteriorly; T1 more swollen posteriorly, its length 2.5× maximum width and 3× maximum height (Fig. 3c-d on the inside front cover of the issue). Some structures and coloration of these specimens from China are different from those in Vecht (1966): clypeus with a vertical black band; mesonotum reddish brown, without longitudinal band; T2 and following segments with a pair of white spots, respectively (Fig. 5h on the inside back cover of the issue).

Specimens examined: 6 ♀♀, China, Guangxi Zhuang Autonomous Region, Jinxiu County, 24-VII-2015, LI Ting-jing; 2 ♀♀, China, Guizhou, Libo County, 21-VI-2015, LI Ting-jing; 2 ♀♀, China, Guizhou, Jiangkou County, 28-VI-2015, MA Zheng-xia.

Distribution: Guangxi, Guizhou, Taiwan. Abroad: India; Nepal; Myanmar.

2.10 *Parapolybia varia* (Fabricius, 1787) (Fig. 1h, Fig. 2h, and Fig. 3o-p on the inside front cover of the issue; Fig. 6a-i and Fig. 7a-h on the inside back cover of the issue)

Vespa varia Fabricius, 1787: 293[4].

Polistes varia de Saussure, 1852: 265[15]; Dalla Torre, 1904: 72[16].

Polybia orientalis de Saussure, 1854: 208[1]; Bingham, 1897: 383[2]; Meade-Waldo, 1911: 108[6]; Meade-Waldo, 1914: 406[17].

Polybia artifex Smith, 1860 (1861): 90[18]; Schulthess, 1913: 164[19].

Icaria quadrimaculata Cameron, 1900: 496[5]; van der Vecht, 1966: 30[8].

Icaria carinata Cameron, 1900: 499[5].

Icaria wroughtoni Cameron, 1900: 500[5]; Meade-Waldo, 1914: 406[17].

Icaria fuscipennis Cameron, 1900: 501[5]; Meade-Waldo, 1911: 108[6]; Meade-Waldo, 1914: 406[17].

Icaria cameroni Dalla Torre, 1904: 73[16].

Icaria singapurensis Dover, 1929: 46[20].

Icaria carinifera Schulz, 1906: 328[11].

Polybia varia: Schulz, 1912: 86, 101[21].

Icaria annulipes Meade-Waldo, 1914: 406[17].

Stelopolybia disticha du Buysson, 1913: 298[22]; van der Vecht, 1966: 31[8].

Stelopolybia orientalis: du Buysson, 1913: 298-299[22].

Parapolybia orientalis: von Schulthess, 1913: 153, 155[19].

Parapolybia disticha Sonan, 1944: 342[7].

Parapolybia varia: Sonan, 1944: 342-343[7]; van der Vecht, 1966: 25, 30[8]; Yamane, 1983: 169-173[23]; Das & Gupta, 1984 (1983): 430[13]; Das & Gupta, 1989: 177, 180[14]; Starr, 1992: 111-112[24]; Yamane, 1995: 77[25].

Parapolybia varia varia: Giordani Soika, 1976: 287[26]; Li, 1982: 98, 100[9]; 1985: 55, 57[10].

Diagnosis: This species is distinguished from the other species of the genus by the following characters: body yellow, except metasoma brown (Fig. 2h on the inside front cover of the issue); occipital carina incomplete, not extending to base of mandible (Fig. 1h on the inside front cover of the issue); mesoscutum with two longitudinal yellow bands; T1 moderately swollen posteriorly, its length 2.3× maximum width and 2.7× maximum height (Fig. 3o-p on the inside front cover of the issue); in male, parameral spine without setae; volsella produced apically, digitus fan shaped, apical half with fine punctures ventrally (Fig. 6f-g on the inside back cover of the issue). This species is strongly variable in color variants (Fig. 6a-d on the inside back cover of the issue): the mark in front of anterior ocellus banded or oval; two longitudinal bands on mesoscutum narrow to broad; S1 without or with a distinct longitudinal band posteriorly (Fig. 7a-d on the inside back cover of the issue); a pair of yellow spots on S2 unconnected ventrolaterally, connected medially or connected extensively (Fig. 7e-h on the inside back cover of the issue). Particularly, four specimens of *P.*

varia are obviously different from typical *varia* in appearance: body reddish brown, except T2 and following segments dark brown (Fig. 6e on the inside back cover of the issue); the area in front of anterior ocellus without yellow mark; mesoscutum absent or with two longitudinal indistinct bands; T1 length 2.5× maximum width and 3.1× maximum height. Whereas, characters of their genitalia in male are the same as those in typical *varia* (Fig. 6f-i on the inside back cover of the issue).

Specimens examined: 6 ♀♀, China, Yunnan, Fugong County, 22-VII-2003, WANG Peng; 32 ♀♀ 1 ♂, China, Yunnan, Hekou County, 17-VII-2015, YANG Lin; 1 ♀, China, Yunnan, Hekou County, 27-X-2006, WANG Sheng-he; 24 ♀♀, China, Yunnan, Mengla County, 29-VII-2015, ZHOU Wen-kai; 8 ♀♀, China, Yunnan, Lianghe County, 28-VII-2011, ZHOU Xin; 1 ♀, China, Yunnan, Ning'er County, 25-VII-2015, HUANG Pan; 3 ♀♀, China, Guangdong, Boluo County, 1-VI-2012, YANG Cheng; 3 ♀♀, China, Guangxi Zhuang Autonomous Region, Jinxiu County, 24-VII-2015, LI Ting-jing; 7 ♀♀ 1 ♂, China, Sichuan, Emei Mountain, 9-VIII-2011, BAI Yuan; 13 ♀♀, China, Chongqing, Kaixian, 10-VIII-2015, LI Ting-jing.

Distribution: Yunnan, Guangdong, Guangxi, Sichuan, Chongqing. Abroad: India; Nepal; Myanmar; Thailand; Malay Peninsula; Borneo; Republic of Indonesia; Philippine; Democratic People's Republic of Korea; Japan.

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动物科学

中国异腹胡蜂属分类研究及所有种类检索表

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摘要:【目的】对中国异腹胡蜂属(*Parapolybia*)进行系统分类研究。【方法】基于形态学特征进行传统形态分类。【结果】中国异腹胡蜂属包括 8 个已知种,其中黄侧异腹胡蜂(*Parapolybia flava* Saito-Morooka) 为新纪录种,提供了这 8 种的重要鉴别特征和特征图;列出并详细比较了变侧异腹胡蜂(*Parapolybia varia* Fabricius)易变的颜色特征;制定了异腹胡蜂属世界已知种类检索表。【结论】异腹胡蜂属世界已知 13 种,中国存在 8 个已知种。

关键词:膜翅目;胡蜂科;马蜂亚科;异腹胡蜂属;新纪录;中国

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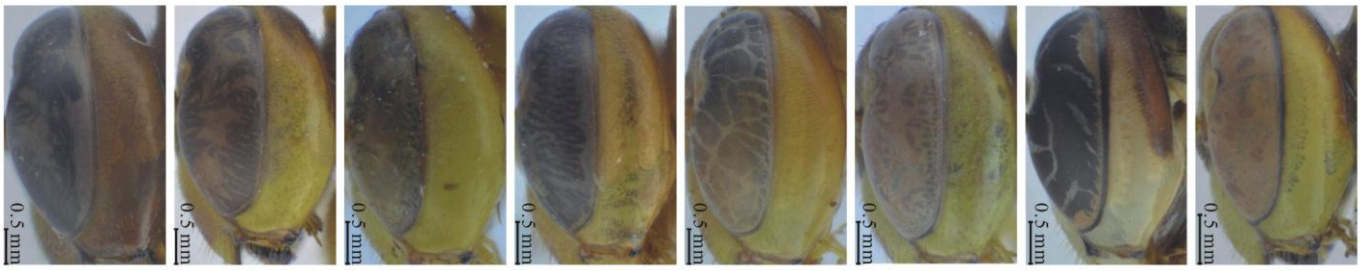
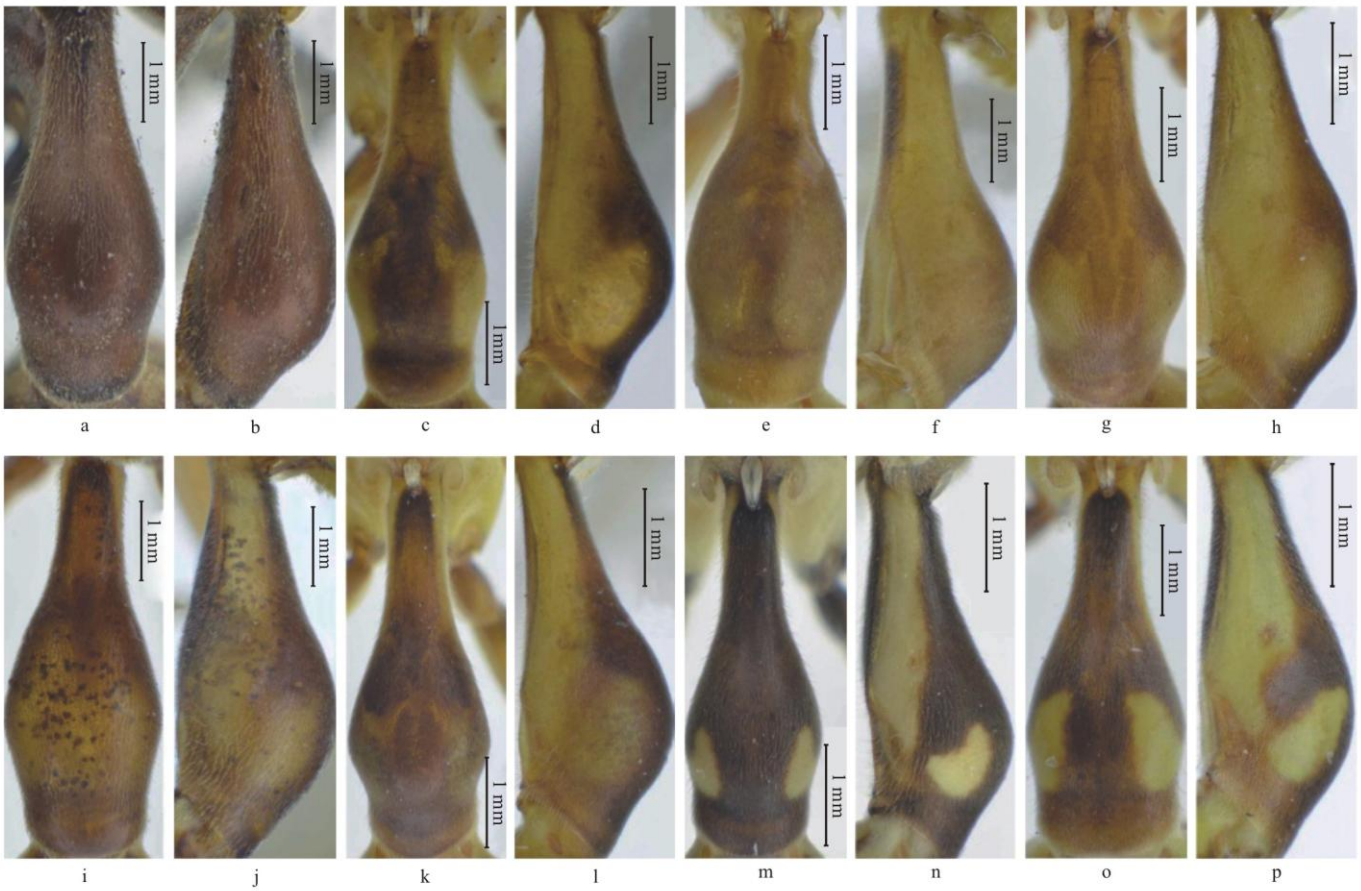


Notes: a. *P. tinctipennis*; b. *P. bioculata*; c. *P. fava*; d. *P. takasagona*; e. *P. indica*; f. *P. crocea*; g. *P. nodosa*; h. *P. varia*.

Fig. 1 Gena of *Parapolybia* ♀ (lateral view)

Notes: a. *P. tinctipennis*; b. *P. bioculata*; c. *P. fava*; d. *P. takasagona*; e. *P. indica*; f. *P. crocea*; g. *P. nodosa*; h. *P. varia*.

Fig. 2 Habitus of *Parapolybia* ♀ (dorsal view)



Notes: a. *P. tinctipennis* (dorsal view); b. *P. tinctipennis* (lateral view); c. *P. bioculata* (dorsal view); d. *P. bioculata* (lateral view); e. *P. fava* (dorsal view); f. *P. fava* (lateral view); g. *P. takasagona* (dorsal view); h. *P. takasagona* (lateral view); i. *P. indica* (dorsal view); j. *P. indica* (lateral view); k. *P. crocea* (dorsal view); l. *P. crocea* (lateral view); m. *P. nodosa* (dorsal view); n. *P. nodosa* (lateral view); o. *P. varia* (dorsal view); p. *P. varia* (lateral view).

Fig. 3 T1 of *Parapolybia* ♀

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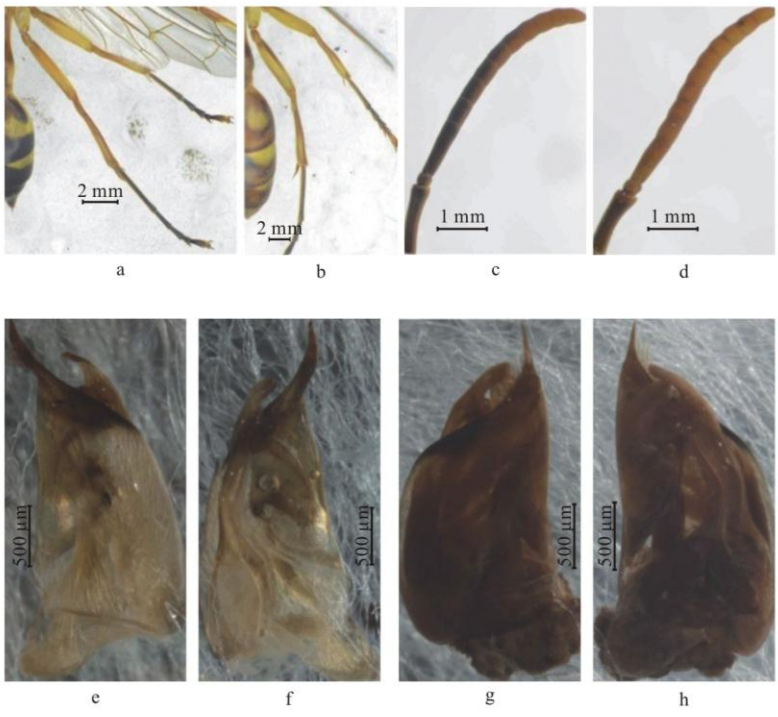

Notes: a. *P. bioculata* (legs); b. *P. crocea* (legs); c. *P. bioculata* (antennae); d. *P. crocea* (antennae); e. *P. indica* (genitalia, dorsal view); f. *P. indica* (genitalia, ventral view); g. *P. crocea* (genitalia, dorsal view); h. *P. crocea* (genitalia, ventral view).

Fig. 4 Legs (♀), antennae (♀), and genitalia (♂)

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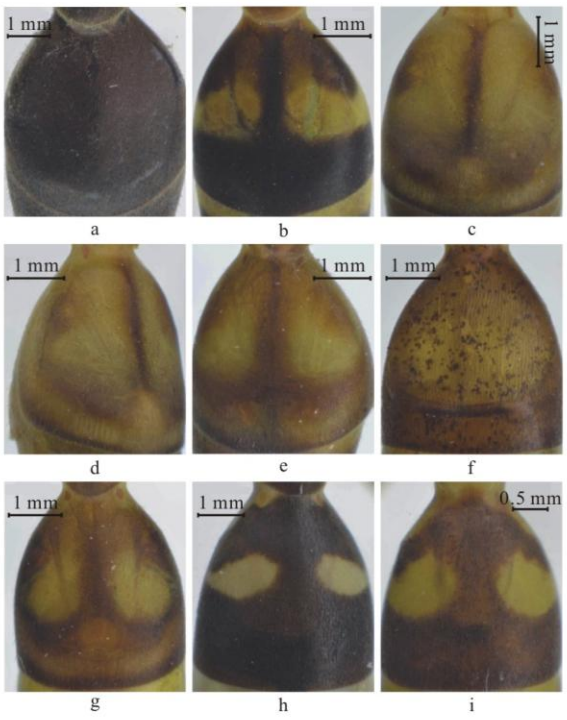

Notes: a. *P. tinctipennis*; b. *P. bioculata*; c. *P. fava*; d. *P. fava* (subdorsal view); e. *P. takasagona*; f. *P. indica*; g. *P. crocea*; h. *P. nodosa*; i. *P. varia*.

Fig. 5 T2 of *Parapolybia* ♀ (dorsal view)

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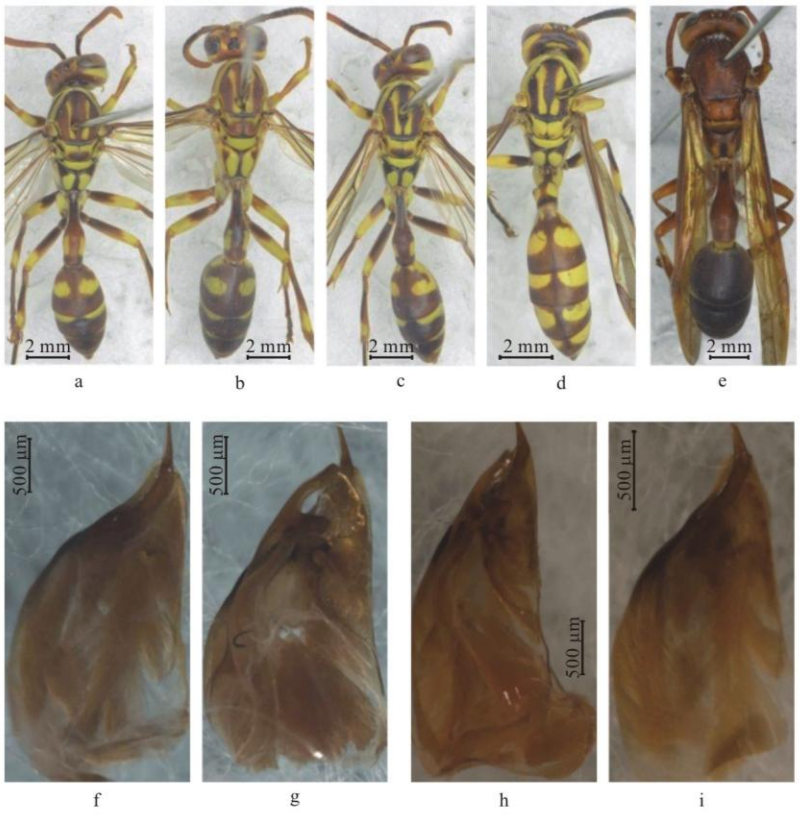

Notes: a-d. typical varia (dorsal view); e. reddish brown specimen (dorsal view); f. typical varia (genitalia, dorsal view); g. typical varia (genitalia, ventral view); h. reddish brown specimen (genitalia, ventral view); i. reddish brown specimen (genitalia, dorsal view).

Fig. 6 Habitus (♀) and genitalia (♂) of *P. varia*

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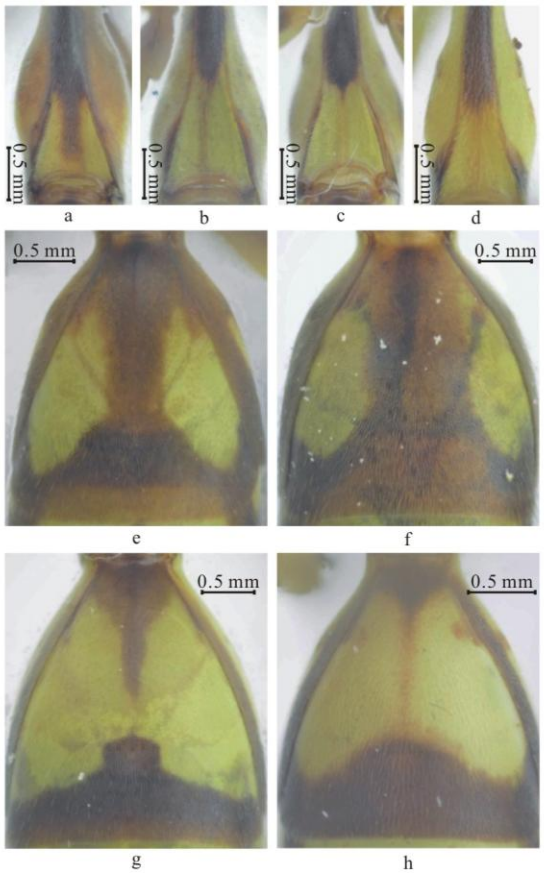

Notes: a-d. S1; e-h. S2.

Fig. 7 S1 and S2 of *P. varia*