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Two new yellow-legged species of *Hybos* Meigen from Hainan, China (Diptera, Hybotidae)

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Two new yellow-legged species of *Hybos* Meigen from Hainan, China (Diptera, Hybotidae). - Six yellow-legged species of the genus *Hybos* are reported from Hainan. The following two new species are described, illustrated and compared with morphologically similar species: *Hybos bawanglingensis* sp. n. and *H. hainanensis* sp. n. A key to the six species of the genus from Hainan is presented for the first time.

Keywords: Diptera - Hybotidae - *Hybos* - new species - Hainan.

INTRODUCTION

Within the Hybotidae *Hybos* Meigen is characterized by the following traits: long spine-like proboscis, anal cell longer than basal cell, Rs rather short, R_{4+5} and M_1 divergent apically (Chvála, 1983; Yang & Yang, 2004). It is distributed worldwide with 164 known species (Yang *et al.*, 2007). The species of *Hybos* from China were revised by Yang & Yang (2004) who mentioned 85 known species. The major references dealing with *Hybos* in the Old World are Brunetti (1920), Frey (1953), Smith (1965), Saigusa (1963, 1965), Chvála (1983), Yang & Yang (2004), and Yang *et al.* (2006).

Hainan Island with a tropical climate belongs to South China. It is famous for its rich biodiversity. Up to now, only two *Hybos* species, *H. jianfengensis* Yang, Yang & Hu, 2002 and *H. particularis* Yang, Yang & Hu, 2002, have been described from this region (Yang *et al.*, 2002; Yang & Yang, 2004). In the present paper, four yellow-legged species of *Hybos* are added to the fauna of Hainan. Two species are described as new to science. A key to the species of the genus from Hainan is presented for the first time.

MATERIAL AND METHODS

The specimens for this study are deposited in the following collections:

CAU Entomological Museum of China Agricultural University, Beijing, China.
MHNG Muséum d'histoire naturelle, Genève, Switzerland.

Basic terminology follows McAlpine (1981) and Steyskal & Knutson (1981). The following abbreviations are used: acr = acrostichal, ad = anterodorsal, av = anteroventral, d = dorsal, dc = dorsocentral, h = humeral, npl = notopleural, oc = ocellar, pd = posterodorsal, presc = prescutellar, psa = postalar, pv = posteroventral, v = ventral.

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KEY TO SPECIES (MALES) OF *HYBOS* FROM HAINAN

1. Legs mostly yellow; arista bare or pubescent 2
   Legs mostly or entirely black; arista bare 5
2. Thoracic pleuron black; scutellum black 3
   Thoracic pleuron yellow; scutellum yellow
   . . . . . *flaviscutellum* Yang & Yang, 1986
3. Hind tibia with 1 strong ad at middle; arista pubescent at least on basal 3/4 . 4
   Hind tibia without distinct ad; arista bare . . . . . *hainanensis* sp. nov.
4. Left and right surstyli hook-like; hypandrium with a large apical incision . . . . . *serratus* Yang & Yang, 1992
   Left and right surstyli not hook-like; hypandrium with a narrow cleft apically . . . . . *bawanglingensis* sp. nov.
5. Legs entirely black; wing pale grayish brown
   . . . . . *jianfengensis* Yang, Yang & Hu, 2002
   Legs partly yellow; wing hyaline . . . . . *particularis* Yang, Yang & Hu, 2002

TAXONOMIC PART

Hybos bawanglingensis sp. n. Figs 1-4

MATERIAL: Holotype male, Hainan, Bawangling, Donger, 25. V. 2007, Junhua Zhang (CAU).

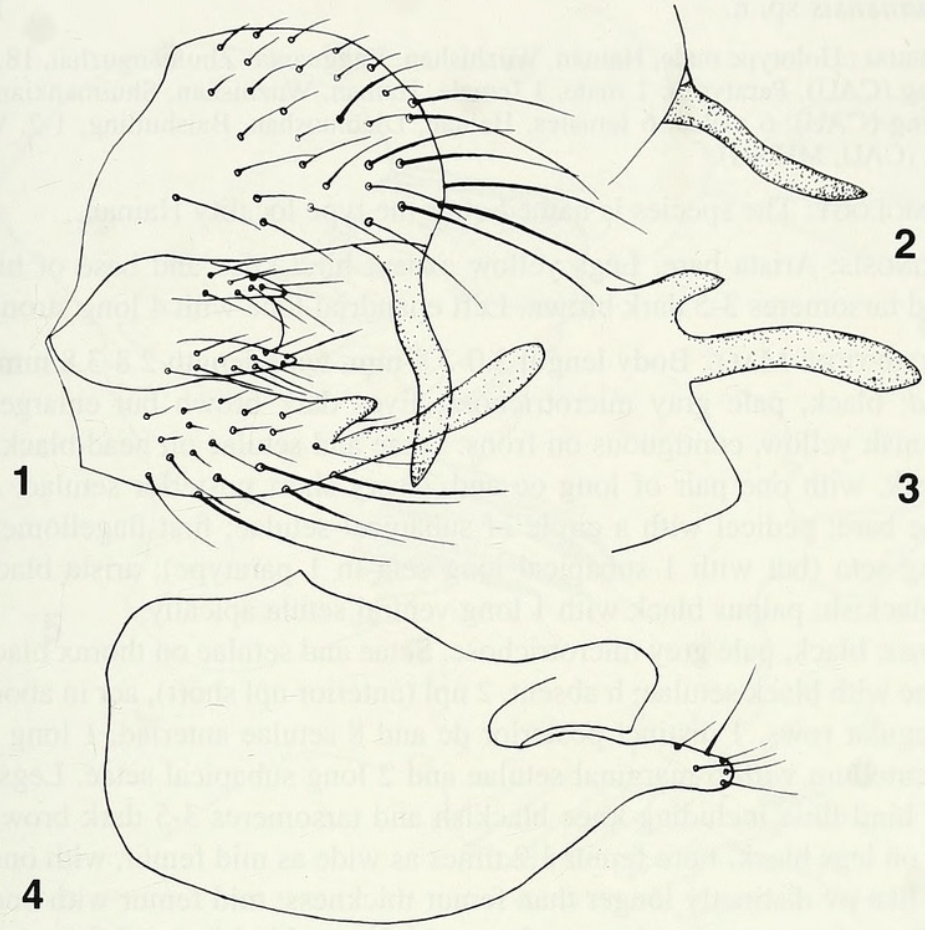
ETYMOLOGY: The species is named after the type locality Bawangling.

DIAGNOSIS: Legs yellow except tarsomeres 3-5 black. Hind tibia with 1 ad at middle. Hypandrium with a narrow cleft apically.

DESCRIPTION: MALE. Body length 4.2 mm, wing length 3.8 mm.

Head: black, pale gray microtrichose. Eyes dark brown but enlarged upper facets brownish yellow, contiguous on frons. Setae and setulae on head black; ocellar tubercle weak, with one pair of long oc and 2 very short posterior setulae. Antenna black; scape bare; pedicel with a circle of subapical setulae; first flagellomere black without dorsal setulae; arista black, short pubescent except apical 1/4 thin and bare. Proboscis black; palpus black with 1 long ventral setula apically.

Thorax: black, pale grey microtrichose. Setae and setulae on thorax black; postpronotal lobe with black setulae; h absent, 2 npl (anterior npl short), acr in about 6 more or less regular rows, 1 distinct posterior dc and 8 setulae anteriad, 1 long presc, 1 long psa; scutellum with 6 marginal setulae and 2 long subapical setae. Legs yellow; hind femur dark yellow dorsally, hind knee dark brown, hind tibia dark yellow basally; tarsomeres 3-5 dark brown. Setae and setulae on legs black. Fore femur 1.1 times as wide as mid femur, with one row of setulae-like pv nearly as long as femur thickness; hind femur 1.9 times as wide as mid femur, with 3 preapical anterior setae, and with one row of 9 v and 6 av which are spine-like and inserted on weak tubercles. Fore tibia with 1 long d at middle, apically with 1 long ad; mid tibia with 2 long ad on basal half and 1 very long av at middle, apically with 5 setae of which 1 av is very long; hind tibia with 1 long ad at middle, apically with 1 av and pd. Fore tarsomere 1 with 1 v at base; mid tarsomere 1 with 2 v on basal 2/5, apically with 1 ad and 1 pv; hind tarso-



FIGS 1-4

Hybos bawanglingensis sp. n. (male). (1) genitalia, dorsal view. (2) right surstylus. (3) left surstylus. (4) hypandrium, ventral view.

mere 1 with 2 v at base. Wing slightly tinged with grayish; stigma dark brown; veins dark brown, R_{4+5} and M_1 divergent apically. Squama dark yellow, bordered with pale setulae. Halter brownish.

Abdomen: nearly straight, black, grey microtrichose. Setulae on abdomen black. Male genitalia (Figs 1-4): left epandrial lobe narrow, left surstylus with a short and a long process closely located; right epandrial lobe wide, right surstylus with a long spine-like process strongly curved inward; hypandrium distinctly longer than wide, basally wide and nearly truncate, apically narrow and with a narrow cleft.

FEMALE: Unknown.

DISTRIBUTION: China (Hainan).

REMARKS: The new species is very similar to *Hybos gutianshanus* Yang & Yang from Zhejiang and Guangdong, but can be easily separated from the latter by having the hind femur with 3 preapical anterior setae, the hind tibia with 1 ad at middle, and the hypandrium narrowly cleft apically with the right lobe long and narrow apically. In *H. gutianshanus*, the hind femur has 4 preapical anterior setae, the hind tibia has 2 ad at middle, and the hypandrium is widely cleft apically with the right lobe wide and obtuse apically (Yang & Yang, 2004).

Hybos hainanensis sp. n. Figs 5-8

MATERIAL: Holotype male, Hainan, Wuzhishan, Jingguantai-Zhumanguzhai, 18. V. 2007, Kuiyan Zhang (CAU). Paratypes: 1 male, 1 female, Hainan, Wuzhishan, Shuimanxiang, 15. V. 2007, Jie Zeng (CAU). 6 males, 6 females, Hainan, Diaoluoshan, Baishuiling, 1-2. VI. 2007, Jingxian Liu (CAU, MHNG).

ETYMOLOGY: The species is named after the type locality Hainan.

DIAGNOSIS: Arista bare. Legs yellow except hind knee and base of hind tibia blackish and tarsomeres 3-5 dark brown. Left epandrial lobe with 4 long strong spines

DESCRIPTION: MALE. Body length 3.0-3.8 mm, wing length 2.8-3.8 mm.

Head: black, pale gray microtrichose. Eyes dark brown but enlarged upper facets brownish yellow, contiguous on frons. Setae and setulae on head black; ocellar tubercle weak, with one pair of long oc and 2 very short posterior setulae. Antenna black; scape bare; pedicel with a circle of subapical setulae; first flagellomere black without long seta (but with 1 subapical long seta in 1 paratype); arista black, bare. Proboscis blackish; palpus black with 1 long ventral setula apically.

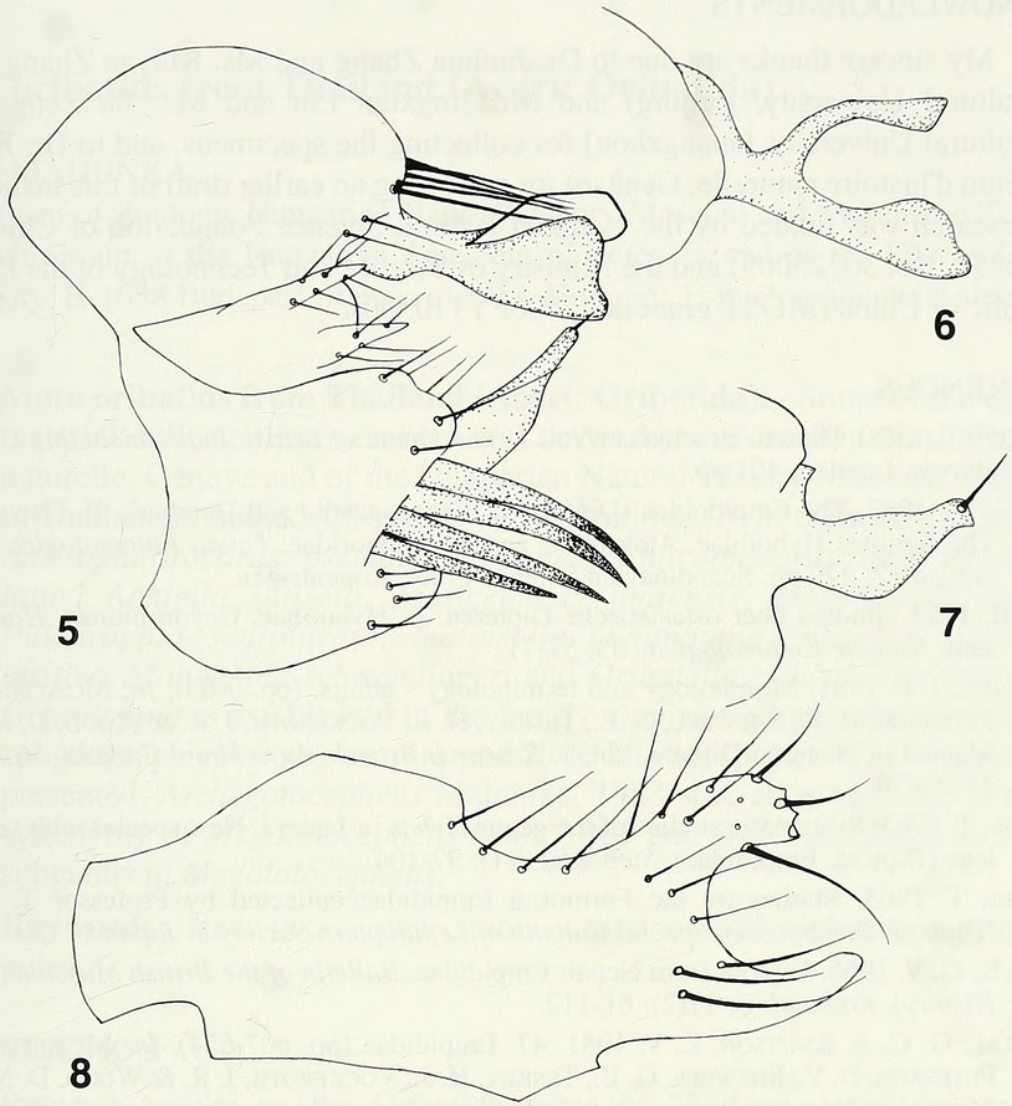
Thorax: black, pale grey microtrichose. Setae and setulae on thorax black; postpronotal lobe with black setulae; h absent, 2 npl (anterior npl short), acr in about 6 more or less regular rows, 1 distinct posterior dc and 8 setulae anteriad, 1 long presc, 1 long psa; scutellum with 6 marginal setulae and 2 long subapical setae. Legs yellow, but base of hind tibia including knee blackish and tarsomeres 3-5 dark brown. Setae and setulae on legs black. Fore femur 1.2 times as wide as mid femur, with one row of long setula-like pv distinctly longer than femur thickness; mid femur with one row of setula-like av and pv nearly as long as femur thickness; hind femur 2.7 times as wide as mid femur, with 3 preapical dorsal setae, and with one row of 15 v and 7 av which are spine-like and inserted on weak tubercles. Fore tibia with 1 long ad at middle and one row of very long setula-like pv (longer than pv on fore femur), apically with 1 long ad; mid tibia with 1 very long ad at basal 1/3, 1 short ad at apical 1/3 and 1 very long av at middle, apically with 4 setae (1 av very long); hind tibia without ad but with a long setula at middle, apically with 1 av and 1 pd. Fore tarsomere 1 with long setula-like pv; mid tarsomere 1 with 1 v at basal 1/3; hind tarsomeres 1 with 2 very short ventral spines on basal 1/3. Wing hyaline; stigma dark brown; veins dark brown, R_{4+5} and M_1 divergent apically. Squama dark yellow, bordered with pale setulae. Halter pale yellow.

Abdomen: nearly straight, black, grey microtrichose. Setulae on abdomen black. Male genitalia (Figs 5-8): left epandrial lobe wide with one row of 4 long strong spines, left surstylus curved, more or less tapering toward tip, with 1 seta at extreme tip; right epandrial lobe wide, right surstylus deeply bifurcated apically; hypandrium much longer than wide, basally slightly narrow, apically furcated.

FEMALE: Body length 3.0-3.9 mm, wing length 3.0-3.7 mm. Similar to male.

DISTRIBUTION: China (Hainan).

REMARKS: The new species is very particular. It can be easily separated from other known species of the genus by the left epandrial lobe with 4 long strong spines.



FIGS 5-8

Hybos hainanensis sp. n. (male). (5) genitalia, dorsal view. (6) right surstylus. (7) left surstylus. (8) hypandrium, ventral view.

Hybos flaviscutellum Yang & Yang, 1986.

Hybos flaviscutellum Yang & Yang, 1986: 81. Type locality: China: Guangxi, Longsheng.

MATERIAL: 1 male, Hainan, Bawangling, Donger, 24. V. 2007, Junhua Zhang (CAU).

DISTRIBUTION: China (Zhejiang, Guangxi, Hainan).

Hybos serratus Yang & Yang, 1992.

Hybos serratus Yang & Yang, 1992: 1089. Type locality: China: Sichuan, Xichang.

MATERIAL: 1 male, Hainan, Bawangling, Donger, 24. V. 2007, Kuiyan Zhang (CAU).

DIATRIBUTION: China (Henan, Sichuan, Guizhou, Guangxi, Hainan).

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