

Two new species of *Hercostomus* from China (Diptera: Dolichopodidae), with some new synonyms

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Abstract

Two species of *Hercostomus*, from *longicercus*-group and *baishanzuensis*-group respectively, are described as new to science from China: *Hercostomus hainanensis* sp. nov., *Hercostomus dashahensis* sp. nov. New synonyms are proposed and new combinations are made in the present paper.

Key words: Diptera, Dolichopodidae, *Hercostomus*, China, new species, new synonyms.

Introduction

Hercostomus LOEW, 1857, is a cosmopolitan genus of the subfamily Dolichopodinae. The 470 species are included in the catalogue by YANG *et al.* (2006). In the past decade, the research of Oriental *Hercostomus* is greatly promoted, especially in the China part by WEI (1995, 2005-2007) and YANG *et al.* (1995-2007). The number of *Hercostomus* from other realms remained stable in the recent years except African *Hercostomus* increased from 21 species to 48 species (GRICHANOV, 1999, 2004).

As new *Hercostomus* are continuously described from the Oriental Realm, Dolichopodinae researchers have called on a comprehensive revision in detail. The authors start the research from the southwest China and revealed a number of new synonyms and combinations, including *Aphalacrosoma*, *Hercostomus*, *Phlacrosoma* and *Setihercostomus*.

In the present paper, eighteen new synonyms are given for ten species. Five new combinations are created. Two species are described as new to science: *Hercostomus hainanensis* sp. nov., *Hercostomus dashahensis* sp. nov.

The research of new synonyms and combinations are mostly based on the examination of types and named specimens deposited in Anshun Centre for

Disease Prevention and Control, Guizhou, Guizhou, and Entomological Museum of China Agricultural University (CAU), Beijing. Several synonyms are confirmed under the help of Dr. O. P. Negrobov by examining the types deposited in St.-Petersburg.

The following abbreviations are used: acr-acrostichal, ad-anterodorsal, apv-apicoventral, av-anterovenral, dc-dorsocentral, LI-fore leg, LII-mid leg, LIII-hind leg, pd-postdorsal, pv-posteroventral, v-ventral.

Taxonomic account

The *Hercostomus longicercus* – group

DIAGNOSIS: Postocular bristles wholly black. Antenna black. Cercus slender and strip-like, usually longer than epandrium.

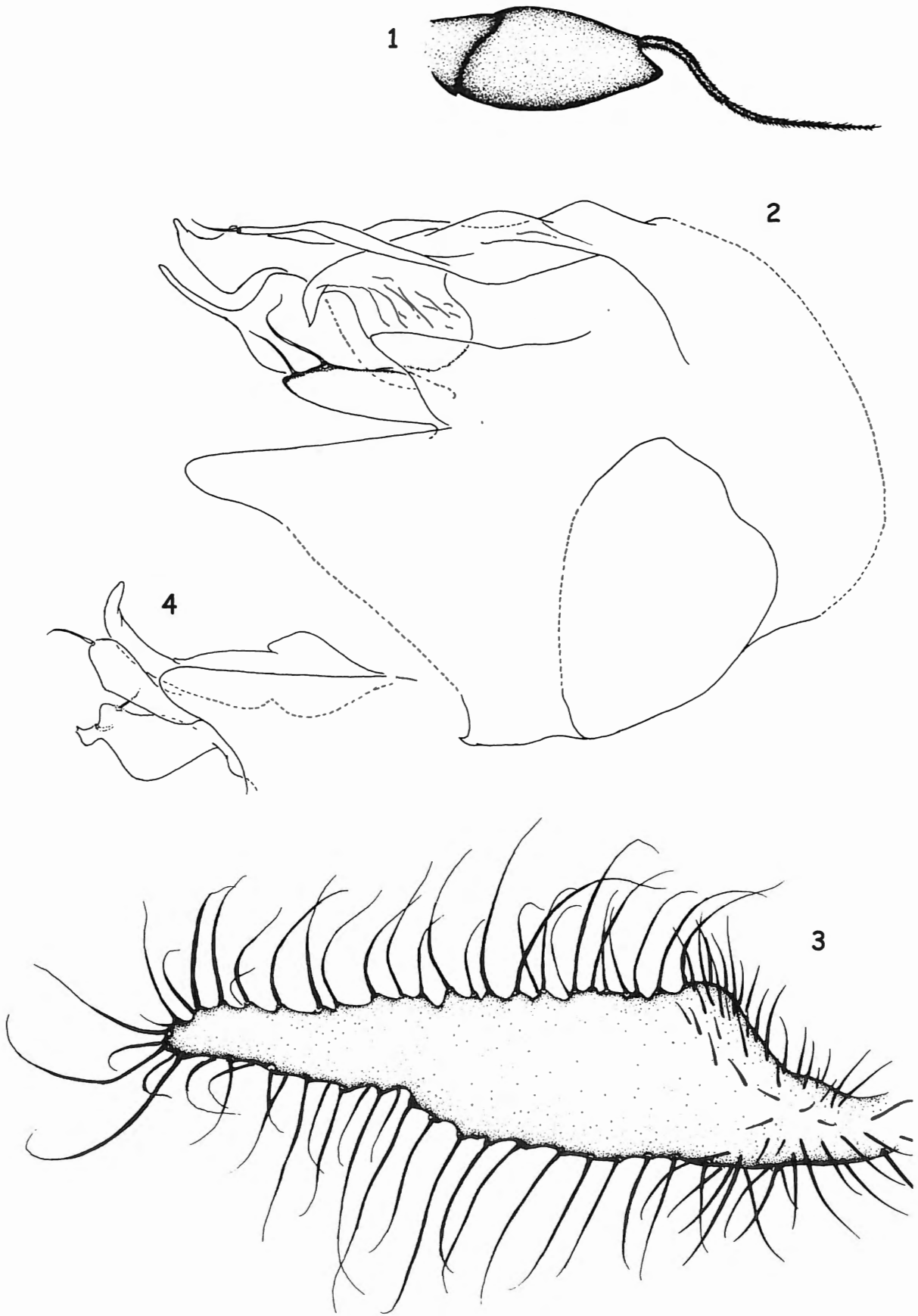
Hercostomus hainanensis sp. nov. (Figs 1-4)

MATERIAL EXAMINED: HOLOTYPE - male, CHINA, Hainan, Lingshui, Dadiaoluo, XII. 1963. (leg. Jicai Li. Type is deposited in the Zhongshan University, Guangzhou).

DIAGNOSIS: First flagellomere 1.5 times longer than wide; arista with basal segment 0.7 times as long as apical segment.

DESCRIPTION: Body length 4.0 mm, wing length 4.0 mm.

Head metallic green with pale gray pollen. Face narrowing downward, narrower than first flagellomere. Hairs and bristles on head black; postocular bristles black. Antenna (Fig. 1) black; first flagellomere 1.5 times longer than wide; arista black, minutely pubescent,



Figs 1-4. — *Hercostomus hainanensis* sp. nov. (male). 1. antenna, lateral view; 2. male genitalia, excluding cercus and subepandrial processes; 3. cercus, lateral view; 4. subepandrial processes.

with basal segment 0.7 times as long as apical segment. Proboscis blackish brown with black hairs; palpus black with black hairs and 1 black apical bristle.

Thorax metallic green with pale gray pollen. Hairs and bristles on thorax black; 6 strong dc, 7-8 paired acr; scutellum with 2 pairs of bristles (basal pair short and hair-like). Propleuron pale haired with 1 black bristle on lower portion. Legs yellow; fore coxa dark yellow, mid coxa black, hind coxa mostly blackish with yellow apex; fore and mid tarsi from tip of tarsomere 1 onward brownish, tip of hind tibia and entire hind tarsus black. Hairs and bristles on legs black; mid and hind coxae each with 1 outer bristle. Mid and hind femora each with 1 preapical bristle. Fore tibia with 1 ad and 2 pd, apically with 2 short bristles; mid tibia with 4 ad and 3 pd (1st rather short), apically with 4 bristles; hind tibia with 3 ad, 4 pd and 1 av, apically with 3 bristles. Relative lengths of tibia and 5 tarsomeres: LI 3.5 : 1.0 : 0.7 : 0.4 : 0.35 : 0.35; LII 5.5 : 2.7 : 2.0 : 1.2 : 0.8 : 0.5; LIII 6.6 : 2.0 : 2.2 : 1.5 : 0.7 : 0.5. Wing hyaline, tinged with grayish; veins brown, R_{4+5} and M distinctly convergent apically. Squama pale yellow with black hairs. Halter pale yellow.

Abdomen dark metallic green with pale gray pollen. Hairs and bristles on abdomen black. Male genitalia (Figs. 2-4): Epandrium longer than wide, lateral lobe wide apically, with 2 bristles; cercus longer than epandrium, with distinct bristles; hypandrium irregularly furcate.

Female. Unknown.

DISTRIBUTION: China (Hainan).

ETYMOLOGY: The specific name refers to the type locality of Hainan.

REMARKS: The new species can be easily separated from other known species of *longicercus*-group by the large antenna with the first flagellomere 1.5 times longer than wide, and the arista black, minutely pubescent, with the basal segment 0.7 times as long as the apical segment.

The *Hercostomus baishanzuensis* – group

DIAGNOSIS: Postocular bristles usually wholly black. Antenna black, first flagellomere large. Acr absent or 2 rows. Legs usually black or dark. Male genitalia: Epandrium longer than wide, outer lateral lobe truncated apically, with 2 apical bristles and 1 bristle near base or at middle; inner lateral lobe short; cercus

nearly triangular or somewhat rectangle, usually with distinct marginal denticles; hypandrium simple, not furcated.

Hercostomus dashahensis sp. nov.

(Figs 5-9)

MATERIAL EXAMINED: HOLOTYPE - male, CHINA, Guizhou, Daozhen, Dashahe, 1400m, 14-16. V. 2006. (leg. Zaihua Yang. Type is deposited in the Health and Anti-epidemic Station, Anshun).

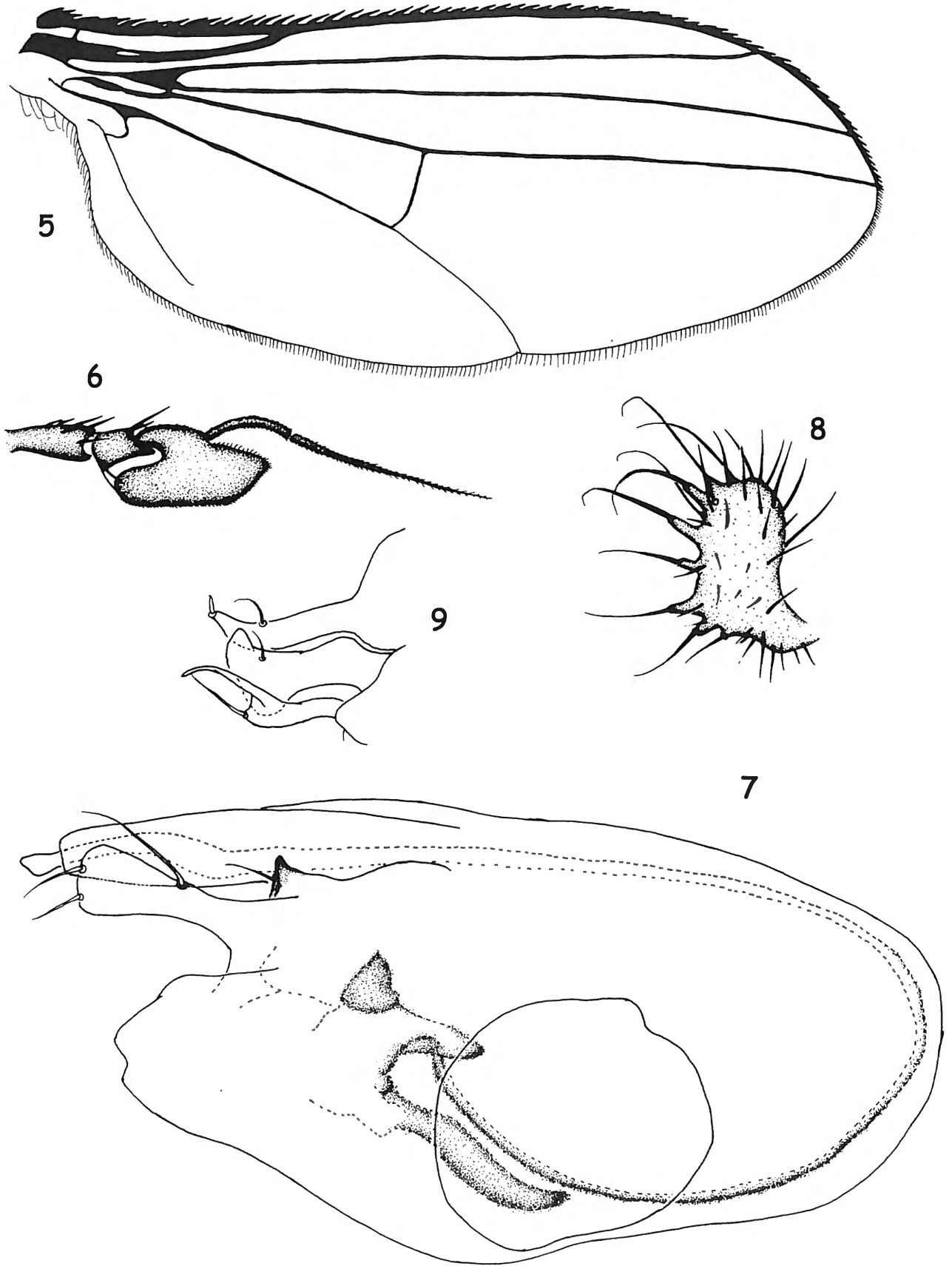
DIAGNOSIS: Antenna black; first flagellomere 1.8 times longer than wide, obtuse apically; arista with basal segment 0.38 times as long as apical segment. All coxae black. Femora black. Fore tibia with 1 black apv, 1/2 as long as fore tarsomere 1.

DESCRIPTION: Body length 2.5 mm, wing length 2.7 mm.

Head metallic green with pale gray pollen. Face narrowing downward, narrower than first flagellomere. Hairs and bristles on head black; postocular bristles entirely black. Antenna (Fig. 6) black; first flagellomere 1.8 times longer than wide, obtuse apically; arista black, minutely pubescent, with basal segment 0.38 times as long as apical segment. Proboscis dark yellow with black hairs; palpus blackish with black hairs and 1 black apical bristle.

Thorax metallic green with pale gray pollen. Hairs and bristles on thorax black; 6 strong dc, 5-6 paired acr; scutellum with 2 pairs of bristles (basal pair short and hair-like). Propleuron with 1 black bristle on lower portion. Legs black; all coxae black; femora black; fore and mid tarsi from tip of tarsomere 1 onward black, apex of hind tibia and entire hind tarsus black. Hairs and bristles on legs black; mid and hind coxae with 1 outer bristle; mid and hind femora each with 1 preapical bristle. Fore tibia with 2 ad, 2 pd and 1 pv, apically with 2 short bristles and 1 black apv (1/2 as long as fore tarsomere 1); mid tibia with 3 ad, 2 pd and 1 av, apically with 3 bristles; hind tibia with 3 ad, 3 pd, 4 pd, 1 av and 2 thin v, apically with 3 bristles. Hind tarsomere 1 with 1 v at base. Relative lengths of tibia and 5 tarsomeres: LI 2.0 : 1.0 : 0.5 : 0.4 : 0.3 : 0.3; LII 2.8 : 1.3 : 0.9 : 0.6 : 0.4 : 0.4; LIII 3.0 : 1.0 : 1.2 : 0.8 : 0.5 : 0.45. Wing (Fig. 5) hyaline, tinged with grayish; veins black, R_{4+5} and M distinctly convergent apically; CuAx ratio 0.5. Squama yellow with black hairs. Halter yellow.

Abdomen dark metallic green with pale gray pollen. Hairs and bristles on abdomen black. Male genitalia



Figs 5-9. – *Hercostomus dashahensis* sp. nov. (male). 5. wing; 6. antenna, lateral view; 7. male genitalia, excluding cercus and subepandrial processes; 8. cercus, lateral view; 9. subepandrial processes.

(Figs. 7-9): Epandrium longer than wide, outer lateral lobe with 2 apical bristles and 1 bristle near base, inner lateral lobe small with 1 bristle; cercus with distinct finger-like marginal processes and bristles; hypandrium simple, obtuse apically.

Female. Unknown.

DISTRIBUTION: China (Guizhou).

ETYMOLOGY: The specific name refers to the type locality Dashahe.

REMARKS: The new species is somewhat similar to *Hercostomus curvilobatus* Yang *et* Saigusa, but may be separated from the latter by the black femora. In *Hercostomus curvilobatus*, the femora are yellow but brown dorsally (YANG & SAIGUSA, 2002).

The genus *Aphalacrosoma*

The reexamination of the four species of *Tachytrechus* described by WEI (1998) showed that they should be assigned to *Aphalacrosoma* based on the following characters: face wide, nearly parallel-sided; clypeus long and wide (1/2-1/3 the total length of face and clypeus), convex apically and reaching lower margin of eyes; antennae widely separated at base; claws elongated, mid and hind pulvilli reduced (ZHANG & YANG, 2005).

Aphalacrosoma absarista (Wei), comb. nov.

Tachytrechus absarista WEI, 1998. Ent. Sin. 5(1): 20. Type locality: China (Guizhou, Fanjingshan).

MATERIAL EXAMINED: *Tachytrechus absarista*, D139, HOLOTYPE - male, CHINA, Guizhou, Fanjingshan, 20. VI. 1994. (leg. Lianmeng Wei. Type is deposited in the Health and Anti-epidemic Station, Anshun).

Aphalacrosoma crypsus (Wei), comb. nov.

Tachytrechus crypsus WEI, 1998. Ent. Sin. 5(1): 18. Type locality: China (Guizhou, Zhenyuan).

MATERIAL EXAMINED: *Tachytrechus crypsus*, D084, HOLOTYPE - male, CHINA, Guizhou, Zhenyuan, 14. IX. 1993. (leg. Lianmeng Wei and Xiao Zhang. Type

is deposited in the Health and Anti-epidemic Station, Anshun).

Aphalacrosoma crypsusoideus (Wei), comb. nov.

Tachytrechus crypsusoideus WEI, 1998. Ent. Sin. 5(1): 19. Type locality: China (Guizhou, Zhenyuan).

MATERIAL EXAMINED: *Tachytrechus crypsusoideus*, D085, PARATYPE - male, CHINA, Guizhou, Shibing, Yuntaishan, 16. IX. 1993. (leg. Lianmeng Wei and Xiao Zhang. Type is deposited in the Health and Anti-epidemic Station, Anshun).

Aphalacrosoma modestus (Wei), comb. nov.

Tachytrechus modestus WEI, 1998. Ent. Sin. 5(1): 19. Type locality: China (Guizhou, Fanjingshan).

Phalacrosoma sichuanense YANG & SAIGUSA, 1999. Bull. Inst. R. Sci. Nat. Belg. Ent. 69: 235. Type locality: China (Sichuan, Emeishan). **syn. nov.**

MATERIAL EXAMINED: *Tachytrechus modestus*, D086, HOLOTYPE - male, CHINA, Guizhou, Zhangjiaba, 10. IX. 1993. (leg. Lianmeng Wei and Xiao Zhang. Type is deposited in the Health and Anti-epidemic Station, Anshun).

Phalacrosoma sichuanense, HOLOTYPE - male, CHINA, Sichuan, Emeishan, 14. VIII. 1998. (leg. Ding Yang. Type is deposited in the Entomological Museum of China Agricultural University, Beijing).

REMARKS: After reexamination, we did not find reliable characteristics to distinguish *A. modestus* from *A. sichuanense*. Therefore, *A. sichuanense* is undoubtedly a new synonym of *A. modestus*.

The genus *Hercostomus*

Hercostomus flaviventris SMIRNOV & NEGROBOV

Hercostomus flaviventris SMIRNOV & NEGROBOV, 1977. Vestn. Moskow Univ. (Bio.) 3: 38. Type locality: Japan (Zupura, Takago-san).

Hercostomus basiflavus YANG, 1996. Entomofauna 17(18): 317. Type locality: China (Zhejiang, Gutianshan). **syn. nov.**

Hercostomus inunctus WEI, 1997. J. Guizhou Agri. Coll. 16(2): 42. Type locality: China (Guizhou, Fanjingshan).

syn. nov.

Hercostomus optatus WEI, 1997. J. Guizhou Agri. Coll. 16(2): 43. Type locality: China (Guizhou, Anshun). **syn. nov.**

Hercostomus opulus WEI, 1997. J. Guizhou Agri. Coll. 16(2): 43. Type locality: China (Guizhou, Anshun). **syn. nov.**

MATERIAL EXAMINED: *Hercostomus basiflavus*, HOLOTYPE - male, CHINA, Zhejiang, Gutianshan, 17. VII. 1992. (leg. Xuexin Chen. Type is deposited in the Entomological Museum of China Agricultural University, Beijing).

Hercostomus inunctus, D054, 2 males, No. 182. CHINA, Guizhou, Leigongshan, Xiaodanjiang, 800-1000m, 14. IX. 2005. (leg. Lianmeng Wei, det. Lianmeng Wei).

Hercostomus optatus, D174, HOLOTYPE - male, CHINA, Guizhou, Anshun, Jiaozishan, 6. VIII. 1993. (leg. Lianmeng Wei. Type is deposited in the Health and Anti-epidemic Station, Anshun).

Hercostomus opulus, D175, No. 849. HOLOTYPE - male, CHINA, Guizhou, Jiaozishan, 1400m, 6. VIII. 1993. (leg. Lianmeng Wei. Type is deposited in the Health and Anti-epidemic Station, Anshun).

REMARKS: WEI (1997) separated *H. inunctus* from *H. flaviventris*, *H. optatus*, *H. opulus* by the hook-like inner spine on the apex of the hind tibia and hind tarsomere 1. The reexamination finds that the inner spine is present both in the above species, including *H. basiflavus*. Also, no distinct difference was found in *H. basiflavus*, *H. inunctus*, *H. flaviventris*, *H. optatus* and *H. opulus* from *H. flaviventris*.

***Hercostomus gansuensis* YANG**

Hercostomus gansuensis YANG, 1996. Dtsch. Ent. Z. 43(2): 238. Type locality: China (Gansu, Kangxian).

Hercostomus mustus WEI, 1997. J. Guizhou Agri. Coll. 16(2): 50. Type locality: China (Guizhou, Anshun). **syn. nov.**

Hercostomus fastigiatus WEI, 1997. J. Guizhou Agri. Coll. 16(2): 46. Type locality: China (Guizhou, Anshun). **syn. nov.**

MATERIAL EXAMINED: *Hercostomus gansuensis*, HOLOTYPE - male, CHINA, Gansu, Kangxian, 30. VII. 1980. (leg. Jikun Yang. Type is deposited in the Entomological Museum of China Agricultural University, Beijing).

Hercostomus mustus, D167, HOLOTYPE - male, CHINA, Guizhou, Anshuan, Longgong. (leg. Lianmeng Wei,

Shixiang Li and Bo Zhang; Type is deposited in the Health and Anti-epidemic Station, Anshun).

Hercostomus fastigiatus, D152, HOLOTYPE - male, CHINA, Guizhou, Anshuan, Longgong, 22. VII. 1994. (leg. Lianmeng Wei, Shixiang Li and Yuzhou Du. Type is deposited in the Health and Anti-epidemic Station, Anshun).

REMARKS: We have found that *H. mustus* and *H. fastigiatus* are indistinguishable from *H. gansuensis* and should be synonymized with it.

***Hercostomus himertus* Wei**

Hercostomus himertus WEI, 1997. J. Guizhou Agri. Coll. 16(4): 34. Type locality: China (Guizhou, Fanjingshan).

Hercostomus serrulatus YANG & GROOTAERT, 1999. Bull. Inst. R. Sci. Nat. Belg. Ent. 69: 217. Type locality: China (Zhejiang, Tianmushan). **syn. nov.**

MATERIAL EXAMINED: *Hercostomus himertus*, D112, HOLOTYPE - male, CHINA, Guizhou, Fanjingshan, 20. VI. 1994. (leg. Lianmeng Wei. Type is deposited in the Health and Anti-epidemic Station, Anshun).

Hercostomus serrulatus, HOLOTYPE - male, CHINA, Zhejiang, Tianmushan, 30. V. 1998. (leg. Hong Wu. Type is deposited in the Entomological Museum of China Agricultural University, Beijing).

REMARKS: Tiny denticles on sternum 7 are not described and illustrated by Wei (1997) in his original description of *H. himertus*.

***Hercostomus jinxiuensis* YANG**

Hercostomus jinxiuensis YANG, 1997. Bull. Inst. R. Sci. Nat. Belg. Ent. 67: 137. Type locality: China (Guangxi, Jinxiu).

Hercostomus itamus WEI, 1997. J. Guizhou Agri. Coll. 16(4): 38. Type locality: China (Guizhou, Fanjingshan). **syn. nov.**

Hercostomus conglomeratus WEI & SONG, 2006. In: Insects from Chishui Spinulose Tree Fern Landscape, p. 324. Type locality: China (Guizhou, Chishui). **syn. nov.**

Hercostomus hilarosus WEI & SONG, 2006. In: Insects from Chishui Spinulose Tree Fern Landscape, p. 323. Type locality: Guizhou (Chishui). **syn. nov.**

MATERIAL EXAMINED: *Hercostomus jinxiuensis*, HOLOTYPE - male, CHINA, Guangxi, Jinxiu, 13. VI. 1982. (leg. Xinli Wang. Type is deposited in the Entomological Museum of China Agricultural University, Beijing).

Hercostomus itamus, D145, HOLOTYPE - male, CHINA, Guizhou, Fanjingshan, 20. VI. 1994. (leg. Lianmeng Wei. Type is deposited in the Health and Anti-epidemic Station, Anshun).

REMARKS: *H. itamus*, *H. conglomerates* and *H. hilarosus* are confirmed to be synonyms of *H. jinxiuensis* by reexamination of type specimens. No distinct differences were found.

Hercostomus luoshanensis YANG & SAIGUSA

Hercostomus luoshanensis YANG & SAIGUSA, 1999. In: Insects of the Mountains Funiu and Dabie Regions, p. 193. Type locality: China (Henan, Luoshan).

Hercostomus cyphus WEI & SONG, 2006. Insects from Chishui Spinulose Tree Fern Landscape, p. 319. Type locality: China (Guizhou, Chishui). **syn. nov.**

MATERIAL EXAMINED: *Hercostomus luoshanensis*, PARATYPE - 1 male, CHINA, Henan, Luoshan, 24-26. V. 1999. (leg. Ding Yang. Type is deposited in the Entomological Museum of China Agricultural University, Beijing).

Hercostomus cyphus, D252, HOLOTYPE - male, CHINA, Guizhou, Chishui, 500 m, 3. VI. 2000. VI. 3. (leg. Lianmeng Wei. Type is deposited in the Health and Anti-epidemic Station, Anshun).

REMARKS: No difference were found to distinguish *H. cyphus* from *H. Luoshanensis* after the reexamination.

Hercostomus subnovus YANG & YANG

Hercostomus subnovus YANG & YANG, 1995. In: Insects of Baishanzu Mountain, Eastern China, p. 513. Type locality: China (Zhejiang, Baishanzu).

Hercostomus weii YANG & SAIGUSA, 2000 (new name for *Hercostomus lii* Wei, 1997, nec Yang, 1996). Bull. Inst. R. Sci. Nat. Belg. Ent. 70: 223. **syn. nov.**

Hercostomus lii WEI, 1997. J. Guizhou Agric. Coll. 16(4): 35. Type locality: China (Yunnan). **syn. nov.**

MATERIAL EXAMINED: *Hercostomus subnovus*, HOLOTYPE - male, CHINA, Zhejiang, Baishanzu, 18. VII. 1994. (leg. Hong Wu. Type is deposited in the Entomological

Museum of China Agricultural University, Beijing).

Hercostomus lii, D119, HOLOTYPE - male, CHINA, Yunnan, Binchuan, 8. VIII. 1994. (leg. Lianmeng Wei. Type is deposited in the Health and Anti-epidemic Station, Anshun).

REMARKS: No difference was found to distinguish *H. weii* from *H. subnovus* after the reexamination.

Hercostomus takagii SMIRNOV & NEGROBOV

Hercostomus takagii SMIRNOV & NEGROBOV, 1979. Vestn. Moskow Univ. (Bio.) 3: 39. Type locality: Japan (Tokyo).

Hercostomus acutatus YANG & YANG, 1995. In: Insects of Baishanzu Mountain, Eastern China, p. 514. Type locality: China (Zhejiang, Baishanzu). **syn. nov.**

Hercostomus hamatus WEI, 1997. J. Guizhou Agri. Coll. 16(2): 48. Type locality: China (Guizhou, Fanjingshan). **syn. nov.**

Hercostomus clivus WEI et YANG, 2007. In: Insects from Leigongshan Landscape, p. 565. Type locality; China (Guizhou). **syn. nov.**

MATERIAL EXAMINED: *Hercostomus acutatus*, HOLOTYPE - male, CHINA, Zhejiang, Baishanzu, Wulingkeng, 30. X. 1993. (leg. Hong Wu. Type is deposited in the Entomological Museum of China Agricultural University, Beijing).

Hercostomus hamatus, 2 males, No.233, CHINA, Guizhou, Leishan, 860 m, 31. V. 2005 (leg. Lianmeng Wei, det. Lianmeng Wei);

Hercostomus clivus, D272, No131, HOLOTYPE - male, CHINA, Guizhou, Leigongshan, Xiaodanjiang, 800-1000m, 14. IX. 2005. (leg. Lianmeng Wei. Type is deposited in the Health and Anti-epidemic Station, Anshun). 1 male, No. 1061, CHINA, Guizhou, Leigongshan, 350 m, 14. IX. 2005. (leg. Lianmeng Wei).

REMARKS: The synonyms are confirmed by reexamination of type specimens.

The genus *Phalacrosona*

Phalacrosona zhenzhuristi (SMIRNOV & NEGROBOV), **comb. nov.**

Hercostomus zhenzhuristi SMIRNOV & NEGROBOV, 1979. Vestn. Moskow Univ. (Bio.) 3: 41. Type locality: Japan

(Tokyo).

Phalacrosona briarea WEI et LIU, 1996. J. Guizhou Agri. Coll. 15(1): 38. Type locality: China (Guizhou, Anshun). **syn. nov.**

REMARKS: The type of *P. zhenzhuristi* is reexamined by Dr. O.P. Negrobov and *P. briarea* is confirmed to be a new synonym (personal communication).

The genus *Setihercostomus*

Setihercostomus wuyangensis (WEI)

Hercostomus wuyangensis WEI, 1997. J. Guizhou Agri. Coll. 16(1): 40. Type locality: China (Guizhou, Wuyanghe).

Hercostomus zonalis YANG, YANG & LI, 1998. In: Insects of the Funiu Mountains region 1, p. 82. Type locality: China (Henan, Luanchuan). **syn. nov.**

MATERIAL EXAMINED: *Setihercostomus wuyangensis*, D83, HOLOTYPE - male, CHINA, Guizhou, Zhenyuan, 14. IX. 1993. (leg. Lianmeng Wei and Xiao Zhang. Type is deposited in the Health and Anti-epidemic Station, Anshun).

Hercostomus zonalis, HOLOTYPE - male, CHINA, Henan, Luanchuan, Longyuwan, 10. VII. 1996. (leg. Wanzhi Cai. Type is deposited in the Entomological Museum of China Agricultural University, Beijing).

REMARKS: There is no difference in male genitalia to be found to distinguish *S. zonalis* from *S. wuyangensis*. However, the species shows variety in the color of legs. The specimen from Guizhou has the yellow fore and mid femora, while specimens from Henan, Shaanxi, Guangdong, Guangxi have the black femora except the apex.

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