

ORIGINAL ARTICLE

New species of Dolichopodidae from eastern Mongolia (Diptera)

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Abstract Two species are described from eastern Mongolia as new to science, *Campsicnemus pallidoapicalis* Wang, Przhiboro & Yang, **sp. nov.** and *Chrysotus minuticapillatus* Liu, Przhiboro & Yang, **sp. nov.** *Campsicnemus picticornis* (Zetterstedt) is recorded from Mongolia for the first time. A key to the Mongolian *Campsicnemus* is given.

Key words Diaphorinae, Sympycninae, *Campsicnemus*, *Chrysotus*, new species.

1 Introduction

The genus *Campsicnemus* Haliday, 1851 belongs to the subfamily Sympycninae and includes about 270 species worldwide (Yang *et al.*, 2006, 2011; Grichanov, 2011, 2012), with an extremely high diversity of endemic species in the Hawaiian Islands and French Polynesia (Evenhuis, 2009, 2011). The genus *Chrysotus* Meigen, 1824 is the largest genus of the subfamily Diaphorinae, with about 400 species distributed worldwide (Negrobov *et al.*, 2000; Yang *et al.*, 2006, 2011; Wei & Zhang, 2010a, b; Wei, 2012; Wei *et al.*, 2014; Liu *et al.*, 2013, 2015).

For these two genera, a description of new species from Mongolia is rare. Two new species collected from eastern Mongolia, namely *Campsicnemus pallidoapicalis* Wang, Przhiboro & Yang, **sp. nov.** and *Chrysotus minuticapillatus* Liu, Przhiboro & Yang, **sp. nov.** are described and illustrated, and one more species is recorded from Mongolia for the first time.

2 Material and methods

The material was collected with net-sweeping and aspirator from two shoreline habitats of eastern Mongolia adjoining to the desert areas of Mongolian Gobi. The specimens were kept in ethanol. The sampling sites are briefly described as below.

Hentiy Aimag, 17 km ESE of Naran (45°04'30"N, 113°53'E; elev. 1 350 m), water-logged stream and lakelet near sand dune. Shorelines of spring and slowly running, water-logged stream passing into a marshy lakelet; shores are flat, marshy, composed mostly by mud with dense turf of monocotyledones; shoreline vegetation is a marshy meadow with *Carex*, *Eleocharis*, *Juncus*, Poaceae and *Ranunculus* predominating; site looking as a locality with permanent moistening and periodical flooding; surrounded by dry steppe.

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Hentiy Aimag, 2 km S of Ondorhaan (47°18'N, 110°39'E; elev. 1 030 m), bank of Kerulen Gol river. Shoreline of river stretch ca. 30 m wide and 1 m deep, with sloping bank composed mostly by mud and sand with a turf of monocotyledones, almost lacking organic remains and the surface; shoreline vegetation is a meadow with *Eleocharis*, *Carex*, Poaceae, *Plantago* and *Triglochin* predominating; surrounded by dry steppe.

The holotypes and a part of the paratypes of the new species are deposited at the Zoological Institute, Russian Academy of Sciences, St Petersburg (ZIN); the other paratypes are deposited at the China Agricultural University, Beijing (CAU).

Morphological terminology mainly follows McAlpine (1981). Terms for the structures of the male genitalia follow Cumming & Wood (2009). The following abbreviations are used: *acr*—acrostichal bristle; *ad*—anterodorsal bristle; *av*—anteroventral bristle; *d*—dorsal bristle; *dc*—dorsocentral bristle; LI—fore leg; LII—mid leg; LIII—hind leg; *pd*—posterodorsal bristle; *v*—ventral bristle; CuAx ratio—length of m-cu / length of distal portion of CuA.

3 Systematics

Key to Mongolia species of *Campsicnemus* Haliday.

1. Legs simple, sometimes with elongated hairs and bristles 2
 Legs modified or bearing bunches or rows of modified bristles 3
2. First flagellomere blackish (with dorsal surface black), long coniform; arista entirely black (Fig. 2) *Ca. picticornis* (Zetterstedt)
 First flagellomere black, with round apex; arista dark brown, but pale yellow in apical 1/3 portion (Fig. 4)
 *Ca. pallidoapicalis* Wang, Przhiboro & Yang, sp. nov.
3. Second segment of fore tarsus shortened, bearing very long process covered with long hairs..... *Ca. compeditus* Loew
 Second segment of fore tarsus without long processes 4
4. Mid tibia considerably dilated along entire length and curved, with row of *ad* *Ca. paradoxus* (Wahlberg)
 Mid tibia only slightly thickened, with two *d*, without rowed *ad*..... *Ca. armatus* (Zetterstedt)

Campsicnemus picticornis (Zetterstedt) New record to Mongolia (Figs 1–2, 13)

Campsicnemus picticornis (Zetterstedt, 1843): 607 (*Dolichopus*). Type locality: Sweden: "Suecia meridionali et media, in Scania ad Raften; Ostrogothia ad Larketorp; Haradshammar; Holmiam".

Diagnosis. Antenna yellow, but first flagellomere blackish, first flagellomere long coniform, about 1.5 times as long as wide; arista black, dorsal. 5 *dc* (first pair rather short), *acr* uniseriate 6–7; scutellum with 2 pairs of bristles, 3–4 pale yellow marginal hairs between apical pair. All legs simple (no distinctly curved, swollen or appendages).

Material examined. 4♂, Mongolia, Hentiy Aimag, 17 km ESE of Naran (45°04'30"N, 113°53'E; elev. 1 350 m), waterlogged stream and lakelet near sand dune (Fig. 13), net-sweeping, 16 August 2002, coll. Andrey Przhiboro (no. 61).

Distribution. Austria, Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, Israel, Italy, northern Kazakhstan, Kyrgyzstan, Latvia, Mongolia, Netherlands, Poland, Russia (Amur Province, Buryatia, Jewish Autonomous Province, Kaliningrad Province, Kamchatka, Karelia, Khabarovsk Territory, Krasnoyarsk Territory, Leningrad Province, Novosibirsk Province, Primorie Territory, Sayan Mountains, Yakutia), Slovakia, Sweden, Turkey (Hakkari), UK, Ukraine (Kherson and Odessa Provinces), Uzbekistan (Grichanov, 2009, 2014).

Campsicnemus pallidoapicalis Wang, Przhiboro & Yang, sp. nov. (Figs 3–4, 10, 13)

Male. Body length 2.4–2.5 mm, wing length 2.5–2.6 mm (Fig. 3).

Head metallic-green with grey pollen; face narrow in middle part, with brown pollen at lower portion. Head with hairs and bristles black. Lower postocular bristles (including ventral hairs) pale. Antenna yellow with first flagellomere black; first flagellomere with round apex, about 1.5 times as long as wide; arista dorsal, dark brown, but pale yellow in apical 1/3 portion (Fig. 4). Proboscis brown, with black hairs; palpus yellow, with black hairs.

Thorax metallic-green with pale grey pollen; mesonotum and scutellum with grey brown pollen. Thorax with hairs and bristles black; 5 *dc* (first pair rather short), *acr* uniseriate 3–4; scutellum with apical pair of bristles distinct, basal pair indistinct and 2–3 pale yellow marginal hairs between apical pair bristles. Propleuron with pale hairs on upper portion and 1 black bristle on lower portion.

Legs yellow; fore coxa yellow, mid and hind coxae black; all femora and tibiae yellow; all tarsi with tarsomeres 2–5 brown to dark brown outward. All legs simple (not distinctly curved or swollen, without projections).

Hairs and bristles on legs black; fore coxa with pale yellow hairs and black apical bristles; mid coxa with pale yellow

anterior hairs, black apical bristles and one black outer bristle; hind coxa with black apical bristles and one black outer bristle. All femora without distinct *v*, each with one *av* apically. Fore tibia with one *pd* and one *v* in apical half, apically with one bristle; mid tibia with 3 *ad*, 2 *pd* and 1 *av*, apically with 3 bristles; hind tibia with 4 *ad*, 5–6 *pd* and 2 *av*, apically with 4 bristles. Tarsomere 1 of all legs each with two rows of short *v*. Relative lengths of tibia and five tarsomeres of legs as follows: LI 3.2:1.5:0.7:0.5:0.4:0.4; LII 4.4:1.8:0.7:0.5:0.4:0.4; LIII 5.4:1.4:1.2:0.8:0.5:0.5. Wing somewhat hyaline; veins dark brown, R_{4+5} and M parallel apically; CuAx ratio 0.40. Squama yellow with brown hairs. Halter yellow.

Abdomen short (ratio of thorax length to abdomen length 0.70). Metallic-green with pale grey pollen, dorsum brilliant. Hairs and bristles on abdomen black.

Male genitalia (Fig. 10). Epandrium longer than wide, with angular ventral apex. Dorsal lobe of surstylus short and wide, with acute apex; ventral lobe long and wide, somewhat curved, with apical bristles and hairs. Cercus short and wide, with medium-sized bristles. Apex of phallus bifurcated.

Female. Unknown.



Figures 1–4. *Campsicnemus* spp. 1–2. *Ca. picticornis* (Zetterstedt). 3–4. *Ca. pallidoapicalis* Wang, Przhiboro & Yang, **sp. nov.** 1, 3. Habitus. 2, 4. Antenna, lateral view. Scale bars: 1, 3=0.5 mm; 2, 4=0.1 mm.

Material examined. Holotype. ♂, Mongolia, Hentiy Aimag, 17 km ESE of Naran (45°04'30"N, 113°53'E; elev. 1 350 m), water-logged stream and lakelet near sand dune (Fig. 13), net-sweeping, 16 August 2002, coll. Andrey Przhiboro (no. 61). Paratype. 1♂, the same data as holotype.

Distribution. Mongolia.

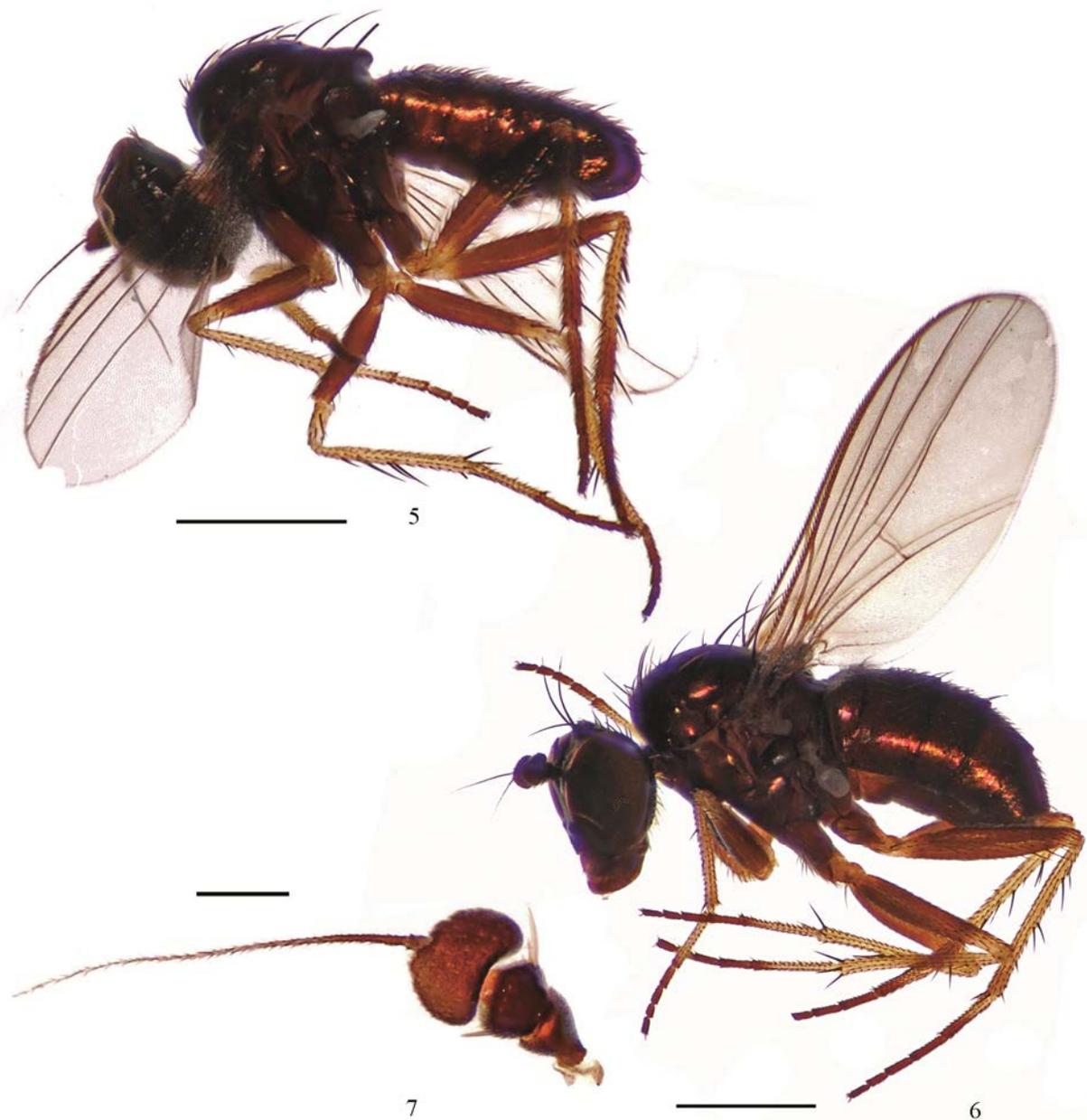
Etymology. The species name refers to the contrasting light coloration of the apical part of arista and is derived from the Latin words “*pallidus*” (=pale) and “*apex*”.

Remarks. The new species is similar to *Ca. picticornis* (Zetterstedt) in the normal leg shape and leg coloration, but can be separated from the latter by the first flagellomere with round apex and the arista dark brown but pale yellow in apical 1/3 portion. In *Ca. picticornis*, the first flagellomere is coniform with acute apex, and the arista entirely black.

***Chrysotus minuticapillatus* Liu, Przhiboro & Yang, sp. nov.** (Figs 5–8, 11–12)

Male. Body length 1.8–2.2 mm, wing length 1.6–2.0 mm (Fig. 5).

Head metallic-green with pale grey pollinosity; eyes contiguous on face. Hairs and bristles on head black except



Figures 5–7. *Chrysotus minuticapillatus* Liu, Przhiboro & Yang, sp. nov. 5. Habitus, male, lateral view. 6. Habitus, female, lateral view. 7. Antenna, male, lateral view. Scale bars: 5–6=0.5 mm; 7=0.1 mm.

posteroventral hairs somewhat pale. Antenna dark brown; first flagellomere subtriangular, 1.4 times as wide as long; arista brown, short pubescent (Fig. 7). Proboscis dark brown with brown hairs; palpus pale brown with one brown bristle at apex.

Thorax metallic-green with pale grey pollinosity. Hairs and bristles on thorax black; 6 *dc* (five strong and anterior one weak), 6–7 irregularly paired *acr* short and hair-like; scutellum with two pairs of bristles, basal pair long, lateral pair short; proepisternum with one long black bristle on lower part and one short black bristle on upper part.

Legs mainly brown; all trochanters yellow; base and apex of all femora yellow; fore and mid tibiae yellow, hind tibia yellow with brown apex; fore tarsomere 1 and 2 yellow (sometimes tarsomere 1 and base of tarsomere 2 yellow), mid tarsomere 1 yellow, base of hind tarsomere 1 yellow. Hairs and bristles on legs black. Fore and mid coxae with long hairs and bristles; hind coxa with one outer bristle at base. Hind trochanter with one bristle at middle. Fore femur without obvious bristles; mid femur with 1–2 *av* and 1 *pv* apically; hind femur with 3–4 *av* apically. Fore tibia with 1–2 weak *ad* and 1 weak *pd*, apically with 3 short bristles; mid tibia with 2 strong *ad* and 2–3 *pd*, apically with 4 bristles; hind tibia with 2 *ad* and 3 *pd* (Fig. 8), apically with 3–4 bristles. Relative lengths of tibia and five tarsomeres of legs as follows: LI 4.0:2.4:1.1:0.7:0.5:0.5; LII 5.0:2.8:1.3:0.9:0.7:0.6; LIII 6.0:1.8:1.5:0.9:0.6:0.6.

Wing hyaline; veins blackish, R_{4+5} and M parallel apically; CuAx ratio 0.25. Squama yellow with brown hairs. Halter pale yellow.

Abdomen metallic-green with pale grey pollinosity; hairs and bristles on abdomen black.

Male genitalia (Figs 11–12). Epandrium somewhat rounded, without angular projection posteriorly. Lateral epandrial lobe protruded and wide. Surstylus somewhat long and curved, tapered at apex. Postgonite developed, somewhat narrow at apex, 4–5 times as long as wide. Cercus short and wide, with medium-sized bristles. Apex of phallus with a fin-like structure.

Female (Fig. 6). Body length 2.1–2.5 mm, wing length 1.9–2.3 mm. Similar to male, but eyes widely separated. Hind tibia almost entirely yellow.

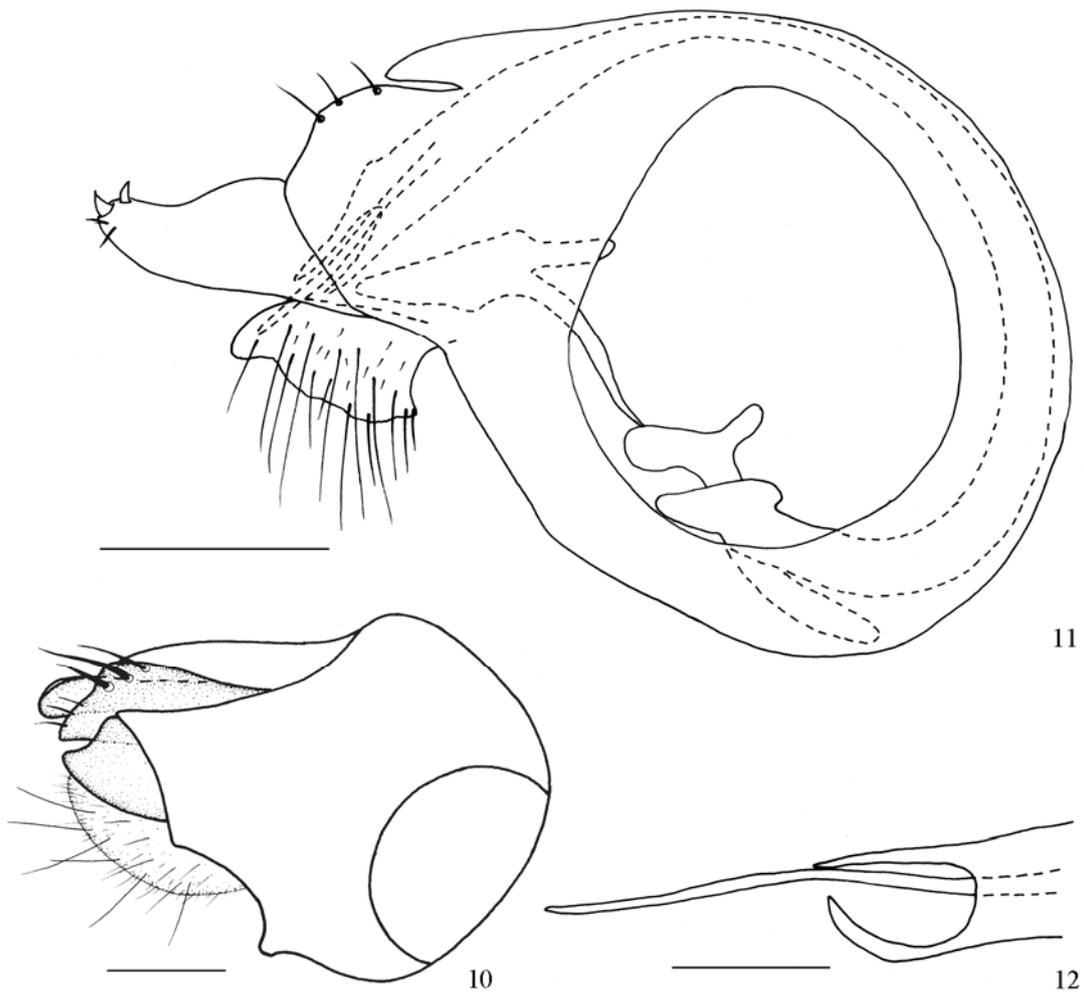
Material examined. Holotype. ♂, Mongolia, Hentiy Aimag, 2 km S of Ondorhaan (47°18'N, 110°39'E; elev. 1030 m), bank of Kerulen Gol river, net-sweeping and aspirator, 18–19 August 2002, coll. Andrey Przhiboro (no. 65). Paratypes. 5♂ 15♀, the same data as holotype.

Distribution. Mongolia.

Etymology. The species name refers to hairs (“*minu*” (=smaller size) and “*capillum*” (=hairs)) on the apical part of hind tibia and tarsomere 1 (compare to *Ch. shanxiensis* Liu & Yang).



Figures 8–9. *Chrysotus* spp., hind femur and tibia, male, lateral view. 8. *Ch. minuticapillatus* Liu, Przhiboro & Yang, **sp. nov.** 9. *Ch. shanxiensis* Liu & Yang. Scale bars = 0.1 mm.



Figures 10–12. Male genitalia. 10. *Campsicnemus pallidoapicalis* Wang, Przhiboro & Yang, **sp. nov.**, lateral view. 11–12. *Chrysotus minuticapillatus* Liu, Przhiboro & Yang, **sp. nov.** 11. lateral view. 12. Apex of phallus, ventral view. Scale bars = 0.1 mm.



Figure 13. Sampling site. Hentiy Aimag, 17 km ESE of Naran (45°04'30"N, 113°53'E; elev. 1 350 m), water-logged stream and lakelet near sand dune.

Remarks. The new species is similar to *Ch. shanxiensis* Liu & Yang from Shanxi in the male genitalia and antenna, but can be separated from the latter by the postgonite 4–5 times as long as wide and hairs on the apical part of hind tibia and hind tarsomere 1 of usual size and sparse (Fig. 8). In *Ch. shanxiensis*, the postgonite 2–3 times as long as wide, and hairs on the apical part of hind tibia and hind tarsomere 1 long and dense (Fig. 9).

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