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A new species of the genus *Scopodes* Erichson from western New Guinea

(Coleoptera, Carabidae, Pentagonicini)

Fourth Supplement to the "Revision of the genus *Scopodes* Erichson from New Guinea"

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Scopodes arfakensis, spec. nov. is described from Arfak Mountains, Vogelkop Peninsula, Papua Indonesia, western New Guinea. It is inserted in the most recent key to the New Guinean species of that genus.

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Introduction

By courtesy of Alexander Riedel, well known collector of many new and interesting carabid species in New Guinea, I received a single specimen of the pentagonicine genus *Scopodes* Erichson, 1842 for identification. After comparison with all species of the genus described from New Guinea it turned out to represent another new and quite peculiar species which is described in the present paper. This is regarded as another supplement to the revision of the genus *Scopodes* in New Guinea (Baehr 1994, 1995, 1998, 1999).

Species of the genus *Scopodes* in New Guinea are characterized at the first glance by their extremely large, far protruded eyes, usually multisulcate frons, pentagonal pronotum commonly covered by transverse strioles, wide elytra usually bearing large and conspicuous, commonly foveate, setiferous punctures at the 3rd interval, and usually bright, metallic colour. The genus has many species in Australia (revision in print), where the probably most plesiotypic species occur, in New Zealand (Britton 1941, Larochelle & Larivière 2001), and New Guinea (Baehr 1994), whereas merely single species occur on islands of the Bismarck Archipelago, on New Caledonia, and on Java. Although species of *Scopodes* are surprisingly similar in their appearance to the genera *Asaphidion* Gozis, 1886, *Elaphrus* Fabricius, 1775, and *Notiophilus* Duméril, 1806 of the northern hemisphere, they are not related, but belong to a highly evolved tribe which is very closely related to the tribe Colliurini (= Odacanthini). However, habitat and habits of a couple of species from Australia and New Zealand exactly match those of their northern counterparts in that they live in open, commonly montane habitats and on barren soil, and chase their prey during daytime by eyesight. Most New Guinean and many northern and eastern Australian species, however, live in rain forest on forest clearings, but also on logs. So far 36 species have been recorded from New Guinea.

Material and methods

The holotype of the new species collected by A. Riedel will be stored in Museum Zoologicum Bogoriense (MZB), Cibinong, Indonesia. All measurements and ratios were obtained in the same manner as in the revision (Baehr 1994) and the supplements.

Fig. 1. *Scopodes arfakensis*, spec. nov. Habitus. Body length 3.5 mm.

The habitus photographs were obtained with a digital camera using ProgRes CapturePro 2.6 and AutoMontage and subsequently digitally processed with Corel Photo Paint 11.

Scopodes arfakensis, spec. nov.
Figs 1-4

Holotype: ♀, W-PAPUA, Manokwari, Arfak Mts Mokwan, Siyoubrig 1870 m, leg. A. Riedel / 11.XII.2007 sample 5, sifted S01°07.066' E133°54.710' *Lithocarpus* forest (MZB).

Etymology. The name refers to the type area, the Arfak Mountains in the eastern part of the Vogelkop Peninsula, Papua Indonesia.

Diagnosis. Species of the *chimbu*-group within the New Guinean species of the genus, in the sense of Baehr (1994); characterized by very coarse and almost isodiametric microreticulation of the elytra, strikingly blue setiferous elytral foveae and punctures, and very rugose frons and pronotum. In colouration and structure of head and pronotum this species is rather similar to *S. hornabrooki* Baehr, 1998, and *S. perignitus* Baehr, 1998, but apart from the very distinct microreticulation it differs from *S. hornabrooki* by longer elytra and longer antenna, and from *S. perignitus* by the different surface structure of the elytra and the lack of any sericeous lustre.

Description

Measurements. Length: 3.5 mm; width: 1.5 mm. Ratios. Width head/pronotum: 1.31; width/length of pronotum: 1.27; width elytra/pronotum: 1.83; length/width of elytra: 1.29.

Colour (Figs 1-3). Bronzed-cupreous, discal and lateral setiferous punctures bright blue. Clypeus, labrum, mandibles, palpi, and four basal antennomeres yellow, apex of mandibles and palpi, and rest of antenna piceous. Legs yellow, tarsi dark.

Head (Fig. 2). Eyes large, space between inner border of eyes slightly wider than diameter of eye. Labrum short and wide, gently triangular, anterior border fairly convex, 6-setose, laterally with few additional short setae, in basal part medially impressed. Clypeus with shallow, transverse sulcus, basal part irregularly striate, glossy. Anterior triangular field of frons coarsely wrinkled, glossy. Frons between eyes with six coarse, markedly irregular, somewhat sinuate and here and there incised ridges and deep sulci that reach far posteriad. Summit and neck very coarsely wrinkled, sparsely punctate. Whole upper surface of head with sparse, very short, erect pilosity, very glossy. Antenna short, median antennomeres c. 1.1 × as long as wide.

Pronotum (Fig. 2). Dorsally very convex, moderately wide, rather trapezoidal, widest at the triangular anterior lateral angle in anterior third. Marginal border line distinct. Lateral margin anteriorly convex, posteriad of the anterior lateral angle oblique and almost straight, in front of the posterior angle not concave. Anterior lateral angle markedly triangular, laterally well projected. Posterior marginal seta absent. Anterior margin slightly convex, posterior margin straight. Median line distinct, fairly deep, not reaching apex nor base. Transverse sulcus in apical third barely visible. Whole upper surface with very coarse, rather dense, irregularly transverse sulci and ridges. Surface almost without punctation, without microreticulation, very glossy, with sparse, erect, extremely short pilosity.

Elytra (Figs 1, 3). Rather short and wide, dorsally moderately convex. Base comparatively wide, elytra widened towards apical third. Lateral margin rounded, in anterior third distinctly excised. Apex wide, apical border oblique, faintly sinuate. Surface striate throughout, though striation irregular and interrupted. Foveae in 3rd interval wide, deep, contrastingly blue. Surface rather uneven. Microreticulation very conspicuous, consisting of very dense, isodiametric to slightly transverse meshes that are

Fig. 2. *Scopodes arfakensis*, spec. nov. Head and pronotum.

Fig. 3. *Scopodes arfakensis*, spec. nov. Microstructure of the elytra.

remarkably irregular around the discal foveae. Due to the strong microreticulation surface comparatively dull. Pilosity sparse, erect, very short. Marginal pores comparatively large, contrastingly coloured. Metathoracic wings very short.

Lower surface. Prosternum with a pair of elongate setae in middle. Metepisternum c. 1.4 × as long as wide. Abdominal sterna with extremely sparse and short pilosity, without distinct microreticulation. Terminal visible abdominal sternum with faint medial incision, quadrisetose in female.

Legs. Narrow and elongate, similar to those of related species.

Male genitalia. Unknown.

Female genitalia (Fig. 4). Gonocoxite 2 medium-sized, rather curved, with one elongate dorso-median ensiform seta and two ventro-lateral ensiform setae, a longer upper one and a shorter lower one. Also with a very small dorsal nematiform seta originating from a groove near the apex. Apex of gonocoxite 1 with 4 setae. Lateral plate fairly densely setose.

Variation. Unknown.

Distribution. Arfak Mountains in Vogelkop Peninsula, Papua Indonesia, westernmost part of New Guinea. Known only from type locality.

Collecting circumstances. Holotype sifted from litter in *Lithocarpus* rain forest at median altitude.

Relationships. The species belongs to the *chimbu*-group of the genus, and probably is nearest related

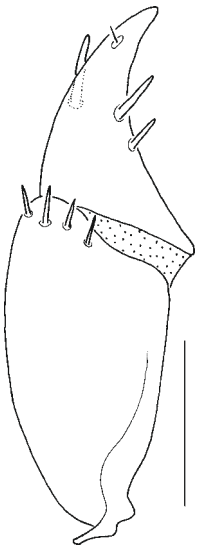

Fig. 4. *Scopodes arfakensis*, spec. nov. Female gonocoxite 2. Scale bar: 0.1 mm.

to *S. hornabrooki* Baehr and *S. pernitidus* Baehr, but through its very coarse elytral microreticulation it is probably quite isolated within the known species of this group.

Identification

In the revised key to the chimbu-group of the New Guinean species of *Scopodes* (Baehr 1998) couplet 4. is easily reached which has to be altered as following (Figs of previous papers mentioned as **BA95, BA98** fig.).

4. Elytra very short and wide, ratio length/width c. 1.20, posteriorly markedly widened (**BA95** figs 2, 3; **BA98** fig. 6); elytral striae at least in basal third coarse and deep .....5.

– Elytra longer and less wide, ratio length/width >1.28, posteriorly much less widened (Fig. 1); elytral striae in basal third fine and rather shallow, as in posterior part ..... 7.

7. Smaller species (length c. 3.5 mm); 6 frontal ridges and sulci present (Fig. 2) .....7a.

– Larger species (length >4 mm); 8-9 frontal ridges and sulci present..... 8.

7a. Colour bronzed or somewhat greenish; microreticulation of elytra very transverse, moderately conspicuous, surface with some sericeous lustre; antenna almost completely reddish, short, median antennomeres as long as wide; aedeagus with simple apex (**BA95** fig. 9). Eastern central Papua New Guinea ..... *tafa* Darlington

– Colour bronzed-cupreous (Fig. 1); microreticulation of elytra little transverse, very conspicuous, surface without sericeous lustre, rather dull (Fig. 3); four basal antennomeres reddish, the outer ones contrastingly dark, median antennomeres distinctly longer than wide; aedeagus unknown. Vogelkop Peninsula, western Papua Indonesia .....*arfakensis*, spec. nov.

Remarks

As mentioned in previous papers (Baehr 1994, 1995, 1998, 1999) the genus *Scopodes* is numerous in terms of species in New Guinea, and apparently many species are restricted to rather limited areas. This is surprising, because all known species (except the high altitude species *S. altus* Darlington, 1968) apparently belong to a single stock and probably even were derived from a single ancestor. Because what today forms the island of New Guinea, is of rather recent origin, in terms of geological time, and probably not much older than 5 millions of years (De Boer 1995), the history of the genus *Scopodes* in New Guinea likewise is reasonably young. Therefore, the reduction of flying wings in a couple of species, but also the extremely fragmentated mountain range that runs through the whole of New Guinea, presumably have supported the rapid evolution of these beetles which in New Guinea are predominantly montane, and also are responsible for the high degree of local endemism. Hence, the prediction that more (perhaps several more) species will be detected in future in areas not yet visited by collectors, seems not too bold.

Scopodes arfakensis belongs to a group (the *chimbu*-group) of brightly coloured species that have retained the striation of the elytra which, however, may be more or less irregular due to the interruption by the large, commonly brightly and contrastingly coloured setiferous foveae on the 3rd interval. The new species is peculiar because of its very conspicuous, almost isodiametric microreticulation of the elytra which give these an unusually dull appearance.

A more detailed phylogenetical analysis of the New Guinean species of *Scopodes* will be attempted in the forthcoming revision of the Australian species of the genus which is in preparation.

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