

A new species of the genus *Minuthodes* Andrewes from North Queensland, Australia

(Insecta, Coleoptera, Carabidae, Lebiinae)

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Minuthodes trimaculata, spec. nov. is described from the lower Cape York Peninsula, northern Queensland. The species is closely related to *M. froggatti* (Macleay) from North Queensland and far Northern Territory and *M. demarzi* Baehr from far Northern Territory. It is distinguished from both species by the different elytral pattern, presence of a light spot on frons of head, projecting though obtuse basal angles of pronotum, and scarcely rugose though distinctly microreticulate dorsal surface of the head. A checklist of the Australian species of the genus *Minuthodes* is added.

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Introduction

While working through unsorted and undetermined carabid material in the Coleoptera collection of the Queensland Museum, Brisbane (QMB), I detected a single specimen of the genus *Minuthodes* that at the first glance did not fit any Australian or New Guinean species of this genus known to me. After comparison with all related species in my working collection it proved to represent a new species that is, however, closely related to the northern Australian species *M. froggatti* (Macleay) and *M. demarzi* Baehr.

Because the catalogue of Moore et al. (1987) is outdated with respect to the genus *Minuthodes*, a checklist of all species recorded from Australia is added to this paper.

Measurements

Measurements have been made under a stereo microscope by use of an ocular micrometer. Length has been measured from apex of labrum to apex of elytra. Length of pronotum was taken along midline. Measurements, therefore, may slightly differ from that of other authors, especially Darlington.

Characters

During ample determining work on Australian and New Guinean *Minuthodes* it turned out that external characters like shape of pronotum, microstructure (puncturation, striation, microreticulation) of surface, and even the colour pattern on the elytra are of more value for the distinction of species than

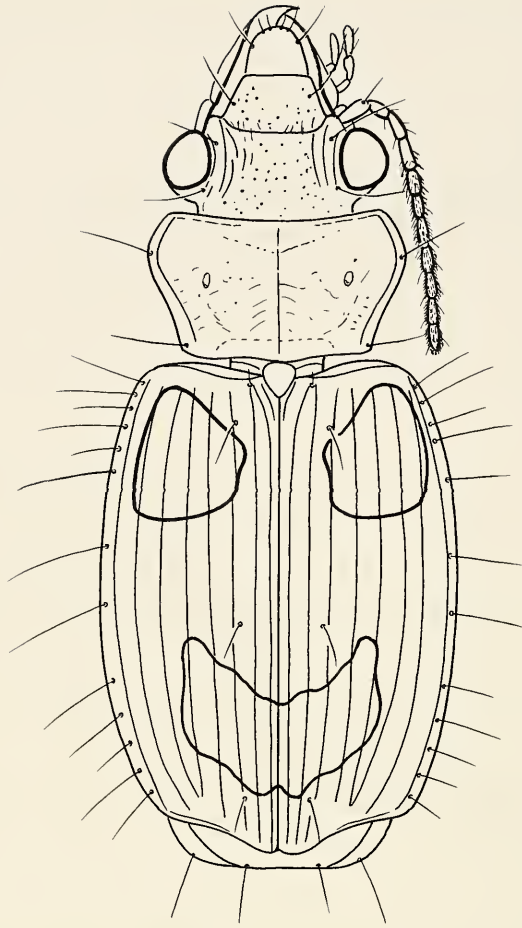


Fig. 1. *Minuthodes trimaculata*, spec. nov. Habitus. Length: 5.35 mm.

are the male genitalia. These are relatively uniform throughout the genus, while the mentioned external characters apparently are not only very distinct but also remarkably little variable within each species. Hence, discrimination of species is possible and even easier by use of external characters than male genitalia.

Minuthodes trimaculata, spec. nov.

Figs 1, 2

Types. Holotype: ♂, Musgrave 1.X.1974 G. B. Monteith (QMB, T 93151).

Diagnosis. Relatively large, trimaculate species with elytral pattern similar to *M. minima* (Macleay), but body much larger and wider. Distinguished from both most closely related species *M. froggatti* (Macleay) and *M. demarzi* Baehr by presence of a transverse reddish spot on frons, widely interrupted anterior and posterior elytral spots, less wide pronotum with projecting but distinctly obtuse basal angles, and but weakly rugose though markedly microreticulate upper surface of head. Further distinguished from *M. froggatti* (Macleay) by more heavily microreticulate and less glossy pronotum and elytra, and from *M. demarzi* Baehr by darkened femora, more cordiform pronotum, and far less rugose and therefore glossier surface of pronotum and elytra.

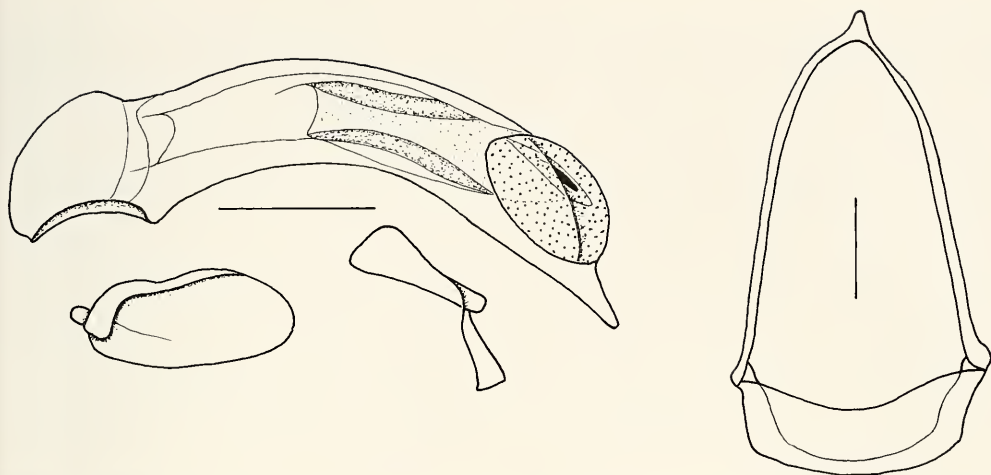


Fig. 2. *Minuthodes trimaculata*, spec. nov. Male genitalia: aedeagus, parameres, genital ring. Scales: 0.25 mm.

Description

Measurements. Length: 5.35 mm; width: 2.25 mm; ratio width/length of pronotum: 1.78; ratio width of pronotum/width of head: 1.15; ratio length/width of elytra: c. 1.45 (elytra somewhat opened).

Colour. Dark piceous-black. Frons posteriorly with two indistinct, transversely arranged, reddish spots. Elytra trimaculate, with a large, distinct, reddish, irregularly triangular humeral spot that extends from 3rd stria to 7th stria though is not in contact to any part of the anterior or lateral margins. In apical half with a common crescent-shaped, reddish spot that laterally extends to 6th stria and is anteriorly prolonged at position of 4th stria. Both, the humeral spots and the apical spot very widely separated. Lateral margins of pronotum and elytra narrowly reddish. Palpi and antenna reddish throughout, three basal antennomeres very faintly lighter than the rest. Femora piceous, tibiae and tarsi dark reddish, moderately contrasting. Lower surface of pronotum and abdomen laterally piceous, in middle broadly reddish. Elytral epipleurae anteriorly reddish.

Head. Wide in comparison to prothorax. Frons anteriorly in middle feebly convex, laterally with very shallow impressions. Impressions with about four to five inconspicuous and rather irregular longitudinal furrows, in middle with some inconspicuous wrinkles. Base of clypeus also with some short longitudinal wrinkles. Eyes large, markedly protruding, with small, obliquely convex orbits. Head but little narrower than prothorax. Clypeo-frontal suture distinct. Anterior margin of clypeus slightly excised, anterior angles broadly rounded, bisetose. Labrum elongate, considerably longer than wide, lateral borders oblique, apex straight, behind apex in middle with a small circular groove. Labrum 6-setose, the proximal seta far removed from apical margin, lateral margins apparently without additional hairs. Mandibles with some longitudinal furrows on upper surface. Terminal palpomere of labial palpus as long as penultimate palpomere, apparently impilose. Maxillary palpus with sparse and very fine pilosity. Mentum with sharp, unidentate tooth. Submentum bisetose, gula quadrisetose. Antenna short, barely surpassing basal angle of pronotum, median antennomeres but slightly longer than wide, densely pilose from apex of 4th antennomere, basal antennomeres sparsely setose. Microreticulation distinct on whole surface including clypeus and labrum, isodiametric. Frons and clypeus irregularly punctate, surface rather dull, apparently without any pilosity.

Pronotum. Wide, distinctly cordiform. Apex slightly wider than base, feebly concave, anterior angles broadly rounded. Sides almost evenly rounded though with a very obtuse angle at position of anterior marginal seta, widest in anterior third. Near basal angle with comparatively elongate sinuosity. Basal angles projecting though obtuse, because the basal margin is considerably curved at angle. Base in middle gently convex. Base bordered throughout, apex in middle unbordered. Lateral channel rather narrow throughout, margin slightly upturned. Disk in middle somewhat raised. Median line distinct, in middle deeply impressed. Basal grooves fairly deep, oblique, prebasal transverse sulcus distinct. Between median line and lateral margin in middle with a small, circular, moderately deep

groove. Anterior marginal seta situated in anterior third, at widest diameter of pronotum, posterior marginal seta situated at basal angle. Microreticulation in middle slightly superficial, irregularly transverse, near borders distinct, isodiametric. Puncturation irregular, rather sparse on disk, laterally and apically coarse and denser. Surface with many shallow, irregularly transverse wrinkles, on disk moderately glossy, laterally more dull, with moderately dense, short, declined, yellow pilosity.

Elytra. Moderately short and wide, widest behind middle, depressed. Humeri evenly rounded, sides very feebly convex, apex oblique, deeply sinuate, sutural angles broadly rounded, elytra slightly dehiscent at suture. Marginal channel slightly widened at anterior third. Striae distinct though shallow, microreticulation distinct, isodiametric, the whole surface densely punctate and pilose. Pilosity yellow, rather short, somewhat declined. 3rd interval with three discal punctures, the anterior one situated near base at position of 3rd stria, both posterior punctures situated near 2nd stria, 3rd puncture very close to apex. Punctures and the very short setae arising from the punctures difficult to trace within the dense puncturation and pilosity. Marginal setae very elongate. Lateral margin extremely finely serrate and very sparsely pilose in anterior half. Surface rather opaque. Posterior wings fully developed.

Lower surface. Proepisternum impilose, prosternum sparsely pilose. Lower surface of hind body rather sparsely punctate and pilose. Metepisternum almost 2 × as long as wide at apex. Terminal abdominal sternum of male 4-setose.

Legs. Four basal tarsomeres of male protarsus slightly widened and biserially squamose, though 4th tarsomere with few squamae only.

Male genitalia. Genital ring elongate, almost symmetric. Basal plate transversely split. Aedeagus narrow, elongate, fairly curved, lower surface evenly concave, apex straight, elongate. Orificium short, turned to left side. Internal sac very simply folded, with a small tooth-like sclerite inside orificium. Parameres very dissimilar, right paramere fairly small, apically widened, left paramere larger.

Female genitalia. Unknown.

Variation. Unknown.

Distribution. Lower Cape York Peninsula, northern Queensland. Known only from type locality.

Collecting circumstances. Not recorded. Holotype captured in October.

Etymology. The name refers to the trimaculate elytral pattern.

Remarks

The genus *Minuthodes* Andrewes is most speciose and diverse in New Guinea (Darlington 1968, Baehr 1998), whereas for a long time in Australia only a single species was known that occurs in northern Queensland (Moore et al. 1987). During the last decade, however, additional species were described from north Queensland as well as from the northern parts of Northern Territory and from northwestern Australia (Baehr 1990, 1994). At the same time, some species previously included in the genus *Agonocheila* Chaudoir by Moore et al. (1987) were arranged in the genus *Minuthodes* by Baehr (1990). Hence, at present, in Australia the genus *Minuthodes* is distributed from eastern South Australia through Victoria, the Australian Capital Territory, New South Wales, central and eastern Queensland, far Northern Territory, and to the Kimberley Division in northwestern Australia as far south as Fitzroy Crossing. For distribution of the involved species see checklist at the end of this paper.

Contrary to New Guinea, in Australia the genus *Minuthodes* includes a group of very small species (*M. minima* Macleay, *M. serrata* Baehr) that live under bark of eucalypts in open rather than closed forest. Almost all species of the major group of large, wide species in New Guinea occur – as far as their habits are recorded – in rain forest where they live on the bark of standing trees as well as on logs, sometimes even in the thick cover of moss on tree trunks. In Australia, *M. queenslandica* Sloane and *M. walfordi* Baehr belong to this group and may possess the same habits. *M. froggatti*, however, which likewise belongs to the group of large species, in northern Queensland and in far Northern Territory has been found by me mainly under bark of eucalypts, e.g. River Gums (*Eucalyptus camaldulensis*), where it lives in a similar way as the small subcortical species mentioned above. No collecting circumstances are known of *M. demarzi* Baehr and the new species described herein. From the collecting localities, however, I would argue that they likewise live rather under eucalypt bark in open sclerophyll forest and tropical savannah than in rain forest.

In Australia at least, subcorticolous species of open sclerophyll forests and rain forest species of *Minuthodes* differ in their elytral pattern. Whereas both rain forest inhabiting species *M. queenslandica* Sloane and *M. walfordi* Baehr possess a pattern consisting of many narrow, light stripes, all sclerophyll forest inhabiting species possess a bilineate, trimaculate, or quadrimaculate pattern, very similar to those patterns common in subcorticolous sclerophyll forest living species of other carabid genera. It seems, hence, that elytral patterns consisting of large spots are better adapted to the conditions in sclerophyll forests, whereas the multilineate patterns apparently are better adapted to rain forest conditions. The reasons for this are still unknown, but it may be caused by different predatorial constraints.

It follows, then, that in Australia several species of *Minuthodes* apparently have managed to change their habits of living in rain forest to invade the open sclerophyll forests. As the stock of the genus *Minuthodes* certainly was a rather recent immigrant into northern Australia from the north, the genus represents one of the rare examples of rain forest inhabiting Oriental or Papuan faunal elements that have successfully invaded the unique Australian habitat of subcortical fissures on eucalypts in open sclerophyll forests and tropical savannahs. Because this habitat houses a numerous and diverse subcortical carabid fauna, it would be very interesting to know the way in which certain *Minuthodes* species managed to introduce themselves into the new habitat and to escape from competition of the many species of Psydrinae (*Amblytelus*, *Dystrichothorax*), Tetragnoderinae (*Scarothrocrepis*), Lebiinae (*Agonocheila*, *Philophiloeus*, *Demetrida*, *Trigonothops*, *Phloeocarabus*), and Pseudomorphae (*Adelotopus*, *Spallomorpha*) that likewise occur under eucalypt bark and actually may be found on the same tree.

Checklist of the species of *Minuthodes* from Australia

For the benefit of the reader this checklist includes some information about the recorded range of the species. It was compiled from the literature and from my own collecting and determining experience (abbreviations of the states of Australia as usual, e: eastern, n: northern).

<i>demarzi</i> Baehr, 1990	n.NT
<i>froggatti</i> (Macleay, 1888)	ne.QLD, n.NT, n.WA
<i>minima</i> (Macleay, 1864)	e.SA, VIC, ACT, NSW, QLD
<i>queenslandica</i> (Sloane, 1917)	ne.QLD
<i>serrata</i> Baehr, 1990	n.NT, n.WA
<i>trimaculata</i> , spec. nov.	ne.QLD
<i>walfordi</i> Baehr, 1994	ne.QLD

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