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**Autor:** Naglis, Stefan

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## A new species of *Chrysotus* (Diptera, Dolichopodidae) from Switzerland

STEFAN NAGLIS

Naturhistorisches Museum, Augustinergasse 2, CH-4001 Basel, Switzerland.  
E-mail: s.naglis@bluewin.ch

*Chrysotus dischmaensis* sp. n. is described from an alpine valley in the canton Grisons in Eastern Switzerland. It is closely related to *Chrysotus alpicola* Strobl with which it shares the generally dark body coloration and the swollen hind tibia. A differential diagnosis of the new species is given and supplements to the Palearctic key are provided. *Ch. alpicola* is redescribed on the basis of the lectotype.

Keywords: Dolichopodidae, *Chrysotus*, new species, redescription, Switzerland.

### INTRODUCTION

The genus *Chrysotus* Meigen, 1824 includes worldwide 285 species which occur in all biogeographical regions; from the Palearctic region 58 species are known (Yang *et al.* 2006). In Europe 28 species are recorded (Pollet 2004), including two recently described species from Romania (Pârvu 1995) and Bulgaria (Olejníček 1999). In Switzerland 12 species have been found so far (Naglis 2009). The European representatives of the genus are relatively stocky and small, with a body length between 1.5 to 3 mm. The genitalia capsule in males is hidden under the post-abdomen. Specimens often occur on leaves of shrubs and trees.

During the examination of material from the collection of Gerhard Bächli (Dietikon, Switzerland) a new species of the genus *Chrysotus* from an alpine valley in the canton Grisons in Eastern Switzerland has been discovered which is similar to *Ch. alpicola* Strobl. Since Strobl's original description is partially vague the examination of the lectotype was necessary, and a redescription of the species is given.

### MATERIAL AND METHODS

The specimens of *Ch. dischmaensis* sp. n. are from the collection of Gerhard Bächli (Dietikon). The holotype and some paratypes will be deposited in Naturhistorisches Museum Basel (NHMB). The lectotype of *Ch. alpicola* Strobl is from the Strobl collection in Admont, Austria (NMBA).

The morphological terminology for adult structures mainly follows McAlpine (1981) and Merz & Haenni (2000). Terms for the structures of the male genitalia follow Cumming *et al.* (1995) and Sinclair (2000). The following abbreviations are used: ad = anterodorsal; av = anteroventral; pd = posterodorsal; pv = posteroventral; CuAx ratio = length of dM-Cu to length of distal portion of CuA.

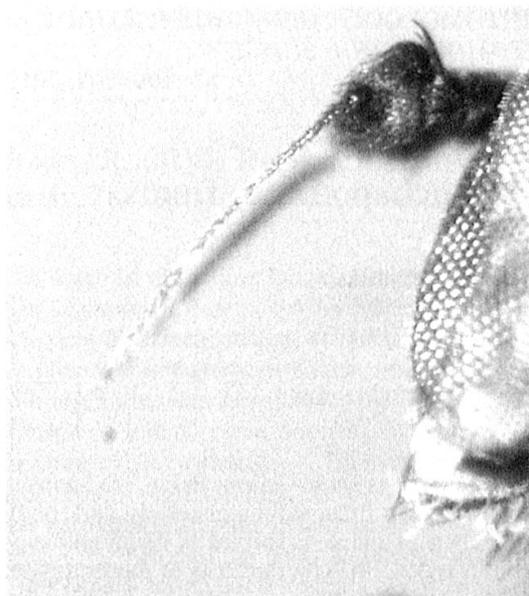


Fig. 1: *Chrysotus dischmaensis* sp. n.: male antenna, lateral view.



Fig. 2: *Chrysotus dischmaensis* sp. n.: male hind leg, anterior view.

## DESCRIPTIONS

### *Chrysotus dischmaensis* sp. n.

(Figs 1–4)

*Diagnosis.* Eyes separated on face, face ochreous brown; first flagellomere triangular; lower postocular setae black; lower calypter with pale setae; legs black except fore and mid tibiae yellowish, hind tibia slightly swollen; setae on fore coxae varying from yellow to black.

*Material.* Holotype ♂: CH, Dischmatal GR, 16.–30.VI.1992 / Net, P. Brodmann leg. Deposited in NHMB.

Paratypes: 5 ♂♂: [Switzerland], Dischmatal GR, 30.5.–24.7.1979, B. Wartmann leg. 3 ♂♂: CH, Dischmatal GR, 15.–30.VI.1990 CT, P. Brodmann leg. 6 ♂♂: CH, Dischmatal GR, 16.–30.VI.1990 / Net, P. Brodmann leg. 7 ♂♂: CH, Dischmatal GR, 1.–15.VII.1992 / Net, P. Brodmann leg. Deposited in NHMB.

#### *Description.*

Body length of holotype: 2.6 mm, wing length 2.3 mm.

Head: Frons dark metallic olive-green with dark brown pruinosity; setae black, lower postoculars black and multiseriate; face narrow, with brown pruinosity, eyes separated; palp whitish, with 1 pale seta; antennae (Fig. 1) black, first flagellomere triangular, about as long as high, and about 1.5 times as high as pedicel.

Thorax: Mesonotum dark metallic olive-green with cupreous reflections; all setae black; 6 strong dorsocentrals; acrostichals very long, about 4–5 times as long as distance between rows; scutellum with 2 strong setae, and 2 smaller lateral setae; pleura dark with metallic green reflections and greyish pruinosity.

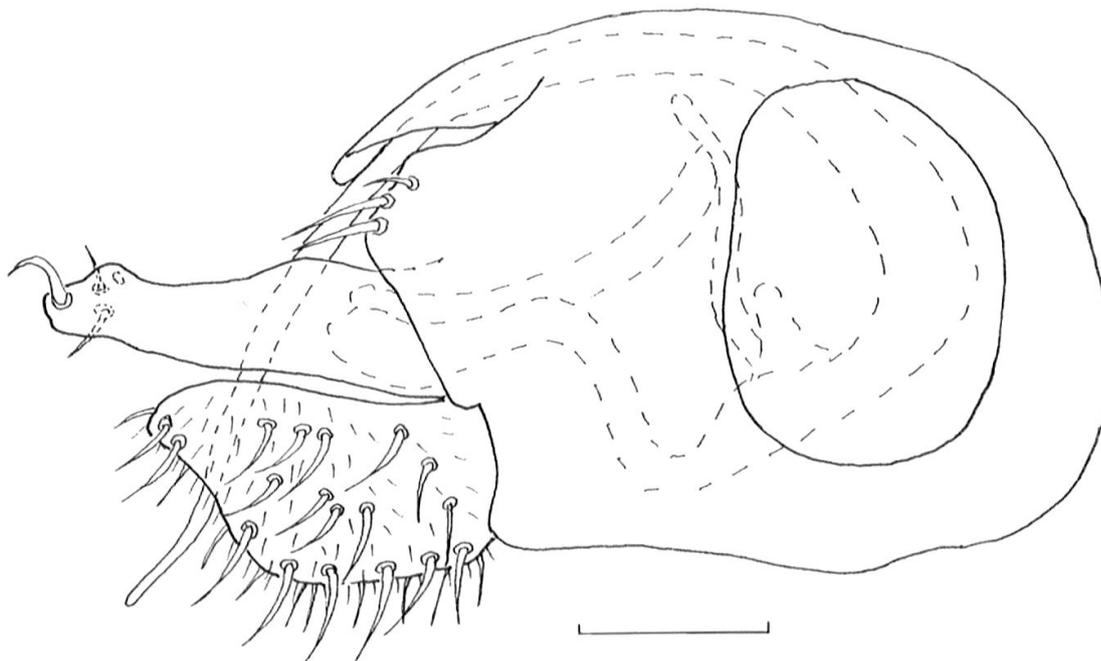


Fig. 3: *Chrysotus dischmaensis* sp. n.: male hypopygium, left lateral view (scale bar = 0.1 mm).

Legs: All legs and coxae black, except tibiae and basal part of basitarsi of fore and mid legs varying from light yellow to yellowish-brown; femora with dark metallic olive-green reflections; all setae and hairs black, except as noted. Fore leg: coxa with setae and hairs varying from yellow to black; femur with short av setae on apical third; tibia with a pair of small ad/pd setae at  $\frac{1}{5}$ . Mid leg: femur with a ventral row of short setae; tibia with a pair of strong ad/pd setae at  $\frac{1}{4}$ , and another pair of smaller setae at  $\frac{1}{2}$ . Hind leg: hind coxa with a strong lateral seta; femur with an av row of strong setae on apical  $\frac{2}{3}$ ; tibia (Fig. 2) slightly swollen, with dense hairs on anterior side, and with 4–5 small dorsal setae; tarsomeres with dense erect hairs on anterior side. All pulvilli and claws well developed. Relative length of tibia and tarsomeres 1–5: fore leg: 52:30:12:9:7:5; mid leg: 67:35:16:11:7:6; hind leg: 78:30:23:14:9:7.

Wing: Hyaline, veins brown; M slightly curved against  $R_{4+5}$  at  $\frac{1}{3}$  from dM-Cu; ratio basal section of CuA to distal section: 0.9; CuAx ratio: 0.3; lower calyp-ter pale yellow with yellow setae; halteres pale yellow.

Abdomen: Black with metallic green and violet reflections; hairs and setae black. Male genitalia (Figs 3 and 4): Cercus dark brown with pale setae; surstylus straight, with a curved seta apically, and 3 smaller setae; epandrium with 2 strong and 1 smaller apical setae; cercus triangular; phallus with a pointed apex, and a serrated rim.

Female: unknown.

*Etymology.* The species is named after the Dischma valley where it has been collected.

*Habitat.* The specimens were collected exclusively in the Dischma valley near Davos, an alpine valley on an altitude between 1600 and 2000 meters, in June and July.

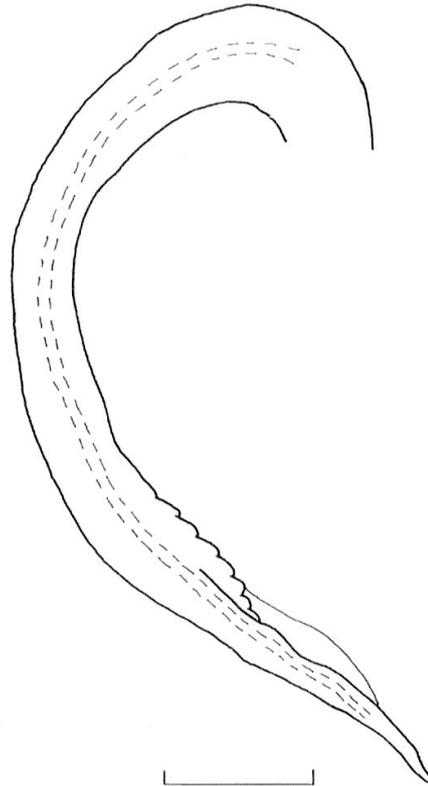


Fig. 4: *Chrysotus dischmaensis* sp. n.: male apex of phallus, left lateral view (scale bar = 0.1 mm).

*Remarks.* The new species can be distinguished from all Central European congeners by the black ventral postocular setae. It is similar to *Chrysotus alpicola* Strobl, which has also a generally dark-colored body, dark legs, and a swollen and densely haired hind tibia. *Ch. dischmaensis* sp. n. can be separated from *Ch. alpicola* by the following characters: lower postocular setae black; lower calypter with pale hairs; eyes separated on face.

The key to Palaearctic species of *Chrysotus* males (Negrobov *et al.* 2000) can be supplemented with the new species as follows:

Remarks: since the coloration of setae on the fore coxae in *Ch. dischmaensis* shows a variation from yellow to black both couplets in the key are provided.

- 12 Postocular setae black ventrally ..... 12a
- Postocular setae white ventrally ..... 13
- 12a Eyes contiguous on face ..... *Ch. decipiens* Negrobov & Tsurikov
- Eyes separated on face ..... *Ch. dischmaensis* sp. n.
  
- 49 Palp fuscous ..... *Ch. vulcanicola* Frey
- Palp pale ..... 49a
- 49a First flagellomere with notch at base of arista; [fore coxa with pale setae<sup>1</sup>]  
 ..... *Ch. caerulescens* Negrobov
- First flagellomere without notch; fore coxa with dark setae .....  
 ..... *Ch. dischmaensis* sp. n.

<sup>1</sup> *Ch. caerulescens* is wrongly included in the Palaearctic key (Negrobov *et al.* 2000), it should be included under species with pale setae on the fore coxa (Negrobov, pers. comm.)

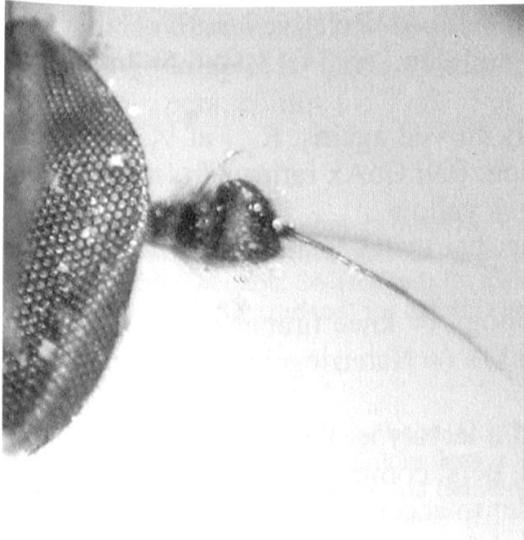


Fig. 5: *Chrysotus alpicola* Strobl: syntype male antenna, lateral view.



Fig. 6: *Chrysotus alpicola* Strobl: syntype male hind leg, anterior view.

### *Chrysotus alpicola* Strobl, 1893

(Figs 5–6)

*Diagnosis.* Eyes contiguous on face; first flagellomere triangular; lower post-ocular setae white; lower calypter with dark hairs; legs black except fore and mid tibiae yellowish-brown; hind tibia distinctly swollen; setae on fore coxae yellowish-brown.

*Material.* Lectotype ♂: «Natterriegel, 22. August 1891» near Admont (Austria). Strobl collection Admont (NMBA).

#### *Redescription.*

Body length: 2.5 mm, wing length 2.1 mm.

Head: Frons metallic blue-green; setae black, lower postoculars white; face narrow, with brown pruinosity, eyes contiguous on face; palp yellow, with 2 dark setae; antennae (Fig. 5) black, first flagellomere triangular, about 1.5 times as long as high, and about 1.5 times as high as pedicel.

Thorax: Mesonotum dark metallic green with dense brown pruinosity, scutellum with violet reflections; all setae black; 6 strong dorsocentrals; acrostichals of normal length; scutellum with 2 strong setae, and 2 smaller lateral setae; pleura dark with greyish pruinosity.

Legs: All legs and coxae black, except tibiae and basal part of basitarsi of fore and mid legs yellowish-brown; femora with dark metallic green reflections; all setae and hairs black except as noted. Fore leg: coxa with setae and hairs yellowish-brown; tibia with a pair of small ad/pd setae at  $\frac{1}{5}$ . Mid leg: femur without ventral row of setae; tibia with a strong ad seta at  $\frac{1}{4}$ , and a smaller one at  $\frac{1}{2}$ , and with 2 small pd setae at  $\frac{1}{4}$  and  $\frac{1}{2}$ . Hind leg: coxa with a strong lateral seta; femur with a av row of strong setae on apical  $\frac{2}{3}$ ; tibia (Fig. 6) distinctly swollen, with dense hairs on anterior side, and with 6–8 small dorsal setae; tarsomeres with dense erect hairs

on anterior side. All pulvilli and claws well developed. Relative length of tibia and tarsomeres 1–5: fore leg: 50:27:12:9:6:5; mid leg: 66:34:13:10:6:5; hind leg: 75:26:18:10:8:5

Wing: Hyaline, veins brown; M slightly curved against  $R_{4+5}$  at  $\frac{1}{3}$  from dM-Cu; ratio basal section of CuA to distal section: 0.9; CuAx ratio: 2.8; lower calyp-ter dark brown with dark brown setae; halteres yellow.

Abdomen: Metallic olive-green shining; hairs and setae black. Male genitalia: cercus dark brown with pale setae.

*Habitat.* «Krummholzwiesen des Kalbling» (= knee timber meadows of the Kalbling mountain), and «Natterriegel ca. 5000'» (= Natterriegel mountain on about 1500 m).

*Remarks.* Morge (1984) has designated a lectotype, but none of the syntypes (1 ♂, 2 ♀♀) bears a lectotype label (Chvála, pers. comm.). I herewith add a lecto-type label to the single male specimen in order to accept the informal lectotype designation of Morge. Strobl's (1893) original description gives no indication of the color of the postocular setae. The species is known from Austria, Switzerland, Hungary, and Russia (Negrobov 1991). The record from Switzerland should be verified as it could be *Ch. dischmaensis* sp. n.

After examination of the lectotype of *Ch. alpicola* I realized that the species is not correctly included in the key to Palaearctic species of *Chrysotus* (Negrobov *et al.* 2000), and I give here the correction:

Remarks: since the coloration of the setae on the fore coxae as well as of the fore and mid tibiae show a variation from yellow to brown, all possible couplets are given.

- |     |   |                                |
|-----|---|--------------------------------|
| 15  | First flagellomere triangular .....   | 15a                            |
| —   | First flagellomere rounded .....  | 16                             |
| 15a | Hind tibia distinctly swollen .....   | <i>Ch. alpicola</i> Strobl     |
| —   | Hind tibia not swollen .....  | <i>Ch. smithi</i> Negrobov     |
| 43  | Hind tibia distinctly swollen .....   | <i>Ch. alpicola</i> Strobl     |
| —   | Hind tibia not swollen .....  | <i>Ch. angulicornis</i> Kowarz |
| 52  | Hind femur ventrally with strong setae at least on apical $\frac{2}{3}$ ..... | 52a                            |
| —   | Hind femur ventrally with strong setae at most on apical $\frac{1}{3}$ .....  | 53                             |
| 52a | Hind tibia distinctly swollen .....   | <i>Ch. alpicola</i> Strobl     |
| —   | Hind tibia not swollen .....  | <i>Ch. glebi</i> Negrobov      |

#### DISCUSSION

*Chrysotus dischmaensis* sp. n. shows a variation in the coloration of the setae on the fore coxae from yellow to black, and also of the fore and mid tibiae from light yellow to yellowish-brown. Both of these characters are traditionally used in Palaearctic keys to species of the genus *Chrysotus*. My personal experience with other species of the genus is that the coloration of legs and setae, as well as the shape of the first flagellomere (third antennal segment) used as key characters, are subject to some variation, and therefore, adequate identification is sometimes afflicted with some uncertainty.

It should be noted that in the Palaearctic key (Negrobov *et al.* 2000) there is an error: in couplet 1 and 2 of the key tar1 and tar3 should be replaced by cx1 (Negrobov, pers. comm.).

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