

**Dolichopodidae (Diptera) from Papua New Guinea XIII.
A remarkable new subgenus in the genus *Chrysotus****

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Contribution n°317 of the biological Station Leopold III on Laing Island.

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Summary

The monotypical subgenus Angiopus is described from the swamp forest in northern Papua New Guinea. It is remarkable in having only uniseriate acrostichals, an enlarged third antennal segment with a dorsal and ventral extension in male and only a ventral extension in female. The male has the first and second segments of the hind tarsi modified. In addition another new species of Chrysotus s.s. is described from the same region.

Key words: Diptera, Dolichopodidae, *Angiopus* subgen. nov., new species.

Résumé

Angiopus subgen. nov., monotypique, est décrit d'une forêt marécageuse au nord de la Papouasie Nouvelle-Guinée. Le genre est remarquable du fait qu'il n'y a qu'une seule rangée de soies acrosticales, que le troisième segment de l'antenne présente un prolongement dorsal et ventral chez le mâle; la femelle n'a que le prolongement ventral. En plus le mâle a les premier et deuxième segments des tarsi postérieurs modifiés. Une deuxième espèce du genre Chrysotus s.s. est décrite de la même région.

Introduction

The present short paper is a further small step in the study of the dolichopodid fauna of Papua New Guinea. In the subfamily Diaphorinae we treated so far the genera *Diaphorus* with 16 species (MEUFFELS & GROO-

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TAERT, 1985), *Cryptophleps* with a single species (GROOTAERT & MEUFFELS, 1987) and the genus *Asyndetus* with 11 species (MEUFFELS & GROOTAERT, 1993). A second species of *Cryptophleps* from the Manam Volcano awaits description.

The genus *Chrysotus* MEIGEN, 1824 is widely distributed in the world (Palearctic region: 39 species; Afrotropical region: 13 species; Nearctic region: 86 species; Neotropical: 86 species; Oriental: 14 species; Australasian and Oceanian regions: 21 species). There is a particularly great diversity in Central America and the Caribbean whereas the Oriental and Australasian regions are apparently poor in species: only three species are known from Australia, eight endemic species from New-Zealand and two species from Hawaii. BECKER (1922) reported two species of *Chrysotus* from New Guinea: *Chr. adsiduus* BECKER, 1922 and *Chr. excretus* BECKER, 1922. In fact he described these species on the base of material from Formosa (Taiwan) and added localities from New Guinea. It should still be proven whether these specimens are really conspecific.

The genus *Chrysotus* is not very common in the lowland area which we sampled intensively for dolichopodids. Only a few specimens, belonging to a single species, were found in a swamp forest during 30 min periods sweeps of the vegetation on a total of several hundreds of *Teuchophorus*, *Acropsilus* and *Sympycnus* specimens. In addition a few specimens were collected in a yellow pan trap in a mangrove habitat on Laing Island.

In the present paper we describe the new subgenus *Angiopus* which is quite distinct from *Chrysotus* s.s. in that both sexes have uniseriate acrostichals and a ventral extension on the enlarged antennae. The male has curiously enlarged hind tarsi and remarkably large and thickened halteres.

Material and methods

The material is preserved in alcohol in the collections of the "Koninklijk Belgisch Instituut voor Natuurwetenschappen" (K.B.I.N.) in Brussels.

Systematic account

Angiopus subgen. nov.

Diagnosis: Species of a very small stature. Frons very broad, sides almost parallel. Eyes practically touching below middle of face in male. Face with eye margins converging in female, but separated for a distance as wide as third antennal segment. Eye facets enlarged in both sexes. 2 strong diverging ocellars pointing backwards; 2 strong verticals pointing forwards; two short postverticals. Postocular cilia uniseriate throughout. Third antennal segment large, roughly triangular in male with a dorsal and a ventral extension; the arista inserted in between the extensions. Female with a ventral apex only. Thorax with uniseriate acr and 6 dc. All legs with small claws and pulvilli in both sexes. Male with modified hind tarsi. Abdomen with six visible segments. Hypopygium enclosed in abdomen, diaphorine in structure.

Monotypical: *Chr. (Angiopus) halteratus* sp. nov. is the only species known so far.

Derivatio nominis: Greek angion (*ἀγγεῖον*) means anything with a cavity in it; pus (*πούς*) means foot. Alluding to the shape of the hind tarsi. Gender: masculin.

Discussion:

ROBINSON (1975) states in his genus diagnosis that *Chrysotus* has small acrostichals which are usually biseriate, sometimes uniseriate or lacking. However all the European species and the 19 Central American species (ROBINSON, l.c.) have biseriate acrostichals. At the moment we do not know of other *Chrysotus* with uniseriate acrostichals nor a combination of characters as in the above described new subgenus. We are however very hesitant as to place *Chr. (Angiopus) halteratus* in a new genus since it is not clear whether species from Central-America with their highly diversified palpi and tarsi should be grouped into distinct species-groups, subgenera or even genera. We think however that it is necessary to attract the attention to this remarkable species by placing it in a new subgenus than to let it drown in the large genus *Chrysotus*.

Chrysotus (Angiopus) halteratus sp. nov.

Material examined: Holotype male: Papua New Guinea, Madang province, Bogia district, Bunapas, 29.II.1992 (leg. P. GROOTAERT). Paratypes: Bunapas, 28.II.1992, 5♂, 2♀ (leg. P. GROOTAERT).

Male

Length: body: 1.75 mm; wing: 1.35 mm.

Head. Frons broad, seen from above a little broader than eye, dark metallic green, not very shining; side margins only slightly converging towards antennae. Face dark bronzy green, narrowing rapidly downwards to antennae; eyes practically touching each other beneath middle of face. Eye facets larger towards face; there the facets about twice as large as upper facets. Palpi small, projecting, brown, with a long black apical bristle. Rostrum small, yellowish brown. Occiput greenish black. 2 diverging ocellars, pointing upwards; 2 verticals, shorter than ocellars, pointing upwards and forwards; 2 short postverticals, clearly separated from postoculars by a gap. Postoculars uniseriate throughout, black. Antennae black (Fig. 2); first segment bare; second segment short conical, with a circlet of weak, black bristles, longest above. Third segment, large, roughly triangular with a ventral apex; the arista is inserted in a dorsal excavation. Third segment covered with long hairs, the longest of them near tip. Arista nearly three times as long as antenna, covered with short hairs; first arisal segment somewhat thickened basally, bare.

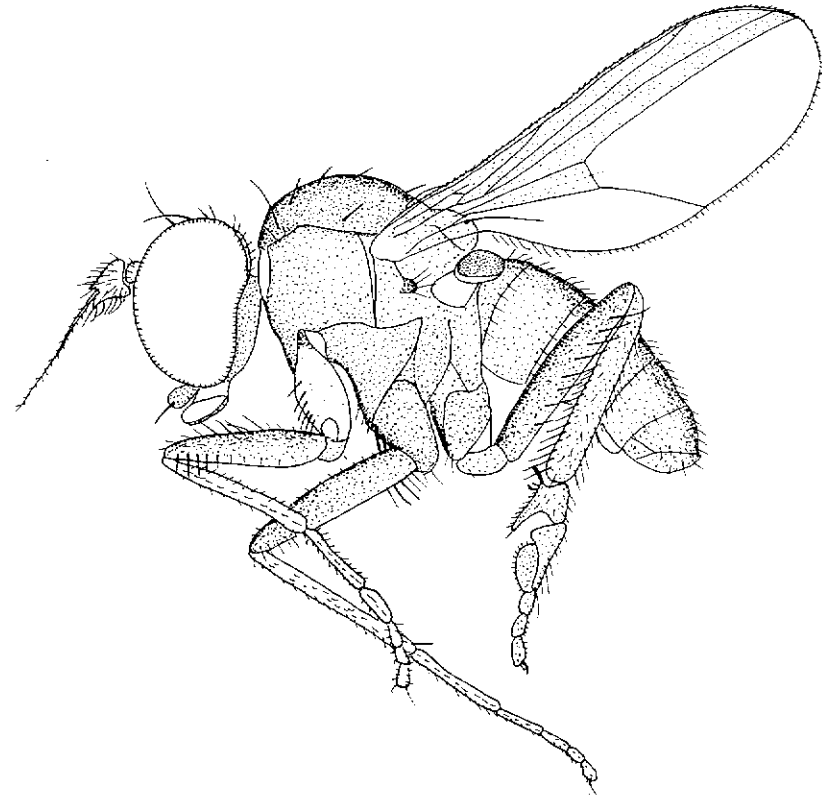
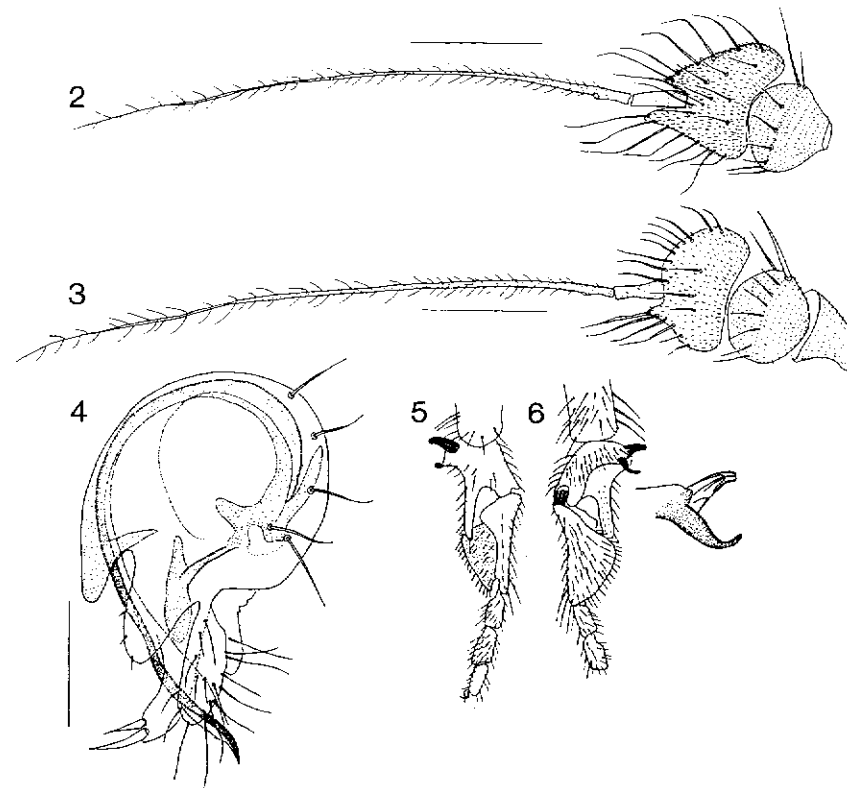


Fig. 1. *Chrysotus (Angiopus) halteratus* sp. nov. male habitus.

Thorax. Mesonotum brightly shining metallic green; scutellum likewise, with coppery reflections; pleura shining dark metallic green; neck yellowish. All bristles and hairs black. Acr uniseriate; 6 dc increasing in length towards the rear. Scutellum with 2 strong marginals. Prothoracic collar with a dorsal series of minute black bristles. 2 weak prothoracic bristles.

Legs with black femora and tibiae. Coxae I yellow with only extreme base brownish. Tarsus I progressively brownish darkened from extreme tip of first segment onwards. Tarsus II with segments 3-5 brown. Tarsus III: segments 3-5 brownish black. **Leg I.** Coxa I with some black hairs anteriorly, pointing downwards. Trochanter with a few tiny hairs. Femur I with a row of short pv increasing in length towards tip; there nearly as long as femur is wide. Tibia I about as long as femur, without bristles. Tarsal segments somewhat dilated. Claws and pulvilli very small. **Leg II.** Coxa II with a remarkable long, strong bristle. Trochanter anteriorly with

two black bristles externally. Femur II somewhat stronger than femur I. Ventrally at base with a bundle of short bristles. Posteroventrally a spaced row of indistinct bristles, a few of them near tip somewhat longer. Tibia II straight, about as long as femur; with a short ad near base. Tarsal segments not dilated. **Leg III.** Coxa with a long, black external bristle near base, longer than coxa is long, and a small exterior bristle near middle. Femur III stouter than anterior femora, with a series of at least six long anteroventrals in apical two thirds; short inconspicuous ventral bristles; three distinct posteroventrals near base. Tibia III thickened, ventrally with a row of long bristles. First tarsal segment flattened, with a forceps-like structure at its base and a long pointed extension apically (Figs 5-6). Second segment also enlarged, with an anterior cavity. Terminal three segments dilated. Claws and pulvilli normal.



Figs 2-6. *Chrysotus (Angiopus) halteratus* sp. nov. 2: male antenna; 3: female antenna; 4: hypopygium; 5: hind tarsus posteriorly; 6: hind tarsus anteriorly with detail of pincer-like structures. Scale 0.1 mm.

Wings (Fig. 1) hyaline, but upper half between costa and vein m1+2 brownish tinged. r3+4 and apical part of m1+2 almost parallel, closer together than in female. Tp much shorter than apical part of m3+4. A distinct fold running through middle of basal cell. Halteres remarkably large with a thick, white stem and a swollen black knob. Squamae small, dark brown with 3-5 black cilia.

Abdomen blackish brown, hardly shining. Terga with short black bristles. Hypopygium (Fig. 4) small, enclosed in abdomen. Cerci yellowish. Five inconspicuous macrocheta.

Female

Length: body: 1.75-1.9 mm; wing: 1.6 mm.

Third antennal segment (Fig. 3) less stout than in male; ventral projection present but shorter; dorsal projection absent. Face wide, eye margins converging towards clypeus, there separated for a distance as long as third antennal segment is wide. Lower eye facets enlarged like in male. All tibiae and tarsi yellow, i.e. much paler than in male. Legs with less bristling. Fore femora with only very short ventral bristles. Hind tibia with an anterodorsal bristle in its basal quarter and a long apical. Hind tarsi simple. Wings with vein r4+5 and m1+2 parallel, but nearly twice wider apart than in male. Wing membrane completely pale. Halteres white. Oviscap with 8 spatulate spines.

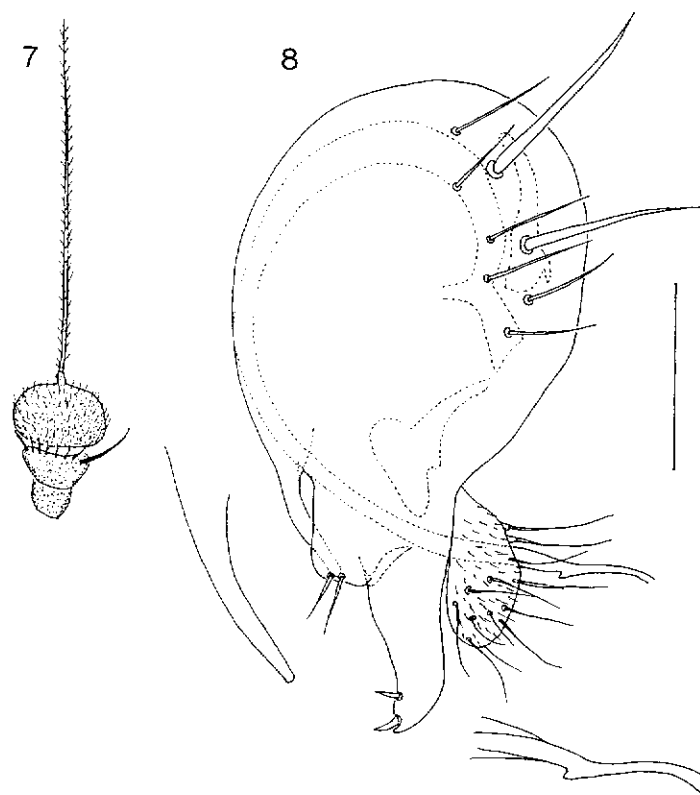
Chrysotus (Chrysotus) papuanus sp. nov.

Material examined: Holotype male and two paratypes males: Papua New Guinea: Madang province, Laing Island, 15.V.1995, southern mangrove, trapped in a yellow pan trap (leg. P. GROOTAERT).

Male

Length 1.8-1.9 mm; wing length 1.4 mm.

Head. Frons broad, seen from above about as wide as eye, dark metallic green, not very shining; side margins only slightly converging towards antennae. Face dark bronzy green, narrowing rapidly downwards; eyes practically touching each other beneath middle of face. Eye facets enlarged on lower half. Palpi small, projecting, pale yellow, with a brown apical bristle. Rostrum small, yellowish brown. Occiput blackish green. Chaetotaxy: 2 very strong diverging ocellars, pointing upwards and backwards, slightly shorter than antenna; 2 strong verticals, slightly longer than ocellars, slightly converging, pointing upwards and forwards; 2 short postocellars and postverticals about a quarter the length of anterior ocellars. Postverticals clearly separated from the postoculars by a gap. Postoculars uniseriate throughout, black and short above, paler and somewhat longer beneath. Antennae black; first segment very short, bare; second segment short, conical, broader and longer than the first segment, with a circlet of short and weak black bristles, longest above. Third antennal segment (Fig. 7) broader than long; arista apical, nearly 3 x as long as antenna, finely pubescent.



Figs 7-8. *Chrysotus papuanus* sp. nov. male paratype 7: antenna; 8: hypopygium. Scale 0,1 mm.

Thorax. Mesonotum brightly shining metallic green; scutellum likewise, with coppery reflections; pleura shining dark metallic green; neck black. Chaetotaxy: acr biseriate, much shorter than dc; 5 dc, increasing in length to the rear. Scutellum with 2 strong marginals, and a fine hair at each side. A strong humeral, directed inward, a strong posthumeral, a supra-alar, a notopleural and a postalar. A weak black prothoracic bristle pointing downwards. Prothoracic collar with a dorsal series of short black bristles.

Legs mainly black. All coxae and femora black. Hind tibiae and tarsi brown. Tip of fore femora, fore tibiae, apical half of mid tibiae, fore and middle tarsi yellowish. A pair of distinct claws on all legs; pulvilli, if present, very small. *Leg I.* Coxa I densely set with black bristles, pointing downwards. Trochanter with a few tiny hairs. Femur I with a row of very short pv, increasing in length towards tip and there not so long as diameter of tip of femur. Tibia I about as long as femur, with a weak dorsal bristle

in basal third and some not very strong apical bristles, which are inconspicuous and weak. Tarsus I with tarsal segment 1 as long as segments 2-5 together. *Leg II*. Coxa II with a long black external bristle. Trochanter with 2 black bristles externally. Femur II anteroventrally with a row of black bristles increasing in length towards tip, there about as long as femur is wide. Posteroventrally near tip 2 long, black preapical bristles. Tibia II with tip somewhat enlarged, about as long as femur; 1 short black anterior bristle on basal quarter; a circlet of strong, black preapicals. Tarsus II: segment 1 as long as following 4 segments. *Leg III*. Coxa III with a rather short black external bristle. Trochanter with one short and one longer black external bristle. Femur III stronger than femur II with a row of anteroventrals increasing in length towards tip; there at least 3-4 bristles nearly as long as femur is wide. Tibia III with a strong anterior bristle on basal third; 3 short, dorsal bristles; ventrally with some longer hair-like bristles and a crown of preapicals. Tarsal segments gently decreasing in length towards tip of tarsus.

Wings hyaline, set with microtrichia; veins dark brown. No costal bristle. r3+4 and apical part of m1+2 parallel. Apical part of m3+4 nearly three times as long as Tp. Basal and apical parts of m1+2 about equal in size. Anal vein indicated only in basal half. Halteres with black knobs. Squamae yellowish brown with black cilia.

Abdomen shining dark greenish-brown, densely covered with short black bristles, being a little stronger at sides. Hypopygium enclosed in tip of abdomen. No macrochetæ, but 2 long hair-like bristles. Hypopygium as illustrated in Fig. 8.

Female

Unknown.

Discussion:

We did not have the occasion to study the two *Chrysotus* species which BECKER (1922) reported from New Guinea. In fact he described *Chr. excretus* from Formosa (Taiwan) in the first place and added localities from New Guinea (Simbang); *Chr. adsiduus* was also described from Formosa (Taiwan) and from material from New South Wales (Australia) and the Huon golf in Papua New Guinea. It is the question whether the specimens from the type series of these species really are conspecific. Anyway according to Becker's description *Chr. excretus* has yellow palpi, yellow halteres and yellow squamae with yellow cilia while *Chr. adsiduus* has black palpi, yellow halteres and yellow squamae with black cilia. So both species differ from *Chr. papuanus* sp. nov. which has a different combination of these characters namely pale yellow palpi, black halteres and yellowish-brown squamae with black cilia.

PARENT (1941) described *Chr. divergens* from the Solomons on the base of a female. This species has the lower postoculars black, squamae with pale cilia and R 3+4 and M diverging.

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