

NEW SPECIES OF *HERCOSTOMUS* FROM TAIWAN (DIPTERA: DOLICHOPODIDAE)¹

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ABSTRACT: Three species of *Hercostomus* from Taiwan are described as new to science: *Hercostomus chiaiensis* sp. nov., *H. hualienensis* sp. nov., and *H. taitungensis* sp. nov.

KEY WORDS: Diptera, Dolichopodidae, *Hercostomus*, Taiwan, new species

The genus *Hercostomus* is one of the most diverse genera in the Dolichopodidae with about 500 known species worldwide. Seventeen species of *Hercostomus* from Taiwan were recorded in the catalogue of Dyte (1975). With the work of Wei (1997), Yang (1996, 1997a-b), Yang and Grootaert (1999), Yang and Saigusa (1999, 2000, 2001a-d, 2002), Yang and Yang (1995), Yang, Yang and Li (1998), Zhang and Yang (2003a-c), the number of species of *Hercostomus* known from continental China soared from 11 species (Dyte 1975, Negrobov 1991) to 235 species. The species of *Hercostomus* from Taiwan remains poorly known. Taiwan belongs to the Oriental Realm with a subtropical and tropical climate. The fauna of Dolichopodidae of Taiwan is definitely rich and unique.

In this paper, three species of *Hercostomus*, which belong to the *H. hamatus*-group, from Taiwan are described as new to science, based on the specimens collected by Dr. Ignac Sivec and Dr. Bogdan Horvat. The *hamatus*-group is characterized by the black antenna, postocular bristles entirely black, hind femur with black tip, R₄₊₅ and M distinctly convergent apically, male cercus rather small, subtriangular and usually with several finger-like marginal processes bearing bristles, and hypandrium irregularly furcated (Wei, 1997). The type specimens are deposited in the Slovenian Museum of Natural History, Ljubljana.

The following abbreviations are used: acr – acrostichal setae, ad – anterodorsal setae, av – anteroventral setae, dc – dorsocentral setae, LI – fore leg, LII – mid leg, LIII – hind leg, pd – posterodorsal setae, pv – posteroventral setae, v – ventral setae.

Hercostomus (Hercostomus) chiaiensis, NEW SPECIES (Figs. 1-5)

Diagnosis: First flagellomere nearly as long as wide; arista subapical. LI with 3rd to 5th tarsomeres flattened and black except 5th tarsomere white with black

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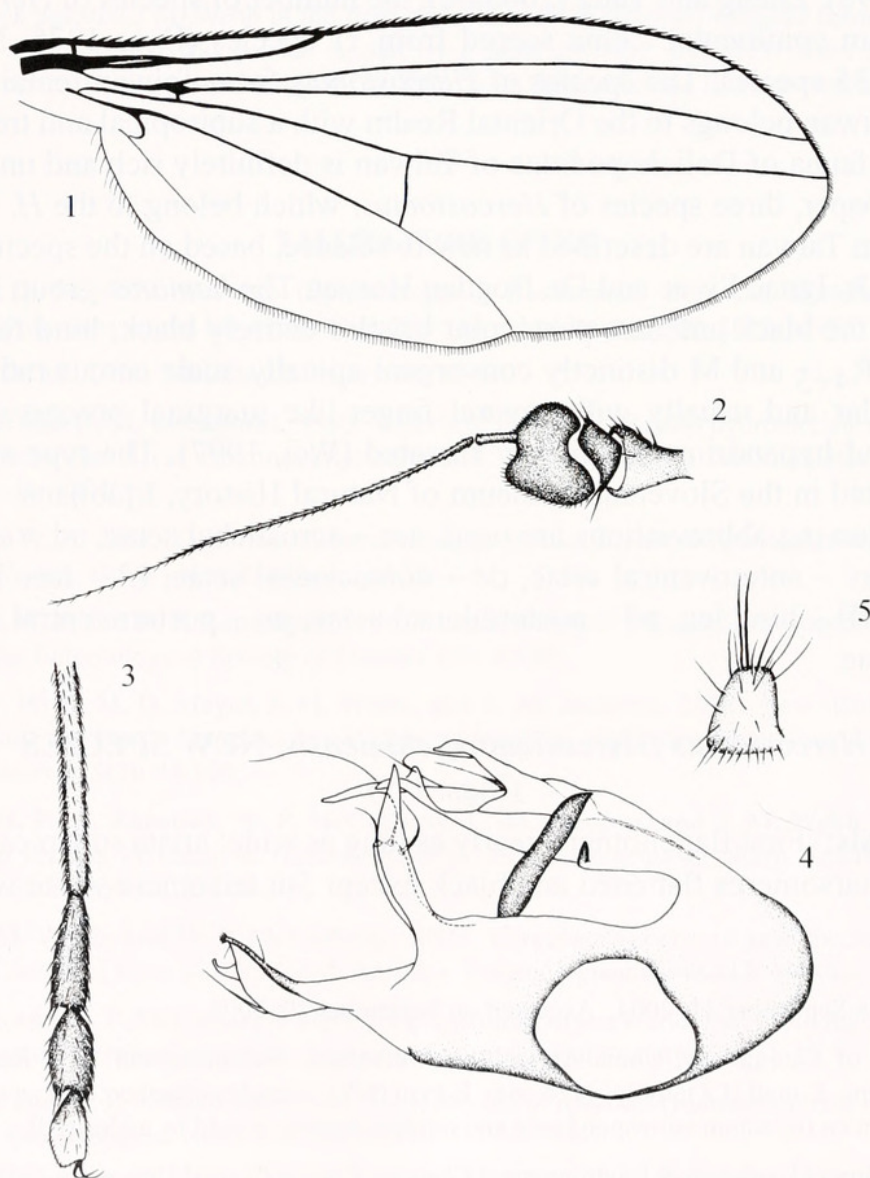
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base and some white hairs. Male cercus nearly quadrate without finger-like marginal process.

Description: Male. Body length 3.4 mm, wing length 3.4 mm. Head metallic green with pale gray pollen. Face narrowing ventrally, narrower than 1st flagellomere. Hairs and bristles on head black; postocular bristles entirely black. Antenna (Fig. 2) black with wide ventral area of scape brownish yellow; 1st flagellomere short, nearly as long as wide, obtuse apically; arista black, sub-apical, minutely pubescent, with rather short basal segment. Proboscis yellow with black hairs; palpus yellow 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 irregularly paired acr; scutellum with one pair of strong bristles. Propleuron black haired with 1 black bristle on lower portion. Legs yellow; coxa I yellow, coxa II and III dark brown. Femur III with black tip. Tarsus I with tarsomeres 3-5 (Fig. 3) flattened, black except 5th tarsomere white with black base and white hairs; tarsus II from tip of 2nd tarsomere onward black; tarsus III from tip of 1st tarsomere onward black. Hairs and bristles on legs black, coxa II and III each with 1 outer bristle, femur II and III each with 1 preapical bristle. Tibia I with 1 ad and 2 thin pd, apically with 4 short bristles; tibia II with 3 ad and 2 pd, apically with 4 bristles; tibia III with 3 ad, 4 pd and 3 thin v, apically with 3 bristles.



Figs 1-5. *Hercostomus (Hercostomus) chiaiensis* sp. nov. 1, wing; 2, antenna, lateral view; 3, tarsomeres 2-5 of LI, lateral view; 4, male genitalia (excluding cercus), lateral view; 5, cercus, lateral view.

gles. Relative lengths of tibia and 5 tarsomeres LI 1.5 : 0.8 : 0.65 : 0.3 : 0.2 : 0.2; LII 2.0 : 1.0 : 0.55 : 0.4 : 0.25 : 0.25; LIII 2.5 : 0.5 : 0.9 : 0.5 : 0.3 : 0.25. Wing (Fig. 1) hyaline, tinged with grayish; veins brown. R_{4+5} and M distinctly convergent apically; CuAx ratio (length of m-cu/length of CuA distal section) 0.5. Squama yellow with brown hairs. Halter yellow.

Abdomen metallic green with pale gray pollen. Male genitalia (Fig. 4-5): Epandrium distinctly longer than wide, with two lateral lobes spine-like and strongly curved; cercus subquadrate without marginal processes (Fig. 5); hypandrium thick and irregularly furcated.

Female. Unknown.

Holotype: Male, Taiwan: Chiai county, 1160m, 23°29'22"N, 120°41'38"E, 1996.X.21, Ignac Sivec.

Distribution: Taiwan (Chiai).

Etymology: The specific name refers to the type locality Taiwan, Chiai County.

Remarks: The new species is somewhat similar to *H. dissimilis* Yang and Saigusa in having leg I with 3rd to 4th tarsomeres flattened, but may be separated from the latter by the arista being nearly apical and leg I with the 5th tarsomere flattened and white with a black base. In *H. dissimilis*, the arista is dorsal, and the 5th tarsomere of leg I is entirely white and not flattened as are the 3rd to 4th tarsomeres (Yang and Saigusa, 1999).

Hercostomus (Hercostomus) hualienensis, NEW SPECIES

(Figs. 6-9)

Diagnosis: First flagellomere 1.4 times longer than wide; arista apical. Abdominal sternite 4 with a ventral process. Hypandrium irregularly furcated with several small inner denticles near base.

Description: Male. Body length 3.6-3.7 mm, wing length 3.6-3.7 mm. Head metallic green with pale gray pollen. Face narrowing ventrally, narrower than 1st flagellomere. Hairs and bristles on head black; postocular bristles entirely black. Antenna (Fig. 7) black with wide ventral area of scape brownish yellow; 1st flagellomere short, 1.4 times longer than wide, obtuse apically; arista black, apical, minutely pubescent, with very short basal segment. Proboscis dark yellow with black hairs; palpus dark yellow with black hairs and 1 black apical bristle.

Thorax metallic green with pale gray pollen. Hairs and bristles on thorax black; 6 strong dc, 6-7 irregularly paired acr; scutellum with 2 pairs of bristles (basal pair short and hair-like) and several short pale hairs on disc and marginal hairs. Propleuron black haired with 1 black bristle on lower portion. Legs yellow; coxa I yellow, coxa II and III blackish brown. Femur III with black tip. Tibia III with brownish tip. Tarsus I and II from tip of 1st tarsomere onward dark brown to black; tarsus III black. Hairs and bristles on legs black, coxa II and III each with 1 outer bristle, femur II and III each with 1 preapical bristle, femur II with 1 pv at tip. Tibia I with 1 thin ad and 2 pd; tibia II with 3 ad and 2 pd, apically with 4 bristles; tibia III with 4 ad and 4 pd, apically with 3 bristles. Relative lengths of tibia and 5 tarsomeres LI 2.0 : 1.05 : 0.9 : 0.5 : 0.25 : 0.25; LII 3.0 : 1.5 : 1.0 : 0.55 : 0.35 : 0.25; LIII 3.5 : 0.85 : 1.0 : 0.5 : 0.6 : 0.55. Wing (Fig. 6) hyaline, tinged with grayish; veins brown. R_{4+5} and M distinctly convergent apically; CuAx ratio 0.6. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale gray pollen. Sternite 4 with a short, subtriangular ventral process. Male genitalia (Figs. 8-9): Epandrium longer than wide, lateral lobe long and thick, bearing 3 apical bristles; cercus (Fig. 9) with 2 finger-like processes; aedeagus curved apically; hypandrium irregularly furcated with several inner denticles near base.

Female. Body length 4.2-4.4 mm. Wing length 4.1-4.2 mm. Similar to male, but sternite 4 without ventral process.

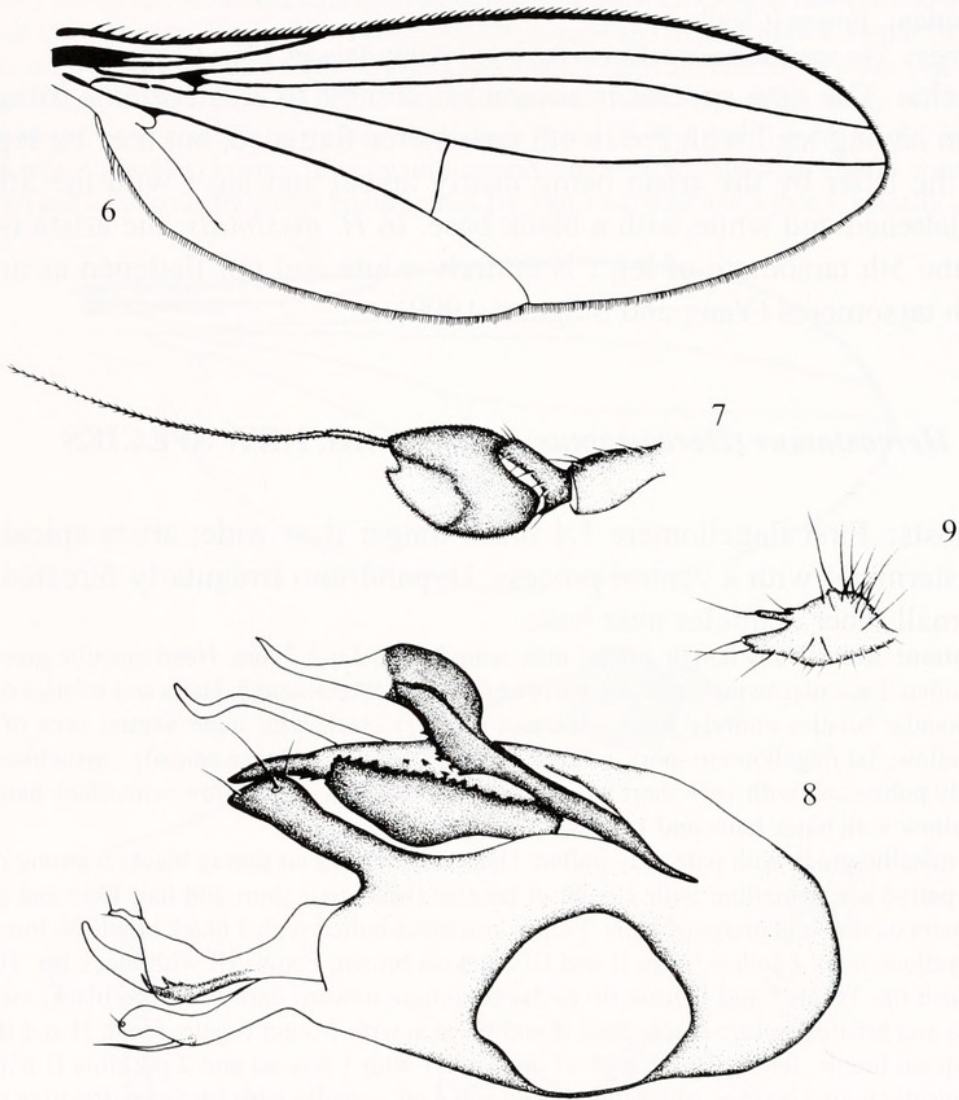
Holotype: Male, Taiwan: Hualien county, Nanan, 200 m, 23°18'47"N, 121°15'37"E, 1996. V. 4, Ignac Sivec and Bogdan Horvat. **Paratypes:** 2♂♂, Taiwan: Hualien county, Nanan, 200 m,

23°18'47"N, 121°15'37"E, 1996. V. 4, Ignac Sivec and Bogdan Horvat; 2♂♂, Taiwan: Chiai county, 1160 m, 23°29'22"N, 120°41'38"E, 1996. X. 21, Ignac Sivec; 9♂♂4♀♀, Taiwan: Taipei county, S Vulai, 330 m. 24°50'03"N, 121°31'56"E, 1996. III. 15, Ignac Sivec and Bogdan Horvat; 1♂1♀, Taiwan: Taichung county, Wushihkang, 720 m. 1996. X. 18, Ignac Sivec.

Distribution: Taiwan (Hualien, Taipei, Chiai, Taichung).

Etymology: The specific name refers to the type locality Taiwan, Hualien county.

Remarks: The new species differs from other species of the *hamatus*-group by the hypandrium bearing small inner denticles near base.

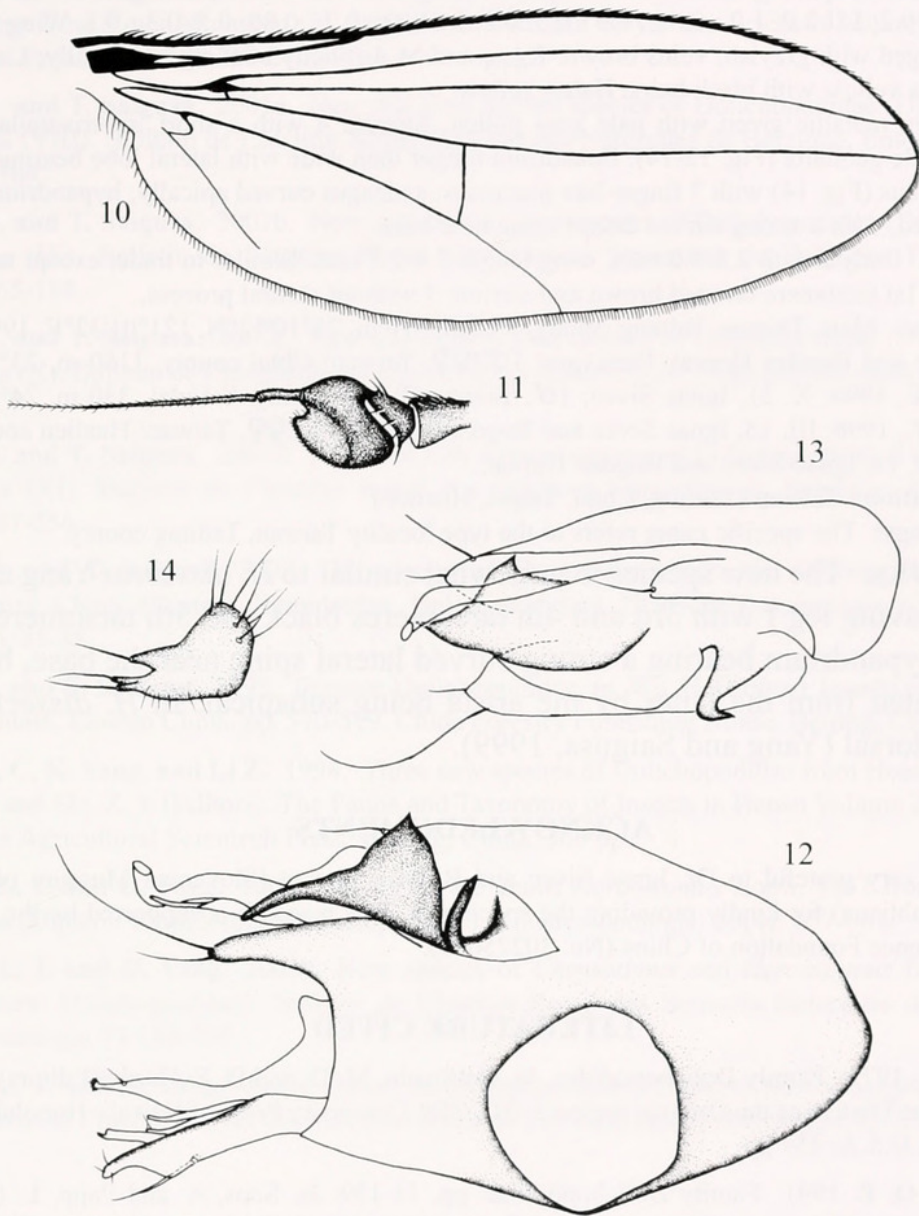


Figs 6-9. *Hercostomus (Hercostomus) hualienensis* sp. nov. 6, wing; 7, antenna, lateral view; 8, male genitalia (excluding cercus), lateral view; 9, cercus, lateral view.

***Hercostomus (Hercostomus) taitungensis*, NEW SPECIES**
(Figs. 10-14)

Diagnosis: First flagellomere nearly as long as wide; arista nearly apical. LI with 5th tarsomere white. Abdominal sternite 4 with a ventral process.

Description: Male. Body length 2.9-3.0 mm, wing length 2.6-2.8 mm.



Figs 10-14. *Hercostomus (Hercostomus) taitungensis* sp. nov. 10, wing; 11, antenna, lateral view; 12, male genitalia (excluding cercus), lateral view; 13, male genitalia, ventral view; 14, cercus, lateral view.

Head metallic green with pale gray pollen. Face narrowing ventrally, narrower than 1st flagellomere. Hairs and bristles on head black; postocular bristles entirely black. Antenna (Fig. 11) black with wide ventral area of scape brownish yellow; 1st flagellomere short, nearly as long as wide, obtuse apically; arista black, subapical, minutely pubescent, with rather short basal segment. Proboscis dark yellow with black hairs; palpus brown with black hairs and 1 black apical bristle.

Thorax metallic green with pale gray pollen. Hairs and bristles on thorax black; 6 strong dc, 6-7 irregularly paired acr; scutellum with 2 pair of bristles (basal pair short and hair-like). Propleuron black haired with 1 black bristle on lower portion. Legs yellow; coxa I yellow, coxa II and III blackish brown. Femur III with black tip. Tibia III with brownish tip. Tarsus I from tip of 1st tarsomere onward brown except 5th tarsomere white; tarsus II from tip of 1st tarsomere onward black; tarsus III entirely black. Hairs and bristles on legs black, coxa II and III each with 1 outer bristle, femur II and III each with 1 preapical bristle, femur II with 1 apical pv. Tibia I with 1 thin ad and 2 thin pd, apically with 2 short bristles; tibia II with 3 ad and 2 pd, apically with 4 bristles; tibia III with 4 ad,

4 pd and 3 thin v, apically with 3 bristles. Relative lengths of tibia and 5 tarsomeres LI 1.5 : 0.9 : 0.5 : 0.3 : 0.2 : 0.2; LII 2.0 : 1.0 : 0.65 : 0.5 : 0.3 : 0.2; LIII 2.6 : 0.7 : 0.85 : 0.5 : 0.3 : 0.3. Wing (Fig. 10) hyaline, tinged with grayish; veins brown. R_{4+5} and M distinctly convergent apically; CuAx ratio 0.6. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale gray pollen. Sternite 4 with a short, subtriangular ventral process. Male genitalia (Fig. 12-14): Epandrium longer than wide with lateral lobe bearing 2 apical bristles; cercus (Fig. 14) with 3 finger-like processes; aedeagus curved apically; hypandrium irregularly furcated, with a strong curved lateral spine near base.

Female. Body length 2.8-3.0 mm, wing length 2.6-2.8 mm. Similar to male, except tarsi of LI from tip of 1st tarsomere onward brown and sternite 4 without ventral process.

Holotype: Male, Taiwan: Taitung county, S Lital, 810 m. 23°10'52"N, 121°01'32"E, 1996. IV. 4, Ignac Sivec and Bogdan Horvat. Paratypes: 1♂2♀♀, Taiwan: Chiai county, 1160 m, 23°29'22"N, 120°41'38"E, 1996. X. 21, Ignac Sivec; 1♂, Taiwan: Taipei county, S Vulai, 330 m, 24°50'03"N, 121°31'56"E, 1996. III. 15, Ignac Sivec and Bogdan Horvat; 1♂2♀♀, Taiwan: Hualien county, 200 m, 1996. IV. 14, Ignac Sivec and Bogdan Horvat.

Distribution: Taiwan (Taitung, Chiai, Taipei, Hualien).

Etymology: The specific name refers to the type locality Taiwan, Taitung county.

Remarks: The new species is somewhat similar to *H. dissectus* Yang and Saigusa in having leg I with 3rd and 4th tarsomeres black and 5th tarsomere white, and the hypandrium bearing a strong curved lateral spine near the base, but may be separated from the latter by the arista being subapical. In *H. dissectus*, the arista is dorsal (Yang and Saigusa, 1999).

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LITERATURE CITED

- Dyde, D. E.** 1975. Family Dolichopodidae. In, Delfinado, M. D. and D. E. Hardy (Editors). A Catalog of the Diptera of the Oriental region 2: 212-258. University Press of Hawaii. Honolulu, Oahu, Hawaii, U.S.A. 459 pp.
- Negrobov, O. P.** 1991. Family Dolichopodidae. pp. 11-139. In, Soos, A. and Papp, L. (Editors). Catalogue of Palaearctic Diptera. Volume 7. Akadémiai Kiadó, Budapest, Hungary. 291 pp.
- Wei, L.** 1997. Dolichopodidae (Diptera) from Southwest China II. A study of the genus *Hercostomus* Loew, 1857. Journal of Guizhou Agricultural College 16(2):36-50.
- Yang, D.** 1996. New species of *Hercostomus* and *Ludovicus* from North China (Diptera: Dolichopodidae). Deutsche Entomologische Zeitschrift 43(2):235-244.
- Yang, D.** 1997a. New species of *Amblypsilopus* and *Hercostomus* from China (Diptera: Dolichopodidae). Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie 67:131-140.
- Yang, D.** 1997b. Five new Species of Dolichopodidae (Diptera) from Longwang Mountain, Zhejiang, Southeastern China. Deutsche Entomologische Zeitschrift 44(2):147-153.
- Yang, D. and P. Grootaert.** 1999. Dolichopodidae (Diptera: Empidoidea) from Xishuangbanna (China, Yunnan province): the Dolichopodinae and the genus *Chaetogonopteron* (I). Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie 69:251-277.
- Yang, D. and T. Saigusa.** 1999. New and little known species of Dolichopodidae from China (VI): Diptera from Emei Mountain (I). Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie 69:233-250.

- Yang, D. and T. Saigusa.** 2000. New and little known species of Dolichopodidae from China (VII): Diptera from Emei Mountain (2). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie* 70:219-242.
- Yang, D. and T. Saigusa.** 2001a. New and little known species of Dolichopodidae (Diptera) from China (VIII). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie* 71: 155-164.
- Yang, D. and T. Saigusa.** 2001b. New and little known species of Dolichopodidae (Diptera) from China (IX). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie* 71:165-188.
- Yang, D. and T. Saigusa.** 2001c. New and little known species of Dolichopodidae (Diptera) from China (X). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie* 71:189-236.
- Yang, D. and T. Saigusa.** 2001d. New and little known species of Dolichopodidae (Diptera) from China (XI). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie* 71:237-256.
- Yang, D. and T. Saigusa.** 2002. The species of *Hercostomus* from the Qinling Mountains of Shaanxi, China. (Diptera, Empidoidea, Dolichopodidae). *Deutsche Entomologische Zeitschrift* 49(1): 61-88.
- Yang, D. and C. K. Yang.** 1995. Diptera: Dolichopodidae. *In*, Wu, H. (Editor). *Insects of Baishanzu Mountain, Eastern China*. pp. 510-519. China Forestry Publishing House, Beijing, China. 586 pp.
- Yang, D, C. K. Yang, and Li Z.** 1998. Three new species of Dolichopodidae from Henan. *In*, Shen, X, C and Shi, Z. Y (Editors). *The Fauna and Taxonomy of Insects in Henan Volume 2*. pp. 81-84. China Agricultural Sciencetech Press. Beijing, China. 368 pp.
- Zhang, L. L and D. Yang.** 2003a. Notes on the genus *Hercostomus* Loew, 1857 from Guangxi, China (Diptera: Empidoidea: Dolichopodidae). *Annales Zoologici* 53(4): 657-661.
- Zhang, L. L and D. Yang.** 2003b. New species of *Chrysotimus* and *Hercostomus* from Beijing (Diptera: Dolichopodidae). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie* 73:189-194.
- Zhang, L. L and D. Yang.** 2003c. Notes on Dolichopodidae (Diptera) from Guangdong, China. *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Entomologie* 71:181-188.



2004. "New species of *Hercostomus* from Taiwan (Diptera: Dolichopodidae)." *Entomological news* 115, 219–225.

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