

Taxonomic Studies on the Miridae (Heteroptera) of Africa and the Middle East

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Received February 23, 1996

Accepted May 22, 1996

Abstract: The genera *Volumnus* Stål, 1865, (Mirinae, Mirini) *Badezorus* Distant, 1910, (Phylinae, Phylini) and *Paredrocoris* Reuter, 1878 (Phylinae, Phylini) are revised. The generic position of *Taylorilygus divergens* (Reuter, 1901) and *Camptotylidea sinaitica* (Linnavuori, 1964) (Phylinae, Phylini) is discussed. New synonymies: *Yambio* Linnavuori, 1975, = *Volumnus* Stål, 1865, *Volumnus elongatus* Poppius, 1913, = *V. ruficornis* Poppius, 1913. New combinations: *Yambio mimnermos* Linnavuori, 1974, = *Volumnus mimnermos* (Linnavuori), *Y. chaetacme* Linnavuori, 1975, = *V. chaetacme* (Linnavuori), *Y. clavicornis* Linnavuori, 1975, = *V. clavicornis* (Linnavuori), *Compsidolon sinaiticum* Linnavuori, 1964, = *Camptotylidea sinaitica* (Linnavuori). New species: *Volumnus rufus* sp.n. (Socotra), *Badezorus ferdowsii* sp.n. (Iran), *B. immaculatus* sp.n. (Iran, Middle Asia), *Paredrocoris picticornis* sp.n. (Iran).

INTRODUCTION

The article is based on material collected during the author's field trips to Sudan (1961-1963) and Iran (1994 and 1995). The recent trips to Iran were made in cooperation with the College of Agriculture of the Ferdowsi University, Mashhad, the College of Agriculture of the Gilan University, Rasht, and the Insect Pests and Diseases Research Institute, Ministry of Agriculture, Tehran. Additional material was sent by Prof. Larry Huldén, Zoological Museum of the Helsinki University, Dr. I. M. Kerzhner, the Zoological Museum in St. Petersburg, and Dr. Antonius van Harten, Suva, Fiji. Financial support was given by the Finnish Society of Sciences and Letters and the Entomological Society of Helsinki, Finland.

Genus *Volumnus* Stål (Mirinae, Mirini)

Volumnus Stål, 1865: 19. Type species: *Capsus straminicolor* Stål

Yambio Linnavuori, 1974: 11-12, 1975: 25, syn. n. Type species: *Y. chaetacme* Linnavuori.



Fig. 1. *Volumnus chaetacme* (Linnavuori): a. *V. clavicornis* (Linnavuori): b. After Linnavuori (1975).

Diagnosis: Medium-sized or large species with relatively short extremities. 2nd antennal segment often clavate. The combined length of antennal segments 3 and 4 as long as or shorter than segment 2. Left style distinctive, shallowly curved, with an accessory subapical lobe on dorsal surface.

Description: Medium-sized or large species. Ground color pale ochraceous, red or dark brown. Antennae usually bicolored. Scutellum and hemelytra opaque. Tibial spines pale or brown.

Body elongate and parallel-sided or robust, relatively short and broad. Upper surface with longish, semierect pale or black setae and dense appressed silvery pubescence. Head in apical view distinctly broader than high, in lateral view about as high as long, with relatively prominent tylus; frons and vertex moderately convex, without median sulcus, basal margin of vertex distinctly keeled; eyes large. Antennae arising slightly below middle of inner margins of eyes, relatively short, with short hairs, 1st segment also with erect bristles; 1st segment incrassate, 2nd clavate, rarely cylindrical, longer than the combined length of segment 3 and 4. Rostrum extending to middle coxae. Pronotum transverse, lateral margins straight, collar narrow, calli faint, disk often uneven owing to small rugosities and minute puncturing. Hemelytra coriaceous, opaque, finely rugose; apex of inner membranous cell nearly rectangular. Legs relatively short and incrassate; hind tibiae shallowly curved, cylindrical or clavate, tibial spines about as long as diameter of tibia; 3rd hind tarsomere longer than 2nd.

Male genitalia: Pygofer broadly conical, simple. Styles with a few short hairs. Right style incrassate, with expanded irregularly dentate or (in *V. rufus*) broadly blade-like

apex. Left style distinctive, shallowly curved, with an accessory subapical lobe on dorsal margin. Vesica with two sclerified apical processes and a pair of sclerified or sub-membraneous dentate lobes.

Distribution: The Ethiopian Region.

Biotope: *V. chaetacme* was found on *Chaetacme aristata* in a savanna forest in southern Sudan, *V. clavicornis* on undergrowth in a cloud forest in the mountains of Ethiopia.

Discussion: The genus *Volumnus* was described by Stål (1865: 19) for two pale colored, elongate and weakly microsculptured species (*V. straminicolor* and *V. obscuricornis*) from South Africa. Linnavuori (1975: 25) established the genus *Yambio* from two robust, dark, strongly microsculptured species (*V. chaetacme* and *V. clavicornis*) from North-eastern Africa. In a preliminary article on the genus (Linnavuori 1974: 11-12) a further species (*V. mimnermos*) was described from Nigeria. Although both groups of species differ considerably from each other, the basic characters, including the structure of the male genitalia, are similar. Consequently *Yambio* undoubtedly is a synonym of *Volumnus*.

Volumnus is related to the genus *Adelphocoris* Reuter, 1896, which differs from it in the following characters: Body more elongate. Base of vertex ecarinate, frons with a median furrow, tylus in lateral view less prominent. Antennae longer and more gracile, 2nd segment shorter than the combined length of segments 3 and 4. Calli of pronotum more convex. Right style gracile and straight, provided with claw-like apical process. Left style shallowly curved, without subapical incisure on dorsal margin. Vesica with a comb-like sclerotized spiculum.

Key to the species of *Volumnus*

- 1 Body twice as long as broad in middle of hemelytra. Color pale ochraceous or red, at most head and cuneus with dark pattern 2
- Body robust and dark-colored 5
- 2 Length 5.75 mm. Upper surface red, head dark brown. 2nd antennal segment strongly clavate, bicolored, blackish with pale subbasal ring. Hind tibiae also clavate *V. rufus* sp.n.
- Larger, pale ochraceous species. 2nd antennal segment unicolored, at most slightly clavate. Hind tibiae gracile 3
- 3 Uniformly pale ochraceous species *V. ruficornis* Poppius, 1913
- Head dark brown, cuneus also with blackish markings 4

- 4 Inner basal angle of cuneus blackish ***V. straminicolor*** (Stål, 1855)
- Inner basal angle and apex of cuneus blackish ***V. obscuricornis*** (Stål, 1855)
- 5 Very small species, length 3.5 mm ***V. mimnermos*** (Linnavuori, 1974)
- Large species, length at least 5 mm 6
- 6 2nd antennal segment gracile, cylindrical, reddish brown with apex dark brown, 3rd segment bicolored, whitish with apical third dark brown ***V. chaetacme*** (Linnavuori, 1975)
- 2nd antennal segment clavate, dark brown with basal third whitish, 3rd segment totally whitish 7
- 7 Smaller, length 5.5 mm. Eyes small, ocular index (♀) 1.62. 2nd antennal segment strongly clavate ***V. clavicornis*** (Linnavuori, 1975)
- Larger, length 6.5-7 mm. Eyes larger, ocular index (♀) 1.12. 2nd antennal segment more gracile ***V. obscurus*** Poppius, 1914

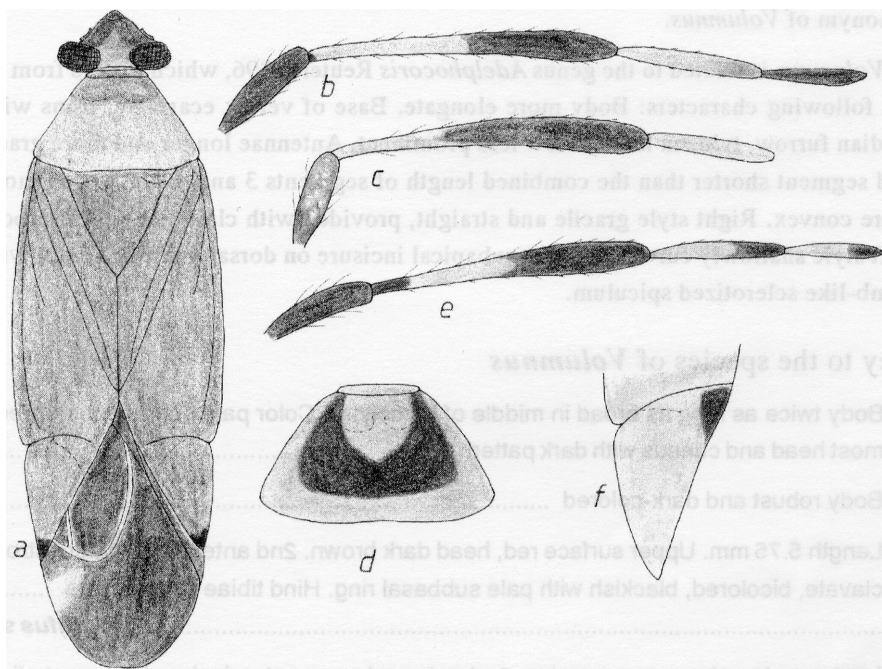


Fig. 2. *Volumnus rufus* sp.n.: (a) dorsal view; (b) antenna. *V. clavicornis* (Linnavuori): (c) antenna. *V. obscurus* Poppius: (e) antenna; (d) pronotum. *V. straminicolor* (Stål): (f) cuneus.

***Volumnus straminicolor* (Stål)**

(Fig. 2 f)

Capsus straminicolor Stål, 1855: 36

Volumnus straminicolor Stål, 1865: 19

Material examined: South Africa: Port Natal, 1 ♀, in Mus. Helsinki.

Diagnosis: Pale ochraceous, head dark brown, inner angle of cuneus blackish.

Description: Length 8.0-8.5 mm. Pale ochraceous. Head dark brown, basal margin of vertex somewhat paler. Eyes brown. Antennae reddish brown. Inner basal angle of cuneus blackish; membrane, except faint pale spots, and veins dark brown. Femora pale ochraceous, other parts of legs reddish brown. Tibial spines brownish.

Body $2.3 \times$ as long as broad at middle of hemelytra. Upper surface with pale semierect hair covering. Head about $0.5 \times$ as broad as basal width of pronotum; ocular index 1.28 (♀). Proportions between antennal segments 22:63:37:?, 1st segment $0.65 \times$ as long as diatone, 2nd $1.85 \times$ as long as diatone, $0.86 \times$ as long as basal width of pronotum, slightly clavate. Pronotum nearly twice as broad as long in middle. Hind tibia $1.44 \times$ as long as basal width of pronotum.

Distribution: South Africa.

***Volumnus obscuricornis* (Stål)**

Capsus obscuricornis Stål, 1855: 36

Volumnus obscuricornis Stål, 1865: 19

Unknown to me. According to the original description, similar to the preceding species, but apex of cuneus dark and membrane pale yellowish hyaline with dark veins. Possibly a synonym of *V. straminicolor*.

Distribution: South Africa.

***Volumnus ruficornis* Poppius**

(Figs 3 f-g, 4 a-c)

Volumnus ruficornis Poppius, 1913: 42

Volumnus elongatus Poppius, 1913: 42, syn.n.

Type material: Somalia: Damasso, Schoa, ♂ syntype of *ruficornis*, here designated as the lectotype, 13. V. 1901, Erlanger, in Mus. Helsinki. Namibia: Windhuk, ♂ holotype of *elongatus*, Seewald, in Mus. Helsinki.

Diagnosis: Uniformly pale ochraceous.

Description: Length 7.5 mm. Uniformly pale ochraceous. Eyes brown. Antennae pale orangish, 1st segment with a few reddish dots. Basal margin of pronotal calli with or without a pair of small dark dots. Membranes of hemelytra yellowish hyaline with

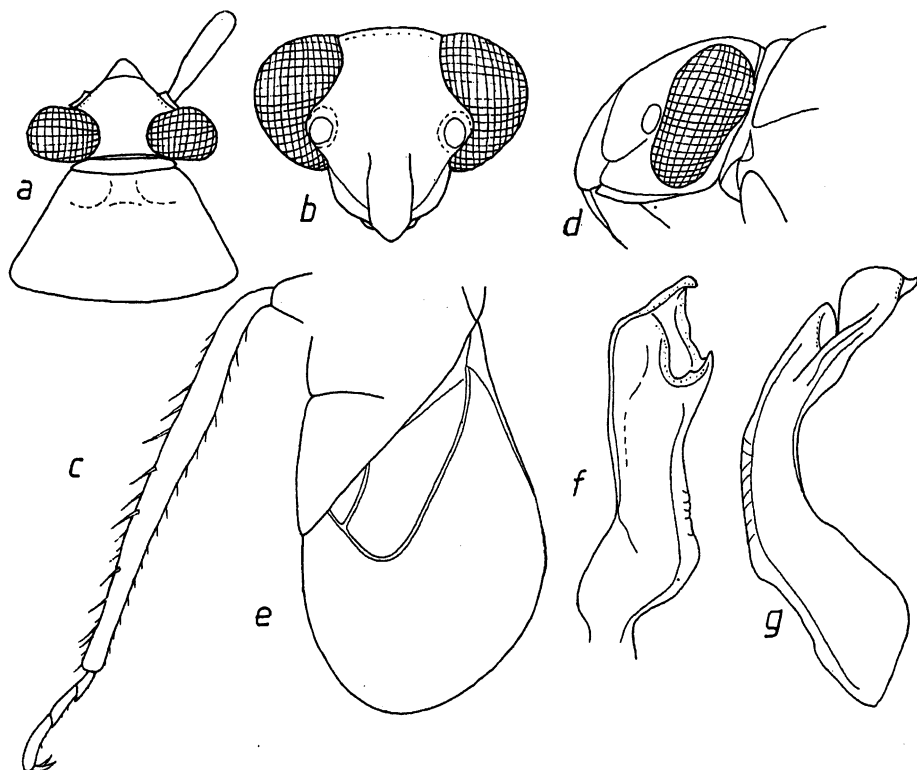


Fig. 3. *Volumnus rufus* sp.n.: (a) head and pronotum in dorsal view; (b) head in apical view; (c) hind leg. *V. chaetacme* (Linnavuori): (d) female head in lateral view; (e) membrane of elytron. *V. ruficornis* Poppius (lectotype): (f-g) right and left style in slide mount.

faint brownish irroration, veins pale. Legs pale, apices of tibiae and tarsi reddish, tibial spines brown.

Body about $2.5 \times$ as long as broad at middle of hemelytra. Semierect hairs on upper surface blackish. Head $0.5 \times$ as broad as basal width of pronotum; ocular index 1.13. Proportions between antennal segments 24:67:?, 1st segment $0.8 \times$ as long as diatone, 2nd gracile, $2.23 \times$ as long as diatone, $1.1 \times$ as long as basal width of pronotum. Pronotum nearly twice as broad as long in middle. Hind tibiae gracile, $1.8 \times$ as long as basal width of pronotum.

Male genitalia shown in Figs 3 f-g and 4 a-c.

Distribution: East-African.

***Volumnus rufus* sp.n.**

(Figs 2 a-b, 3 a-c, 4 d-e, 5 a)

Type material: Socotra: Hadibo, ♂ holotype, 13-14. IV. 1993, A. van Harten, in coll. Linnavuori.

Diagnosis: Easily recognized by the red coloring.

Description: Length 5.75 mm. Opaquely shiny. Anterior part of head dark brown, vertex reddish; eyes brown. 1st and 2nd antennal segments blackish, 2nd with pale subbasal ring, 3rd and 4th segments pale ochraceous, apically dark brown. Pronotum reddish, collar and callal area slightly darker. Scutellum and hemelytra red, apex of cuneus black; membrane brown, veins red. Under surface reddish. Meso- and metasternum and all coxae dark brown. Legs dark brown, fore and middle femora with distinct, hind femora with obscure pale ring. Middle tibiae with faint pale ring. Tibial spines dark. Tarsi pale ochraceous, 1st tarsomere dark.

Elongate, parallel-sided, body nearly 3 × as long as broad at middle of hemelytra. Semierect hairs on upper surface relatively short, pale. Head 0.67 × as broad as basal

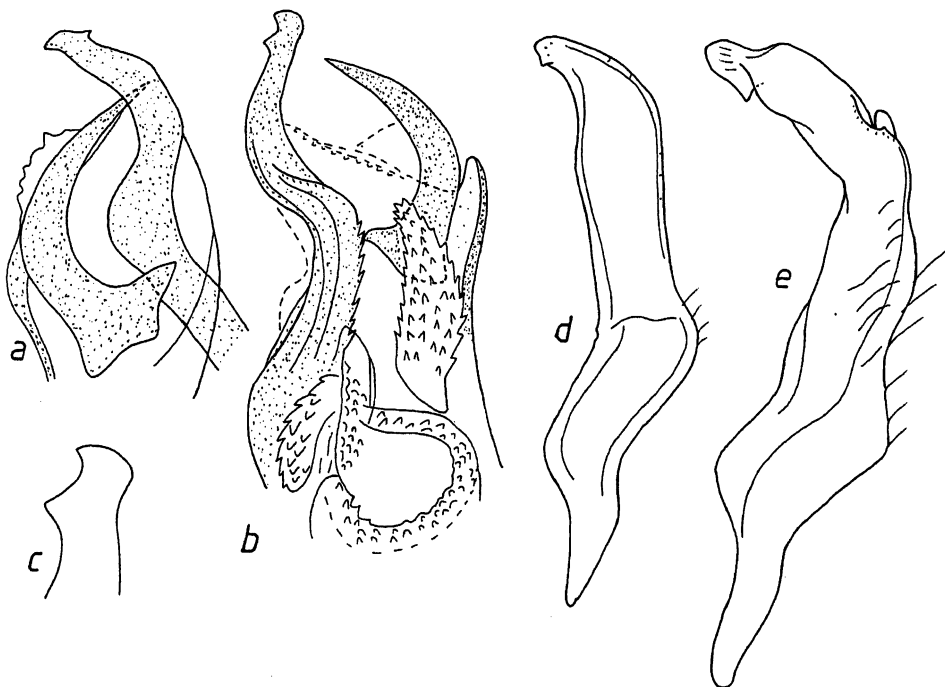


Fig. 4. *Volumnus ruficornis* Poppius (lectotype): (a-b) apex of vesica in slide mount; (c) apex of the longer process of vesica (holotype of *V. elongatus* Poppius). *V. rufus* sp.n.: (d-e) right and left style in slide mount.

width of pronotum, in apical view $1.26 \times$ as broad as high, in lateral view as long as high; eyes very large, ocular index 0.65. Proportions between antennal segments 20:46:26:13, 1st segment incrassate, with a few dark bristles, $0.7 \times$ as long as diatone, 2nd distinctly clavate, with longish dark hairs, $1.6 \times$ as long as diatone, $1.07 \times$ as long as basal width of pronotum. Rostrum extending to middle coxae. Pronotum $1.72 \times$ as broad as long in middle, lateral margins straight, disk finely rugose. Costal margins of hemelytra parallel. Hind femora distinctive, narrowly clavate, $1.74 \times$ as long as basal width of pronotum. Proportions between hind tarsomeres 12:17:20.

Male genitalia in Figs 4 d-e and 5 a.

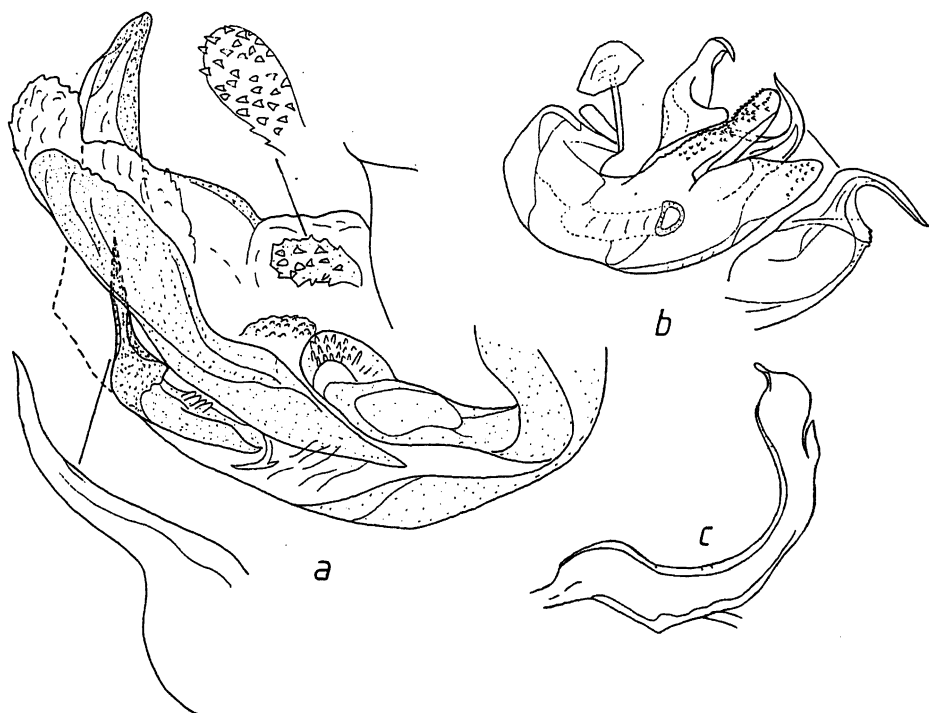


Fig. 5. *Volumnus rufus* sp.n.: (a) vesica in slide mount. *V. mimnermos* (Linnavuori). (b) vesica in slide mount; (c) left style. After Linnavuori (1974, 1975).

***Volumnus mimnermos* (Linnavuori), comb. n.**

(Figs 5 b-c, 6 a)

Yambio mimnermos Linnavuori, 1974: 11-12

Type material: Nigeria: Ile-Ife, ♂ holotype, 9. VIII. 1969, J. Medler, in coll. Linnavuori.