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New taxa and new records of Odacanthinae from Sulawesi

(Insecta, Coleoptera, Carabidae)

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Ophionea nigrofasciata fortestriata, subspec. nov. is described from central Sulawesi. The species was not yet recorded from this island and apparently, there a distinct subspecies occurs. Some records of additional odacanthine species from Sulawesi are dealt with, including a specimen of *Archicolliuris bimaculata* Redtenbacher having completely black pronotum, though the single available specimen from central Sulawesi is not regarded more than a colour variant and thus, it is not given a nomenclatorially valid name.

Considerations about the odacanthine fauna of Sulawesi suggest rather an Oriental than Australian origin of the fauna. For odacanthines at least, Wallace's line may not have acted as a past or present faunal border.

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Introduction

Samples of carabid beetles recently received from Sulawesi include a number of odacanthine species some of which are interesting in the light of the very limited knowledge we still possess about the ground beetle fauna of that island. Especially the odacanthine fauna never was systematically sampled and most records are based on rather casual collections or samples made at light. Hence, neither the classical works on the Oriental fauna, nor even more recent papers about this fasciating group – fascinating in view of both, external structure and ecology – contain much information on the odacanthine fauna of Sulawesi.

Previous authors, e.g. Andrewes (many papers during the 20thies and 30ties of last Century), Liebke (1938), Jedlicka (1963), had little access to material from Sulawesi, and, although since the eighties of 20th Century Sulawesi is being much better explored, there is still much more information available concerning the faunas of neighbouring areas than Sulawesi itself: e.g. Andrewes for Buru (1930), Sumatra (1933), and Bali (1937); Habu (1962, 1967) for Japan; Darlington (1968) for New Guinea; Stork (1986) for Borneo; and Baehr for New Guinea (1995, 1996b, 1997a, 1998), Australia (1986, 1996c, 1999a, in press), the Philippines (1996d), Java (1997b), and the New Guinean- West Pacific region (1996a, in prep.).

Only Baehr (1996a) described a new odacanthine species from Sulawesi and gave some additional records of species occurring on that island. However, the odacanthine fauna of the Moluccas still is far less well known than the faunas of the surrounding areas. Therefore, this paper, likewise far from being an exhausting treatment, could add to the knowledge and also could encourage future collectors and workers to direct their attention to the fauna of this island.

Format and style of the description, as well as measurements and ratios follows those used in my revision of the genus *Casnoidea* (Baehr 1996a). The full list of synonymies of the described species of *Ophionea (= Casnoidea)* may also be taken from this paper.

The specimens recorded are stored either in Zoologische Staatssammlung, München (ZSM), or in the working collection of the author at Zoologische

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Staatssammlung (CBM), or in Staatliches Museum für Naturkunde, Stuttgart (SMNS).

Eucolliuris fuscipennis (Chaudoir)

Chaudoir, 1850: 26 *(Casnonia)*; Andrewes 1927: 106 *(Odacantha)*; Csiki 1932: 1527 *(Colliuris)*; Liebke 1938: 65 *(Colliuris)*; Jedlicka 1963: 494 *(Colliuris)*; Habu 1967: 17; Darlington 1968: 205 *(Colliuris)*; Lorenz 1998: 417.

The nominate form occurs through the whole of southern Asia including the Greater and Lesser Sunda Islands, the Philippine Islands, and according to Darlington (1968) even New Guinea, and it also occurs on Sulawesi. The available Sulawesi specimens would rather correspond to the description of *punctata* Nietner, if this taxon at all could be maintained as a separate one. According to Andrewes (1927), Darlington (1968), and Lorenz (1998), however, the individual variability within *C. fuscipennis* is so great as to prevent maintenance of any subspecies. After examination of large samples of specimens of *C. fuscipennis* from India, Thailand, Sumatra, and Sulawesi I fully agree with this opinion, because even specimens collected at the same locality and within the same sample in some instances differ more substantially in shape and colouration than specimens from areas far away.

New records: Ugung Pandang (S-Sulawesi), 17.12. 1994, leg. Hiermeier (CBM); Sengkang, 10.4.1995, leg. Gerstmeier (CBM).

Eucolliuris celebensis (Gestro)

Gestro, 1875: 854 *(Casnonia)*; Csiki 1932: 1527 *(Colliuris)*; Liebke 1938: 65 *(Colliuris)*; Lorenz 1998: 417.

Liebke (1938, p. 65), in his "Key to the indo-malayan species of the subgenus *Eucolliuris*" noted this species as a subspecies of *E. fuscipennis*, while Jedlicka (1963) did not mention the species at all. The taxonomic status certainly is disputable, though Lorenz (1998) mentioned it as a separate species. The series of specimens at hand corresponds well with the description of Gestro (1875). From my view, the specimens are so different from all *E. fuscipennis* I have seen that their specific status should not be questionable.

New records: 20 km ne. Bantmurung (S-Sulawesi), 30. III.1999, leg. Becvar & Zabransky (CBM).

Archicolliuris bimaculata (Kollar & Redtenbacher)

Kollar & Redtenbacher, 1842: 498 *(Odacantha)*; Csiki 1932: 1525 *(Colliuris)*; Liebke 1938: 61 *(Colliuris)*; Jedlicka 1963: 497 *(Colliuris)*; Habu 1967: 26; Lorenz 1998: 418.

This species is very widely distributed through the whole of south Asia from northwestern India in the west to Japan in the east, and through the Philippine and Indonesian Archipelagos including Sulawesi. From the latter island I have seen no material apart from a single female specimen that is distinguished by completely black instead of red prothorax. In other features, e. g. elytral pattern and striation, density and distinctness of microreticulation, shape and structure of prothorax, and shape of head, it is within the variation limits of *A. bimaculata*. Hence, the specimen most probably does not merit a nomenclatorial valid name, but at most it represents an infrasubspecific variety that may be called *bimaculata* s. str var. *nigricollis*. It is not known, however, whether this colour variety is accidental and individual, whether it has a wider distribution and might be characteristic even for a local population. It should be mentioned, however, that *A. bimaculata* apparently is a quite variable species with respect to colouration and pattern. Indeed, I have seen some specimens from different provenance completely lacking the white spots on the elytra.

New record: 20 km ne. Bantmurung (S-Sulawesi), 30.III. 1999, leg. Becvar & Zabransky (CBM).

Ophionea indica (Thunberg)

Thunberg, 1784: 68 *(Attelabus)*; see Baehr (1996a: 1055, as *Casnoidea*) for further citations; Lorenz 1998: 417.

A species with very wide range that includes almost all of South Asia including the Philippine and Indonesian Archipelagos. It was also recorded from Sulawesi, but neither from New Guinea nor from Australia, although it was accidentally introduced into Western Australia by ship (Baehr 1996a). Available specimens from Sulawesi in general structure are similar to those from other areas, though they slightly differ in their less distinct microreticulation of the elytra which gives the elytra a glossier appearence. However, these slight differences that, moreover, should be corroborated by additional material, probably do not merit any taxonomic differentiation of the Sulawesi specimens.

New records: 20 km ne. Bantmurung (S-Sulawesi), 30. III.1999, leg. Becvar & Zabransky (CBM, ZSM).

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Ophionea celebensis (Baehr)

Baehr, 1996a: 1060 *(Casnoidea)*; Lorenz 1998: 417.

Species closely related to *O. interstitialis* Schmidt-Göbel and its allies that so far was only recorded from Sulawesi. Apparently it is quite common there, as I have lots of specimens collected at light in different parts of Sulawesi. It seems that this species is the most common *Ophionea* on this island.

New records: 20 km ne. Bantmurung (S-Sulawesi), 30.III.1999, leg. Becvar & Zabransky (CBM, ZSM); 8 km W Mamasa (S-Sulawesi), 950 m, 18.-21.VII.1999, leg. Bolm (SMNS); 20 km NE Sabbang (S-Sulawesi), 5.-7.VII. 1999, leg. Bolm (SMNS).

Ophionea nigrofasciata Schmidt-Göbel

Schmidt-Göbel, 1846: 21; see Baehr (1996a: 1052, as *Casnoidea*) for further citations; Lorenz 1998: 417.

A widespread species that is, inter alia, characterized by the red base, black fascia, and presence of two small, circular, white spots on the elytra; and by absence of any lateral seta on the prothorax. The nominate form is also characterized by the striation of the elytra becoming very weak in the apical half. The species is distributed through continental Southeast Asia, the Greater Sunda Islands, and Buru in the Moluccas, though was not yet known from Sulawesi nor from New Guinea (Baehr 1996a). The specimens mentioned below, therefore, represent the first record of this species for Sulawesi. The available specimens from this island, however, differ rather characteristically from those of other areas (India, Thailand, Sumatra), so that their description as a separate subspecies is justified.

Ophionea nigrofasciata fortestriata, subspec. nov.

Figs 1, 2

Types. Holotype: ♂, INDONESIA – C-SULAWESI W coast of lake POSO TAIPA env. 10.-11.IV.1999 BECVÁR & ZÁBRANSKÝ leg. (CBM-ZSM). – Paratype: 1♀, same data (CBM).

Diagnosis. Distinguished from nominate subspecies by the following character states: posterior half of head slightly shorter, prothorax considerably shorter and wider, puncturation of elytra distinct and coarse also in posterior half, and apex of aedeagus even shorter and more asymmetrically turned to right side.

Fig. 1. *Ophionea nigrofasciata fortestriata*, subspec. nov. Aedagus, parameres, and genital ring. Scale: 0.5 mm.

Description

Measurements. Length: 6.8-7.1 mm; width: 1.70-1.75 mm. Ratios. Length/width of prothorax: 2.05-2.08; length/width of elytra: ♂ 1.86, ♀ 1.84.

Colour (Fig. 2). Elytra quadrimaculate and with wide black band as in nominate subspecies, though posterior white spot even more enclosed in black fascia. Head, prothorax, antennae, and legs of same colour as nominate subspecies.

Head. Much alike nominate subspecies, though posterior part of head slightly less elongate, head, therefore, of slightly wider appearance.

Pronotum. Of same shape and surface structure as in nominate subspecies, but distinctly shorter and wider (l/w: 2.05-2.08, vs. 2.23-2.33 in nominate subspecies).

Elytra. In size and shape similar to nominate subspecies, though puncturation of striae not or barely finer towards apex, and intervals still distinctly convex in apical half.

Lower surface. Similar to nominate subspecies.

Legs. Similar to nominate subspecies.

♂ genitalia (Fig. 1). Generally similar to those of nominate subspecies, though genital ring (in the single available male!) wider. Aedeagus as short and compact, but apex even shorter and more turned to right side. Parameres of similar size as in nominate subspecies, but left paramere bearing a more acute apex.

♀ genitalia. Similar to nominate subspecies.

Variation. Due to limited material very little variation noted.

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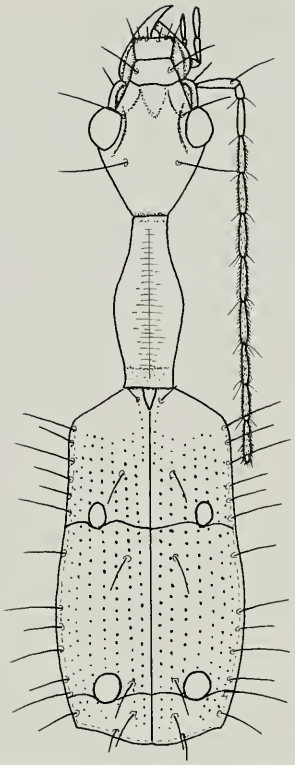

Fig. 2. *Ophionea nigrofasciata fortestriata,* subspec. nov. Habitus. Length of specimen: 7.1 mm.

Distribution. Central Sulawesi. Known only from type locality.

Collecting circumstances and habits. Largely unknown, both available specimens collected at light. Lives probably in and on reeds and grass near water or in swamps, like its nominate subspecies.

Etymology. The name is an adjective and refers to the coarse striation of the elytra.

Note. Although degree of variation in shape and structure of male genitalia is unknown due to the very limited material, the differences in length of pronotum and surface structure of the elytra seem to be constant. Hence description of the Sulawesi specimens as a separate subspecies is reliable.

Recognition. For recognition of the new subspecies the key to the *nigrofasciata*-group of the genus *Ophionea (=Casnoidea)* in Baehr (1997b) has to be altered in some ways. Therefore, the whole key to this species-group is repeated below.

Key to the Oriental-Australian species of the *nigrofasciata*-group of the genus *Ophionea* Castelnau

For identification of the species included, follow up to couplet 13. in the key in Baehr (1996a).

13. Prothorax coarsely punctate and with a row of lateral setae; only one large white spot in posterior half of each elytron. Northern and northeastern Australia, New Guinea ..... *puncticollis* (Sloane)

– Prothorax not coarsely punctate, without lateral setae or with only one seta; two white spots in anterior third and near apex of each elytron. Distribution different ..... 14.

14. Dark parts of upper surface distinctly blue. 15.

– Dark parts of upper surface black ..... 16.

15. Elytra with anterior white spot situated outside dark fascia, posterior spot completeley included in fascia; head longer, posteriorly slightly convex; aedeagus unknown. Burma ..... *bhamoensis* (Bates)

– Elytra with both white spots at least partly included in dark fascia; head shorter, posteriorly rather straight; aedeagus with hook-shaped apex (Baehr 1996a, fig. 12). Philippines ..... *bakeri* (Dupuis)

16. Prothorax without distinct transverse strioles; elytra with barely indicated microreticulation, surface highly glossy; both white elytral spots large and elongate, anterior spot completely outside of dark fascia, posterior spot clearly surpassing posterior margin of fascia; posterior part of head rather short (Baehr 1997b, fig. 1). Java ..... *insignis* (Baehr)

– Prothorax with distinct transverse strioles; elytra with distinct microreticulation, surface dull; either both white elytral spots small and circular, or only posterior spot large, in latter case both spots completely included in dark elytral fascia; posterior part of head longer ..... 17.

17. Prothorax without lateral seta, narrower and more elongate, surface regularly transversely striolate and distinctly microreticulate; posterior white elytral spot circular and rather small, clearly surpassing posterior margin of elytral fascia; head anteriorly longer, shape of head regularly rhomboidal with eyes situated about in middle (Fig. 2); microreticulation of elytra distinct, entire surface dull ..... 18.

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- Prothorax with a pair of lateral setae, wider and shorter, surface less regularly transversely striolate, rather superficially microreticulate; posterior white elytral spot elongate and very large, completely included in elytral fascia; head anteriorly shorter, shape of head irregularly rhomboidal with eyes clearly situated in front of middle (Baehr 1996a, fig. 20); microreticulation of elytra less distinct, surface more glossy. Northern Thailand ..... *malickyi* (Baehr)

18. Prothorax longer, about 2¼ × as long as wide; elytral striae distinct and coarsely punctate only in basal half; posterior part of head slightly longer; apex of aedeagus longer (Baehr 1996a, fig. 10). Southern Asia including the Greater Sunda Islands except Sulawesi .... *nigrofasciata nigrofasciata* Schmidt-Göbel
- Prothorax shorter, just twice as long as wide; elytral striae distinct and coarsely punctate even in apical half (Fig. 2); posterior part of head slightly shorter; apex of aedeagus shorter (Fig. 1). Sulawesi ....*nigrofasciata fortestriata*, subspec. nov.

Remarks

The odacanthine species mentioned from Sulawesi in this paper demonstrate quite different states of endemism. Whereas some species, e.g. *Eucolliuris fuscipennis*, *Ophionea indica*, and perhaps also *Archicolliuris bimaculata*, do not differ perceptibly from their extra-Sulawesian forms, taxa like *Eucolliuris celebensis* and *Ophionea celebensis* apparently are specifically distinct, and *Ophionea nigrofasciata* occurs in a separate subspecies on this island (*O. nigrofasciata fortestriata*).

In this context it should be mentioned, however, that recognition of subspecific rather than specific differentiation of insect taxa is rather a matter of opinion, as long as we do not know the extent to which the gene flow between taxa actually is interrupted. In particular in insular populations such decisions are extremely difficult, the more when the respective taxa either are able and willing to fly over considerable distances, or are easily transported by natural or human carriers. Classifications, therefore, are rather based on characters and, at least for tropical insects like those mentioned in the present paper, usually they make advantage of more or less extensive similarity of morphological character states. In other words: without possessing much more information about genetics, in particular population genetics, but also about way of life and behaviour of the respective taxa, we have little chance to draw any final decision about their taxonomic status; and so we call 'subspecies' those taxa that exhibit little morphological differences and, at the same time, are allopatric, and 'species' those taxa that are more strikingly different and/or occur sympatrically. For the further discussion, therefore, one should bear in mind that more or less extensive similarities, as a rule, indicate more or less close relationships of taxa, though without adhering too much to terms like 'species' or 'subspecies'.

Certainly, it is premature to draw any biogeographical conclusions about the odacanthine fauna of Sulawesi, because our knowledge about the actual number of species occurring is still quite unsatisfactory. Nevertheless, we could argue that most of the odacanthine species yet mentioned from Sulawesi have their nearest relatives in southern Asia, or even belong to species being widely distributed there. The odacanthine fauna of New Guinea and Australia, on the other hand, is rather different and includes several genera and species groups that do not reach further west than New Guinea or in few instances, the Moluccas (Darlington 1968, 1971, Baehr 1986, 1996a, 1996c, 1999a, 2000a, in press, in prep.). One recorded exception from this rule is the occurrence of *Dicraspeda brunnea* Chaudoir on Sulawesi. This species belongs to a genus that has its centre of specific and morphological diversity in New Guinea and Australia, although a single species *(D. brunnea)* occurs on Sulawesi, the Moluccas, the Philippines, and the Greater Sunda Islands (Baehr in prep.). As a conclusion one could argue, then, that – at the present state of knowledge – the odacanthine fauna of Sulawesi generally is an Oriental one.

The insular belt that runs from the Greater Sunda Islands in the north and northwest, to the Moluccas and New Guinea in the south and southeast, since a long time has been noted as a major area of faunal transition, where Oriental and Papuan-Australian faunal elements are intermixed to a remarkable extent. To clarify the difficult situation, some 'lines' have been drawn by early scientists that should depict certain faunal boundaries, or better, lines of faunal balance or of a certain procentual degree of preponderance of the Australian faunal elements over the Oriental ones, or *vice versa* (Fig. 3). The most familiar lines are 'Wallace's line' that runs between Borneo and Sulawesi, and Bali and Lombok, and depicts an equilibrium of elements of both faunal provinces; 'Weber's line' that runs east of Timor and Sulawesi but west of the Moluccas, and depicts a more than 75 % advantage of Papuan-Australian faunal elements and also marks the western boundary of some Papuan-Australian elements; and 'Lydekker's line' that divides New Guinea and some nearby islands from the Moluccas and marks the

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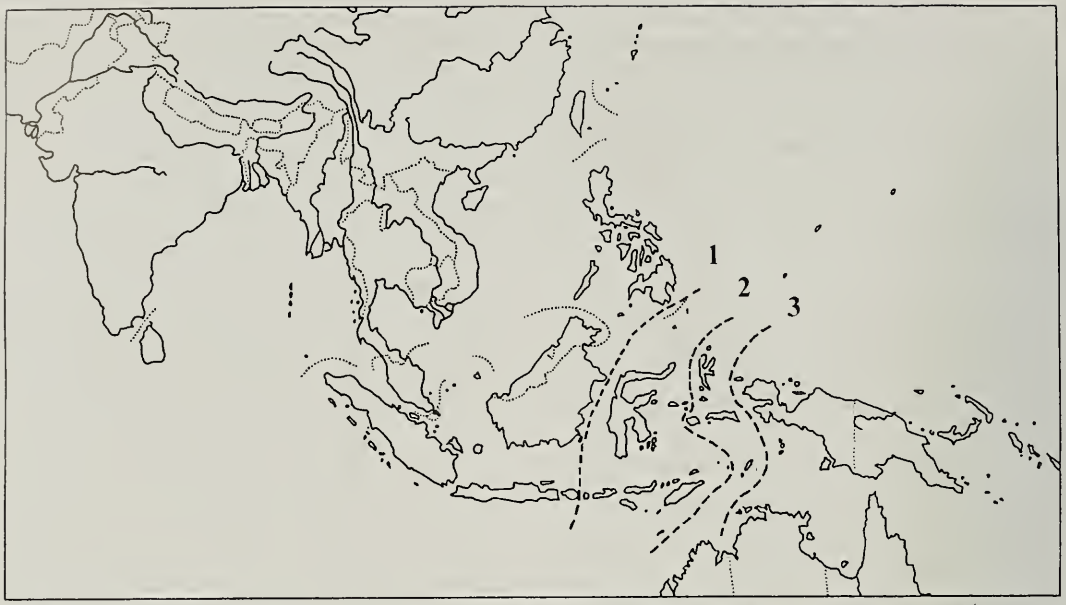

Fig. 3. The Oriental and Papuan-Australian area of faunal transition and the important zoogeographic lines. 1: Wallace's line; 2: Weber's line; 3: Lydekker's line.

Papuan (and Australian) faunal province(s) proper.

For the subfamily Odacanthinae, at least, Wallace's line apparently has not been of any biogeographic significance in the past, but, for Odacanthinae, the faunal border is running further east, presumably just west of the Moluccas proper (Weber's line). Unfortunately, very little is known about the odacanthine faunas of the Moluccas, especially of Seram, as well as about the faunas of Timor and the neighbouring Lesser Sunda Islands and of the island groups east of Timor, so, a more exact definition cannot been given at present.

As a conclusion, as far as Odacanthinae are considered, Sulawesi, although showing a certain degree of endemism, clearly belongs to the Oriental faunal region. This situation, at least at the present state of knowledge, apparently deviates from results gathered from some other carabid genera, for example in the subgenus *Coeloprosopus* Chaudoir of the Oriental-Papuan genus *Pericalus* W.S. Macleay (Baehr 1994), though apparently not in the nominate subgenus *Pericalus* s. str. (Baehr 2000b). Similar differences are presumably seen in the large genus *Dolichoctis* Schmidt-Göbel. Here, only a single species from the decidedly Papuan subgenus *Spinidolichoctis* Baehr (*D. aculeata* Chaudoir) occurs on Sulawesi, though many species of the predominantly Oriental nominate subgenus *Dolichoctis* s. str. occur, of which probably no one is conspecific with those – very few species – that occur in New Guinea and/or Australia (Baehr 1999b, in prep.).

Already these apparent differences within single genera demonstrate the complexity of the biogeographic situation in this mentioned area of faunal transition. They also suggest that, in some instances, Sulawesi apparently was re-colonized by single species of Papuan-Australian origin which, nevertheless, belong to genera that originally came from the Oriental region. It seems, thus, that not only general trends of a northwest to southeast range extension and of a similar migration in the reverse direction, respectively, took place, or even still takes place, in this region, but moreover, that even within restricted groups of taxa to and fro range extensions in both directions occurred which, therefore, necessitates very scrutinized examinations of the biogeographic history even on the species-group level.

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