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A revaluation of *Loeffleria globicollis* Mandl from Borneo

(Insecta, Coleoptera, Carabidae, Psydrinae)

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The genus *Loeffleria* Mandl, 1969 from Mt. Kinabalu, Sabah, northeastern Borneo, is revaluated, the single species *L. globicollis* Mandl is redescribed and male and female genitalia are described and figured for the first time. The genus *Loeffleria*, originally arranged within Broscinae by the describer, is obviously synonymic with the psydrine genus *Mecyclothorax* Sharp. Hence, *Loeffleria* is herewith stated to be a junior synonym of *Mecyclothorax* Sharp. The presence of setiferous punctures on 3rd and 5th elytral intervals suggests that the Bornean species is most closely related to the New Guinean species *M. toxopei* Darlington.

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In 1969 Mandl described the new genus *Loeffleria* from a single specimen that was collected at about 3500 m altitude on Mt. Kinabalu in Sabah, northeastern Borneo. Mandl gave an extensive description and discussion. He included the new genus in the tribe Broscini, but, apart from some broscine genera, he compared it also with the genus *Oopterus* that, according to Mandl, "was only recorded in Tasmania" (Mandl 1969, p. 53). Although almost all of this statement as well as a major part of the description is wrong, the new genus was included under Broscini without any commentary by Stork (1986) in his checklist of the Carabidae of Borneo.

Unfortunately, Mandl failed to recognize two important characters on his single specimen: namely the presence of a seta in the mandibular scrobe, and the presence of setiferous punctures not only on the 3rd but also on the 5th interval. Already the observed absence of a mandibular seta in the single examined specimen should have prevented Mandl from arranging it within Broscini; though apparently this arrangement had been made exclusively by virtue of the convex surface and the rather circular shape of pronotum and elytra, because Mandl explicitly stated that his genus and species has two supraorbital setae, a pattern that does not normally occur in Broscini.

Although Mandl stated that "the new genus is between Broscini and Nomiini", he compared it with the genus *Oopterus* which actually belongs to Merizodini and, moreover, does not occur in Tasmania. Therefore, not only the description demonstrates a high degree of inaccuracy, but also the discussion reveals a lamentable ignorance about the systematics of the carabid tribes. Everybody who is just a bit familiar with the Indoaustralian carabid fauna immediately would have recognized the specimen as a species of the widespread Indoaustralian psydrine genus *Mecyclothorax* Sharp. This example of a catastrophic misinterpretation should prevent anybody being absolutely unfamiliar with the fauna of a certain faunal province to describe new genera from single specimens.

The synonymy of *Loeffleria* with *Mecyclothorax* was independently detected by both authors of this paper: by the first author while studying some specimens from the Museum Civico di Storia Naturale, Verona (MCSNV); by the second author while identifying material recently collected by Mr. Carsten

Brühl on Mt. Kinabalu (material in coll Lorenz, Tutzing – CLT and the working collection of M. Baehr, München – CBM). So we agreed to formally synonymize *Loeffleria* with *Mecyclothorax*, to redescribe the single species, and to describe and figure the male and female genitalia. This had not been done by Mandl, because the holotype was said by him to be a female.

Mecyclothorax is a genus of small psydrine ground beetles of characteristic shape that is widely distributed in the Indopacific region area from Java in the west to Hawaii and Tahiti in the east. To the south the range includes New Guinea, New Caledonia, Australia, and New Zealand. The genus is well known for its dispersal ability and for its diversity it has achieved on certain islands or island groups like Hawaii and Tahiti, although the many species occurring there have probably evolved from one stock or few stocks only that were introduced by rafting or by drifting by wind. The origin of the genus may have been in the southeastern part of Australia where the most plesiotypic species still exist.

Most of the Australian species, namely those related to *M. ambiguus* (Erichson) are still winged and the foundator species on Hawaii, Tahiti, Java, New Guinea, and also on Borneo should have had been winged, too, but today all species occuring on these islands or island groups apparently have lost their flying ability and thus possess reduced wings. This is probably due to the mountain-living habits of all these species. The same is true for the highly evolved, montane species occurring in northern Queensland (Moore 1984).

Although the species of *Mecyclothorax* are said to live in ground litter (Darlington 1962), some Australian species are at least partly semi-arboricolous and live on mossy tree trunks in subtropical and temperate rain forest (MB pers. obs.) and several species from Tahiti also have been beaten from foliage of shrubs and ferns (Perrault 1992).

In the northwestern part of its areal the genus has been so far rather rare in terms of species. 5 species are known from Java (Louwerens 1949, Darlington 1962) and at present 10 species are recorded from New Guinea (Darlington 1962, 1971, Baehr 1992, 1995, 1998), but none from Borneo, Sumatra, or elsewhere in the south Asian insular belt. In New Guinea two species groups exist, one consisting of smaller species with rather circular pronotum that live in rain forest of median altitude, the other inhabiting high mountains, where some species are known even from the highest tops (Baehr 1995). There is only one species that is similar to the Bornean species in having punctigerous 3rd and 5th intervals, namely *M. toxopei* Darlington from the top of Mt. Wilhelmina in central Irian Jaya.

Genus *Mecyclothorax* Sharp, 1903

Loeffleria Mandl, 1969: 53 (**new synonymy**); Stork 1986: 10 (the citation: Mandl 1964 is wrong!)

The genus *Mecyclothorax* is well known, and the type species of *Loeffleria* falls well into the boundaries of the genus. A diagnosis of the genus *Mecyclothorax* is not required.

Mecyclothorax globicollis (Mandl, 1969)

Figs 1, 2

Loeffleria globicollis Mandl, 1969: 54 (**comb. nov.**); Stork 1986: 10.

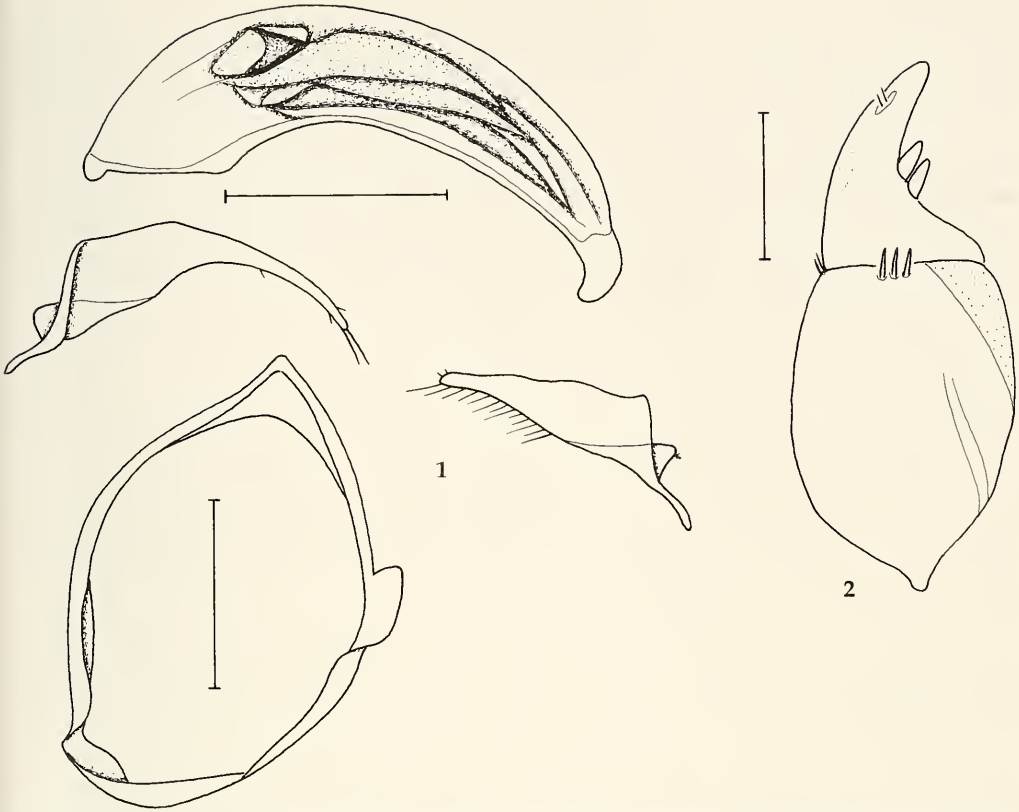
Diagnosis. Easily distinguished from all Javan, New Guinean, and Australian species, except for *M. toxopei* Darlington from Irian Jaya, by presence of setiferous punctures on 3rd and 5th intervals. The latter species mainly differs in the barely punctate and at the same time much less abbreviated striae of the elytra.

Contrary to the original description the species has a well developed seta in the mandibular scrobe – as usual in *Mecyclothorax* and generally in Psydrinae.

Redescription

Measurements. Length: 4.8-5.7 mm; width: 2.15-2.5 mm. Ratios. Width head/prothorax: 0.69-0.72; width/length of prothorax: 1.24-1.25; width base/apex of prothorax: 0.95-0.98; with elytra/prothorax: 1.62-1.65; length/width of elytra: 1.39-1.43.

Colour. Almost black, labrum, mandibles, palpi, antennae, and legs more or less dark reddish, basal antennomeres slightly lighter. Lower surface black, pronotal and elytral epipleurae reddish.



Figs 1,2. *Mecyclothorax globicollis* (Mandl). **1.** ♂ genitalia: aedeagus, left side; parameres; genital ring. Scales: 0.5 mm. **2.** ♀ stylomere 2 and base of stylomere 1. Scale: 0.1 mm.

Head. Rather narrow in relation to prothorax. Eyes comparatively large though depressed, orbits moderate, obliquely convex, almost ⅓ of length of eye. Clypeal suture well impressed. Frontal furrows slightly sinuate, very oblique, deep, ending shortly behind anterior supraocular seta. Labrum transverse, truncate, 6-setose. Mandibles moderately elongate, apex rather suddenly incurved, with setiferous puncture in scrobe. Mentum with distinct, apically rounded tooth. Antenna short, barely surpassing posterior border of pronotum, median antennomeres c. 1.5 × as long as wide. Posterior supraorbital seta situated well behind posterior border of eye. Frons convex or with very shallow, oblong median groove. Surface impunctate, with very superficial remnants of isodiametric microreticulation, glossy.

Pronotum. Large, wide, circular, considerably wider than long, in middle rather depressed, laterally evenly curved, without any excision in front of the basal angles. Widest diameter slightly in front of middle. Base slightly narrower than apex. Apex straight, apical angles not projecting, obtusely rounded. Base slightly convex, laterally very oblique. Basal angles perceptible, very small and obtuse. Marginal channel narrow throughout, barely widened near basal angles, base and apex not margined. V-shaped anterior sulcus very shallow, in middle barely perceptible. Median line barely impressed, anteriorly slightly, posteriorly much abbreviated, near base deepedend to a longitudinal groove. Basal grooves shallow, linear, slightly curved. Basal area not explanate, on same level with disk, impunctate. Anterior marginal seta situated slightly in front of middle, slightly removed from lateral margin, posterior marginal situated immediately at basal angle. Surface impunctate, microreticulation absent on disk, very weak and superficial along lateral margins, surface highly glossy.

Elytra. Short and wide, egg-shaped, dorsally markedly convex, widest diameter at or slightly behind middle. Shoulders almost regularly rounded off, lateral margin evenly curved. Basal margin strong, transversal, barely sinuate, connected to scutellary striole. Elytra quadristriate, though 4th stria

varying in distinctness. Striae including sutural stria much abbreviated at shoulder, all striae except for sutural stria also much abbreviated at apex. Three inner striae at least in basal half fairly impressed, intervals perceptibly convex. Striae coarsely punctate, 4th stria not or but slightly impressed, in some specimens considerably less coarsely punctate than inner striae. Outer striae absent or at least barely indicated. Scutellary striole fairly elongate, situated mediad of 1st interval, consisting of 4-5 coarse punctures. Marginal channel narrow. 3rd and 5th intervals with 3-5 setiferous punctures each in centre of interval, anterior puncture commonly situated close to base. Punctures rather conspicuous, setae fairly elongate. Scutellar puncture and seta at apex of sutural stria, though quite isolated. Near apex with a setiferous puncture at end of 2nd stria. Marginal pores fairly conspicuous, about 15 in a row that is barely interrupted in middle. Intervals impunctate, without any traces of microreticulation. Surface highly glossy, though not iridescent. Inner wings absent.

Lower surface. Impunctate. Metepisternum slightly longer than wide. Sternum VII in male bisetose, in female quadrisetose.

Legs. Without striking features. Three basal tarsomeres of male anterior tarsus expanded and squamose.

Male genitalia. Genital ring very wide, markedly asymmetric, with conspicuously diagonal basal rim. Aedeagus moderately elongate, lower surface rather straight, only towards apex suddenly curved. Apex rather compressed, slightly falciform, strongly sclerotized. Orifice mainly situated on right side. Internal sac with a large fold in apical half, and with a sclerotized furciform sclerite on upper side in posterior half. Right paramere rather elongate, with elongate, rather narrow, straight apex; lower margin with c. 12-15 elongate setae, upper margin near apex with 1-2 very short setae. Left paramere longer, with narrow and elongate, markedly curved apex that bears two elongate apical setae and 0-1 very short setae on upper rim and 1-2 short setae on lower rim.

Female genitalia. Both stylomeres short. 1st stylomere with three larger dentiform setae on lower margin and 2 fine short setae on median margin. Stylomere 1 with rather short, obtuse apex, with 2 large ventral ensiform setae, one large dorsal ensiform seta situated rather basally, and 2 very short nematiform setae originating from a groove near apex.

Variation. Apart from some extraordinary small specimens rather little variation noted.

Distribution. Mt. Kinabalu, Sabah, northeastern Borneo. Known only from this mountain top.

Collecting circumstances. Those of the holotype largely unknown. Most additional specimens have been collected between 3.500 m and 4.100 m, respectively. The latter altitude virtually matches the highest point of the summit of Mt. Kinabalu. One extraordinary small specimen, however, was collected at 2.800 m only. It is uncertain so far, whether this is evidence of size differences between populations living in different altitudes or whether the single specimen is only an extraordinary small specimen. The specimens collected by C. Brühl were captured on moist ground under slabs of granite on the summit plateau.

Material. 2♂♂, Mt. Kinabalu, vetta m. 4100, 10 Agosto 1972, Rosetto legit (MCSNV); 1♀, Kinabalu, Sabah, Borneo, m. 3500, Rif. New Hut, 9. Agosto 72, Rosetto legit (MCSNV); 2♂♂, 4♀♀, MALAYSIA, Sabah, Kinabalu NP. Granite Plateau, 3850m, 13.9.95, Leg. Brühl (CBM, CLT, ZSM); 2♀♀, Borneo, Sabah, 7.9.78, Mt. Kinabalu at 3900m, 116°33'E, 6°04'N, leg. Bogenberger (CLT); 1♂, Borneo, Sabah, 12.9.78, Mt. Kinabalu at 2800m, 116°33'E, 6°04'N, leg. Bogenberger (CLT).

Remarks. This is the first species of the genus *Mecyclothorax* recorded from the island of Borneo. Since several species of the genus occur on Java and New Guinea, respectively, this discovery was not too unexpected. Perhaps, additional species may occur on other mountains in central and southern parts of Borneo.

According to shape and structure of pronotum and elytra, the most similar species is *M. toxopei* Darlington from the top of Mt. Wilhelmina in central Irian Jaya, New Guinea. Provided, the multiplied number of elytra setae is an apomorphic character state – which is rather probable, because the apparently most plesiotypic species of the genus which occur in Australia bear two setiferous punctures on the 3rd interval only – then *M. toxopei* Darlington actually would be the nearest relative of *M. globicollis*. This New Guinean species likewise occurs at the very high altitude of about 4.200 m. Unfortunately, the male genitalia of *M. toxopei* are still unknown. The male genitalia of *M. globicollis*, however, are quite similar to some of the New Guinean species recently described by Baehr (1995, 1998).

At any rate, the distribution pattern of the genus in the northwestern part of its range is still very fragmentated and certainly we should expect additional species on high mountains in western Irian Jaya, on the larger islands of the Moluccas, and perhaps even on Sumatra. The distribution pattern in this part of the range rather seems to be caused by mountain hopping on very high mountains.

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