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DOLICHOCEPHALA (DIPTERA: EMPIDIDAE) NEWLY FOUND IN TIBET WITH DESCRIPTION OF A NEW SPECIES

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ABSTRACT

The genus *Dolichocephala* Macquart (Diptera: Empididae) is newly recorded from Tibet, which represents the first record of the subfamily Clinocerinae from this region. A new species, *Dolichocephala tibetensis* **sp. nov.**, is described. Its relationships with other species in neighboring areas are discussed. A key to the species of the genus *Dolichocephala* from China is presented.

Key Words: dance fly, *Dolichocephala tibetensis*, Tibet

RESUMEN

Se registró la presencia del género *Dolichocephala* Macquart (Diptera: Empididae) en el Tibet, lo que representa el primer registro de la subfamilia Clinocerinae para esta región. Se describe una nueva especie, *Dolichocephala tibetensis* **sp. nov.** Se discute su relación con las especies cercanas. Se presenta una clave para las especies del género *Dolichocephala* en China.

Palabras Clave: moscas empíidas, *Dolichocephala tibetensis*, Tibet

The genus *Dolichocephala* Macquart belongs to the subfamily Clinocerinae. It is characterized by the following features: neck arising high on occiput; head extending obliquely forward with distinct clypeus and gena; wing infusate with clear spots; fore tarsomere 2 much longer than tarsomere 3 or 4; subepandrial sclerite extended beyond base of claspings cercus (Sinclair 1995; Yang et al. 2004). Detailed descriptions of the genus *Dolichocephala* are in Collin (1961) and Sinclair (1995). There are 39 known species in the world, of which 11 are distributed in the Afrotropical Region, 18 in the Palaearctic Region, 7 in the Oriental Region, 2 in the Australian Region and 2 in the Nearctic Region (Yang et al. 2007). According to the previous study, 6 *Dolichocephala* species are known to occur in China (Fig. 3). The major references dealing with the Palaearctic and Oriental *Dolichocephala* are as follows: Horvat (1994); Wagner (1995); Wagner et al. (2004); Yang et al. (2004); and Yang (2008).

Tibet is a plateau region in Asia, located northeast of the Himalayas. It is the highest region on earth, with an average elevation of 4,900 m (16,000 ft). It supports a peculiar biodiversity. However, the dance fly fauna is poorly known (Yang & Yang 2004; Yang et al. 2007). Here we report that the genus *Dolichocephala* is newly recorded from Tibet with a new species (Fig. 3), which represents the first record of the subfamily Clinocerinae from this region. A key to the species of the genus *Dolichocephala* from China is presented. Type specimens are deposited in the Entomological Museum of China Agricultural University (CAU), Beijing. Morphological terminology generally follows McAlpine (1981). The following abbreviations are used for setae of the head and thorax: acr = acrostichal, dc = dorsocentral, h = humeral, npl = notopleural, oc = ocellar, ph = posthumeral, psa = postalar, sa = supraalar, sc = scutellar, vt = vertical.

KEY TO SPECIES OF *DOLICHOCEPHA* FROM CHINA [Modified from Yang (2008)]

1. Wing with more than 10 small white spots; claspings cercus rather wide, not finger-like 2
- Wing with 6 or 8 large white spots; claspings cercus narrow, finger-like 4

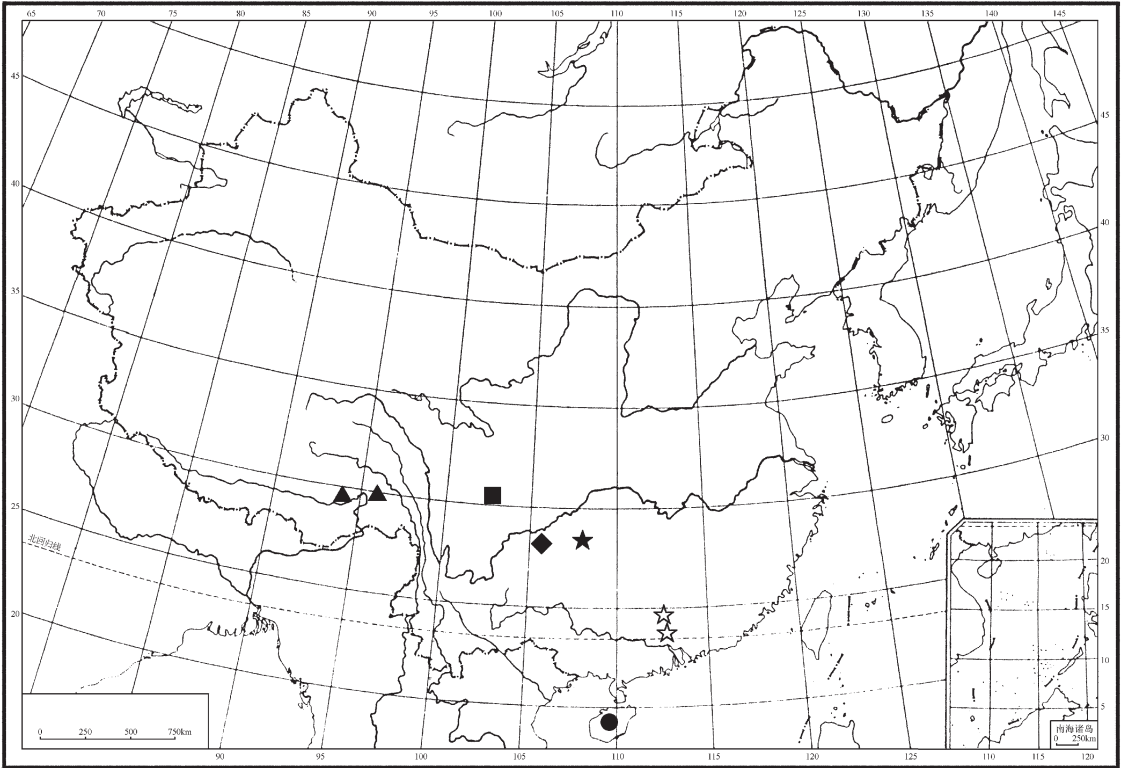


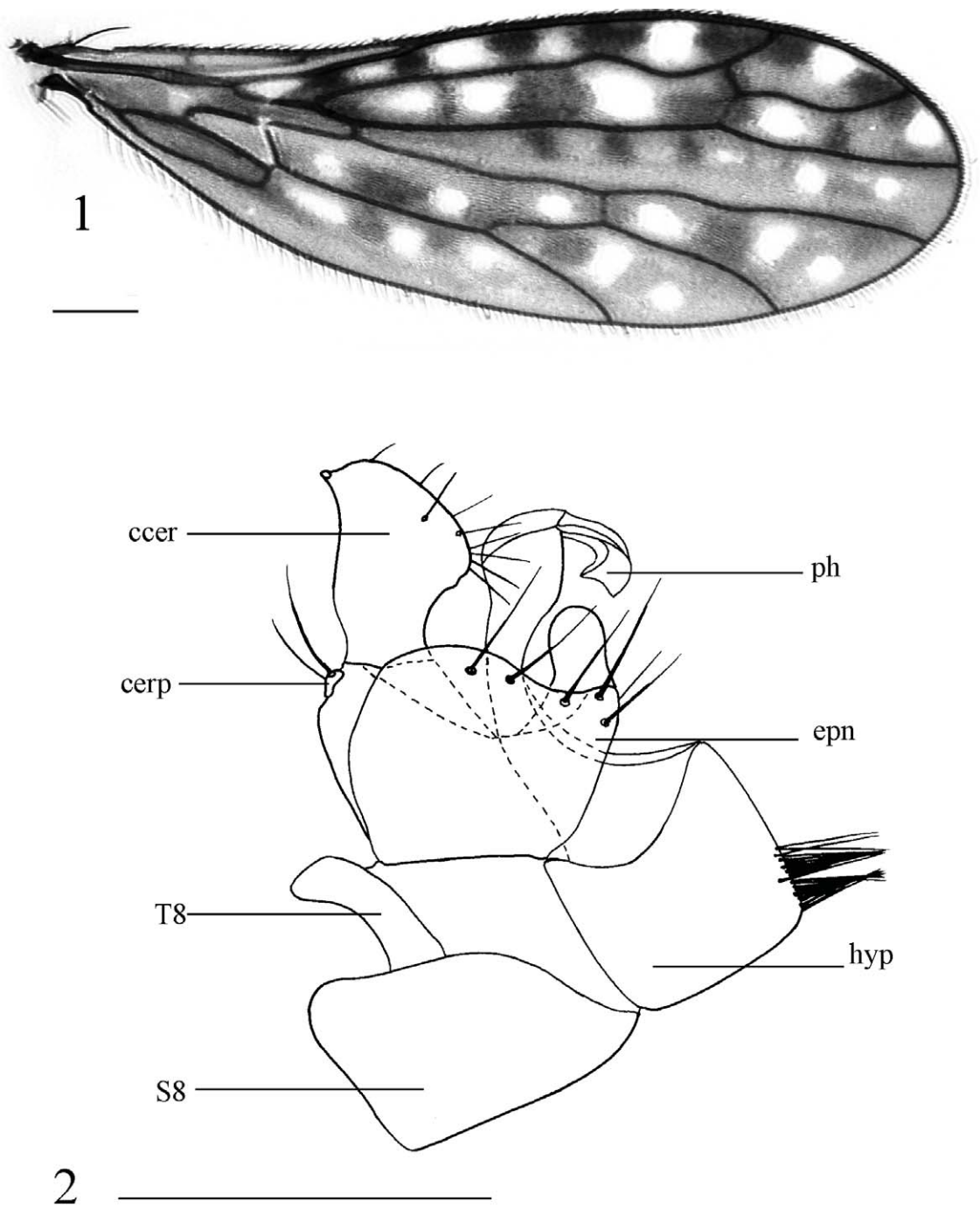
Fig. 3. Distribution map of *Dolichocephala* in China. ★ *Dolichocephala cuiiae* Yang, Zhang & Yao; ☆ *D. guangdongensis* Yang, Grootaert & Horvat; ● *D. hainanensis* Yang; ◆ *D. orientalis* Yang, Zhu & An; ■ *D. sinica* Horvat; ▲ *D. tibetensis* **sp. nov.**

- 2. Hypandrium with wide tuft of loose setae; dorso-apical corner of clasper obtuse 3
 - Hypandrium with narrow bundle of compact setae at tip; dorso-apical corner of clasper somewhat acute. Tibet *D. tibetensis* **sp. nov.**
- 3. Male cercus nearly quadrate, with a small inner process at base; epandrial lobe without antero-dorsal process; hypandrium apically with wide-spaced row of long setae *D. sinica* Horvat
 - Male cercus somewhat triangular without inner process at base, but with nearly acute posterior corner; epandrial lobe with short antero-dorsal process; hypandrium with bundle of diverging setae *D. irrorata* Fallén
- 4. Wing with 6 large white spots 5
 - Wing with 8 large white spots *D. cuiiae* Yang, Zhang & Yao
- 5. Thoracic pleuron with a blackish dorsal stripe; clasper strongly curved inward and nearly geniculate; phallus narrow in dorsal view 6
 - Thoracic pleuron without dorsal stripes; clasper weakly curved inward apically and not geniculate; phallus very wide in dorsal view *D. orientalis* Yang, Zhu & An
- 6. Mesonotum blackish; clasper with a separate tubercle at base; basiphallus rather wide with angulate posterior process in lateral view . . . *D. guangdongensis* Yang, Grootaert & Horvat
 - Mesonotum dark yellow with anterior and lateral portions blackish; clasper without separate tubercle at base; basiphallus rather narrow without angulate posterior process in lateral view *D. hainanensis* Yang

DOLICHOCEPHALA TIBETENSIS SP. NOV.
(Figs. 1 and 2)

Thorax black. Legs mostly brownish yellow; fore coxa brownish yellow, mid and hind coxae blackish. Wing with many small hyaline spots;

Diagnosis



Figs. 1 and 2. *Dolichocephala tibetensis* sp. nov. (male). 1. Wing; 2. Genitalia, lateral view. Abbreviations: ccer = clasping cercus; cerp = cercal plate; epn = epandrium; hyp = hypandrium; ph = phallus; S8 = sternum 8; T8 = tergum 8. Scale bar = 0.1 mm.

5 hyaline spots in cell r_1 , 3 hyaline spots in cell r_{2+3} . Clasping cercus thick, with short, somewhat acute anterior apex. Hypandrium with narrow bundle of compact setae at tip.

Male

Body length 2.0-2.8 mm, wing length 2.3-2.4 mm.

Head black with pale gray pollen. Eyes black, distinctly separated; face narrower than frons, narrowed downwards. Setulae and setae on head black; occiput with row of 5 strong postocular setae (uppermost one being vt), lower half of occiput with minute pale setulae; ocellar tubercle weak with 2 long oc and 2 pairs of very short posterior setulae. Antenna black; pedicel with a circle of black apical setulae; first flagellomere short, somewhat quadrate, $1.1 \times$ longer than wide; arista upper apical, $5 \times$ longer than first flagellomere, black, indistinctly pubescent. Proboscis blackish with black setulae; palpus black with black setulae and 2 apical setae.

Thorax black with pale gray pollen. Setulae and setae on thorax black; acr absent, 5 strong dc, 1 long h, 1 long ph, 1 short hair-like npl, 1 long sa, 1 slightly short psa; scutellum with pair of slightly short sc. Laterotergite with 4 short weak blackish setae. Legs mainly brownish yellow except mid and hind coxae are blackish, all trochanters brown, extreme tips of all tibiae brown, and tarsomeres 3-5 brown to dark brown onward. Setulae and setae on legs including those on coxae blackish to black. Fore femur with an erect, preapical anterior comb of short setae. Fore tibia apically with an anterodorsal serration, i.e., about 20 rows of short black setulae arranged in line. Apical $\frac{1}{4}$ th of hind tibia, anterodorsally also with short black comb-like setae. Wing dark gray with many small hyaline spots, of which 5 hyaline spots are in cell r_1 and 3 hyaline spots are in cell r_{2+3} ; veins dark gray. Squama dark brown with blackish setulae. Halter dark yellow with brown base.

Abdomen black with pale gray pollen. Setulae and setae on abdomen black. Tergum 1 very narrow, i.e. a triangular plate at both sides interconnected with a linear sclerotization. Anterior border of tergum 2 concave, leaving a distinct intersegmental space between terga 1 and 2. Terga 3-6 rectangular. Tergum 7 narrow with apical border concave. Tergum 8 narrow, strip-like; sternum 8 large and broad.

Male genitalia (Fig. 2): Epandrial lobe rather large and somewhat quadrate, with 5 long setae along dorsal margin. Cercal plate very small with 2 long setae; clasping cercus thick, with short, somewhat acute anterior apex curved forward (with apical tooth). Hypandrium nearly quadrate, with narrow bundle of compact setae at tip. Basiphallus rather long and thick, slightly curved; distiphallus rather short, strongly curved in lateral view.

Female

Body length 1.9-2.1 mm, wing length 2.4-2.5 mm. External characteristics similar to male.

Type Material

HOLOTYPE ♂, CHINA: Tibet, Bomi (N 29° 51' 42.57" E 95° 46' 1.59"), Galonglashan, 2954 m, 2013.VII.9, leg. Xiaoyan Liu (CAU). Paratypes: 5♂, 2♀, same data as holotype (CAU); 1♂, CHINA: Tibet, Linzhi (N 29° 38' 18" E 94° 21' 46"), Sejilashan, Lulangdong, 3260 m, 2012. VIII.18-25, Malaise trap, leg. Zeqing Niu, Huanxi Cao & Qingtao Wu (CAU).

Distribution

China (Tibet).

Remarks

The new species is similar to *D. irrorata* Fallén and *D. sinica* Horvat in the color pattern of the wing with many small hyaline spots, but may be separated from these 2 species by the hypandrium with a small bundle of compact setae at tip and dorso-apical corner of the clasping cercus somewhat acute and curved forward. In *D. irrorata* Fallén and *D. sinica* Horvat, the hypandrium has a large tuft of loose setae and the dorso-apical corner of the clasping cercus is obtuse (Collin 1961; Niesiolowski 1992; Horvat 1994).

Etymology

The specific name refers to the type locality Tibet.

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REFERENCES CITED

- COLLIN, J. E. 1961. Empididae In British Flies, Volume 6. Cambridge Univ. Press, 782 pp.
- HORVAT, B. 1994. *Dolichocephala sinica* sp. n. (Diptera, Empididae: Clinocerinae) from Sichuan (China). Aquatic Insects 16(4): 201-203.
- MCALPINE, J. F. 1981. Morphology and terminology – adults, pp. 9-63 In J. F. McAlpine, B. V. Peterson, G. E. Shewell, H. J. Teskey, J. R. Vockeroth and D. M.

- Wood [Coords.], Manual of Nearctic Diptera. Vol. 1. Agric. Canada Monograph 27.
- NIESIOLOWSKI, S. 1992. Empididae Aquatica (Insecta: Diptera). Fauna Polski 14: 1-128.
- SINCLAIR, B. J. 1995. Generic revision of the Clinocerinae (Empididae), and description and phylogenetic relationships of the Trichopezinae, new status (Diptera: Empidoidea). Canadian Entomol. 127: 665-752.
- WAGNER, R. 1995. Empididen aus dem Mittelmeerraum (Diptera, Empididae: Hemerodromiinae und Clinocerinae). Acta Entomol. Slov. 3(1): 5-23.
- WAGNER, R., LEESE, F., AND PANESAR, A. R. 2004. Aquatic dance flies from a small Himalayan mountain stream (Diptera: Empididae: Hemerodromiinae, Trichopezinae and Clinocerinae). Bonn Zool. Beitr. 52(1-2): 3-32.
- YANG, D. 2008. A new species of *Dolichocephala* from Hainan Island, with a key to the Chinese species (Diptera: Empididae). Aquatic Insects 30(4): 281-284.
- YANG, D., GROOTAERT, P., AND HORVAT, B. 2004. A new species of *Dolichocephala*, with a key to the species from China (Insect: Diptera, Empididae). Aquatic Insects 26(3/4): 215-219.
- YANG, D., AND YANG, C. K. 2004. Diptera, Empididae, Hemerodromiinae and Hybotinae. Fauna Sinica Insecta. Vol. 34. Sci. Press, Beijing. 329 pp.
- YANG, D., ZHANG, K. Y., YAO, G., AND ZHANG, J. H. 2007. World catalog of Empididae (Insecta: Diptera). China Agric. Univ. Press, Beijing. 599 pp.