

**TRIGOMPHUS HAINANENSIS SPEC. NOV.,
A NEW DRAGONFLY SPECIES FROM HAINAN, CHINA
(ANISOPTERA: GOMPHIDAE)**

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Both sexes of the new sp. are described and illustrated. Holotype ♂, paratype ♀: China, Wushishan, Hainan, 30-III-2008; deposited in the Collection of Aquatic Insects and Soil Animals, Department of Entomology, South China Agricultural University Guangzhou. *T. hainanensis* sp. n. is closely related to *T. citimus* (Needham), from which it can be distinguished by the labrum, colour of ♂ superior appendices and by a pointed black occipital horn in ♀.

INTRODUCTION

The genus *Trigomphus* was erected by BARTENEF (1911) with *T. anormolobatus* as the type species. To date, it includes 12 species, distributed from Japan to Korea and China, 9 of these were recorded from mainland China (NEEDHAM, 1930; CHAO, 1990; ZHOU & WU, 1992), viz.: *T. agricola* (Ris, 1916) (Zhejiang, Fujian and Jiangsu), *T. beatus* Chao, 1954 (Fujian, Hunan, Hubei and Guangxi), *T. carus* Chao, 1954 (Fujian), *T. citimus* (Needham, 1931) (Heilongjiang and Jilin), *T. lautus* (Needham, 1931) (Fujian), *T. nigripes* (Selys, 1887) (Jilin and Liaoning), *T. succumbens* (Needham, 1930) (Jilin), *T. svenhedini* (Sjöstedt, 1933) (Sichuan) and *T. yunnanensis* Zhou and Wu, 1992 (Yunnan). WILSON & REELS (2001) recorded 27 gomphid species from Hainan without mention of the genus *Trigomphus*. The present new species broadens the known distribution of this genus, showing Hainan Island as the southernmost point of the range of *Trigomphus*.

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TRIGOMPHUS HAINANENSIS SP. NOV.

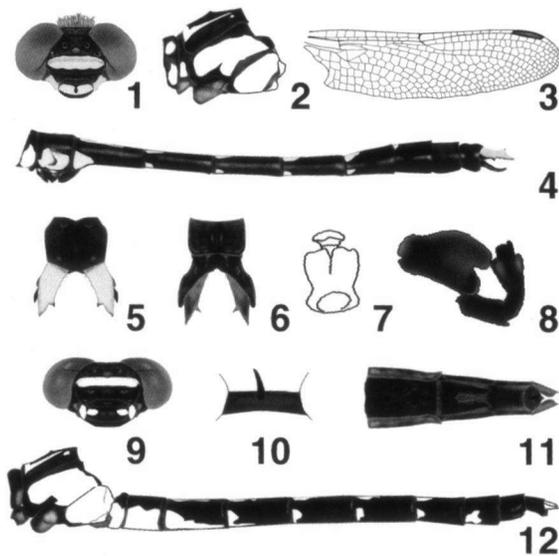
Figures 1-14

Material. — **Holotype:** ♂: China, Wuzhishan, Hainan, 30-III-2008, Zhang Haomiao leg. — **Paratypes:** 1 ♂, 1 ♀, same locality, date and collector. All specimens deposited in the Collection of Aquatic Insects and Soil Animals, Department of Entomology, South China Agricultural University, Guangzhou, China.

Etymology. — The name refers to the type locality.

A small sized *Trigomphus*. Colour black, with greenish yellow stripes.

MALE (holotype). — **Head.** — Face black with greenish yellow stripes. Middle lobe of labium black, lateral lobe of labium yellow. Labrum mostly greenish yellow with a rounded black spot in the centre. Base of mandibles pale yellow. Labrum, clypeus and frons with fine black setae. Clypeus entirely black. Antefrons black with central 1/2 forming a yellow stripe. Upper frons black with a transverse yellow stripe occupying 4/5 width. Vertex black with setae. A rounded protuberance above each lateral ocellus with black setae. Occiput margin unbent with dense long black setae.



Figs1-12. *Trigomphus hainanensis* sp. n., Figs 1-8: ♂ holotype; Figs 9-12: ♀ paratype: (1) head, frontal view; — (2) synthorax, lateral view; — (3) hindwing; — (4) abdomen, lateral view; — (5) caudal appendages, dorsal view; — (6) same, ventral view; — (7) distal segment of secondary genitalia, ventral view; — (8) secondary genitalia, lateral view; — (9) head, frontal view; — (10) occipital horn; — (11) valvula vulvae; — (12) synthorax and abdomen, lateral view.

Thorax. — Frontal lobes of prothorax yellow, central lobe black with a pair of yellow lateral spots below, hinder lobe black. Synthorax black with greenish yellow collar stripes not connected at centre. Dorsal crest dark brown and raised to a pointed protuberance. Antehumeral stripe absent. Antehumeral spot yellow, very small. Sides of synthorax black with greenish yellow stripes across mesepimeron and metepisternum. Metepimeron and metaposternum greenish yellow. Coxae pale yellow, legs black. Wings hyaline, anal triangle 4-celled (Fig.3).

Abdomen. — Black, with yellow stripes. S1

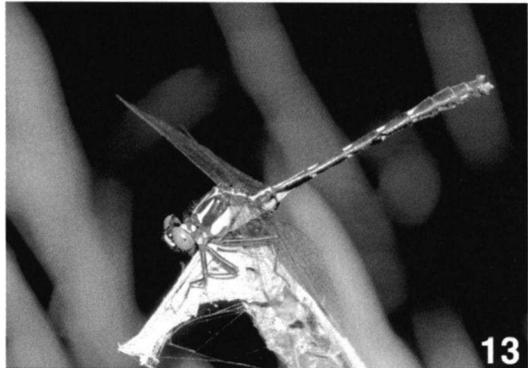
with large yellow lateral spots below and yellow spot on dorsum. S2 with contiguous yellow spots along the dorsal carina and large spots below which cover the auricle. S3 with yellow stripe along the mid-dorsal carina of the whole segment and triangular shaped yellow lateral spots on the post-ventral area. S4-7 with yellow spot at the anterior dorsal carina, tapering posteriorly, and small lateral spots on the post-ventral area. S8-10 entirely black. Superior appendages white with distal tip black, broad at base and narrowing beyond mid-point with black pointed tip. About 1/2 way along the outer margin, a prominent lateral peg, pointing downwards, distal tip black. About 2/3 along the inner margin, a sharply attenuated peg pointing inwards with the distal tip black. Ventral margin of superior appendages black. Inferior appendages black, with the distal tip of two lobes strongly divided. Secondary genitalia shown in Figures 7 and 8.

FEMALE (paratype). — Head black, with greenish yellow stripes. Labrum black with two yellow separated spots (Fig. 9). Labrum, clypeus and frons similar to male. Vertex black with setae. A rounded protuberance above each lateral ocellus with black setae. Occipital margin unbent with a pointed black occipital horn in the middle, curved slightly forwards (Fig.10). Synthorax black with yellow stripes. Sides of synthorax mostly yellow. Abdomen black with yellow markings similar to but more extensive than male. Synthorax and abdomen shown in Figure 12. Cerci white. The valvula vulvae are divided by a V-shaped cleft, the apical cleft approaching 2/3 length of the subgenital plate (Fig.11).

Measurements (mm). — Male (holotype): body length 42.5; abd. + app. 33.0; hindwing 24.5; — female (paratype): body length 39.0; abd. + app. 29.5; hindwing 25.5; — male (paratype): body length 42.0; abd. + app. 32.5; hindwing 24.5;

DISTRIBUTION. — Hainan (China). Known from type locality only.

NOTES ON BIOLOGY. — Members of the genus typically inhabit lentic ponds. All



Figs 13-14. *Trigomphus hainanensis* sp. nov., Wuzhishan, Hainan: (13) male; — (14) female. — [Photos by Mo Shanlian]

the known *Trigomphus* species are spring species with a rather early emergence time. This new species was found in late March in Wuzhishan Nature Reserve, where over ten male individuals were simultaneously observed near a very small pond together with *Orthetrum t. triangulare* (Sel.) and *Tetrathemis platyptera* Sel. The males usually perched on the surface of leaves along the pond and would take to flight to intercept a female as frequently as every two minutes. Two females were observed to oviposit at the site, dropping their eggs freely onto the surface of the water. In northern China, *Trigomphus* species emerge in the middle of May, making them among the earliest emerging dragonfly adults in that region. Most *Trigomphus* species require two years to complete their life cycle in northern China, but they are univoltine in southern China.

REMARKS. — CHAO (1954) divided the genus into two groups: (1) *agricola*-group: the female apical cleft deepness of valvula valvae less than the 1/2 length of subgenital plate with the apex bent outwards; — (2) *carus*-group: the female valvula vulvae are divided by a V-shaped cleft, and the deepness surpasses 1/2 the length of the subgenital plate, approaching 2/3 length of subgenital plate, with the two lobes triangular shaped. In view of the apical cleft of female vulvae, which is the 2/3 length of the subgenital plate, *T. hainanensis* sp. nov. obviously belongs to the *carus*-group, and it is closely related to *T. citimus* (Needham). It can be distinguished by the following combination of characters: (1) labrum mostly greenish yellow with a rounded black spot in the centre in the males, whereas the female labrum black with two yellow separated spots, vertex and occiput black without yellow stripes; (2) colour of male superior appendages white in dorsal view, differs from *T. citimus* with superior appendages colour gray with the two pegs black in dorsal view; (3) female with a pointed black occipital horn; (4) S4-7 with short yellow spot at the anterior dorsal carina less than 1/3 length of each segments.

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