Genus	Vol. 8 (3-4): 517-553	Wrocław, 15 XII 1997

Revision of the *Vannius*-complex and its subfamily placement (*Hemiptera*: *Heteroptera*: *Miridae*)

JACEK GORCZYCA
Department of Zoology, Silesian University, Bankowa 9, 40-007 Katowice

ABSTRACT. A new tribe *Vanniini* is recognised on the basis of the pretarsal structure. It includes the following genera: *Vannius*, *Vanniusoides*, *Vanniopsis*, *Afrovannius* gen. n. and *Paracylapus*. These genera placed so far in *Cylapinae* KIRKALDY are transferred to *Palaucorinae* CARVALHO as a sister group of *Palaucorini*. The genus *Vannius* DISTANT is revised. A new genus *Afrovannius* is described for *Afrovannius halinae* sp. n.. All known African representatives of *Vannius* are transferred to *Afrovannius* gen. n. and redescribed. *Pseudovannius* GORCZYCA, 1996 is synonymized with *Paracylapus* CARVALHO, 1952. *Vannius rubrovittatus* DISTANT, 1883, *V. crassicornis* POPPIUS, 1909, *V. podager* BERGROTH, 1922, *Vanniopsis rufescens* POPPIUS, 1909, *Paracylapus insularis* CARVALHO, 1952, *Paracylapus lestoni* (GORCZYCA, 1996) and *Vanniusoides brevis* CARVALHO et LORENZATO, 1978 are redescribed and figured. The systematic position of these genera and their relation to *Palaucoris* CARVALHO, 1956 is discussed. A key to the genera of *Vanniini* as well as keys to the species of *Vannius* DISTANT and *Afrovannius* gen. n. are provided.

Key words: Entomology, *Heteroptera*, *Miridae*, *Cylapinae*, *Palaucorinae*, *Vanniini*, *Vannius*-complex, new taxa

INTRODUCTION

The genus *Vannius* DISTANT, 1883 was traditionally placed within the subfamily *Cylapinae* according to the original description given by DISTANT (1883), which begins with the words: "Allied to *Valdasus*" (some species of *Cylapus* SAY were placed at that time in *Valdasus* STÅL). POPPIUS (1909) in the revision of the subfamily *Cylapinae* described three new species from Bolivia, New Guinea and Madagascar and a new, allied genus *Vanniopsis* from the New Hebrides. Other species of *Vannius* were described from the Seychelles (DISTANT 1913), Brazil (BERGROTH 1922), Costa Rica (CARVALHO 1955) and Madagascar (GORCZYCA 1996a). In the revision of *Cylapinae* of Papua New Guinea, a new genus *Vanniusoides* was erected

(CARVALHO & LORENZATO 1978) for *Vannius brevis* POPP. The authors distinguished the new genus especially on the basis of the characters of the head. A related genus *Pseudovannius* was described from West Africa (GORCZYCA 1996b).

Since the fundamental paper of POPPIUS (1909) until my paper on *Vannius schmitzi* and *Pseudovannius lestoni* (GORCZYCA 1996a, b) the systematic position on *Vannius* and its relatives has never been considered and seemed to be unquestionable. When the paper on *V. schmitzi* was almost complete I noticed unusual characters of the pretarsal structure in this species: the toothed claws and spatulate parempodia. I found a more complicated pretarsal structure in the genus *Pseudovannius* GORCZYCA (at least two teeth and small spatulate parempodia) but in spite of this I placed it in *Cylapinae* (GORCZYCA 1996b). Further investigations showed that a similar set of characters occurred also in the genus *Paracylapus* CARVALHO: two teeth on the inner surface of the claws with small parempodia. Such a peculiar combination of characters had been known so far only in the genus *Palaucoris* CARVALHO, 1956. Nevertheless, the structure of claws in the genus *Palaucoris* is different from that in *Vannius* and allied genera but on the other hand both groups have the same type of parempodia unknown in any other representatives of *Miridae,* which may indicate their close relationships.

On the basis of the character analysis of the above mentioned taxa I decided to establish a new tribe - *Vanniini* - including the genus *Vannius* and its relatives: *Vanniopsis*, *Vanniusoides*, *Paracylapus* and *Afrovannius* gen. n. and transfer them from *Cylapinae* KIRKALDY to *Palaucorinae* CARVALHO (the genus *Vanniopsis* was included in this new tribe on the basis of its general appearance, because all the examined specimens had all legs mutilated and I was not able to examine the pretarsal structure of this genus). Moreover, I conclude that all these genera represent a monophyletic group which should be linked with *Palaucoris* CARV. I propose to treat *Palaucorinae* as a distinct subfamily, according to CARVALHO (1956, 1984). *Vanniini* are proposed to be a sister group of *Palaucorini* (see discussion below).

ABBREVIATIONS

AMNH - American Museum of Natural History, New York, USA; BMNH - Museum Natural History, London, England; BPBM - Department of Entomology Collection, Bernice P. Bishop Museum, Honolulu, HI USA; DZO - Department of Zoology, University of Opole, Poland; HNHM - Hungarian Natural History Museum, Budapest, Hungary; MNHN - Museum National d'Histoire Naturelle, Paris, France; MRAC - Musée Royal de l'Afrique Centrale, Tervuren, Belgium; SMNH - Swedish Museum of Natural History, Stockholm, Sweden; ULB - Universite Libre de Bruxelles; USNM - National Museum of Natural History, Washington, USA; SU - Deptartment of Zoology, Silesian University, Poland; ZIN - Zoological Institute RAS, St. Petersburg, Russia; AC - author's collection.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to: Mrs J. MARGARISON-KNIGHT (BMNH), Dr K. KAMI (BPBM), Dr. D. PLUOT-SIGWALT (MNHN), Dr. T. HENRY (USNM),

Mr G. HEVEL (USNM), Dr. T. VASARHELYI (HNHM), Dr. U. DALL' ASTA (MRAC), Dr. F. CHEROT (ULB), Dr. P. LINDSKOG (SMNH), Dr. R. T. SCHUH (AMNH), and Prof. I. M. KERZHNER (ZIN) for the loan of the specimens, I would like to thank cordially Dr. D. PLUOT-SIGWALT and Dr. J. LIS (DZO) who have found the holotypes of *Vannius annulicornis* POPP. and *Paracylapus insularis* CARV., which were assumed to be lost, among the collection of *Heteroptera* in MNHN and Dr J. LIS for all his critical notes. I am also very grateful to Prof. KERZHNER, Dr. VASARHELYI, Dr. F. CHEROT for their hospitality and help during my stay in St. Petersburg, Budapest and Bruxelles respectively.

TAXONOMY

Vanniini, new tribe

DIAGNOSIS

Recognised by the pretarsal structure having spatulate parempodia (figs 17-22) and usually toothed claws.

DESCRIPTION

Body smooth, covered with long semi-erect setae. Head vertical or elongated dorsoventrally, eyes placed near top of head; rostrum short, stout; pronotal collar distinct, pronotum short, flat, calli slightly marked, posterior margin of pronotum bisinuate, mesoscutum exposed.

Hemelytra well developed, membrane bicellulated, embolium distinct, cuneus distinct, long. Pro- and mesotibiae usually thickened at base, covered with short setae, few spiculi, and distinct spiculi at base; tarsi long, slender, two- or tri-segmented, usually with two long setae.

Type genus: *Vannius* DISTANT, 1883.

KEY TO THE GENERA

1. First antennal segment shorter than the width of head, pronotal collar thinner than the diameter of the first antennal segment ..... 2.
-. First antennal segment longer than the width of head, pronotal collar wide, wider than the diameter of the first antennal segment (New Hebrides, New Caledonia) ..... *Vanniopsis*
2. Claws with at least one tooth ..... 3.
-. Claws without teeth (South & Central America) ..... *Vannius*
3. Claws with one tooth, parempodia large, strongly widened at apex, body generally pale with contrasting red spots ..... 4.
-. Claws with more than one tooth, parempodia very small, body generally obscured, without contrasting red spots (Madagascar, West Africa) ..... *Paracylapus*

4. Vertex convex without longitudinal sulcus, clypeus with a tubercle projecting downwards (fig. 14), femora relatively thin (New Guinea) ..... *Vanniusoides*
-. Vertex with sulcus, clypeus without a downward projecting tubercle (figs 12,13), femora enlarged at base (Madagascar, the Seychelles Islands, Africa) .... *Afrovannius* gen. n.

Vannius DISTANT, 1883

Vannius DISTANT, 1883: 245 (type-species: *Vannius rubrovittatus*, by monotypy); KIRKALDY 1906a: 134, 1906b: 372; POPPIUS 1909: 3, 14; REUTER 1910: 155; POPPIUS 1912: 173; REUTER 1913: 59; OSHANIN 1916: 60; BERGROTH 1920: 72; CARVALHO 1952: 50; 1955: 21; 1957: 33; ODHIAMBO 1967: 1666; SLATER 1974: 184; SCHUH 1995: 39; SCHUH, SLATER 1995: 172; GORCZYCA 1996a: 337, 340.

DIAGNOSIS

From the other genera of *Vanniini* it can be distinguished by large spatulate parempodia and claws without subapical tooth, almost parallel hemelytra as well as strongly elongated aedeagus (figs 23, 25).

DESCRIPTION

Small insects with elongated body, covered with setae and with almost parallel margins of hemelytra.

Head vertical (figs 9,10,11), vertex sulcated, frons prominent or vertical. Antennae long, longer than body, slender, first antennal segment short, more or less thickened. Eyes granulated, removed or contiguous with pronotal collar (figs 1,2,3,9,10,11).

Pronotum smooth or slightly rugose. Scutellum small, weakly swollen, mesoscutum exposed. Ostiolar peritreme small but distinct.

Hemelytra long with very characteristic colour pattern: pale with contrasting red spots and patches. Membrane well developed, bicellulated; embolium narrow; cuneus at least twice as long as its width at base.

Legs long, slender, covered with short setae. Tibiae long, metafemora enlarged at base, tarsi linear, two-segmented, thickened at apex (figs 17,18), bearing long guard setae, parempodia large, strongly widened at apex (figs 17,18)

Male specimens are known only in *V. rubrovittatus* and *V. crassicornis*. All male type-specimens had been prepared before and their genital segments were either lost or destroyed. Aedeagus and parameres of *V. crassicornis* were demaged (see description below) and only one male of *V. rubrovittatus* was available for my study (the specimen from Panama-Canal Z.). Nevertheless, both species have a similar and very characteristic type of aedeagus, very thin and elongated, superficially similar to *Phylini*-type (figs 23, 25). Parameres slender and very small (figs 24, 26, 27).

KEY TO SPECIES OF *VANNIUS* DISTANT

1. Eyes contiguous with pronotal collar ..... 2.
-. Eyes removed from pronotal collar ..... 3.
2. First antennal segment strongly thickened in the middle ..... *rubrovittatus*
-. First antennal segment not thickened in middle ..... *oculatus*
3. First antennal segment thickened in one third, than distinctly narrowed toward the apex, pronotum entirely red, frons prominent (fig. 11), legs dark, reddish brown ..... *podager*
-. First antennal segment not thickened, pronotum pale in anterior part, frons not prominent, legs pale ..... *crassicornis*

Vannius rubrovittatus DISTANT, 1883

Vannius rubrovittatus DISTANT, 1883: 246; POPPIUS 1909: 14; REUTER 1913: 60; BERGROTH 1920: 72; CARVALHO 1952: 50; 1957: 34; CARVALHO, DOLLING 1976: 806; SCHUH 1995: 39.

DIAGNOSIS

From other representatives of the genus it can be easily distinguished by the colour pattern on hemelytra (fig. 1).

DESCRIPTION

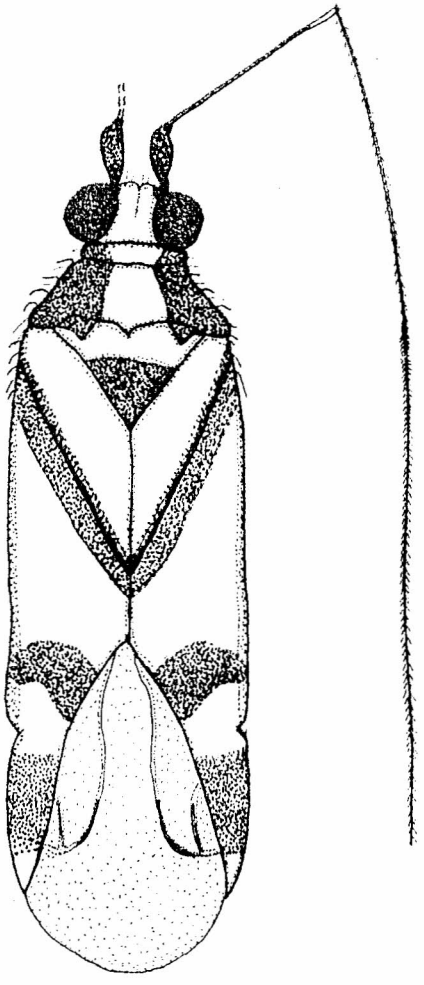
Female

Body small, elongated, length: 3.3-3.8 mm. width: 0.8-1.1 mm.

Head horizontal, very short, wider than long, length: 0.25-0.3 mm., width: 0.5-0.6 mm, height: 0.5 mm., red; only vertex pale or dark yellowish, sulcate. Eyes large, granulated, contiguous with pronotal collar, occupying more than one-half of the height of head (fig. 9). Antennal fossae almost contiguous with the anterior margins of eyes. Antennae very long, slender, longer than body. First antennal segment red, strongly thickened in the middle, second pale or yellowish, only at base and in the apical part with reddish spots or rings, sparingly covered with short setae. Third and fourth segments long, dark, sometimes with pale apical part, clothed with setae. Fourth segment covered with dense setae, considerably longer than its diameter (fig. 1). Length of antennal segments (in mm): 0.25-0.3:1-1.2:1.1-1.2:1.8. Rostrum pale or dark, short, stout, covered with setae, reaching mesocoxae (fig. 9).

Pronotum and apical collar pale or yellowish dark in the middle and red on sides. Pronotum broader than long, width of the posterior margin: 0.8-0.85 mm., length: 0.3 mm.. The posterior margin noticeably bisinuate. Mesoscutum exposed, slightly swollen, pale or darkened with red spots in the angles, scutellum flat, entirely red, sometimes with two pale spots in the anterior angles. Length of scutellum (without mesoscutum): 0.3-0.35 mm., width: 0.4-0.45 mm. Ostiolar peritremae small, propleura red or reddish black, sternum pale to reddish dark. Abdomen pale, yellowish with red spots in the in the upper part (at the level of spiracles) to red and reddish black. Genital segment red to reddish black.

Hemelytra pale, yellowish, sometimes darkened with red bands and patches, covered with semi-erect, long hairs. Claval suture with long red bands on both sides which come together at the apex, two unregular red patches occur in the distal part of hemelytra, contiguous with membrane (fig. 1). Cuneus long, more than twice as long as broad, with a large red spot in the middle. Membrane pale grey to dark greyish, venation pale, partly red. The smaller cell well visible.



1. *Vannius rubrovittatus*, dorsal habitus

Legs pale, yellowish, sparingly covered with short setae, forecoxae enlarged. Femora and tibiae long. In some cases hind tibia with one or two reddish patches at the apex. Tarsi two segmented, long, claws curved (fig. 18).

Male similar to female but smaller 2.8-3.3 mm. The smallest was the specimen from Panama-Canal Z.

Aedeagus similar to *V. crassicornis* (fig. 23), left paramere slender, elongated and small (fig. 24); I was not able to find the right paramere.

TYPE MATERIAL EXAMINED

Lectotype female (designated by CARVALHO & DOLLING 1976): Lectotype [white circle label with blue margin]; symbol of female; Las Mercedes 3 000 ft., CHAMPION, g. n. sp. n., DISTANT, 1883; *Vannius rubrovittatus* g. n., sp. n. W. L. DISTANT, G. SCHMITZ rid. 1970; Lectotype [pink label]. Paralectotypes: one male (a prepared specimen, genital segment destroyed), paralectotype [white circle label with blue margin]; symbol of male; Las Mercedes, 3000 ft. CHAMPION; *Vannius rubrovittatus* g. n. sp. n. W. L. DISTANT, G. SCHMITZ rid. 1970; paralectotype [pink label]; female; paralectotype [white circle with blue margin]; symbol of female; Cerro Zunil 4-5000 ft., CHAMPION, DISTANT sp. n. 1883; *Vannius rubrovittatus* g. n. sp. n., W. L. DISTANT, 1883, G. SCHMITZ rid. 1970; paralectotype [pink label]; female, paralectotype [white circle label with blue margin]; symbol of female; *Vannius rubrovittatus* g. n. sp. n. W.L. DISTANT, 1883, G. SCHMITZ rid. 1970; paralectotype [pink label]; Las Mercedes 3000 ft. CHAMPION; coll DISTANT 1911; two female, paralectotype [white circle label with blue margin]; symbol of female; Las Mercedes 3000 ft CHAMPION; DISTANT coll. 1911 - 383; paralectotype [pink label]; *Vannius rubrovittatus* g. n. sp. n. W. L. DISTANT G. SCHMITZ rid. 1970; female (4 paralectotypes). Lectotype and paralectotypes in BMNH.

OTHER MATERIAL EXAMINED

Colombia: one female: Colombia , April 30 1925, NEVERMAN, *Vannius rubro-vittatus* DIST. det. T. Y. HSIAO; (USNM); Panama: one male: Panama-Canal Z., Pipeline Rd., Canopy Knockdown, *Luhea seemanni*, 24 Oct. 1975; ; (AMNH); det. J. GORCZYCA; one male: V. de Chiriqui, 25-4000 ft. CHAMPION; *V. rubrovittatus* [handwritten]; P.R. UHLER Collection; Cotype No. U.S.N.M. [red label]; *Vannius rubrovittatus* DIST. [handwritten], det J.C.M. CARVALHO 1953 (USNM); one female: Summit, Panama C. Z, XII - 1946; N.L.H. KRAUS; *Vannius rubrovittatus* DIST. [handwritten], FROESCHNER 69 (USNM); one female: 25. 3 Cacao Trece Aguas; Aita V. Paz Guatemala; BARBER & SCHWARZ Coll.; *Vannius rubrovittatus* DIST. det. J. GORCZYCA, 1996; one female: Colombia, Rio Raposto, May 1965, V.H. LEE, light trap; *Vannius* sp. [handwritten], Det. T.J. HENRY 1989; *Vannius rubrovittatus* DIST., det. J. GORCZYCA, 1996 (USNM).

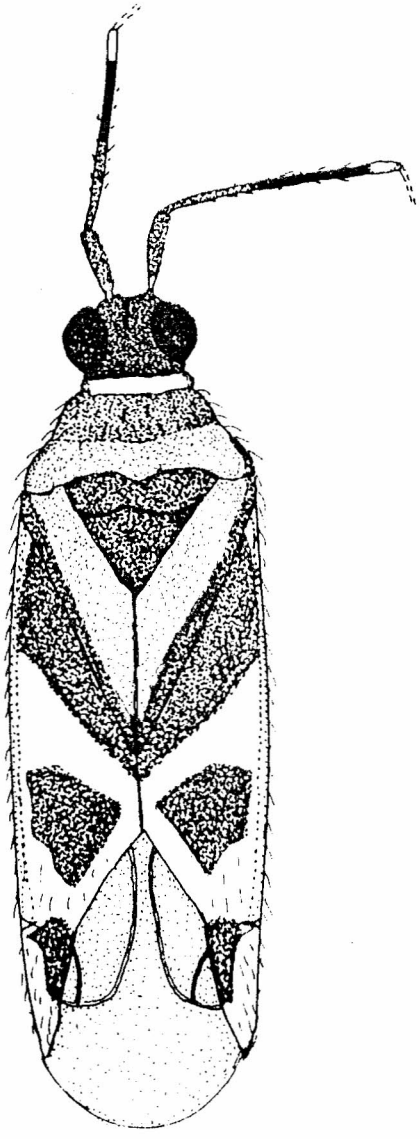
REMARKS

This last specimen has the general appearance and the colour patern of hemelytra like the rest of the representatives of the species but its head and first antennal segment are dark red, pronotum is dark, only slightly paler in its distal part,

mesoscutum is entirely red, underside of body dark red, almost brown. The coxae and femora are brown, tibiae and tarsi pale.

Vannius crassicornis Poppius, 1909

Vannius crassicornis Poppius, 1909: 16; Bergroth 1920: 72; Carvalho 1957: 34; 1980: 658; Schuh 1995: 39.



2. *Vannius crassicornis*, dorsal habitus

DIAGNOSIS

The species can be distinguished by only slightly thickened first antennal segment

(figs 2, 10), eyes not contiguous with pronotal collar, head with vertical but not prominent frons as well as the general colour pattern (fig. 2).

DESCRIPTION

Male

Body small, elongated, covered with long shining and dark setae, length: 3.8-3.9 mm., width: 1.0 mm. Head elongated vertically, shining, red to dark red, width: 0.6 mm., length in top view: 0.32 mm., height in lateral view: 0.52 mm.; eyes large, a little removed from pronotal collar, occupying almost one-half of head in lateral view (fig. 10), vertex with a deep distinct sulcus in the middle, frons with sulcus and impression above antennae; antennae contiguous with the margin of eyes. First segment light red, pale and very thin at base, length: 0.35-0.4 mm., only slightly thicker than the second; second light red in the basal half, then dark red with white apical part, sparingly covered with short setae, length: 1 mm. Third and fourth segments mutilated.

Pronotal collar pale. Apical part of pronotum light red, basal part obscured, posterior margin distinctly bisinuate. Length: 0.32 mm., anterior margin: 0.52 mm., posterior margin 1.0 mm., lateral margins 0.4 mm.; mesoscutum exposed, a somewhat swollen; length of scutellum 0.36 mm., width: 0.45 mm., mesoscutum and scutellum entirely red.

Hemelytra pale yellow with contrasting red patches, covered with pale setae; embolium very narrow (fig. 2). Clavus obscured, there is a large V - shaped red patch on both sides of claval suture. Corium pale with large red patches above cuneus, contiguous with membrane. Cuneus long, pale with a red spot in the inner part contiguous with membrane. Membrane pale to dark grey, venation partly red.

Legs yellowish, covered with dense short setae, tarsi with curved claws, first segment short, second almost twice as long as the first, slightly widened at apex

Parameres very slender, aedeagus elongated (figs 25-27).

Female unknown

TYPE MATERIAL EXAMINED

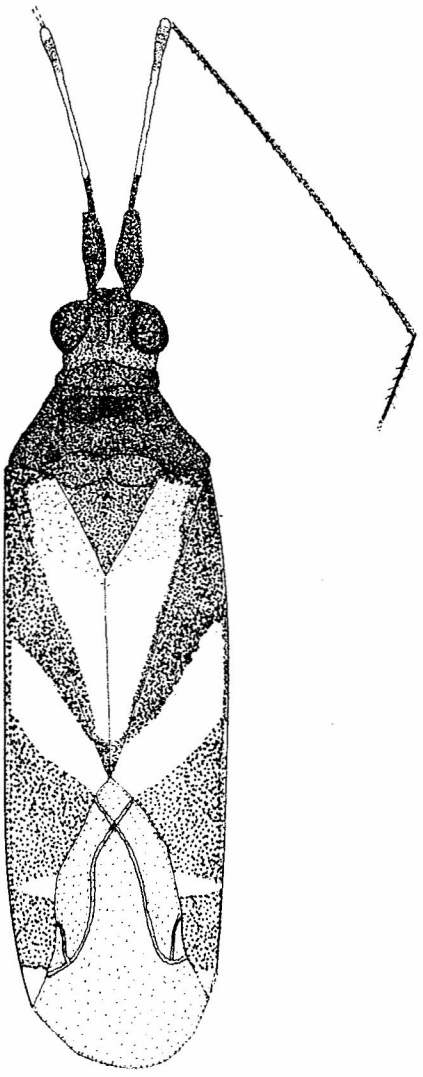
Lectotype, male (designated by CARVALHO 1980 as a "type): Bolivia, Mapiri, *Vannius crassicornis* n. sp., B. POPPIUS det.; typus, lectotype [handwritten], paralectotype, male: Bolivia, Mapiri, *Vannius crassicornis* POPPIUS, G. SCHMITZ det. 1969, paralectotype. Both in HNHM

Vannius podager BERGROTH, 1922

Vannius podager BERGROTH, 1922: 6; CARVALHO 1957: 34; SCHUH 1995: 39.

DIAGNOSIS

From the other species of the genus it can be easily distinguished by relatively small eyes, distinctly removed from the pronotal collar, the characteristically thickened first segment of antennae (figs 3, 11) and the general colour pattern (fig. 3).



3. *Vannius podager*, dorsal habitus

DESCRIPTION

Female. Body elongated, reddish, length: 3,6 mm., width: 1.17 mm; head shining, entirely red, paler before eyes and darkened behind, length of head (in top view): 0.37 mm., width: 0.52 mm., diameter of eye: 0.15 mm., height in lateral view: 0.46 mm, frons distinctly prominent. BERGROTH (1922) in his description noted that vertex was without sulcation - in fact there is a longitudinal sulcus crossing vertex and frons as well. Antennae removed from the margin of eye, first segment dark red, shining, distinctly thickened, narrower at base and apex (figs 3, 11), second segment much more slender, dark red at base and pale reddish at apex, pale in the middle, top of apex pale, slightly thickened, third and fourth segments thin, reddish brown, covered with dense setae. Length of segments (in mm.): 0.41: 0.96: 1.32, fourth segment broken but according to BERGROTH's description distinctly longer than the third. Rostrum hardly visible in the examined specimen, but first segment dark red. Pronotal collar dark red, thickened in the middle, shining.

Pronotum dark red, shining, slightly raised at collar area with distinct depression inside, length: 0.4 mm, anterior margin: 0.57 mm, lateral margins: 0.41 mm, posterior margin: 1 mm. Posterior margin slightly bisinuate. Mesoscutum exposed, scutellum almost as long as wide (excluding mesoscutum), both entirely red but much lighter than pronotum, covered with pale setae, scutellum lighter at apex.

Hemelytra pale with red patches, covered with dense pale and brownish setae. Clavus obscured at base, pale in the middle, pale red at apex. There is a large, V-shaped, red patch on the base of corium and along claval suture (fig. 3), a large, red patch above cuneus and a smaller patch inside cuneus. Embolium narrow, pale and reddish. Cuneus long, thin, pale at base and apex (fig. 3), length: 0.44 mm. width: 0.18 mm. Membrane greyish pale with slightly marked, partly reddish venation.

Legs reddish brown, covered with short setae, apex of tibiae and tarsi pale, length of metafemora: 1.8 mm, metatibiae: 2 mm., tarsi: 0.57 mm., slender, first segment longer than the second. Claws curved, parempodia large (fig. 17).

Male unknown

MATERIAL EXAMINED

Holotype female: Amazon. Fonteboa; Typus [red label]; *Vannius podager* sp. n. E. BERGROTH 1922 [hand-written probably by G. SCHMITZ]; 248, 79 [red label]; 259, 81 [red label]; 600 [pale label]; Naturhistoriska Riksmuseet Stokholm Loan no 134\96 (SMNH).

Vannius oculatus CARVALHO, 1955

Vannius oculatus CARVALHO, 1955: 628, CARVALHO 1957: 34; SCHUH 1995: 39.

DIAGNOSIS

It can be easily distinguished from the other representatives of the genus by the structure of head and eyes, length of cuneus as well as the characteristic general colour pattern (CARVALHO 1955, fig. 74d).

DESCRIPTION

Female. Body elongated, pale with red patches, covered with dark setae. Length of the body 2.8 mm., width 0.8 mm. Head entirely red, only vertex pale, strongly depressed and sulcated, eyes red, elongated. Length of head 0.25 mm., width 0.45, diameter of eye 0.15 mm., height in lateral view 0.55. Rostrum pale, first antennal segment pale, second pale with red and white rings at the apex. Third and fourth segments reddish dark, thin and covered with dense, short setae. Length of antennal segments in mm: 0.27: 1: 1.25 (fourth segment broken).

Pronotum pale with red, elongated patches contiguous with lateral margins. Anterior margin raised and hooded over the vertex. Length of pronotum 0.27 mm., anterior margin 0.37 mm., posterior margin 0.75 mm., lateral margins 0.35 mm. Mesoscutum depressed, pale at angles, scutellum red.

Hemelytra pale, covered with dark setae, with large, red V-shaped patch, contiguous with claval suture. Clavus yellowish only with distal part tinged with red. There are also red patches in distal part of the corium, contiguous with membrane and smaller ones inside cuneus.

Cuneus long, thin, elongated. Membrane and venation pale.

Coxae pale, rest of legs mutilated.

Male unknown.

TYPE MATERIAL EXAMINED

Holotype female: Costa Rica in babanas [handwritten]; Intercapt N. York, V-11. 36 [handwritten]; *Vannius oculatus* n. sp. [handwritten], det. JCM CARVALHO 1953; Type No 61942, USNM [red label] (USNM).

Afrovannius gen. n.

Vannius POPPIUS 1909, 1912 (part); REUTER 1910: 155 (part); OSHANIN 1916: 60 (part); BERGROTH 1920: 72 (part); CARVALHO 1952: 50 (part), 1955: 21 (part), 1957: 33 (part); ODHIAMBO 1967: 1666 (part); SLATER 1974: 184 (part); SCHUH & SLATER 1995: 172 (part); SCHUH 1995: 39 (part); GORCZYCA 1996a: 337, 340 (part).

Gender: masculine.

DIAGNOSIS

It can be easily distinguished from the genus *Vannius* DISTANT by the oval shape of body and large spatulate parempodia combined with subapically toothed claws. It differs from *Vanniusoides* CARVALHO et LORENZATO in vertex with sulcus and frons without prominent tubercles. From both genera it differs also in the structure of the parameres and aedeagus.

DESCRIPTION

The new genus has a general appearance of *Vanniusoides* CARVALHO et LORENZATO and these genera are undoubtedly allied.

Head vertical with big eyes, first antennal segment short and thickened, next antennal segments thin and very long. Antennae longer than body. Rostrum relatively short. Body more oval than in the case of *Vannius* DISTANT.

Body bearing long semi-erect setae, the posterior margin of pronotum bisinuate. Mesoscutum exposed. Hemelytra well developed, cuneus distinct. Membrane with two cells.

Metafemora enlarged, tibiae long, tarsi two-segmented. Sometimes pseudojoint well visible. Claws curved, toothed subapically, parempodia large.

I was able to examine the genitalia of only male specimens of *A. annulicornis* (one specimen) and *A. halinae*. The male of *A. mahensis* had been prepared before and the genitals had been lost, the same is true of other male representatives of *A. annulicornis*. Aedeagus of both species represents the same, very characteristic type (figs 28, 31).

Type-species: *Afrovannius halinae* sp. n.

KEY TO SPECIES OF *AFROVANNIUS*

1. Insects longer than 4 mm, pronotum, scutellum and mesoscutum obscured, reddish dark, second antennal segment relatively short, almost as long as the posterior margin of pronotum (Madagascar) ..... *A. schmitzi*
-. Insects smaller than 4 mm, pronotum, mesoscutum and scutellum pale with distinct, well separated red bands, second antennal segment much longer than the posterior margin of pronotum ..... 2.
2. Clavus red, hemelytra with distinct lines separating red and dark areas, cuneus red with pale patch in the middle (Madagascar) ..... *A. annulicornis*
-. Clavus pale, hemelytra without lines separating red patches, cuneus pale with red patches ..... 3.
3. Pronotum pale, only lateral margins with red bands, cuneus pale with a red patch in the middle (Seychelles Island) ..... *A. mahensis*
-. Pronotum with large red or yellowish red patches, cuneus pale with small red patches at base and apex (Sierra Leone, Congo) ..... *A. halinae*

Afrovannius halinae sp. n.

DIAGNOSIS

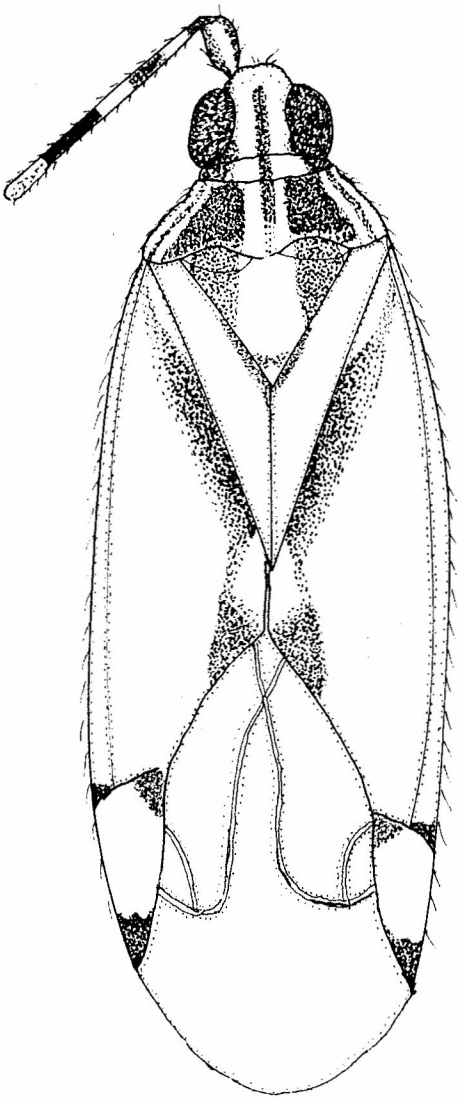
It differs from other species of the genus in its size, colour pattern (fig. 4) as well as in the shape of parameres and aedeagus (figs. 28-30).

DESCRIPTION

Male

Body elongatedly oval, length 3.2-3.4 mm., width 1.2 mm., pale, with a red or orange pattern. Head generally pale with more or less reddish places, covered with

setae. Vertex pale with a broad, distinct, longitudinal, dark stripe crossing also pronotal collar and pronotum. Width of head 0.49 mm, length 0.26 mm, height 0.57 mm. Eyes red, diameter of eye 0.18 mm. Mandibular plate, maxillary plate, clypeus and buccula partly reddish. Rostrum reaching behind metacoxae, pale, first segment more or less tinged with red. Antennal insertion contiguous with the anterior



4. *Afrovannius halinae*, dorsal habitus

margin of eye (fig. 12). Antennae long, longer than body. First antennal segment thickened, covered with a few setae, inserted on distinct antenniferous tubercles, orange to dark red with an irregular, longitudinal, pale stripe (in dorsal view). Second, bearing dense short setae, reddish at base, then with pale and reddish rings (fig. 4), in the apical part with a large reddish dark ring, apex pale. Third segment also covered with dense setae, reddish dark at base, then reddish with a pale ring. Fourth very thin, reddish dark covered with dense setae, much longer than its diameter. Length of antennal segments in mm: 0.26:1.10:1.24:1.4. Pronotal collar pale in the middle with a dark stripe, reddish on sides.

Pronotum pale with dark bands parallel to the lateral margins, covered with long pale setae. Pale in the middle with dark stripe and two large red or red yellowish patches on sides (fig. 4). Length of anterior margin 0.49 mm, posterior margin 0.83 mm, lateral margins 0.36 mm. Mesoscutum and scutellum pale or yellowish with two broad, red bands. Ostiolar peritreme small.

Hemelytra pale covered with dense setae. Clavus pale, only at the border with scutellum and along claval commissure reddish. Corium pale with two elongated reddish patches along claval suture. Clavus pale with small red patches at base and apex, relatively short, length 0.52 mm, width 0. 3 mm.. Membrane pale grey, venation pale.

Underside of body pale, yellowish to reddish. Pygophor reddish or reddish dark.

Legs pale, yellowish with red and reddish brown rings and patches. Metafemora enlarged, tarsi two segmented, first segment much longer than the second.

Aedeagus elongated (fig. 28), parameres small, left paramere thin, elongated, right paramere small, curved at apex (figs. 29, 30).

Female similar to male but somewhat bigger: length 3.4-3.6 mm., width 1.2-1.28 mm. Antennae with distinct reddish and pale rings, much better marked than in male.

TYPE MATERIAL

Holotype male: Sierra Leone, Njala, 27. VI. 33, E. HERGREAVES; Pres. By Com. Inst. Ent. B.M. 1948-536. Paratypes: 1 male: Sierra Leone, Njala, 7. V. 32, E. HARGREAVES; Pres. By Com. Inst. Ent. B.M. 1948-536.; 1 male: Njala, Sierra Leone, Date 24-V-27. E. HARGREAVES [handwritten]; Pres. By Com. Inst. Ent. B.M. 1948-536; 1 female: Musee du Congo, Sankuru: Komi, 24-II [handwritten] - 1930, J. GHESQUIERE; Holotypus [pink label]; symbol of female; *Vannius cheiridocerus* G. SCHMITZ det. 1972; 1 female: Musee du Congo, Sankuru, -IV-1925, Lt GHESQUIERE, coton [handwritten]; Paratypus [pink label]; symbol of female; *Vannius cheiridocerus* sp. n. G. SCHMITZ det. 1972. Holotype and one male paratype in BMNH, one male paratype in AC collection, two females paratypes in MRAC.

ETYMOLOGY

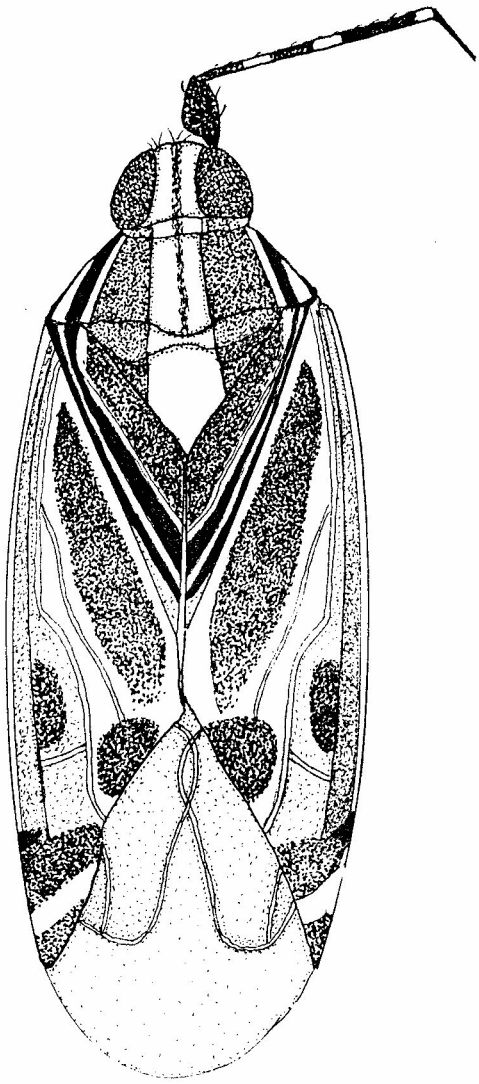
Named after my mother Halina.

Afrovannius annulicornis (Poppius, 1909) n. comb.

Vannius annulicornis Poppius, 1909: 14; Poppius 1912: 173; Bergroth 1920: 72; Carvalho 1957: 34; Odhiambo 1967: 1666, 1667; Schuh 1995: 39; Gorczyca 1996a: 337.

Diagnosis

It can be easily distinguished from other species by the size and the colour pattern, with the regular lines separating red and pale patches (fig. 5).



5. *Afrovannius annulicornis*, dorsal habitus

DESCRIPTION

Female

Body elongatedly oval length: 3.72-4 mm, width: 1.3-1.4 mm, bearing dense semi-erect setae, with a large red area separated by dark and pale bands (fig. 5).

Head shorter than wide, length: 0.4 mm, width: 0.57 mm, height: 0.44 (in lateral view). Diameter of eye: 0.18 mm, vertex pale a with wide, longitudinal, dark stripe, crossing pronotal collar and in some specimens reaching the mid part of pronotum. Frons pale obscured, bearing long, dark setae. Eyes large red, contiguous with pronotal collar. Antennae inserted in the anterior margin of eyes. First antennal segment red, short, thickened (fig. 13), sparingly covered with setae; second segment thin, red at base, then with white and red rings, covered with very short setae. Last ring before apex is the longest and dark red, apex pale. Third and fourth segments thinner than the second, obscured, bearing short, dense setae. Length of antennal segments (in mm): 0.26:1.24-1.3:1.9 (fourth segment mutilated).

Pronotum pale in the middle, with two broad, longitudinal red bands reaching mesoscutum and scutellum and with thin dark stripes along the lateral margins (fig. 5). Posterior margin strongly bisinuate, length of anterior margin: 0.65 mm, lateral margins: 0.44 mm., posterior margin: 1 mm. Mesoscutum large, strongly exposed, swollen, scutellum with pale or obscured middle part and broad red bands at the angles. Propleuron with dark and pale bands more or less contrasting. Length of scutellum: 0.4 mm, width: 0.52 mm (excluding mesoscutum).

Hemelytra with relatively wide embolium, which is yellowish or grey to dark grey, reddish at apex and above cuneus. The outer margin of embolium pale, along the inner margin of embolium there is a pale, line running down, divided in the middle and reaching membrane and the red patch contiguous with membrane (fig. 5). Clavus with dark and pale stripes and red patches contiguous to scutellum. Corium with longitudinal red patches contiguous with clavus, and smaller patches below. Cuneus long, red, with small pale patch in the middle, length: 0.55 mm., width at base: 0.32 mm.

Legs pale, yellowish more or less tinged with red. Metafemora enlarged, with red patches and stripes. Claws typical of the genus.

Male

Similar to female, length: 3.68-3.8 mm., width: 1.16-1.20 mm. Metafemora dark red.

Aedeagus elongated, left paramere curved (fig. 32). Unfortunately, the genital segment of the only male specimen which had not been prepared before and was available to my study was sunk in glue and the right paramere was crushed.

TYPE MATERIAL

Holotype female; 1 mars 01; Museum Paris, Madagascar, Foret Tanala, Region D'Ikongo, Vinanitelo, Ch. ALLUAUD 1901; Holotype [red label]; *Vannius annulicornis* n. sp. B. POPPIUS det. In MNHN.

OTHER MATERIAL EXAMINED

Madagascar: one female, Perinet, Madagascar, OLSUF "EV [Олсуфъев], XII. 932; *Vannius annulicornis* POPPIUS, G. SCHMITZ det. 1970 (MRAC); one female, Perinet, Madagascar, OLSUF "EV [Олсуфъев], XII. 932; *Vannius annulicornis* POPPIUS, G. SCHMITZ det. 1970 (ZIN), one male, Perinet, Madagascar, OLSUF "EV [Олсуфъев], XII. 932; *Vannius annulicornis* POPP., KERZHNER det, 961 (ZIN); one male, Perinet, Madagascar, ROBINSON, 10 I. 935; *Afrovannius annulicornis* (POPP.), det. J. GORCZYCA. (ZIN)

REMARKS

Holotype is weakly coloured, very pale.

Afrovannius mahensis (DISTANT, 1913) n. comb.

Vannius mahensis DISTANT, 1913: 176; BERGROTH 1920: 72; CARVALHO 1957: 34; ODHIAMBO 1967: 1666; SCHUH 1995: 39.

DIAGNOSIS

Similar to *A. halinae* but differs from it in the pale pronotum, general colour pattern of hemelytra and colour and length of the antennal segments.

Description

Pale with red and pink pattern on hemelytra, pronotum and antennae. Length: 3 mm, width: 0.9 mm. Head pale, vertex with a longitudinal sulcus, eyes red large. Antennae long, longer than body. First antennal segment red pale at base and apex. Second segment pale reddish , 3rd and 4th reddish. Length of antennal segments in mm: 0.3:1.4:2.8 (3rd and 4th together).

Pronotum pale with two red patches along the lateral margins. Scutellum pale with V-shaped red stripes.

Hemelytra with red bands along the outer margins of clavus, two red patches above membrane and a small red patch in the middle of cuneus. Embolium narrow.

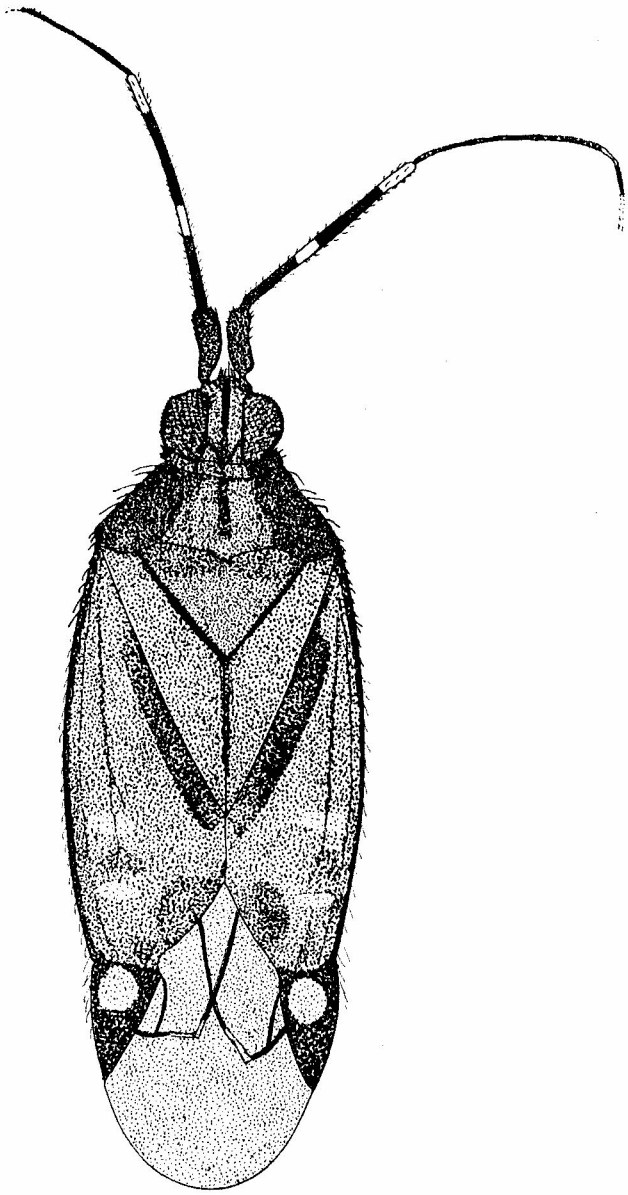
TYPE MATERIAL

Holotype, male: Holotype [white circle label with red border]; Type [circle label with orange border]; holotypus [pink label with the symbol of male]; Mahe, '08-9, Seychelles Exp.; Seychelle Islands., Percy Salden Trust Expedition. 1911-497.; pink & white, eyes pink-red [handwritten]; *Vannius mahensis* n.sp DIST. [handwritten]. In BMNH

REMARKS

The only known specimen of this species is a young male in very bad condition. Also the genitalia had been examined before and lost. It is impossible to take its precise measurements. According to original DISTANT's description and picture

(DISTANT 1913: Pl. 13, fig. 8) and on the basis the examination of the type specimen it is likely that *A. mahensis* is allied to *A. halinae*.



6. *Afrovannius schmitzi*, dorsal habitus

Afrovannius schmitzi (GORCZYCA, 1996) n. comb.

Vannius schmitzi GORCZYCA, 1996a: 337.

DIAGNOSIS

This species can be recognised on the basis of its size, colour pattern and short second segment of antennae as well as the strong, enlarged metafemora. All the remaining species of *Afrovannius* DISTANT have a similar colour pattern on the hemelytra - red spots sharply contrasting with the generally pale body. In *Afrovannius annulicornis* (POPP.) red areas are separated by distinct, pale and dark bands. The new species is generally dull yellowish and reddish but the reddish areas are not distinctly separated. It is also the largest species among all known representatives of the genus.

DESCRIPTION

Length: 4.4-4.8 mm, width: 1.6-1.8 mm.

Body reddish and dark yellow to brown, bearing long setae. Head wider than long, width 0.57-0.60 mm; length 0.35-0.40 mm; height 0.7-0.8 mm; width of vertex 0.18-0.2 mm; eyes large occupying nearly half height of head, contiguous with pronotal collar; vertex flat, yellowish with a dark stripe in the middle crossing vertex, pronotal collar and the anterior part of pronotum (fig. 6); frons reddish. Antennal fossae contiguous with the anterior margins of eyes. First antennal segment reddish dark, thick, second segment reddish or reddish black at base with a pale ring separating another reddish or black part, apex pale (fig. 6); clothed with short dense setae. Third and fourth segments slender; third almost black with a pale ring at apex, covered with very short setae; fourth black at base. In all examined specimens fourth segments are broken; length of antennal segments (in mm): 0.35-0.40:1.3-1.43:1.0-1.17. Rostrum rather short, not reaching or hardly reaching metacoxae.

Pronotum broader than long, length 0.6-0.65 mm, width 1,17-1.30 mm. Pronotum and pronotal collar reddish with a large pale part in the middle, with dark vertical stripe, posterior margin noticeably bisinuate; pronotum, collar and thorax in lateral view reddish dark or entirely black; scutellum and mesoscutum yellowish dark or dark, framed with reddish stripes, mesoscutum exposed, swollen, with small red spots in the anterior angles.

Hemelytra pale yellow to yellowish brown, with more or less distinct reddish spots and bands. Claval suture, commissure of hemelytra, the edge of embolium and veins of hemelytra reddish. Corium with two transverse, weakly contrasted, pale spots and with two large red patches above cuneus, contiguous with membrane. Cuneal fracture distinct; cuneus almost twice as long as broad, red with a large, more or less regular, pale spot in the middle. Membrane reaching well beyond the apex of abdomen, pale grey to greyish black, veins reddish with white distal part, primary cell of membrane large, secondary cell small but well visible.

Legs reddish or reddish pale, covered with short setae, metafemora distinctly enlarged at base, long, tibiae long with short setae and a row of not numerous, pale spines (11-13), tarsi bisegmented. Claws curved, guard setae long (fig. 20).

Male unknown.

TYPE MATERIAL EXAMINED

Holotype and 13 paratypes: Madagascar, Perinet; holotype: Perinet, Madagascar, OLSUF "EV [Олсуфъев], XII. 932; *Vannius perineti* sp. n. G. SCHMITZ det. 1970; *Vannius schmitzi* sp. n., det. J. GORCZYCA, 1996 (ZIN)

5 paratypes: Perinet, Madagascar, OLSUF "EV [Олсуфъев], 5 III. 935; *Vannius perineti* sp. n. G. SCHMITZ det. 1970; *Vannius schmitzi* sp. n. det. J. GORCZYCA, 1996; 7 paratypes: Perinet, Madagascar, ROBINSON, 26 XII. 933; *Vannius perineti* sp. n. G. SCHMITZ det. 1970; *Vannius schmitzi* sp. n. det. J. GORCZYCA, 1996; 1 paratype: Perinet, Madagascar, ROBINSON, 10. I. 935; *Vannius perineti* sp. n., G. SCHMITZ det. 1970. ; *Vannius schmitzi* sp. n. det. J. GORCZYCA, 1996.

Holotype and 11 paratypes in ZIN, ST. Petersburg, two paratypes in MRAC, Tervuren.

OTHER MATERIAL EXAMINED

Madagascar: one female, Perinet, Madagascar, Olsuf "ev [Олсуфъев], XII. 932; *Vannius schmitzi* GORCZ. 1996, det. J. GORCZYCA (AC).

Vanniusoides CARVALHO et LORENZATO, 1978

Vannius POPPIUS 1909: 3, 14. (part)
Vanniusoides CARVALHO et LORENZATO, 1978: 127; Schuh 1995: 39; GORCZYCA 1996a: 337, 340; (type-species: *Vannius brevis*, original designation).

DIAGNOSIS

Similar to *Afrovannius* but differs from it in the absence of sulcate frons, the presence of relatively thin femora, the presence of a tubercle projecting downwards from clypeus (fig. 14) and relatively long rostrum. From *Vannius* it can be distinguished by a subapical tooth on claws (fig. 19). From both genera it differs also in 3-segmented tarsi, and the characters of aedeagus.

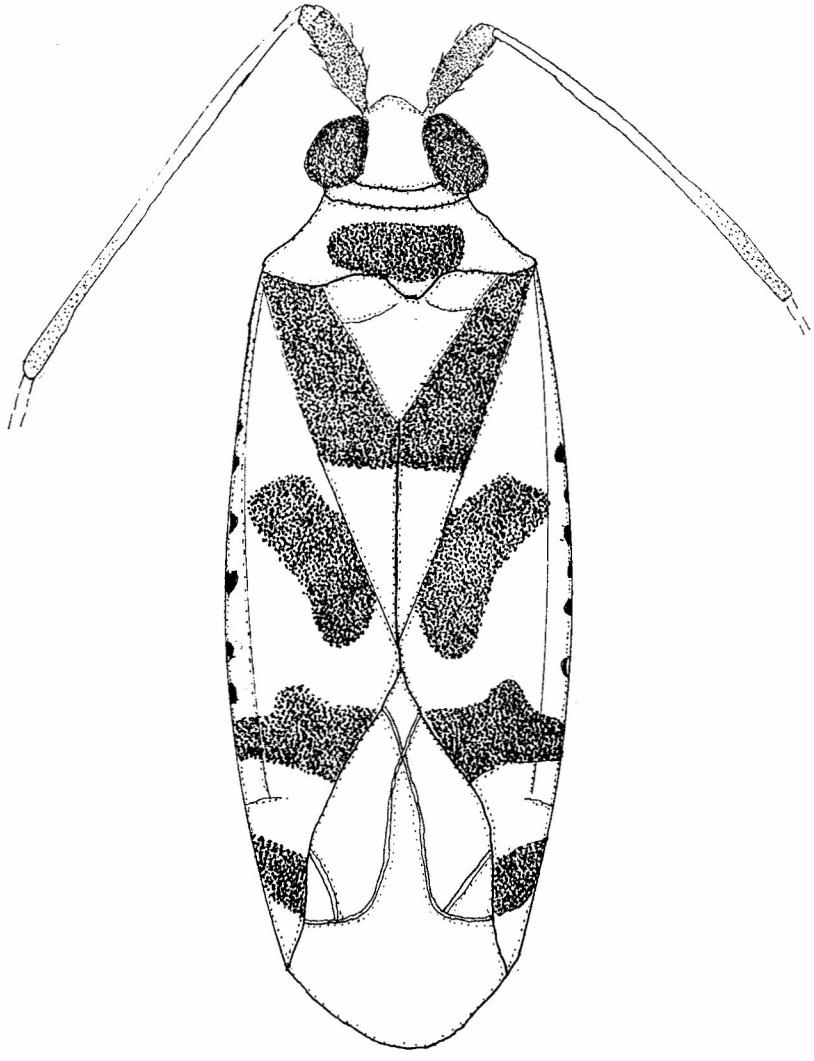
DESCRIPTION

Body elongatedly oval, smooth, bearing long setae. Head vertical, almost as long as wide, vertex slightly convex, without longitudinal sulcus, frons prominent. Clypeus with a small but distinct tubercular projection downwards (fig. 14). Eyes contiguous with pronotal collar. Antennae contiguous with eyes, inserted in the middle of the anterior margin. First antennal segment thicker than others, which are thin and covered with short setae (according to the description and fig. 26 given by CARVALHO & LORENZATO 1978).

Pronotal collar enlarged in the middle, pronotum wider than long, posterior margin bisinuate, humeral angles rounded. Mesoscutum exposed, scutellum small, flat.

Hemelytra with well developed embolium, cuneus long, almost twice as long as wide at base. Membrane well developed, with two cells.

Ostiolar peritreme small, rounded. Metafemora and metatibiae noticeably long, tibiae covered with short setae and few spines distinctly thickened distally. Tarsi tree- segmented, long, last segment slightly swollen at apex, bearing long guard setae (fig. 19). Claws curved, toothed subapically, parempodia large.



7. *Vanniusoides brevis*, dorsal habitus

Vanniusoides brevis (POPPIUS, 1909)

Vannius brevis POPPIUS, 1909: 15; BERGROTH 1920: 72; CARVALHO 1957: 34, 1980: 658.
Vanniusoides brevis: CARVALHO & LORENZATO 1978; SCHUH 1995: 39.

DIAGNOSIS

See generic diagnose.

DESCRIPTION

Characterized by the general colour pattern (fig. 7) and the structure of the male genitalia. Body length: 3.2 mm, width: 1.2 mm, colour pale yellow with contrasting red spots and patches. Head pale, width (seen above) 0.6 mm, length: 0.32 mm, height: 0.6 (in lateral view). Eyes large, red, diameter of eye: 0.2 mm. First antennal segment red, paler in the apical part, covered with pale setae, thickened, length: 0.39 mm, second pale yellowish, tinged with red and weakly thickened in the apical part, length: 1.4 mm, third and fourth segments mutilated. Pronotal collar pale.

Pronotum pale with a red patch in the middle, propleura reddish. Length of pronotum: 0.35 mm. Length of anterior margin: 0.55 mm, posterior margin: 1.32 mm, lateral margins: 0.32 mm. Mesoscutum and scutellum pale, length of scutellum 0.4 mm. (excluding mesoscutum).

Hemelytra pale with two large red patches (fig. 7), the first part of clavus (apical) red, second pale, obscured, embolium wide, pale, with a longitudinal row of small red patches. Cuneus pale with a red patch in the middle. Membrane and venation pale.

Legs pale, reddish in places covered with short setae. Metafemora reddish in the apical part. First segment of tarsi longest almost as long as second and third together.

Aedeagus membraneous, with spines surrounding secondary gonopore, parameres small, thin (according to CARVALHO & LORENZATO 1978).

TYPE MATERIAL EXAMINED

Holotype, female: New Guinea: Simbang, Huon-Golf, BIRO, 1898 (HNHM).

OTHER MATERIAL EXAMINED

One male: New Guinea: NE., Arnok, 169 m. Jan 6, 1960; T.C. MAA collector; Compared with Type by CARVALHO 197 . [red label]; *Vanniusoides brevis* (POPP.), det. J. C. M. CARVALHO (HNHM); one male: New Guinea (NE): Maprik, 160 m., Oct. 15, 1957, J. L. GRESSITT Collector; *Vanniusoides brevis* (POPP.), Det. J. C. M. CARVALHO (BPBM); one male: New Guinea: NE, Amok 165 m, Jan 6. 1970 [handritten]; T. C. MAA colector [handritten]; *Vanniusoides brevis* (POPP.) [handwritten], Det. J. C. M. CARVALHO (BPBM).

Vanniopsis Poppius, 1909

Vanniopsis Poppius, 1909: 17 (type-species: *Vanniopsis rufescens*, original designation); Reuter 1910: 155; Bergroth 1920: 72; Carvalho 1952: 50, 1955: 21, 1957: 33; Schuh 1995: 39; Gorczyca 1996a: 340.

Diagnosis

In general apperance (fig. 8) similar to *Vannius* Distant but differs from it in broad and flat pronotal collar, and very long first antennal segment covered with dense setae.

Description

Body small, smooth, elongated. Head short, vertical, covered with erect long setae, vertex flat with a longitudinal sulcus in the middle, frons elongated, eyes large, rounded, granulated, contiguous with pronotal collar (figs 8, 16). Antennae contiguous with eyes, very thin at base, inserted on long antenniferous tubercles in the middle of the anterior margin of eye. First segment long, longer than the width of head and almost equal to its height. Rostrum short, reaching meso- to metacoxae.

Pronotum very short, the posterior margin slightly bisinuate, mesoscutum exposed, weakly swollen, scutellum relatively small, ostiolar peritreme small.

Hemelytra with almost parallel margins, covered with dense, long setae, embolium distinct, narrow, cuneal fracture well visible, cuneus long, almost twice as long as the base, membrane well developed with two cells.

Procoxae enlarged, legs long, covered with dense setae.

Remarks

The only two known specimens - the holotype and the female from New Caledonia have almost all legs mutilated (the holotype has only metafemora and broken metatibiae). Genital segment in the holotype had been prepared and lost. Some data are given according to Poppius's original description and pictures and on the basis of the female specimen from New Caledonia.

Vanniopsis rufescens Poppius, 1909

Vanniopsis rufescens Poppius, 1909: 17; Bergroth 1920: 72; Carvalho 1952: 50, 1957: 33; Schuh 1995: 39.

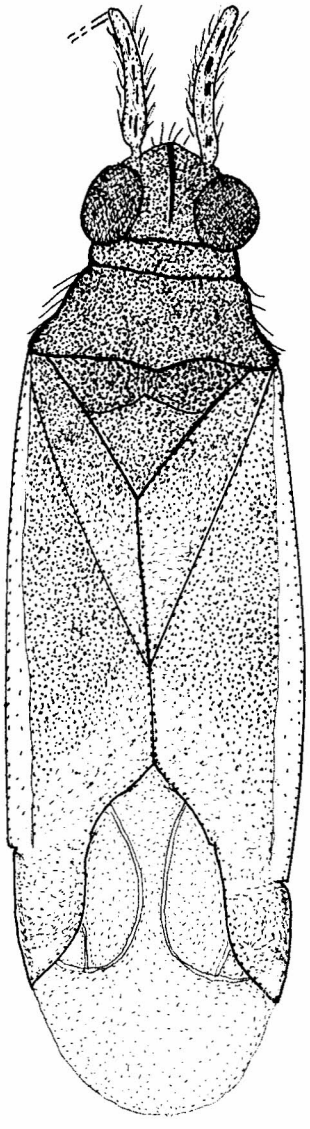
Diagnosis

See the generic diagnose.

Description

Male. Body yellow dark, obscured, length: 3.50 mm, width: 1 mm. Head with obscured yellow vertex, pale frons, clypeus, mandibular plate, and maxillary plate pale; width of head: 0. 72 mm, length: 0.32 mm, diameter of eye: 0.18 mm, height of head: 0.65 mm, height of eye 0. 33 mm in lateral view. First segment 0.65 mm,

long, yellow with reddish rings at base and apex and a reddish stripe from base to apex in the dorsal part, covered with short dense setae (figs 8, 16), second segment length: 1.1 mm, black, with white rings at base and at middle, covered with short, dense setae. According to fig. 5 (POPPIUS 1909), the third antennal segment is short,



8. *Vanniopsis rufescens*, dorsal habitus

almost equal to the first, fourth longer than the second, covered with dense long setae (the same combinations can also be found in the specimen from New Caledonia). Rostrum pale, length of segments in mm.: 020, 0.23, 0.28 (fourth segment invisible), first segment thickened (fig. 16).

Pronotal collar flat, obscured, broad - 0.11 mm. Pronotum obscured, slightly rugose, darkened near the anterior margin, length: 0.31 mm (excluding pronotal collar), anterior margin: 0.54 mm, posterior margin: 0.91 mm, lateral margin: 0.39 mm. Mesoscutum dark, scutellum small, paler than mesoscutum, width: 0.46 mm, length: 0.39 mm (excluding mesoscutum).

Clavus and corium dirty yellow, distal part of corium tinged with red. Cuneus reddish, with very small pale spots at base and apex. Cuneus length: 0.52 mm, width at base: 0.26 mm. Membrane dark grey, venation dark.

Metafemora pale, covered with dense dark setae, metatibiae pale covered with short dark setae. According to POPPIUS' picture all legs are pale and covered with very long, dark setae.

Female. Similar to the male but first antennal segment is obscured and unicoloured, without any red stripes and rings, second segment slightly thickened at apex, coloured as the respective segment in the male, frons more convex. Length of body 3.5 mm., width of head 0.68 mm., length of head 0.32 mm., diameter of eye 0.16 mm, height 0.64 mm. Third antennal segment dark, with pale apex and base, fourth dark, thin. Length of antennal segments in mm: 0.65:1.2:0.64:1.2.

Corium distinctly tinged with red, cuneus pale, weakly reddish at apex and the outer margin. Membrane greyish with red venation

TYPE MATERIAL

Holotype female: holotype [red hand-written label]; Mai, Museum Paris, Nouv. - Hebrides, Espiritu Santo, Ilot Dauphin, Dr JOLY, 1902; *Vaniopsis rufescens*. n. gen. et sp., B. POPPIUS det. [hand-written in black ink] (MNHN).

OTHER MATERIAL EXAMINED

One female: New Caledonia, Lifou, Ejengen; 21. II. 1977, leg. J. BALOGH; *Vanniopsis rufescens* POPP. det. J. GORCZYCA (HNHM).

REMARKS

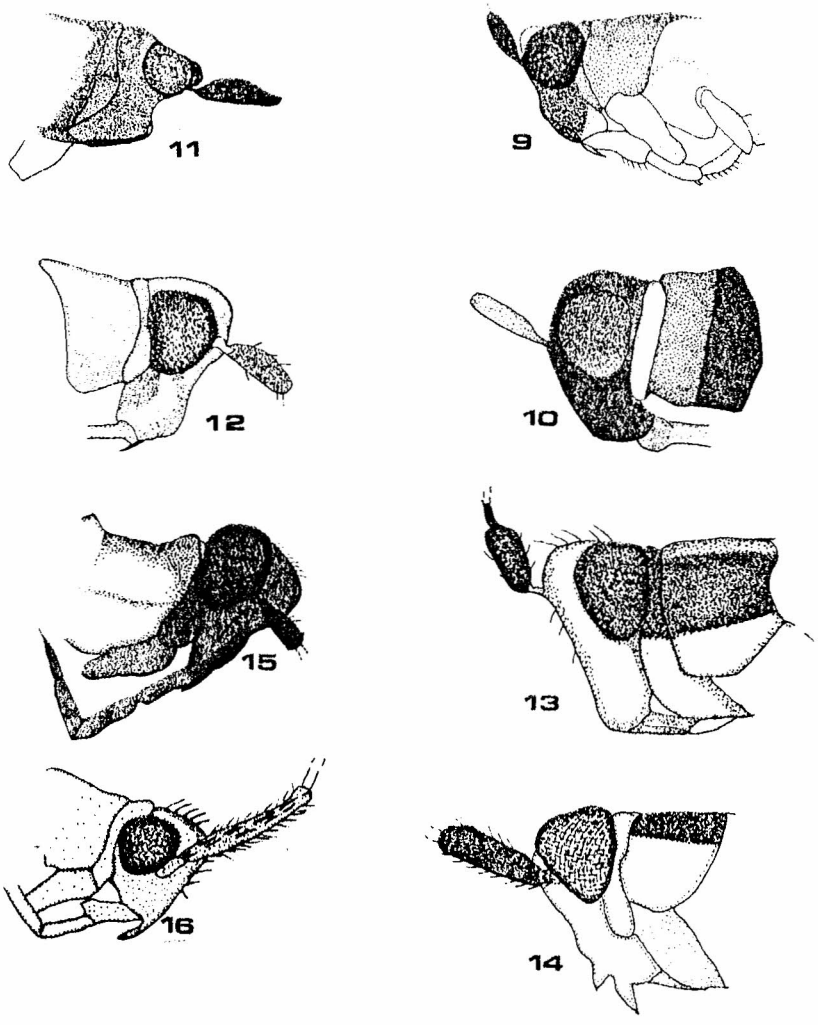
Among the specimens from New Caledonia deposited in HNHM I found a female which undoubtedly belonged to the genus *Vanniopsis*. Because the genus was described on the basis of a single male specimen nothing is known about its sexual dimorphism. Nevertheless, the similarity of both specimens was manifest enough and I decided that the female from New Caledonia represented *Vanniopsis rufescens* POPPIUS.

Paracylapus CARVALHO, 1952

Paracylapus CARVALHO, 1952a: 97, 1952b: 50, 1955: 21, 1957: 32; SCHUH 1995: 32.
Pseudovannius GORCZYCA, 1996b: **syn. n.**

DIAGNOSIS

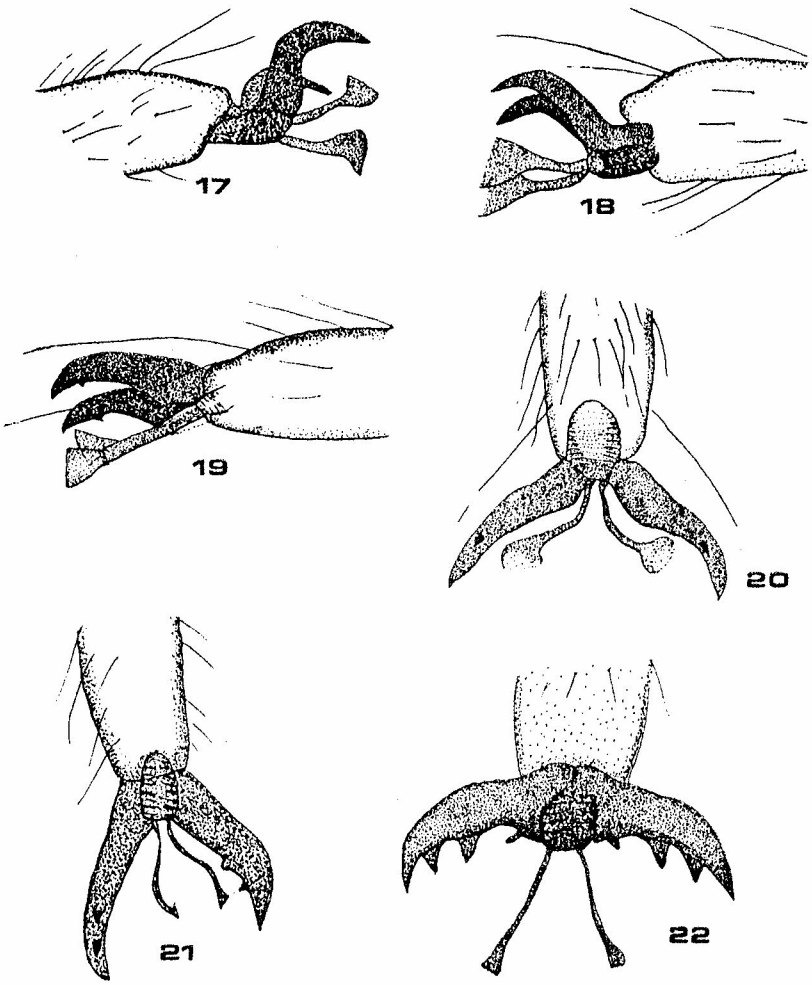
It differs from the other members of the tribe in the presence of two teeth on the inner surface of the claws and in very small, narrow parempodia (figs 21, 22).



9-16. head and pronotum: 9 - *V. rubrovittatus*; 10 - *V. crassicornis*; 11 - *V. podager* 12 - *A. halinae*; 13 - *A. annulicornis*; 14 - *Vanniusoides brevis*; 15 - *Paracylapus lestoni*; 16 - *Vanniopsis rufescens*

DESCRIPTION

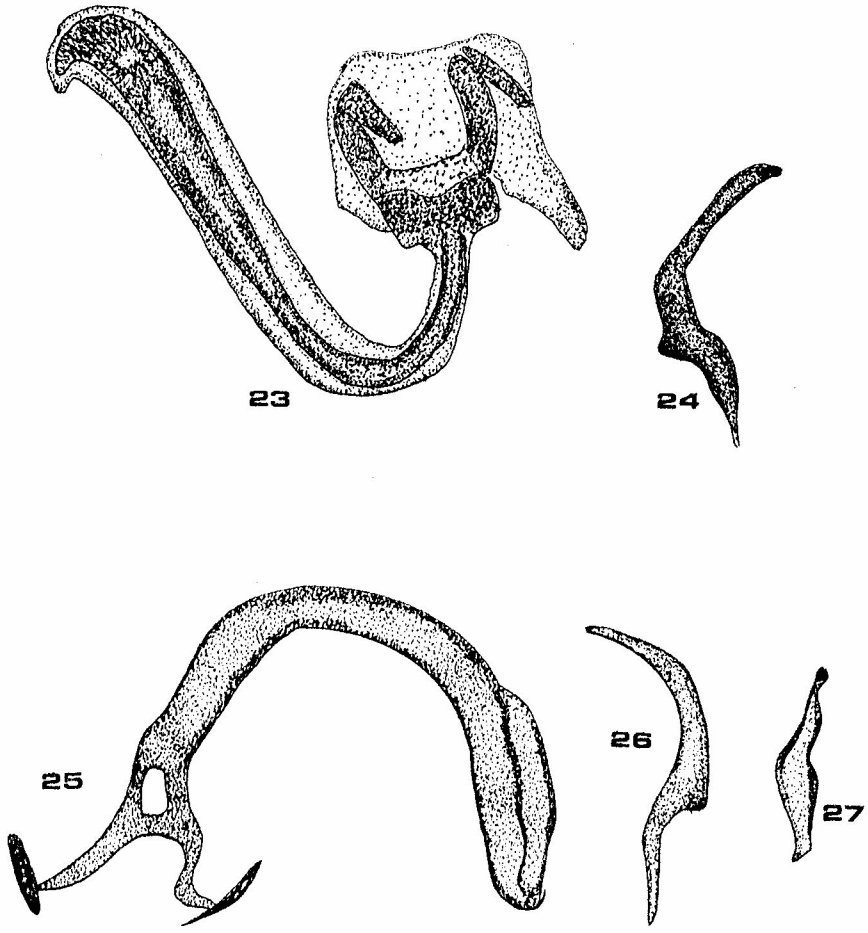
Body elongated, smooth, covered with setae. Head very short, vertex with longitudinal sulcus, eyes very large, granulated, occupying more than one-half of the lateral side of head. Antennae long, contiguous with the internal margin of eyes, inserted approximately in the middle of margin of eye. First antennal segment short, thickened, bearing a few short setae. Second segment thin and long, third thinner than he second, fourth the thinnest. Rostrum relatively short, reaching from meso- to metacoxae (fig. 15).



17-22. pretarsal structures: 17 - *V. podager*; 18 - *V. rubrovittatus*; 19 - *V. brevis*; 20 - *A. schmitzi*; 21 - *P. insularis*; 22 - *P. lestoni*

Pronotal collar narrow, enlarged in the middle, pronotum flat, very short, anterior margin slightly raised, posterior margin bisinuate, mesoscutum well exposed, raised, scutellum weakly swollen, sloping posteriory. Ostiolar peritreme small but distinct.

Hemelytra almost parallel, well developed, embolium narrow, costal fracture distinct, cuneus long. Membrane with two distinct cells.



23 - 27. Male genitals, *Vannius rubrovittatus*: 23 - aedeagus, 24 - left paramere; *V. crassicornis*: 25 - aedeagus, 26 - left paramere, 27 - right paramere

Procoxae enlarged, protibiae short, distinctly thickened at apex, apex with a few strong spiculi. Mesotibiae short, metatibiae long, slightly thickened at apex, with few spicula. Metafemora distinctly enlarged. Tarsi long, slender not thickened at apex, pseudo-joint well visible. Claws with two small subapical teeth and small spatulate parempodia (figs 21, 22).

Type species: *Paracylapus insularis* CARVALHO, 1952 (original designation)

REMARKS

I described the genus *Pseudovannius* on the basis of its unusual pretarsal structure unknown so far in any other representatives of *Miridae*. I noticed the superficial similarity of the examined specimens to the picture of *Paracylapus insularis* given by CARVALHO, 1952. I tried to borrow the type of this species but I was informed that it had been lost. According to CARVALHO, the genus *Paracylapus* was similar to the Nearctic genus *Corcovadocola* CARV. and not to *Vannius* DISTANT; he did not mention its unusual pretarsal structure either. Thanks to the efforts of Dr D. PLUOT-SIGWALT (MNHN) and Dr. J. LIS (DZO), who found the holotype of *Paracylapus insularis* CARVALHO, I was able to examine it. It turned out that both genera had the same pretarsal structure, so I decided to synonymize them.

Paracylapus insularis CARVALHO, 1952

Paracylapus insularis CARVALHO, 1952a: 99, 1952b: 50, 1957: 32; SCHUH 1955: 32

DIAGNOSIS

This species can be distinguished from *Paracylapus lestoni* (GORCZYCA) by larger eyes, more thickened first antennal segment, not thickened protibiae and red cuneus with a large pale patch in the middle as well as by smaller teeth on the claws and lack of small teeth at the base of claws.

DESCRIPTION

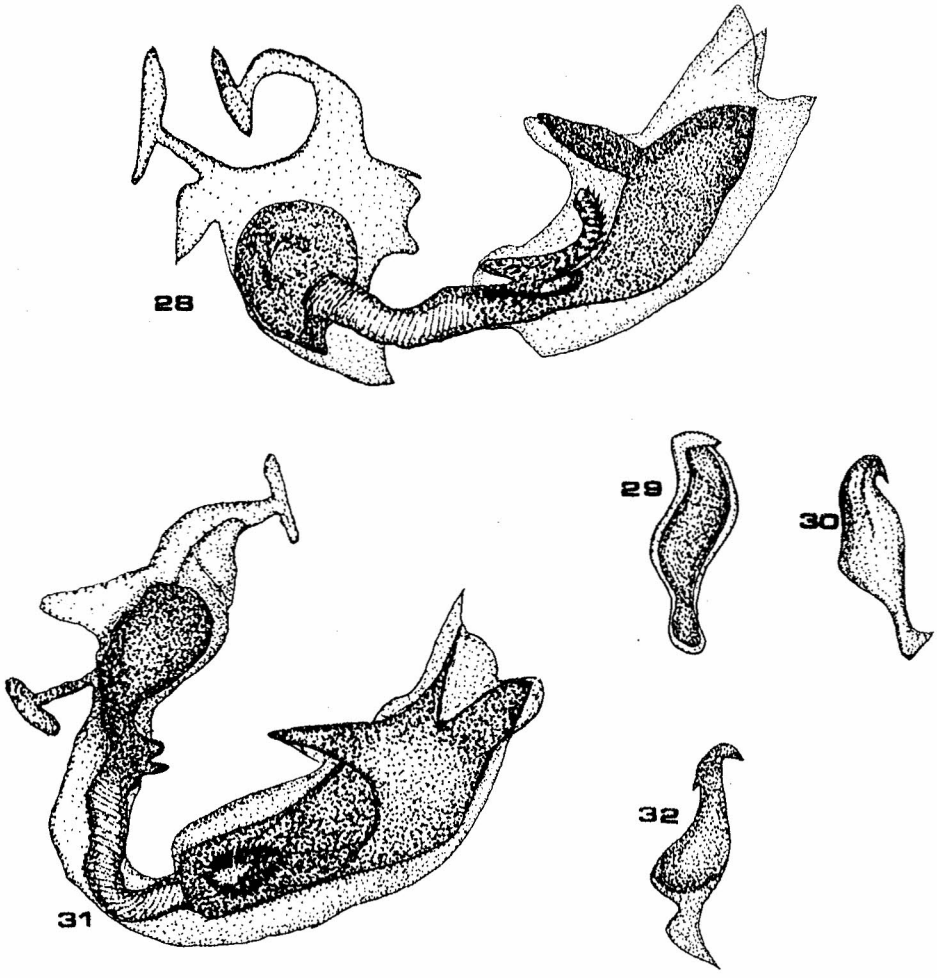
Male. Body brown with few pale and reddish places, length 4.5 mm, width 1.5 mm. Head brown, eyes dark brown, large, occupying almost half of the head (in lateral view). Length of head 0.32 mm, width 0.8 mm, height 0. 78 mm, diameter of eye 0.32 mm. Vertex brown with two small patches contiguous with the margins of eye. First antennal segment short (fig. 15), thickened and brown, bearing a few setae, inserted on antennal tubercle in the middle of the anterior margin of eye, second pale at base then darkened towards apex, apex pale, tinged with red. 3rd and 4th segments very thin, brown, covered with short, dense setae. Length of antennal segments in mm: 0.26:1.95:1.5 (4th broken in the apical part)

Pronotum dark brown with a pale short stripe perpendicular to the posterior margin. Length of anterior margin 0.67 mm, posterior margin 1.3 mm, lateral margins 0.52 mm. Mesoscutum brown with reddish places; scutellum brown, paler at apex.

Clavus brown, paler along claval suture, corium brown with paler places on the medial fracture, below clavus and with a triangular pale patch above cuneus. Above cuneus also slightly reddish. Cuneus red pale at base with a pale patch inside, length 0.57 mm., width 0.4 mm. Membrane darkened with paler venation.

Legs covered with short, dense setae, reddish, pro- and mesotibiae pale, slightly reddish at apex, all femora reddish brown, metafemora dark reddish to brown, with a paler patch in the apical part. Claws with two subapical teeth (fig. 21).

Female. Similar to the male.



28-32. Male genitals, *A. halinae*: 28 - aedeagus, 29 - left paramere, 30 - right paramere; *A. annulicornis*: 31 - aedeagus, 32 - left paramere

TYPE MATERIAL

Holotype male: Type [circular, white label with red margin]; Mt-d Ambre, XII-48 [handwritten], Inst. Scient. Madagascar, RP [handwritten]; *Paracylapus* n. gen. *insularis* n. sp. [handwritten], J. C. M. CARVALHO det. 1951; Holotypus [pink label]; symbol of male (MNHN).

OTHER MATERIAL EXAMINED

One female: Madagascar, Foret Cote Est; Museum Paris 1934, B CATALA; *Paracylapus insularis* CARVALHO, M. HANNOTHIAUX det. (MRAC).

REMARKS

CARVALHO in his original description used the symbol of the female twice but under the picture of *Paracylapus insularis* given in the there paper is symbol of the male. The genital segment of the type species had been prepared and lost; still, there is the label with the male symbol. According to the general appearance of the specimen I redescribed it as a male.

Paracylapus lestoni (GORCZYCA, 1996), n. comb.

Pseudovannius lestoni GORCZYCA, 1996b: 344.

DIAGNOSIS

See diagnosis of *P. insularis* CARVALHO.

DESCRIPTION

Female. Body length: 4.4 mm. general colour brown with few paler patches. Head reddish to dark, vertex with two pale spots contiguous with eyes, frons covered with erect setae. Width of head: 0.68 mm, width of eye: 0.22 mm, eyes red, length of head: 0.32 mm in top view, height: 0.8 mm. Rostrum reddish with almost equal length of segments, only the first segment slightly longer than the others (fig. 15); first antennal segment black, length: 0.28 mm, second pale brown, darkened and weakly thickened gradually towards the apex, apex white, length of second segment: 1.6 mm, third segment pale at base, then dark brown, broken at the apex.

Pronotum dark brown, only the anterior and middle part somewhat lighter. Length of anterior margin: 0.7 mm, posterior margin: 1.2 mm, lateral margin: 4.5 mm. Mesoscutum and scutellum brown, only apex of scutellum pale. Width of scutellum 0.8 mm, length: 0.6 mm (excluding mesoscutum).

Hemelytra brown, with few lighter patches, clavus and embolium brown, cuneus reddish black, pale at base, red and gradually darkened towards the apex, apex almost black, width: 0.4 mm, length: 0.7 mm. Membrane greyish dark, with slightly lighter venation.

Underside of body red yellow to reddish brown, ostiolar peritremae very small but well visible, pale, procoxae enlarged, reddish. Legs reddish to brown, femora

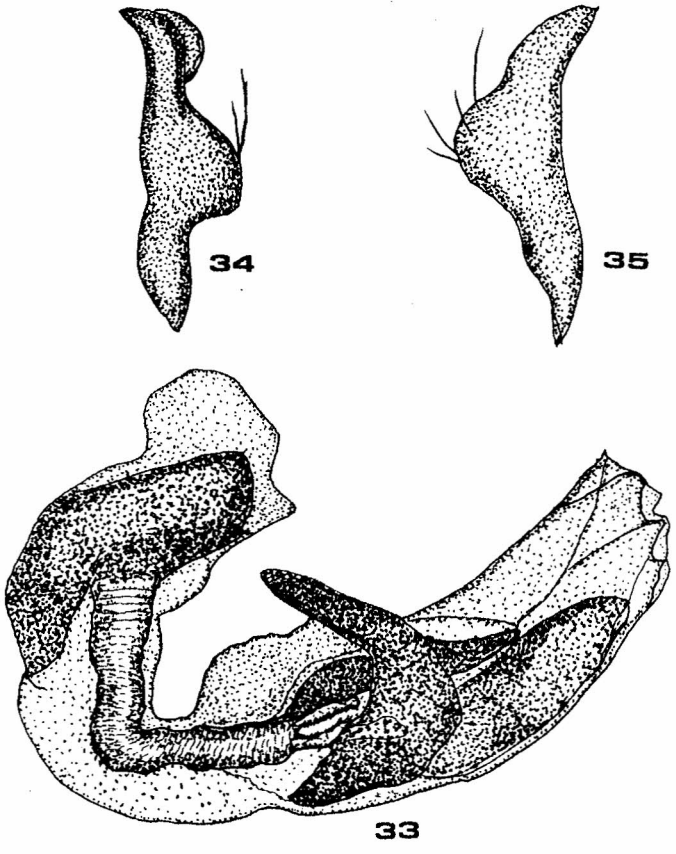
dark reddish to dark brown, tibiae and tarsi lighter, covered with dense setae. Protibiae thickened distally, with a few spicules at base. Metatibiae with short setae and only a few spiculi. Tarsi covered with dense setae, distally bearing a few long setae, two segmented but with a visible line resembling a pseudo-joint, dividing the second segment into two parts. Claws with almost equal teeth on the ventral surface and with a much smaller tooth at base (fig. 22). I was unable to compare the differences in pretarsal structures on meso- and metatarsi because in both specimens tarsi had been mutilated.

Male: similar to female but smaller, length 4.2 mm.

Aedeagus and parameres represent the type similar to *Afrovannius* (figs 33-35).

TYPE MATERIAL EXAMINED

Holotype female: Ghana: *Pyrethrum* knockdown, K. 8\4; Kade, Ghana, 22 VIII. 69, D. LESTON"; D. LESTON coll. B.M. 1976-509; *Pseudovannius lestoni* gen. n. sp. n.



33-35. Male genitals of *Paracylapus lestoni*: 33 - aedeagus, 34 - left paramere, 35 - right paramere

det. J. GORCZYCA, 1996; paratype female: *Pyrethrum* knockdown, K. 7\3; Kade, Ghana, 22 VIII. 69, D. LESTON; D. LESTON coll. B.M. 1976-509; *Pseudovannius lestoni* gen. n. sp. n. det. J. GORCZYCA, 1996. (BMNH)

OTHER MATERIAL EXAMINED

One female: Tafo, Ghana, 15 VIII. 65, LESTON; At light; holotypus [red label]; *Paracylapus guineensis* sp. n., SCHMITZ det. 1970; *Paracylapus lestoni* (GORCZ.), det. J. GORCZYCA, 1996, (MRAC); one female: At light [handwritten]; 15. VII. 65, Tafo, Ghana [handwritten]; *Paracylapus lestoni* (GORCZ.) det. J. GORCZYCA, 1996, (MRAC); one male: At light [handwritten]; 26. VI. 65 Tafo, Ghana [handwritten]; *Paracylapus lestoni* (GORCZ.), det. J. GORCZYCA 1996 (MRAC).

DISCUSSION

In my previous paper on *Pseudovannius* (GORCZYCA 1996b) I decided to place this genus, in spite of its unusual pretarsal structure, within *Cylapinae* because of its similarity to *Vannius* DISTANT. Further studies on almost all the representatives of *Vannius*-complex revealed that the African species, placed up to now in *Vannius* Distant, represented a new genus and that these taxa and *Vanniusoides* CARVALHO et LORENZATO had a similar pretarsal structure, which did not fit in *Cylapinae*. According to the most recent papers (SCHUH & SCHWARTZ 1984; SCHUH & SLATER 1995) the subfamily *Cylapinae* can be distinguished by slender, long usually toothed claws, absence of guard setae, parempodia absent or setiform. Curved claws and the presence of fleshy, spatulated parempodia and presence of guard setae exclude the above-mentioned genera from this subfamily. Moreover they do not fit in any other subfamily of *Miridae* except *Palaucorinae* CARVALHO, so I decided to transfer all the *Vannius*-complex from *Cylapinae* to *Palaucorinae* and erect a new tribe for them: *Vanniini* as a sister group of *Palaucorini*.

The subfamily *Palaucorinae* was erected by CARVALHO (1956) on the basis of specimens from Palau, Micronesia. One of the most important characters of this subfamily was the presence of spatulate parempodia with subapically toothed claws. Hitherto, only one genus and species - *Palaucoris unguidentatus* CARVALHO was known. In 1975 GHAURI described a new genus and species - *Pseudopalaucoris novaguineae* from New Guinea. SCHUH (1976) treated these genera as members of the tribe *Eccritotarsini* (*Bryocorinae*), which he divided into the subtribes *Eccritotarsina* and *Palaucorina,* convinced that this unusual set of characters was an apomorphic for *Palaucorina*. CARVALHO (1984) treated *Palaucorinae* as a separate subfamily, synonymized *Pseudopalaucoris* with *Palaucoris,* described two new species of *Palaucoris* and erected new subgenus *Tylonisca* for *Palaucoris clypeatus* n. sp. In spite of this, the latest works of SCHUH (1995) and SCHUH & SLATER (1995) still treat this group as a subtribe within *Eccritotarsini*. According to the obtained results, I assume that *Palaucoris* is allied to *Vannius* and its relatives rather than to

Eccritotarsus Stal and *Bryocorinae*, and I decided to treat *Palaucorinae* as a subfamily, following CARVALHO (1984).

I was able to examine the representatives of *Palaucoris* from the Bishop Museum and compare them with characters occurring in the *Vannius*-complex. My conclusions are also based on the original descriptions of CARVALHO and GHAURI. Both groups have the same type of parempodia and toothed claws. The lack of subapically toothed claws in *Vannius* DISTANT can be treated as an autapomorphic character of the genus. The genera *Vanniusoides*, *Afrovannius* and *Paracylapus* have both: spatulate parempodia and toothed claws. As I have already mentioned the status of *Vanniopsis* will be clear after the examination of its pretarsal structure. The other characters shared by the mentioned genera, and given in the diagnosis of the tribe are as follows: head elongated vertically with eyes on the top; short, stout rostrum, distinct pronotal collar, exposed mesoscutum, very short and bisinuate pronotum, smooth body covered with long semi-erect setae, distinctly marked cuneus, long and slender tarsi, two- or three-segmented. Characters shored with *Palaucoris* are: the structure of the head and pretarsal structure (tab. 1).

Interrelationships within *Vanniini* are not clear and will be come less obscure when more species and specimens from various geographical regions are described. For the present the absence of subapical tooth in *Vannius* seems to be a derived character and can be assumed to be an autapomorphy of the genus. *Afrovannius* seems to be closely related to *Vanniusoides* and the presence of subapical tooth in both genera may be treated as their symplesiomorphy. In both genera tarsi are similar, long and slender, three-segmented in *Vanniusoides* and two-segmented in *Afrovannius*. But the two-or three-segmented tarsi appear independently in various genera and seem to have rather adaptive character. Unfortunately all male specimens of *Vanniusoides* available to me had been prepared before and I was not able to compare the genitalia of both genera. However, according to the figures given by CARVALHO & LORENZATO (1978) the eaedeagus of *Vanniusoides brevis* (CARVALHO & LORENZATO, 1978: fig. 23) is different from those in other genera. The genitalia of *Afrovannius* and *Paracylapus* are very similar (figs 28-35) although the characters of pretarsal structure of these genera are quite different.

As has been already mentioned before, the study of pretarsal structure of *Vanniopsis* might clear up the situation within the tribe or make it more complicated. *Vanniopsis* differs from the other genera of the tribe in long first antennal segment, very broad pronotal collar and weakly bisinuate posterior margin of pronotum.

All described species of *Palaucorini* are known from the western tropical Pacific. *Vanniuini* occur in Neotropical, Ethiopian and Australasian Regions. *Vannius* is known only from South and Central America, *Afrovannius* from tropical Africa, the Seychelles and Madagascar. *Paracylapus* is known from Madagascar and Ghana, *Vanniopsis* from the New Hebrides and New Caledonia. Little is known on the bionomics of the species. *Palaucoris novaguinae* (GHAURI) was collected under the bark and *Paracylapus lestoni* (GORCZYCA) was found on fungi.

Table 1. The characters of *Vanniini* and *Palaucorini*

Vanniini	*Palaucorini*
Head vertical, elongated dorsoventrally	Head vertical, elongated dorsoventrally
Rostrum usually short, stout	Rostrum always short, stout
Body smooth	Body punctate
Pronotum very short, posterior margins bisinuate	Pronotum long, trapeziform, posterior margin straight
Cuneus distinct	Cuneus absent
Parempodia spatulated, claws usually toothed	Parempodia spatulated, claws always toothed
Embolium reduced	Embolium distinct

REFERENCES

BERGROTH, E., 1920. List of the *Cylapinae* (*Hem., Miridae*) with description of new Philippine forms. Ann. Soc. Entomol. Belg., **60**: 67-83.

-, 1922. New Neotropical *Miridae* (*Hem.*). Ark. f. Zool. **14**(21): 1-14.

CARVALHO, J. C. M., 1952a. Trois nouveaux genres de *Miridae* de Madagascar (*Hemiptera*). Mem. Inst. Sci. Madagascar, ser. E., **1**: 93-100.

-, 1952b. On the major classification of the *Miridae* (*Hemiptera*). (With keys to subfamilies and tribes and a catalogue of the world genera.). Ann. Acad. Brasil. Cien., **24**: 31-110.

-, 1955. Keys to the genera of Miridae of the world (*Hemiptera*). Bol. Mus. Paraense Emilio Goeldi, Belem, **11**: 1-151.

-, 1956. Insects of Micronesia: *Miridae*,. Bishop Museum, Honolulu, Insects of Micronesia, 7(1): 1-100

-, 1957. Catalogue of the *Miridae* of the World. Part I. Subfamilies *Cylapinae*, *Deraeocorinae* and *Bryocorinae*. Arq. Mus. Nac., Rio de Janeiro, **44**: 1-158.

-, 1980. Analecta Miridologica, IV: Observations on type specimen in the National Museum of Natural History, Budapest, Hungary (*Hemiptera, Miridae*). Rev. Brasil Biol., **40**: 649-658.

-, 1984. On the subfamily *Paulocorinae* [sic!] CARVALHO (*Hemiptera, Miridae*). Rev. Brasil. Biol., **44**(1): 81-86.

CARVALHO, J. C. M., W. R. DOLLING, 1976. Neotropical *Miridae*, CCV: Type designation of species described in the Biologia Centrali Americana (*Hemiptera*). Rev. Brasil. Biol., **36**: 789-810.

CARVALHO, J. C. M., L. M. LORENZATO, 1978. The *Cylapinae* of Papua New Guinea. Rev. Brasil. Biol., **38**(1): 121-149.

DISTANT, W. L., 1883-84. Biologia Centrali Americana. *Insecta. Rhynchota, Hemiptera-Heteroptera*. Vol. I: 1-304.

-, 1913. Reports of the Percy Sladen Trust Expedition to the Indian Ocean in 1905. No. IX *Rhynhota*. Part I: Suborder *Heteroptera*. Trans. Linn. Soc. London, **16**: 139-190.

GHAURI, M. S. K., 1975. Anomalus *Miridae* (*Heteroptera*) from Australasia. J. Nat. Hist., **9**: 611-618.

GORCZYCA, J., 1996a. A new species of *Vannius* DISTANT, 1883 from Madagascar (*Heteroptera, Miridae*), Genus, 7(3): 337-340.

-, 1996b. *Pseudovannius lestoni* gen. n. sp. n. from Ghana (*Heteroptera: Miridae*). Genus, 7(3): 341-346.

KIRKALDY, G. W., 1906a. List of the genera of the pagiopodous *Hemiptera-Heteroptera*, with their type specimens from 1758 to 1904 and also of the aquatic and semiaquatic *Trochalopoda*. Trans. Am. Entomol. Soc., **32**: 117-156.

-, 1906b. Notes on the classification and nomenclature of the hemipterous superfamily *Miroidea*. Can. Entomol., **38**: 369-376.

ODHIAMBO, T.R., 1967. A taxonomic study of some genera of the Ethiopian *Miridae* (*Hemiptera*). (Part I). Bull. I. F. A. N., ser. A, **29**: 1655-1687.

OSHANIN, B., 1916. Vade mecum destine a faciliter la determination des Hemipteres, Horae Soc. Entom Ross., **42**(2): 1-106, tab. I-IV.

POPPIUS, B., 1909. Zur Kenntnis der Miriden-Unterfamilie *Cylapina* REUT. Acta Soc. Sci. Fenn., **37**(4): 46 pp.

-, 1912. Die Miriden der Athiopischen Region I *Mirina, Cylapina, Bryocorina.* Acta Soc. Sci. Fenn., **41**(3): 1-203.

REUTER, O. M., 1910. Neue Beitrage zur Phylogenie und Systematic der Miriden nebst einleitenden Bemerkunden uber die Phylogenie der Heteropteren-Familien. Mit einer Stammbaumstafel. Acta Soc. Sci. Fenn., **37**(3): iv + 167pp.

-, 1913. Amerikanische Miriden. Ofv. F. Vet. Soc. Forh., **55A**(18): 64 pp.

SCHUH, R. T. 1976. Pretarsal structure in the *Miridae* (*Hemiptera*) with a cladistic analysis of relationships within the family. Am. Mus. Novit., **2601**: 1-39.

-, 1995. Plant bugs of the World (*Insecta*: *Heteroptera*: *Miridae*). New York Entom. Soc., 1329 pp.

SCHUH, R. T., M. D., SCHWARTZ, 1984. *Carvalhoma* (*Hemiptera*: *Miridae*): revised subfamily placement. J. N. Y. Entomol. Soc., **92**: 48-52.

SCHUH, R. T., J. A. SLATER, 1995. True bugs of the World (*Hemiptera, Heteroptera*), classification and natural history. Coronell University Press, New York, 336 pp.

SLATER, J. A., 1974. A preliminary analysis of the derivation of the *Heteroptera* fauna of the northeastern United States with special reference to the fauna of Connecticut. Mem. Conn. Entomol. Soc., pp. 145-213.

WHEELER, Q. D., A. G. WHEELER, Jr. 1994. Mycophagous *Miridae* ? Associations of *Cylapinae* (*Heteroptera*) with pyrenomycete fungi (*Euascomycetes*: *Xylariaceae*). J. N. Y. Entomol. Soc., **102**: 114-117.