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On the Afrotropical species of *Myrmoplasta* (Heteroptera: Pyrrhocoridae)

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Abstract. *Myrmoplasta kmenti* sp. nov. (brachypterous morph) from the Democratic Republic of the Congo (former Zaire), and macropterous morph of *M. mira* Gerstäcker, 1892, from Swaziland are described. New distributional records of *M. vittiventris* Carlini, 1894, from the Democratic Republic of the Congo, Ethiopia, Kenya, Rwanda, Uganda, and Tanzania are given. *Myrmoplasta potteri* Martin, 1900, syn. nov., and *M. potteri* var. *nigra* Courteaux, 1922, syn. nov., are considered junior synonyms of *M. vittiventris*, and *M. pseudomira* Ahmad & Zaidi, 1987, syn. nov., a junior synonym of *M. mira*. The ancestral stock of the genus *Myrmoplasta* Gerstäcker, 1892, and the phylogenetic relationships of its Afrotropical species are discussed.

Keywords. Heteroptera, Pyrrhocoridae, *Aderrhis*, *Courtesius*, *Dermatinus*, *Myrmoplasta*, morphology, taxonomy, new species, new synonyms, faunistics, Afrotropical region

Introduction

Myrmoplasta Gerstäcker, 1892, is a depauperate genus of the family Pyrrhocoridae, characterized by a peculiar myrmecomorphic body shape and distinct sexual dimorphism; both characters are unique within the Pyrrhocoridae. Until recently, six species of *Myrmoplasta* were recognized, two from the Oriental region (Blöte 1933) and four from the Afrotropical region (Robertson 2004, Ahmad & Zaidi 1987). In this paper, three new synonyms are established and one new Afrotropical species is described. The phylogenetic relationships of *Myrmoplasta*, morphology of their fore legs and other morphological characters are briefly discussed.

Material and Methods

The following codens are used for the collections mentioned in this study:

AMNH American Museum of Natural History, New York, USA;
BMNH Natural History Museum, London, United Kingdom;
MMBC Moravian Museum, Brno, Czech Republic;
MNHN Muséum National d'Histoire Naturelle, Paris, France;
MRAC Musée Royal d'Afrique Centrale, Tervuren, Belgium;
ZMAN Zoölogisch Museum, University of Amsterdam, Netherlands;
ZMAS Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia;
ZMHB Zoologisches Museum, Humboldt Universität, Berlin, Germany.

Results

Myrmoplasta kmenti sp. nov.

(Figs. 1, 3-7)

Myrmoplasta mira: Schouteden (1957): 266 (misidentification).

Material examined. Holotype: ♂ (brachypterous), **DEMOCRATIC REPUBLIC OF THE CONGO:** Kinshasa province, Kisantu, 1932, R. P. Vanderyst (MRAC). Paratypes (3 ♀♀, brachypterous): **DEMOCRATIC REPUBLIC OF THE CONGO:** Kinshasa province, Mayidi, 1942, 2 ♀♀, Rév. P. van Eyen (MRAC); ditto, 1945, 1 ♀, Rév. P. van Eyen (MRAC).

Description (♂♀, brachypterous morph – Fig. 1). Body black. Posterior margin of pronotum very narrowly bordered with yellow; distal margin of hemelytra with narrow yellow border, slightly widening apicad but not reaching the apex of shortened hemelytra. Connexival membrane and, to a varying degree, laterotergites of females red. Parameres and lateral rim infolding on pygophore pale yellow.

Head of male (Fig. 3) more horizontally positioned and less convex than in female (Fig. 4). Antennae of male relatively short (missing in all studied females). Antennomere 2 stout, slightly spindel-shaped; antennomere 3 strongly spindel-shaped (i.e. strongly widening from base and narrowed before apex), about 1.4 times as thick as antennomere 2; antennomere 4 quite stout, slightly less than 0.8 times as thick as antennomere 3. Gula of male only very slightly convex (in lateral view), in female slightly more convex.

Pronotum long and narrow (Figs. 3-4). Callar lobe (including lateral margins) in male 1.23 times, in females 1.22 times as wide as base of pronotum; callar lobe (without pronotal collar) of male 2.3 times, in female 2.5 times as long as pronotal lobe; callar lobe (including lateral margins) of male 1.30 times, of female 1.08 times as wide as interocular distance. Lateral margins of callar lobe strongly heart-shaped. Callar lobe distinctly higher than pronotal lobe (especially in male) and strongly sloping towards it. Pronotum between callar and pronotal lobe considerably narrowed. Distal part of pronotal lobe straight, its proximal part slightly lifted. Mesoscutellum with distinct median longitudinal furrow, in male 1.16 times, in female 1.10 times as long as wide. Mesoscutellum fused with hemelytra, the latter fused together. Each hemelytron (Figs. 3-4) relatively long, narrow, its margin (except of base) more strongly raised upwards, regularly rounded, a bit narrowed before apex; distal angles

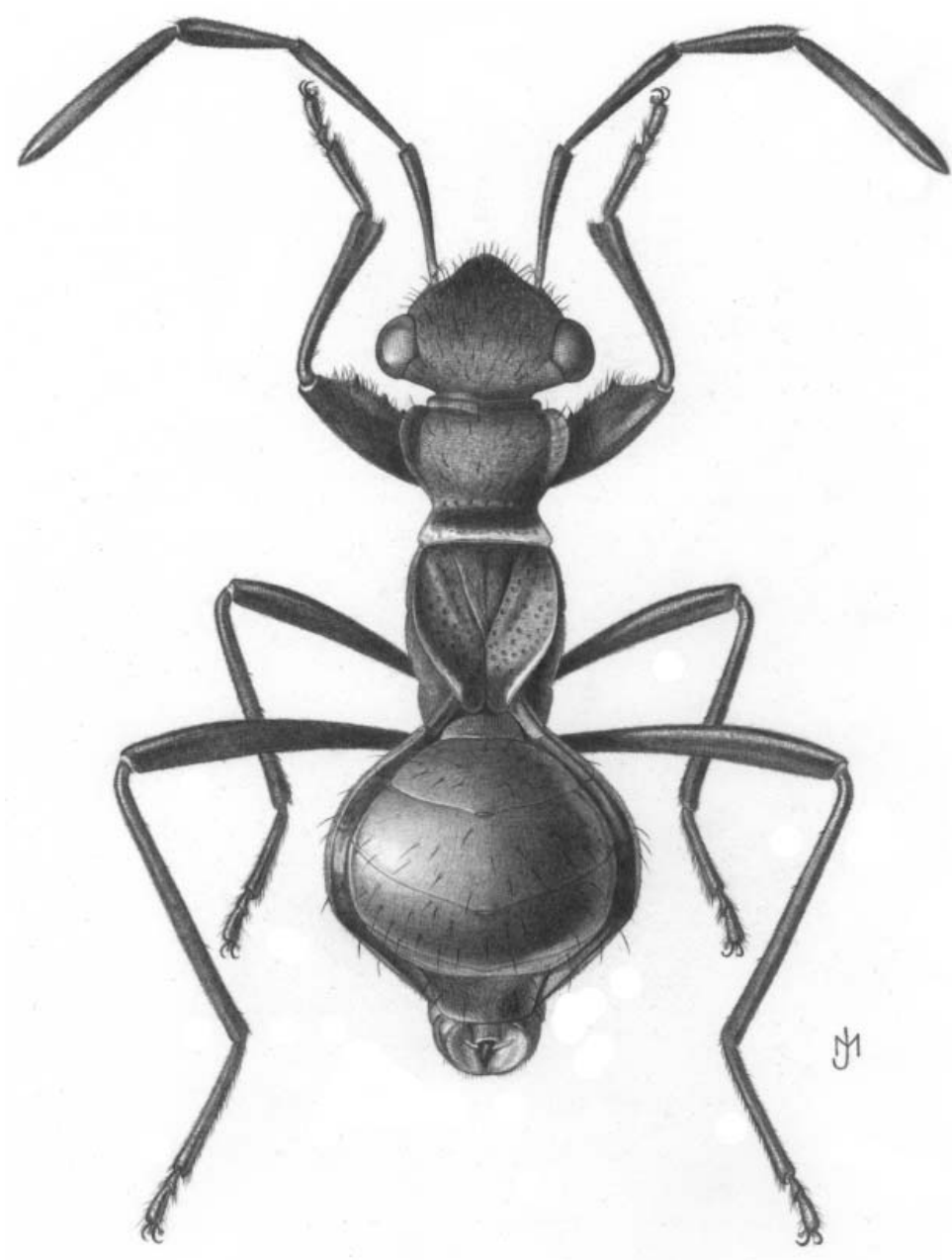


Fig. 1. *Myrmoplasta kmenti* sp. nov., brachypterous male, holotype (orig. J. Meduna).

of hemelytra slightly produced, convergent, and rounded. Fore femora strongly swollen with three teeth in male.

Abdomen nearly spherical, strongly constricted basally (Figs. 5-6); tergum considerably gibbous. Mesotergite II small, mesotergites III-V distinctly large, mesotergite VI of male nearly vertically positioned. Abdomen apically narrowed, mesotergite VII narrow, horizontally positioned in male, its distal margin bent dorsally. Pygophore not retractable into abdomen (Fig. 1).

Pygophore. Ventral wall submedially with rounded depression under ventral rim; prominent longitudinal groove under this depression. Ventral rim only slightly elevated above

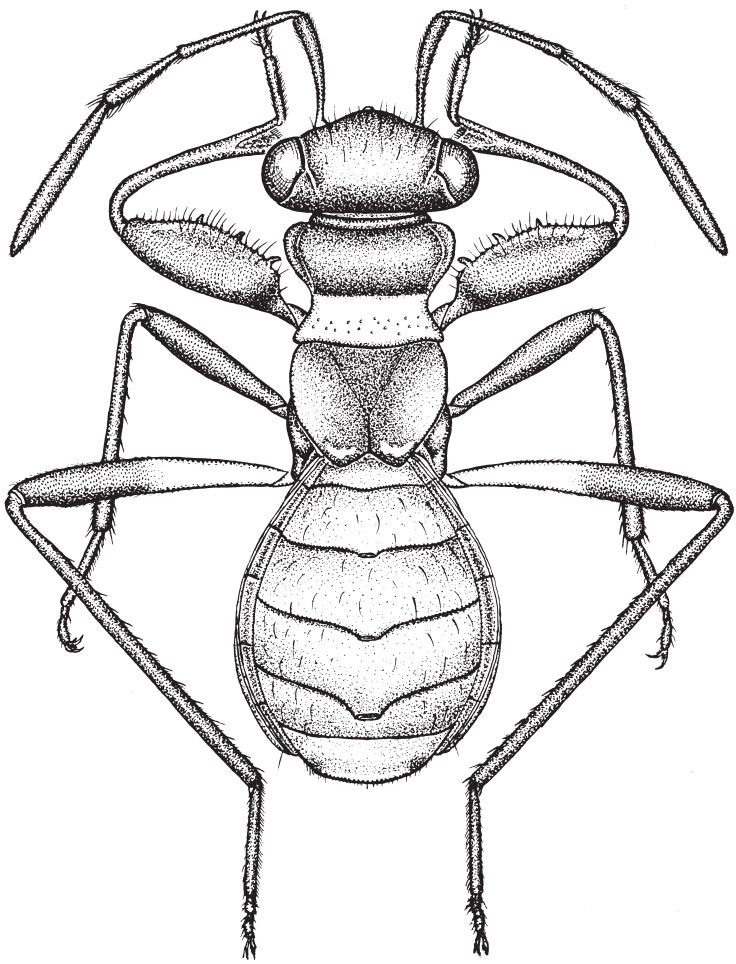
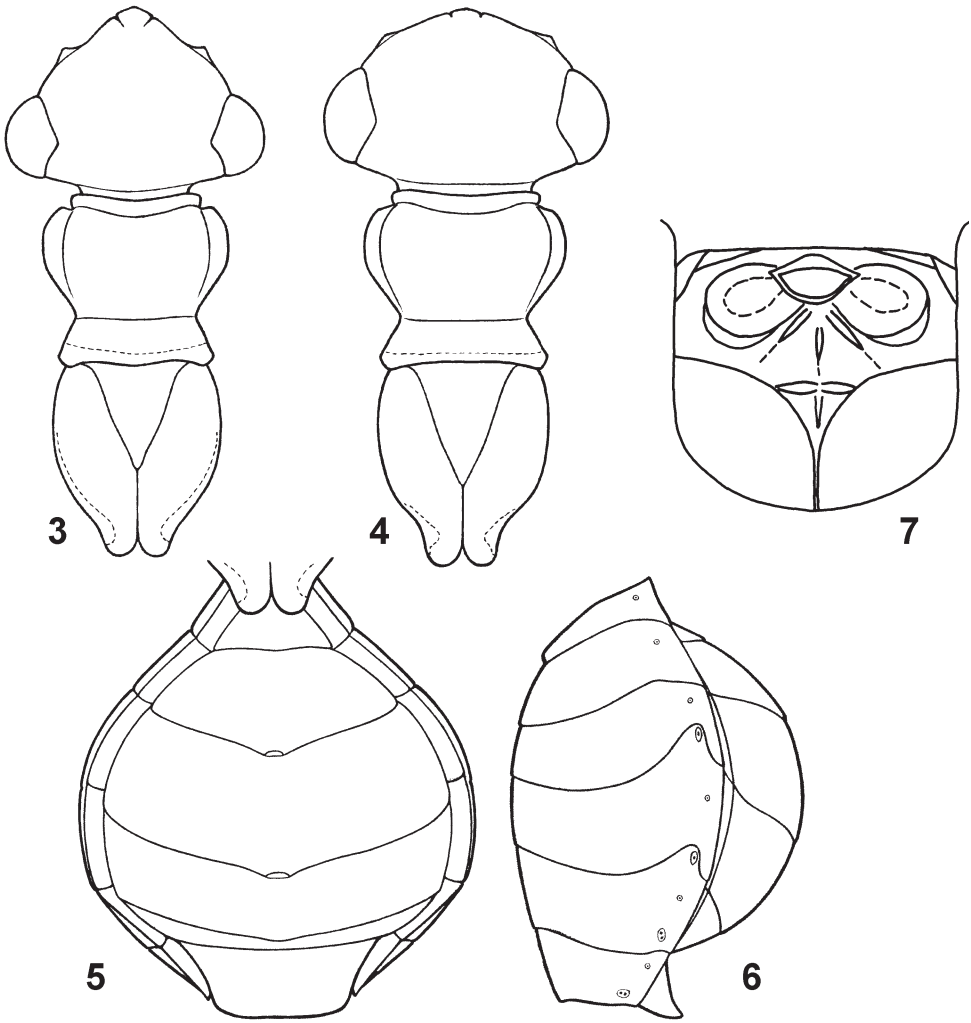


Fig. 2. *Myrmoplasta vittiventris* Carlini, 1894, brachypterous male (orig. J. L. Stehlík).



Figs. 3-7. *Myrmoplasta kmenti* sp. nov. 3-4 – head and thorax, dorsal view: 3 – male; 4 – female. 5-6 – abdomen, male: 5 – dorsal view; 6 – lateral view. 7 – outer female genitalia.

lateral rims; both ventral and lateral rims with sharp edge, continually and roundly merging into each other. Infolding of lateral rims very broad, both sides of these bent under ventral rim and nearly contiguous, ventral rim infolding thus not apparent; anterior part of lateral rim infoldings shallowly dish-like deepened, almost horizontal; their posterior part smaller, nearly vertically declivous and abruptly narrowed. Parameres placed nearly in the middle of genital chamber, their basal part slightly lopsided medially and than bent over the lateral rim infolding; their apex narrowed into a tip and very slightly curved. Anal tube positioned horizontally, reaching nearly the parameres.

Outer female genitalia (Fig. 7). Inner margin of valvifer 1 convexly arcuate, reaching the middle of genitalia. Anal tube short, closely under tergite VIII. Laterotergite IX raised, rounded, dish-shaped deepened, with horizontal groove medially. Valvifer 2 visible, medially deepened, with longitudinal projection laterally on each side; these projections deepened from their inner and under side, and apically horizontally ridged.

Measurements. Male (holotype). Body length 6.48 mm. Head: width (including eyes) – 1.84 mm, interocular width – 1.08 mm; antenna: lenght of antennomeres 1 – 1.24 mm, 2 – 1.35 mm, 3 – 1.05 mm, 4 – 1.76 mm; pronotum: total length – 1.16 mm, collar lenght – 0.08 mm, callar lobe: length – 0.76 mm, width (including margins) – 1.40 mm, pronotal lobe: length – 0.32 mm, width – 1.13 mm; scutellum: length – 0.76 mm, width – 0.65 mm; hemelytron: length – 1.40 mm, width – 0.59 mm.

Female (paratypes) (mean with full range in parentheses). Body length 7.37 mm (7.13-7.68 mm). Head: width (including eyes) – 2.13 mm (2.05-2.19 mm), interocular width – 1.32 mm (1.19-1.35 mm); antennae absent in all paratypes; pronotum: total length – 1.25 mm, collar lenght – 0.11 mm, callar lobe: length – 0.84 mm (0.81-0.86 mm), width (including margins) – 1.57 mm (1.46-1.62 mm), pronotal lobe: length – 0.29 mm (0.27-0.30 mm), width – 1.28 mm (1.19-1.35 mm); scutellum: length – 0.93 mm (0.89-0.97 mm), width – 0.83 mm (0.76-0.97 mm); hemelytron: length – 1.37 mm (1.32-1.43 mm), width – 0.63 mm (0.59-0.65 mm).

Variability. No apparent variability was observed among the studied specimens, except the measurements given above.

Differential diagnosis. *Myrmoplasta kmenti* sp. nov. differs from the other Afrotropical species of the genus by characters given in the key below.

Etymology. This species is dedicated to Petr Kment, curator of the Hemiptera collection in National Museum in Prague.

Bionomics. Unknown.

Distribution. Known only from the Kinshasa province in the Democratic Republic of the Congo (former Zaire).

Myrmoplasta mira Gerstäcker, 1892

(Figs. 8-10)

Myrmoplasta mira Gerstäcker, 1892: 51. Holotype: ♂, Tanzania, Rosako, Usaramo, August [18]88 (depository unknown – see Note).

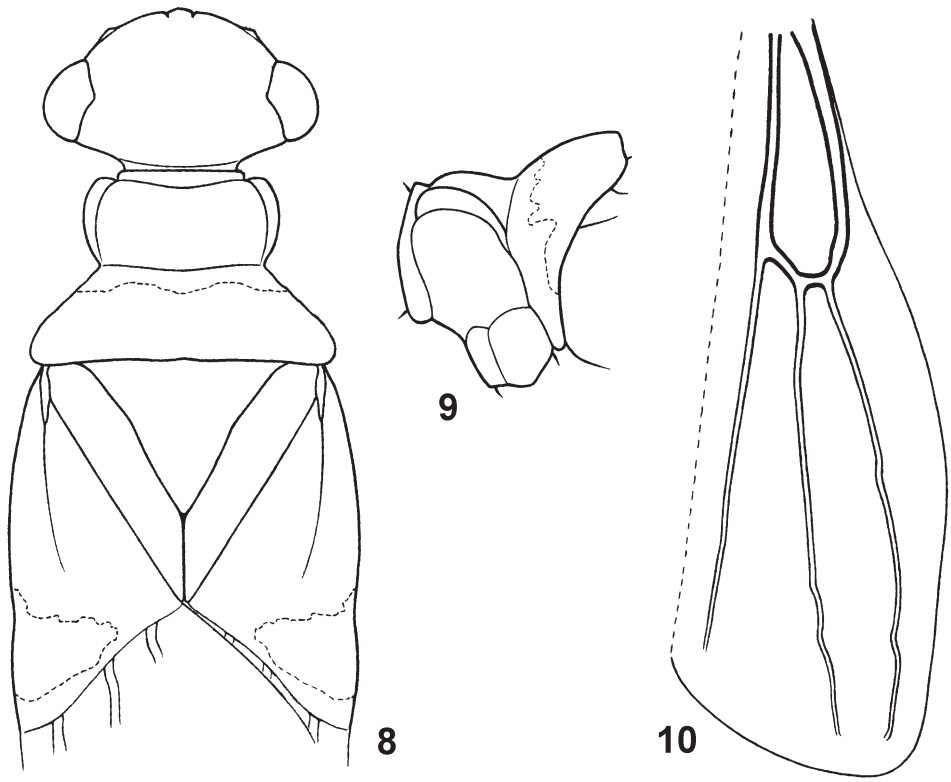
Myrmoplasta mira: Robertson (2004): 21 (catalogue).

Myrmoplasta pseudomira Ahmad & Zaidi, 1987: 47-49, **syn. nov.** Holotype: ♀, Malvern, 22-1-19, 215 (BMNH).

Type material examined. *Myrmoplasta pseudomira*. Holotype: ♀, **REPUBLIC OF SOUTH AFRICA:** Kwazulu-Natal, Malvern, 22-1-19, 215 (BMNH).

Additional material examined. TANZANIA: Zanzibar, no further data, 1 ♂ (brachypterous) (BMNH). **REPUBLIC OF SOUTH AFRICA:** Kwazulu-Natal, Ngongoni Veld, 12.ii.1975, 1 ♀ (brachypterous), P. E. Reavell lgt. (BMNH); Port Shepstone, no further data, 1 ♂ (brachypterous) (BMNH). **SWAZILAND:** Eranchi, xii.1957, 1 ♂ (macropterous), A. L. Capener leg. (AMNH).

Description of macropterous morph (♂, Swaziland: Eranchi). Body black, slightly more than basal two thirds of pronotal lobe pale yellow; pale yellow spot anterior of apical angle of corium (on costal margin) wide, nearly triangularly narrowed towards the inner margin of corium, covering almost one quarter of total length of corium; laterotergites IV-V yellowish.



Figs. 8-10. *Myrmoplasta mira* Gerstäcker, 1892, macropterous male. 8 – anterior part of body; 9 – thorax, lateral view; 10 – remigium (rest of the wing absent).

Head large, vertex strongly convex (Fig. 8). Antennae long, antennomere 1 1.32 times as long as interocular distance, antennomere 3 as long as the interocular distance; antennomere 1 more strongly widened towards apex, antennomere 2 more slightly widened, antennomere 3 distinctly widened towards apex (but not spindel-shaped). Bucculae large and high.

Pronotal collar (in lateral view, Fig. 9) distinctly lowered below callar lobe; pronotal lobe strongly convex above the level of callar lobe, strongly widened laterad (in dorsal view) and slighly lowered next to humeral humps, at base 1.56 times as wide as callar lobe (including lateral margins), 1.18 times as long as callar lobe (without pronotal collar). Base of pronotum 1.58 times as wide as pronotum long. Lateral margins of pronotum only slightly narrowing towards base. Scutellum large. Hemelytra with clavus and membrana well-developed; costal margin of corium more strongly arched outwards, its distal margin rounded towards apex. Delimitation of corium and membrane less apparent, especially in distal angle; clavus and corium roughly and hardly regularly punctured. Hind wings (Fig. 10) fully developed, slightly surpassing base of tergite VII; hamus not developed. Veins R, M, and Cu protruding in regular distances, with closed cell formed by R and Cu (only remigium of the wing preserved,

other parts missing). Mesosternum strongly developed, pleuron I strongly gibbous, posterior pleural flange quite wide.

Abdominal tergites with long, nearly erect setae, the latter developed even if covered with hemelytra.

Measurements. Body length 7.45 mm. Head: width (including eyes) – 2.00 mm, interocular width – 1.19 mm; antenna: lenght of antennomeres 1 – 1.57 mm, 2 – 1.62 mm, 3 – 1.19 mm, 4 – 1.78 mm; pronotum: total length – 1.40 mm, collar lenght – 0.11 mm, callar lobe: length – 0.59 mm, width (including margins) – 1.42 mm, pronotal lobe: length – 0.70 mm, width – 2.21 mm; scutellum: length – 1.19 mm, width – 1.19 mm; corium: length – 2.70 mm, width – 1.19 mm.

Variability. Measurements of brachypterous morph. Males (from Zanzibar / Natal, Port Shepstone). Body length 7.40 mm / 7.18 mm. Head: width (including eyes) – 2.05 mm / 2.08 mm, interocular width – 1.30 mm / 1.24 mm; antenna: lenght of antennomeres 1 – 1.62 mm / 1.57 mm, 2 – 1.57 mm / 1.51 mm, 3 – 1.24 mm / 1.08 mm, 4 – 1.94 mm / 1.84 mm; pronotum: total length – 1.35 mm / 1.19 mm, width of base – 1.35 mm / 1.30 mm, callar lobe width – 1.54 mm / 1.46 mm; scutellum: length – 0.92 mm / 0.92 mm, width – 0.78 mm / 0.81 mm; hemelytron: length – 1.30 mm / 1.19 mm, width – 0.65 mm / 0.59 mm.

Females (holotype of *M. pseudomira* from Malvern / specimen from Natal, N Gongony Veld). Body length 8.26 mm / 9.18 mm. Head: width (including eyes) – 2.32 mm / 2.32 mm, interocular width – 1.51 mm / 1.51 mm; antenna: lenght of antennomeres 1 – 1.73 mm / 1.73 mm, 2 – 1.62 mm / 1.84 mm, 3 – 1.24 mm / 1.35 mm, 4 – missing / 1.94 mm; pronotum: total length – 1.35 mm / 1.54 mm, width of base – 1.51 mm / 1.46 mm, callar lobe width – 1.67 mm / 1.78 mm; scutellum: length – 0.81 mm / 0.86 mm, width – 0.81 mm / 0.92 mm; hemelytron: length – 0.86 mm / 0.97 mm, width – 0.59 mm / 0.59 mm.

Antennomeres 1 and 2 are subequal in length, and antennomere 1 is sometimes slightly longer than antennomere 2.

Comparative note. This species was previously known only in the brachypterous morph. The macropterous morph of *M. mira* resembles the macropterous morph of *M. vittiventris* Carlini, 1894, from which it is easily separated by the coloration of abdominal venter (in *M. mira* entirely black, in *M. vittiventris* black with yellow spots), pronotal lobe (in *M. mira* only ca. basal 2/3 yellow, in *M. vittiventris* entirely yellow), and dorsal tergites (in *M. mira* black, in *M. vittiventris* yellow).

Taxonomy. Revision of the type material of *M. pseudomira* revealed that it is merely a junior synonym of *M. mira*. The original description of *M. pseudomira* by Ahmad & Zaidi (1987) is not very precise. The following points should be noted: i) antennomeres 1 and 2 are not equally long, but antennomere 1 is slightly longer than antennomere 2 (see measurements of the holotype) as in *M. mira* (Gerstäcker (1892): 'articulo primo secundo parum longiore' [= first segment only slightly longer than second]); ii) base of hind femur is not black but whitish as in *M. mira*; iii) in the habitus figure of female by Ahmad & Zaidi (1987), the fore femora are very slender, although stout fore femora with a ridge on the dorsal margin of the depression are a general character of the genus *Myrmoplasta* (see below); the fore femora of male are not edentate but possess three stout, distant teeth on a ridge; iv) the figure of female outer genitalia in Ahmad & Zaidi (1987) is apparently incorrect, showing artificial

structures. Moreover, the numbers of all figures in Ahmad & Zaidi (1987) do not correspond with the figure captions.

Distribution. Republic of South Africa (Kwazulu-Natal) (Ahmad & Zaidi 1987); Swaziland (new record); Tanzania (Gerstäcker 1892), including Zanzibar (new record).

Ahmad & Zaidi (1987) described *M. pseudomira* from Malvern, which they placed in eastern Africa. However, this locality is in fact situated in the province of Kwazulu-Natal in the Republic of South Africa. *Myrmoplasta pseudomira* was omitted in the catalogue of Afrotropical Pyrrhocoroidea by Robertson (2004).

Robertson (2004) listed *M. mira* also from the Democratic Republic of the Congo and Ethiopia. However, the records from the Democratic Republic of the Congo (Schouteden 1957) belong to *M. kmenti* sp. nov., and records from Ethiopia (Schmidt 1932) belong to *M. vittiventris*.

Note. According to Horn (1926, 1929), the Gerstäcker's collection should be deposited in ZMBH and the Zoological Museum of Ernst-Moritz-Arndt-Universität (Greifswald, Germany). Jürgen Deckert (ZMBH, pers. comm.) informed me that the holotype is not housed in ZMBH. Unfortunately, I did not recieve any response from Greifswald, and the type depository thus remains uncertain.

Myrmoplasta vittiventris Carlini, 1894

(Figs. 2, 11-16)

Myrmoplasta vittiventris Carlini, 1894: 471. Holotype: ♀, [Uganda], Nkole, cap. Casati leg., 1888 (depository unknown).

Myrmoplasta potteri Martin, 1900: 21-22, **syn. nov.** Syntypes: 1 ♂ and more ♀♀, Abyssinie [= Ethiopia], M. Maurice leg. (MNHN).

Myrmoplasta potteri var. *nigra* Courteaux, 1922: 286, pl. xxvii, **syn. nov.** Holotype: ♀, [Ethiopia], Lac Abbaï (?MNHN – see Note).

Myrmoplasta potteri: Distant (1909): 79 (distribution); Blöte (1931): 115 (distribution); Izzard (1950): 192-194 (description of macropterous morph, distribution); Mancini (1956): 79 (distribution); Schouteden (1957): 266 (distribution); Linnavuori (1978): 8 (distribution, ecology); Linnavuori (1980): 29 (distribution); Robertson (2004): 21 (catalogue).

Myrmoplasta mira (misidentification): Schmidt (1932): 257 (distribution).

Myrmoplasta vittiventris: Robertson (2004): 22 (catalogue).

Material examined. Macropterous specimen. **UGANDA:** Kawanda, 7.v.1943, 1♀, H. D. Mubbiru lgt., B.M. 1948-548, R. J. Izzard 1944 det. as *M. potteri* (BMNH). Brachypterous specimens. **DEMOCRATIC REPUBLIC OF THE CONGO:** East, Ituri province, Bunia, vi.1938, 1 ♂ 2 ♀♀, P. Lefèvre leg. (MRAC); Mahagi Port, 1929, 1 ♀, Ch. Scops leg. (MRAC); Abock, 8.iii.1929, 1 ♀, A. Collart leg. (MRAC). Sud Kivu province, Mulungu – Tshibinda, xi.1951, 2 ♂♂ 4 ♀♀, P. C. Lefèvre leg. (MRAC); Bas-Uelé province, Dingila, 1935, 1 ♀, J. V. Leroy leg. (MRAC). **ETHIOPIA:** 'Süd-Aethiopien, Abasse, O. Neumann S.', 1 ♀; 'Süd-Aethiopien, Habela, O. Neumann S.', 1 ♀; 'Süd-Aethiopien, Svhubba, O. Neumann S.', 1 ♀; 'N. Galla, 14.xii.1900, v. Erlanger S. G.', 1 ♀; 'Galla. Somali, v. Erlanger S. G.'; all material published by Schmidt (1932) as *M. mira*, J. L. Stehlík revid. (ZMHB). **KENYA:** Arusha province, Makuyu, B.M. 1937-529, 1.ii.1937, 1 ♂ 1 ♀, C. D. Knight lgt. (BMNH). **RWANDA:** Kisenyi, 1947, 1 ♀, P. C. Lefèvre leg. (MRAC); Astrida Ginda, 1700 m a.s.l., 12.-15.iv.1950, 1 ♀, R. Laurent leg. (MRAC); Mutambu Tare, 1750 m a.s.l., 11.-15.iv.1950, 1 ♀, R. Laurent leg. (MRAC); Ndiza, Kabuye, 2000 m a.s.l., iv.1951, 1 ♂, A. E. Bertrand leg. (MRAC); Kibungu, x.-xii.1937, 1 ♂ 1 ♀, R. Verhulst leg. (MRAC). **TANZANIA:** Kagera region, Bukoba district, Bukoba, 8.vi.1913, 1 ♀, Troitzkij leg. (ZMAS); ditto, Lake Ikimba, 7.vii.1913, 1 ♀, Troitzkij leg. (ZMAS). Mwanze region, Mwanza district, Mwanza, 18.-19.i.1968, 1 ♂ 1 ♀, D. Gulissen & L. Blommers leg. (ZMAN). **UGANDA:** Buganda province, Mengo district, Kawanda, 9.viii.1956, 1 ♀, T. H. Odhiambo leg. (MMBC).

Eastern province, Teso district, Serere, on *Dolichos*, xi.1956, 2 ♀♀, T. R. Odhiambo leg. (MMBC). Western province, Toro district, Ituri Forest, 9.iv.1957, 1 ♀, T. R. Odhiambo leg. (MMBC); Bunyoro district, Valley of Kafu R.[iver], Unyoro, 3400 ft., 23.-28.xii.1911, 1 ♂, S. A. Neave leg. (BMNH);

Variability. None of the preceding authors, except of a short note by Robertson (2004), mentioned the sexually dimorphic coloration of ventrites in *M. vittiventris*. Thus, I give here a detailed description and illustration.

Male (Fig. 15). Ventrites black, large yellow spots laterally on ventrites II and III, sometimes also a small, vaguely delimited spot on ventrite IV. Spots on ventrites II and III nearly reaching lower margins of laterotergites II and III; spot on ventrite II elongated, nearly triangular; spot on ventrite III nearly square, its lower margin reaching ca. mid-height of ventrite.

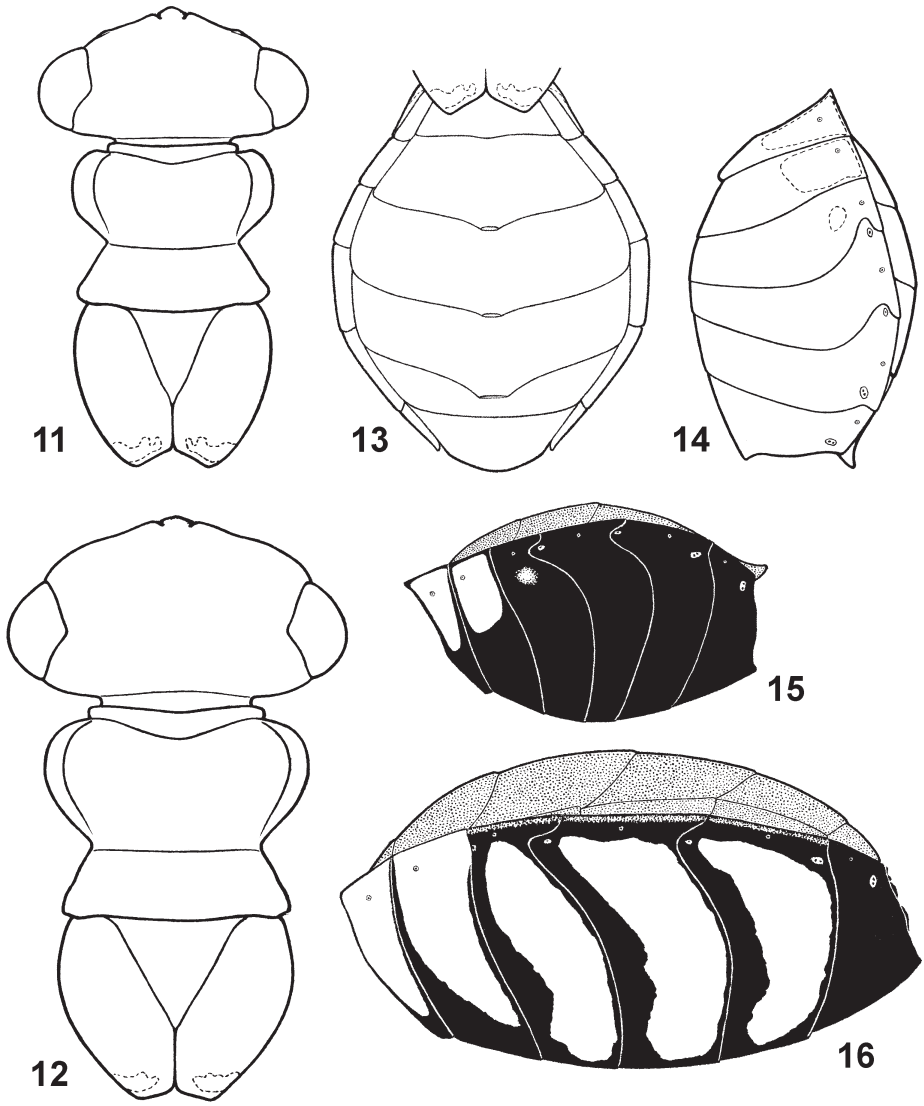
Female (Fig. 16). Ground coloration of ventrites black, with large yellowish spots on ventrites II-VI. Spots on ventrites II and III reaching lower margin of laterotergites II and III, considerably elongated and sickle-shaped ventrally; wide yellowish bands on ventrites IV-VI situated only on zygosternites (not reaching lower margins of laterotergites) and not connected medially together, closer to distal than proximal margins of zygosternites.

A colour aberration described by Courteaux (1922), *M. potteri* var. *nigra*, has mesotergites black and laterotergites ferruginous.

I had the possibility to examine the macropterous female described by Izzard (1950). The following two statements should be added to Izzard's (1950) description: i) tergites under hemelytra of macropterous morph bright yellow, only incisurae between tergites black (tergites red in brachypterous morph); ii) tergites of macropterous morph completely flat, without setae (arched and setous in brachypterous morph). The macropterous morph occurs rarely in both sexes; Schouteden (1957) noted one macropterous male and one female.

Bionomics. In Uganda, this species was collected on *Dolichos* sp. (this paper). The hyacinth bean (*Dolichos lablab* L.) (Fabaceae) is an edible plant cultivated in tropical Africa. Linnavuori (1978) reported this species to be swept from dry sunny meadows.

Distribution. This species has a relatively small area of distribution around the northern part of East African Rift Valley. It is known from Ethiopia (Martin (1900) – no exact locality; Courteaux (1922) – environs of Abaya Hayk lake in south-western Ethiopia; Schmidt (1932, as *M. mira* – J. L. Stehlík revid.) – southern Ethiopia; Mancini (1956) – several localities in south-eastern Ethiopia), Sudan (Linnavuori (1978) – central part of the Equatoria province), Kenya (Robertson (2004) – no exact locality), Uganda (Carlini (1894) and Blöte (1931) – Western province, Nkole [= Ankole] district; Distant (1909) – Toro district; Izzard (1950) – Buganda province, Mengo district), Tanzania (Blöte (1931) – Kagera [= Karagwe] region), Burundi (Schouteden (1957) – more localities), Rwanda (Schouteden (1957) – more localities), and the Democratic Republic of the Congo (Schouteden (1957) – '…l'est du Congo', without any exact locality; confirmed in this paper). Schmidt (1932) mentioned five females originally identified as *M. mira* from 'Süd-Aethiopien [= southern Ethiopia] (O. Neumann S.)'. Revision of this material revealed that this material originated from five different localities, three of which are undoubtedly situated in Ethiopia. However, I could not trace localities 'N. Galla' and 'Galla. Somali'; both Galla and Somali are names of native tribes living both in Ethiopia and Somalia. Thus, the occurrence of *M. vittiventris* in Somalia cannot be excluded; however, no exact record was ever published from this country (see Linnavuori 1982, 1986; Robertson 2004). Linnavuori (1980) classified this species as east-sudanese element.



Figs. 11-16. *Myrmoplasta vittiventris* Carlini, 1894. 11-12 – head and thorax, dorsal view: 11 – male; 12 – female. 13-14 – abdomen, male: 13: dorsal view; 14 – lateral view. 15-16 – abdomen, lateral view, coloration: 15 – male; 16 – female.

Taxonomy. Robertson (2004), comparing the original descriptions of *M. vittiventris* and *M. potteri*, mentioned the possible synonymy of both species but did not establish it. Here I am confirming his statement that *M. potteri* is a junior synonym of *M. vittiventris*. Original descriptions of both species are identical. According to Carlini (1894), *M. vittiventris* lacks any pubescence, except of the ventral side of fore legs. However, the pubescence of the head and

the setae on mesotergites break off easily, especially in badly conserved specimens. Moreover, the presence of pubescence on mesotergites is a generic character of *Myrmoplasta*. Martin (1900) probably did not know the description of *M. vittiventris*, which has the same coloration, and compared his *M. potteri* only with the distinctly differently coloured *M. mira*.

Myrmoplasta potteri var. *nigra* is undoubtedly an infrasubspecific colour form and thus an unavailable name.

Note. The type depositoty of *M. vittiventris* is unknown. There is no information about location of Carlini's collection in the lists by Horn (1926, 1929) and Sachtleben (1961). Courteaux (1922) described *M. potteri* var. *nigra* based on a female collected by expedition of Baron Maurice de Rothschild in Ethiopia and British Eastern Africa (1904-1905). According to Horn (1929), this material was deposited in MNHN in Paris. However, D. Pluot-Sigwalt (pers. comm.) did not find it there.

Key to the Afrotropical species of *Myrmoplasta*

1 (2) Coloration of ventrites sexually dimorphic; ventrites black with yellow spot on ventrite II and III in males (Fig. 15) and with yellow bands on ventrites II-VI in females (Fig. 16). Pronotal lobe entirely yellow in both brachypterous (Fig. 2) and macropterous morph. ..... ***M. vittiventris*** Carlini, 1894

2 (1) Coloration of ventrites not sexually dimorphic, ventrites entirely black; in brachypterous morph only posterior margin of pronotal lobe yellow (Fig. 11). 3

3 (4) Base of metafemora yellowish (Fig. 2). Pygophore retractable. Distal part of tergite VII slightly raised, its lateral margins more strongly tapering, its distal margin slightly arcuate (Figs. 13-14). Laterotergites of female black. Body larger (male 7.18-7.40 mm, female 8.26-9.18 mm). Antennae longer (6.05-6.86 mm in male). Laterotergites IV and V yellowish. Apex of hemelytra in brachypterous morph less prolonged (1.19-1.30 mm in male, 0.86-0.97 mm in female). ..... ***M. mira*** Gerstäcker, 1892

4 (3) Metafemora black. Pygophore not retractable, abdominal segment VII reduced (Fig. 1). Distal part of tergite VII more risen, its lateral margins proximally slightly deflected, distally almost parallel, its posterior margin straight (Figs. 5-6). Body smaller (male 6.48 mm, female 7.13-7.68 mm). Antennae shorter (4.40 mm in male). Laterotergites of female red. Apex of hemelytra in brachypterous morph more prolonged (1.40 mm in male, 1.32-1.43 mm in female). ..... ***M. kmenti* sp. nov.**

Fore leg morphology of *Aderrhis, Courtesius, Dermatinus,* and *Myrmoplasta*

Although the shape of the fore legs is an important taxonomic character, it was so far insufficiently described, especially with respect to the sexual dimorphism. Therefore, I give here diagnoses of the fore leg morphology for all four genera.

Dermatinus Stål, 1854. Fore legs not sexually dimorphic; fore femora with deeper depression on ventral side (except of their apical parts), dorsal margin of this depression slightly higher; one tooth anteapically on dorsal margin (plesiomorphic character). Fore tibiae straight, without denticles on its ventral side.

Aderrhis Bergroth, 1906. Fore legs strongly sexually dimorphic. ♂: Fore femora constricted basally, then strongly and abruptly ventrally thickened with large tooth; ventral depression on fore femur shallow, its dorsal edge only slightly indicated, its ventral edge forming gibbous ridge with small regular denticles; depression covered with sparse, very long, thin, and almost orthogonally directed setae ordered into a regular row. Fore tibiae incurved, postero-ventrally with row of regular setiferous denticles. ♀: Fore femora without abrupt thickening and without tooth, almost without ventral depression, but with a row of long setae (apomorphic character). Fore tibiae straight, without postero-ventral denticles.

Courtesius Distant, 1903. Fore femora of both sexes robust, basally narrowed. Longitudinal depression shallow, its dorsal margin in both sexes with three distant teeth spaced along nearly entire length of femur (except of apices) (the same arrangement as in males of *Myrmoplasta*); teeth larger in males than in females. Spaces between teeth with setae, some of them arising from very small denticles. Fore tibiae straight, without postero-ventral denticles.

Myrmoplasta. Fore legs sexually dimorphic. ♂: Fore femora strongly narrowed basally, then very abruptly thickened on ventral side with large tooth on the thickened place. Depression on ventral margin of femur almost indistinct, its dorsal edge (opposite than in *Aderrhis*!) with a high ridge armed with three teeth, one basal and two apparently larger ones; one situated approximately in middle of femur and another one in basal two thirds. Ridge (not the depression) with conspicuously stout, projecting, somewhat irregularly arranged setae. Fore tibiae inflexed basally, lacking minute denticles ventrally, only with a row of short, stout, densely spaced, adpressed setae. ♀: Fore femora regularly swollen from base, on antero-ventral side with a ridge (not as high as in males); minute denticles in places where males possess the stout teeth. Fore tibiae straight. Pubescence of the ridge and fore tibiae as in males.

Discussion

The phylogeny of the morphologically higly specialized, myrmecomorphic body structures in the genus *Myrmoplasta* offers interesting questions. Undoubtedly, this genus developed from an ancestral stock characterised by large eyes without eye sockets and a high tendency for brachyptery (i.e. brachypterous morphs without rudiments of membrana, clavus fused with corium). Except of *Myrmoplasta*, this stock contains also the genera *Dermatinus*, *Aderrhis*, and *Courtesius*.

The following characters seem to be plesiomorphic: slight sexual dimorphism in the structure of fore legs; distinctly trapezoidal pronotum; callar lobe emarginated by deeper impressions or pronounced punctuation (characteristic feature of most genera within the Pyrrhocoridae); abdomen basally broad; flat mesotergites without sparse, erect, long setae; and hemelytra distinctly surpassing basal part of abdomen. On the other hand, the following characters are supposed to be apomorphic: strongly sexually dimorphic fore legs (male with a lamellar ridge on the ventral side and with strong teeth near the base of femur and incurved tibia, or with a lamellar ridge with three strong teeth on the dorsal side of femur); deep constriction between callar and pronotal lobes; basally constricted abdomen; strongly gibbous mesotergites with sparse, long, erect setae; hemelytra shortened, only slightly surpassing metanotum, fused with mesoscutellum.

Dermatinus and *Aderrhis* are characterized, among other characters, by a smaller and (especially in *Dermatinus*) horizontally directed head. Their pronotum is more or less trapezoidal, usually almost flat, and with only a very indistinctly indicated callar lobe. The collar and lamellar margins of the pronotum are only slightly differentiated. The head of *Myrmoplasta*, compared with *Courtesius*, is even more enlarged and its anterior part is more bowed. The constriction between the callar and pronotal lobe is even more distinct. Another evolutionary trend within *Myrmoplasta* is the shortening of hemelytra. This tendency is supported by the existence of two Oriental species of *Myrmoplasta* described only in female sex by BLÖTE (1933), in which the hemelytra distinctly surpass the metanotum. In *M. longipennis* Blöte, 1933, from Vietnam and Laos, the hemelytra reach almost half the length of abdomen, while in *M. biguttata* Blöte, 1933, from southern India, they slightly surpass abdominal tergite III.

The myrmecomorphic body shape is an undoubtedly apomorphic character within the Pyrrhocoridae. The most primitive (i.e. the 'least myrmecomorphic') Afrotropical species is *M. vittiventris*. *Myrmoplasta vittiventris* is a possible ancestor of the more specialized *M. mira*, from which *M. kmenti* sp. nov. should be derived by geographical isolation. *Myrmoplasta kmenti* sp. nov. is clearly the most specialized (i.e. most myrmecomorphic) species among the Afrotropical ones. While the corium is considerably shortened with a skewed distal margin in *M. vittiventris* (Figs. 11-12), the brachypterous hemelytra are slightly prolonged and their apices convergent and virtually fused in *M. kmenti* sp. nov. (Figs. 3-4). Comparing the ancestral type, i.e. *M. vittiventris*, with *M. kmenti* sp. nov., the narrowing and slight prolongation of the pronotum should be observed in the latter species. The abdomen of *M. kmenti* sp. nov. is nearly spheric, with tergites strongly gibbous (Figs. 5-6). To achieve the shape, ventrite VI is horizontally positioned in this species, and its median extension (almost reaching tergite VII) and the third dorsal scent gland opening are not apparent in dorsal view. In *M. vittiventris*, all tergites as well as the dorsal scent gland openings are fully visible in dorsal view (Fig. 13). Moreover, segment VII is reduced and the pygophore is not retractable in *M. kmenti* sp. nov.; the segment is only little wider than its opening and the distal part of pygophore (largely hidden in urite VII) is not retacted into the abdomen in lateral view.

STEHLÍK (1965) discovered that most of the species formerly asigned to *Dermatinus* belong in fact to *Aderrhis*. Revision of the described Oriental species of *Dermatinus* also revealed that they belong to *Aderrhis* (STEHLÍK & KERZHNER 1999). Most probably, this pyrrhocorid stock originated from the Indian subcontinent and then spread through the Arabian peninsula to Afrotropical region; no species of this stock is known from Madagascar. *Aderrhis* probably reached Sub-Saharan Africa before the opening of the East African Rift Valley, which is supported by its occurrence in the western part of Sub-Saharan Africa. *Dermatinus* seceded from *Aderrhis* on the African continent, and secondarily lost the sexual dimorphism in the structure of the fore legs. *Myrmoplasta* probably entered the Afrotropical region after the opening of the East African Rift Valley, beeing distributed almost only east of the rift. This geographical barrier was crossed only by *M. kmenti* sp. nov. from the Democratic Republic of the Congo.

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