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Taxonomic revision of the African assassin bug genus *Fusius* (Heteroptera: Reduviidae: Peiratinae)

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Abstract. The African assassin bug genus *Fusius* Stål, 1862 is revised after the examination of type specimens with redescrptions of four species. Lectotypes of *Pirates* (*Fusius*) *H-flavum* Reuter, 1881 and *Pirates rubricosus* Stål, 1855 are designated. The status of *P. (Fusius) H-flavum* Reuter, 1881 is revalidated with its current name as *F. hflavus* (Reuter, 1881) stat. rev. et comb. nov. Seven new synonyms are proposed: *F. dilutus* Miller, 1957 = *F. gowdeyi* Miller, 1957 syn. nov. = *F. liberiensis* Miller, 1957 syn. nov. = *F. dilutus anonymus* Dispons, 1969 syn. nov. = *F. dilutus vicinus* Dispons, 1969 syn. nov.; *F. distinctus* Miller, 1957 = *F. sylvestris* Miller, 1957 syn. nov.; *F. hflavus* (Reuter, 1881) = *F. hargreavesi* Miller, 1957 syn. nov.; *F. rubricosus* (Stål, 1855) = *F. ugandensis* Miller, 1957 syn. nov. A key is provided to separate the four species of this genus. Diagnosis and distribution of *Fusius* are briefly discussed.

Keywords. Hemiptera, taxonomy, lectotype, new synonym, Afrotropical Region.

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Introduction

As the sixth largest subfamily within Reduviidae Latreille, 1807 (Hemiptera: Heteroptera), Peiratinae Amyot & Audinet-Serville, 1843 contains more than 300 species in 35 genera worldwide (Maldonado Capriles 1990; Chlond 2007; Zhang & Weirauch 2011; Melo 2012; Liu *et al.* 2020a, 2020b, 2021, 2022). The diagnosis of Peiratinae includes the anterior lobe of pronotum obviously longer than the posterior, the elongate fore coxa, the prominent fossula spongiosa on the fore and mid tibiae and the asymmetric male genitalia which is unique among assassin bugs (Amyot & Audinet-Serville 1843; Weirauch *et al.* 2014). Peiratinae has the highest species diversity in the Afrotropical Region with 15 genera distributed in the African mainland and three genera distributed in Madagascar (Liu *et al.* 2020b). Taxonomic studies

have been carried out on half of the Afrotropical genera, and most of these studies have demonstrated that there are still some peiratine taxa with distinct intraspecific morphological variations or sex dimorphism that need further revisions as they may lead to misidentifications and synonymies (Coscarón & Morrone 1995; Coscarón 1997, 2002; Zhang & Weirauch 2011; Chfond 2018; Liu *et al.* 2020a, 2020c).

The genus *Fusius* Stål, 1862 was erected by Stål (1862) for the species, *Pirates rubricosus* Stål, 1855. Miller (1953) redescribed this species and recorded some biological observations, such as “preying on the abundant dipterous larvae in the mass of cow-dung” and its “extremely painful bite”. Reuter (1881) described *Pirates (Fusius) H-flavum* Reuter, 1881, but this species was treated as a variety of *F. rubricosus* (Stål, 1855) by Villiers (1948) and he expressly mentioned that this variety indicates individuals with posterior lobe of pronotum and hemelytron yellow (“Lobe postérieur du pronotum et élytres rouges (f. t.) ou jaunes (var. *H. flavum*)”). Since this variety was not adopted for a species or subspecies before 1985, it is unavailable (ICZN 1999, Arts 45.5 & 45.6.4). Thus, Villiers’ act (1948) could be considered as synonymizing *P. (Fusius) H-flavum* with *F. rubricosus* despite the distinct difference in body color. Miller (1957) proposed seven new species of this genus with hand-painted illustrations of the parameres and the median pygophore process of the male genitalia and provided a key to separate them. However, in the revision of *Fusius* by Dispons (1969), *F. gowdeyi* Miller, 1957 and *F. liberiensis* Miller, 1957 were relegated as subspecies of *F. dilutus* Miller, 1957 while *F. sylvestris* Miller, 1957 was relegated as subspecies of *F. distinctus* Miller, 1957. Dispons (1969) also described another two subspecies of *F. dilutus*, *F. dilutus anonymus* Dispons, 1969 and *F. dilutus vicinus* Dispons, 1969. Since then, there has been no more taxonomic study on this genus.

In the present study, after examining the type specimens of above nominal species, the genus *Fusius* is revised with four species recognized, redescribed and keyed. The status of *Peirates (Fusius) H-flavum* Reuter, 1881 is revalidated with its current name as *F. hflavus* (Reuter, 1881) stat. rev. et comb. nov. The following seven new synonyms are proposed: *F. dilutus* Miller, 1957 = *F. gowdeyi* Miller, 1957 syn. nov. = *F. liberiensis* Miller, 1957 syn. nov. = *F. dilutus anonymus* Dispons, 1969 syn. nov. = *F. dilutus vicinus* Dispons, 1969 syn. nov.; *F. distinctus* Miller, 1957 = *F. sylvestris* Miller, 1957 syn. nov.; *F. hflavus* (Reuter, 1881) = *F. hargreavesi* Miller, 1957 syn. nov.; *F. rubricosus* (Stål, 1855) = *F. ugandensis* Miller, 1957 syn. nov. The morphological comparisons are made between several similar genera and *Fusius* and the distribution of this genus is also briefly discussed.

Material and methods

This study is based on specimens held in the Natural History Museum (NHMUK), London, United Kingdom and the Swedish Museum of Natural History (Naturhistoriska Riksmuseet, NHRS), Stockholm, Sweden. Male genitalia were soaked in hot 20% lactic acid solution for approximately 15 minutes to remove soft tissue, rinsed in distilled water, then dissected under a binocular dissecting microscope. Dissected genitalia were placed in vials with glycerin and pinned under the corresponding specimens after examination and imaging. Photographs were taken using a Canon 7D Mark II digital camera mounted with a Canon macro lens EF 100 mm or an Olympus E-M1 II digital camera with an Olympus M. Zuiko digital ED 60 mm lens. Helicon Focus ver. 5.3 was used for image stacking. Measurements were obtained using a calibrated micrometer and given in millimeters. Body length represents the distance between the apex of the head and the tip of the abdomen in resting position. The distribution map was built using the online version of SimpleMapp (Shorthouse 2010). The distribution data are based on our examination of museum specimens, supplemented by data from Reuter (1881), Miller (1957), Villiers (1963), Dispons (1969) and Maldonado Capriles (1990). Morphological terminology mainly follows Lent & Wygodzinsky (1979) and Liu *et al.* (2020a, 2020b, 2021).

Results

Class Insecta Linnaeus, 1758
Order Hemiptera Linnaeus, 1758
Suborder Heteroptera Latreille, 1810
Family Reduviidae Latreille, 1807
Subfamily Peiratinae Amyot & Audinet-Serville, 1843

Genus *Fusius* Stål, 1862
Figs 1–16

Fusius Stål, 1862: 458. Type species by monotypy: *Pirates rubricosus* Stål, 1855.

Fusius – Stål 1865: 115. — Jeannel 1919: 243. — Schouteden 1931: 145. — Villiers 1948: 236. —
Miller 1957: 59. — Dispons 1969: 1. — Maldonado Capriles 1990: 358.

Fusius – Stål 1874: 57, as subgenus of *Pirates*.

Diagnosis

Macropterous, body color bright with black, red or yellowish brown in large part. Head roughly conical in dorsal view with postocular part elliptical; eye small, transverse width of eye shorter than half width of interocular space; ocelli tiny and not elevated, separated from each other; neck without lateral tubercle. Pronotum somewhat trapezoidal with anterior lobe slightly narrower than posterior lobe, collar process reduced; ventral surface of fore femora with a row of small denticles; fore tibia with fossula spongiosa occupying about $\frac{2}{5}$ of tibial length, mid tibia with fossula spongiosa occupying about $\frac{1}{3}$ of tibial length. First seven abdominal sternites strongly compressed; total length of eighth abdominal sternite of female combined with female genitalia about half length of abdomen in ventral view; male genitalia large, about $\frac{1}{3}$ length of abdomen in ventral view. Parameres broad, left paramere subtrapezoidal, right paramere subtriangular; phallus with basal plate longer than basal plate bridge; lateral phallosomal sclerite moderately sclerotized with a process on lower right corner; struts fused and long, nearly reaching end of phallosoma; venter of phallosoma with two transverse slender sclerites at basal portion.

Redescription

Macropterous male and female (Figs 1–4, 6–8, 10–14).

COLORATION. Black and red (Figs 1–4, 6–8, 12–14), or black and yellowish brown (Figs 10–11) in large part; hemelytron with some yellowish white markings (Figs 1–4, 6–8, 10–14).

STRUCTURE. Body robust, small sized; body surface densely covered with golden to yellowish brown setae, except dorsal surface of anterior lobe of pronotum generally glabrous; anteocular part of head covered with yellowish white, decumbent, short pubescence; corium of hemelytron densely covered with yellowish brown, decumbent, short setae; legs covered with golden to yellowish brown, suberect, long setae (Figs 1–4, 6–8, 10–14).

HEAD. Roughly conical in dorsal view, anteocular part longer than postocular, postocular part elliptical; eye small, transverse width of eye shorter than half width of interocular space in dorsal view, reniform in lateral view, not reaching dorsal and ventral margins of head; ocelli tiny and not elevated, separated from each other; antenna with scape thickest and slightly curved, pedicel longest and slender, basiflagellomere and distiflagellomere gracile; first and second visible labial segments thick, second segment longest and slightly swollen, third segment tapered; neck without lateral tubercle (Figs 1–4, 6–8, 10–14).

THORAX. Pronotum somewhat trapezoidal, collar process reduced; anterior lobe nearly twice as long as posterior lobe, slightly narrower than posterior lobe, flat with a median, longitudinal, thin sulcus on posterior portion, sculpture thin and shallow; pronotal transverse sulcus deep; dorsal surface of posterior lobe of pronotum coarse and shallowly punctate; humerus round, posterior margin of pronotum arcuate, but nearly straight in middle. Scutellum subtriangular, width greater than length, Y-shaped ridges thick with apex of scutellar process knob-shaped and horizontal, disc of scutellum with an oval depression. Stridulitrum long with total-striate type of sculpture. Surfaces of pleura and sterna finely wrinkled and granulose; metapleural sulcus arcuate, located close to supporting sclerite; meso- and metasterna with a median longitudinal ridge. Fore femur strongly thickened but compressed laterally, ventral surface of fore femora with a row of small denticles; fore and mid tibiae clavate, gradually thickened to apex, fore tibia with fossula spongiosa occupying about $\frac{2}{5}$ of tibial length, mid tibia with fossula spongiosa occupying about $\frac{1}{3}$ of tibial length. Hemelytron extending beyond tip of abdomen (Figs 1–4, 6–8, 10–14).

ABDOMEN. Ellipsoidal, only slightly wider than posterior lobe of pronotum, with connexivum not dilated; first seven abdominal sternites strongly compressed (Figs 1–4, 6–8, 10–14); total length of eighth abdominal sternite of female combined with female genitalia about half length of abdomen in ventral view (Figs 2B, 7B); male genitalia large, about $\frac{1}{3}$ length of abdomen in ventral view (Figs 1B, 3B, 4B, 6B, 8B, 10B, 11B, 12B, 13B).

MALE GENITALIA. Pygophore oval in ventral view (Figs 5A, 9A, 15A), median pygophore process long, more than half length of pygophore (Figs 5C, 9C, 15C), oblique to right side in caudal view, ventral surface with a longitudinal ridge (Figs 5B, 9B, 15B). Parameres broad, left paramere subtrapezoidal (Figs 5D, 9D, 15D), right paramere subtriangular (Figs 5E, 9E, 15E), left paramere longer than right paramere; phallus with basal plate longer than basal plate bridge (Figs 5F, 9F, 15F), pedicel slightly curved and shorter than basal plate (Figs 5H, 9H, 15H, 15I); dorsal phallosomal sclerite strongly sclerotized and bent inward (Figs 5F, 5H, 5I, 9F, 9H, 9I, 15F, 15H, 15I); lateral phallosomal sclerite moderately sclerotized with a process on lower right corner (Figs 5I, 9I, 15I); struts fused and long, nearly reaching apex of phallosoma (Figs 5F, 9F, 15F); venter of phallosoma with two transverse slender sclerites at basal portion (Figs 5G, 9G, 9H, 15G, 15H).

Diversity and distribution

Four species, occurring in the Afrotropical Region (Fig. 16).

Key to species of *Fusius* Stål, 1862

1. Body color black and yellowish brown in large part (Figs 10–11); apical part of clavus without yellowish white marking (Figs 10A, 11A) *F. hflavus* stat. rev. et comb. nov. (Reuter, 1881)
– Body color black and red in large part (Figs 1–4, 6–8, 12–14); apex of clavus yellowish white (Figs 1A, 2A, 3A, 4A, 6A, 7A, 8A, 12A, 13A, 14) 2
2. Anterior lobe of pronotum entirely black (Figs 6A, 7A, 8A); legs black, without yellow markings (Figs 6–8) *F. distinctus* Miller, 1957
– Anterior lobe of pronotum black and red (Figs 1A, 2A, 3A, 4A, 12A, 13A, 14); legs blackish brown to black, with yellow markings (Figs 1–4, 12–14) 3
3. Red stripes on anterior lobe of pronotum thin and obscure or even only anterior margin of anterior lobe red (Figs 1A, 2A, 3A, 4A); fifth abdominal sternite of male with a small process on left side (Figs 1B, 3B, in red circles); sub-apical margin of sixth abdominal sternite of male normal (Figs 1B, 3B, 4B) *F. dilutus* Miller, 1957
– Red stripes on anterior lobe of pronotum distinct (Figs 12A, 13A, 14); fifth abdominal sternite of male without small process (Figs 12B, 13B); sub-apical margin of sixth abdominal sternite of male strongly sclerotized and distinctly irregular (Figs 12B, 13B) *F. rubricosus* (Stål, 1855)

***Fusius dilutus* Miller, 1957**

Figs 1–5

Fusius dilutus Miller, 1957: 62. Type locality: Calabar [Nigeria].

Fusius gowdeyi Miller, 1957: 62. Type locality: Uganda: Luzinga. **Syn. nov.**

Fusius liberiensis Miller, 1957: 62. Type locality: Liberia: Sinoe. **Syn. nov.**

Fusius dilutus anonymus Dispons, 1969: 5. No locality. **Syn. nov.**

Fusius dilutus vicinus Dispons, 1969: 5. Type locality: Tanzania: Pemba. **Syn. nov.**

Fusius rubricosus – Villiers (nec Stål) 1948: 237, part. — Villiers 1963: 513 (synonymization).

Fusius liberiensis – Villiers 1963: 513.

Fusius dilutus dilutus – Dispons 1969: 5. — Maldonado Capriles 1990: 358.

Fusius dilutus gowdeyi – Dispons 1969: 5. — Maldonado Capriles 1990: 358.

Fusius dilutus liberiensis – Dispons 1969: 5. — Maldonado Capriles 1990: 358.

Fusius dilutus anonymus – Maldonado Capriles 1990: 358.

Fusius dilutus vicinus – Maldonado Capriles 1990: 358.

Diagnosis

Body color black and red in large part; anterior lobe of pronotum black, with red stripes thin and obscure, or even only anterior margin of anterior lobe red, posterior lobe of pronotum red; legs brown to blackish brown, apices of coxae, bases of trochanters and apex of fore femur with irregular yellow markings; basal half of dorsal surface of fore tibia and most bases of mid and hind tibiae yellow; apex of clavus yellowish white; fifth abdominal sternite of male with a small process on left side; median pygophore process strongly twisted, knife-shaped in lateral view with apex truncated; apex of right paramere with a small mastoid process; apical margin of dorsal phallosclerite arcuate; process on lower right corner of lateral phallosclerite distinct and round.

Material examined

Holotype

NIGERIA • ♂; “Holotype; Type; Calabar.; *rubricosus* Stål; Distant Coll. 1911-383; *Fusius dilutus* sp. n. (holotype) N.C.E. Miller det. 1956”; NHMUK 013586560 (Fig. 1).

Paratypes

CAMEROON • 1 ♀; “Paratype; Cameroons. Escalera. 1903-355.; *Fusius dilutus* sp. n. (paratype) N.C.E. Miller det. 1956”; NHMUK 013586563.

GABON • 1 ♂; “Paratype; Gabon 3 1936 Libreville Coll. J. Primot; *Fusius dilutus* sp. n. (paratype) N.C.E. Miller det. 1956”; K.; NHMUK 013586564.

NIGERIA • 1 ♂; “Paratype; Calabar; Distant Coll. 1911-383; *Fusius dilutus* sp. n. (paratype) N.C.E. Miller det. 1956”; NHMUK 013586561 • 1 ♀; “Paratype; Calabar; Distant Coll. 1911-383; *Fusius dilutus* sp. n. (paratype) N.C.E. Miller det. 1956”; NHMUK 013586561 (Fig. 2).

Holotype of *Fusius gowdeyi* Miller, 1957

UGANDA • ♂; “Holotype; Type; Uganda Luzinga 17. V. 1916. C.C. Gowdey. 1916-209.; No. 3423; *Fusius gowdeyi* sp. n. (holotype) N.C.E. Miller det. 1956”; NHMUK 013586565 (Fig. 3).

Paratype of *Fusius gowdeyi* Miller, 1957

UGANDA • 1 ♀; “Paratype; Uganda Prot. S. of L. George. 3,200-3,400 ft. 17-19 Oct. 1911. S.A. Neave.; 1912-193, *Fusius gowdeyi* sp. n. (paratype) N.C.E. Miller det. 1956”; NHMUK 013586566.

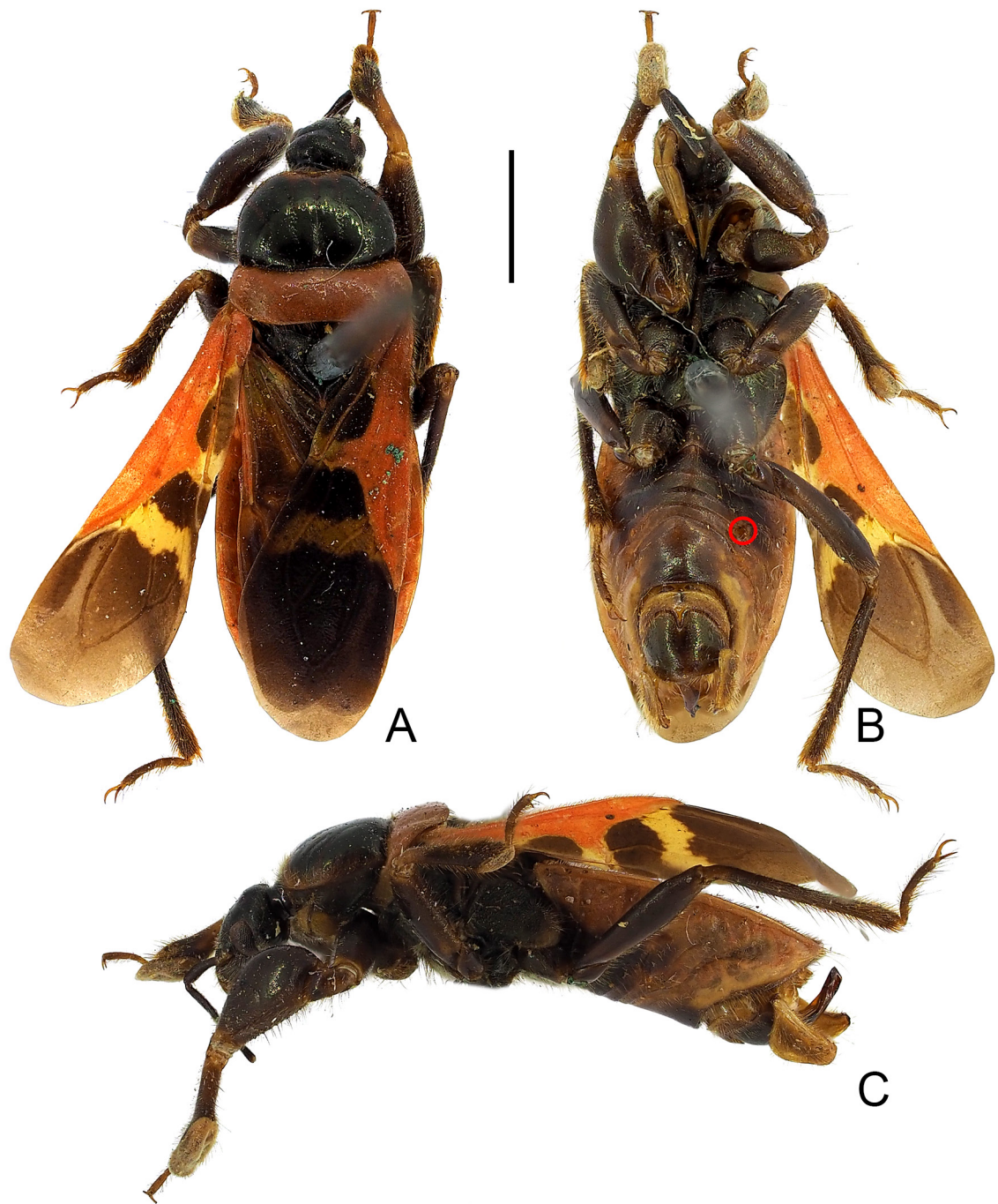


Fig. 1. *Fusius dilutus* Miller, 1957, holotype, ♂ (NHMUK 013586560) habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar = 2.00 mm.

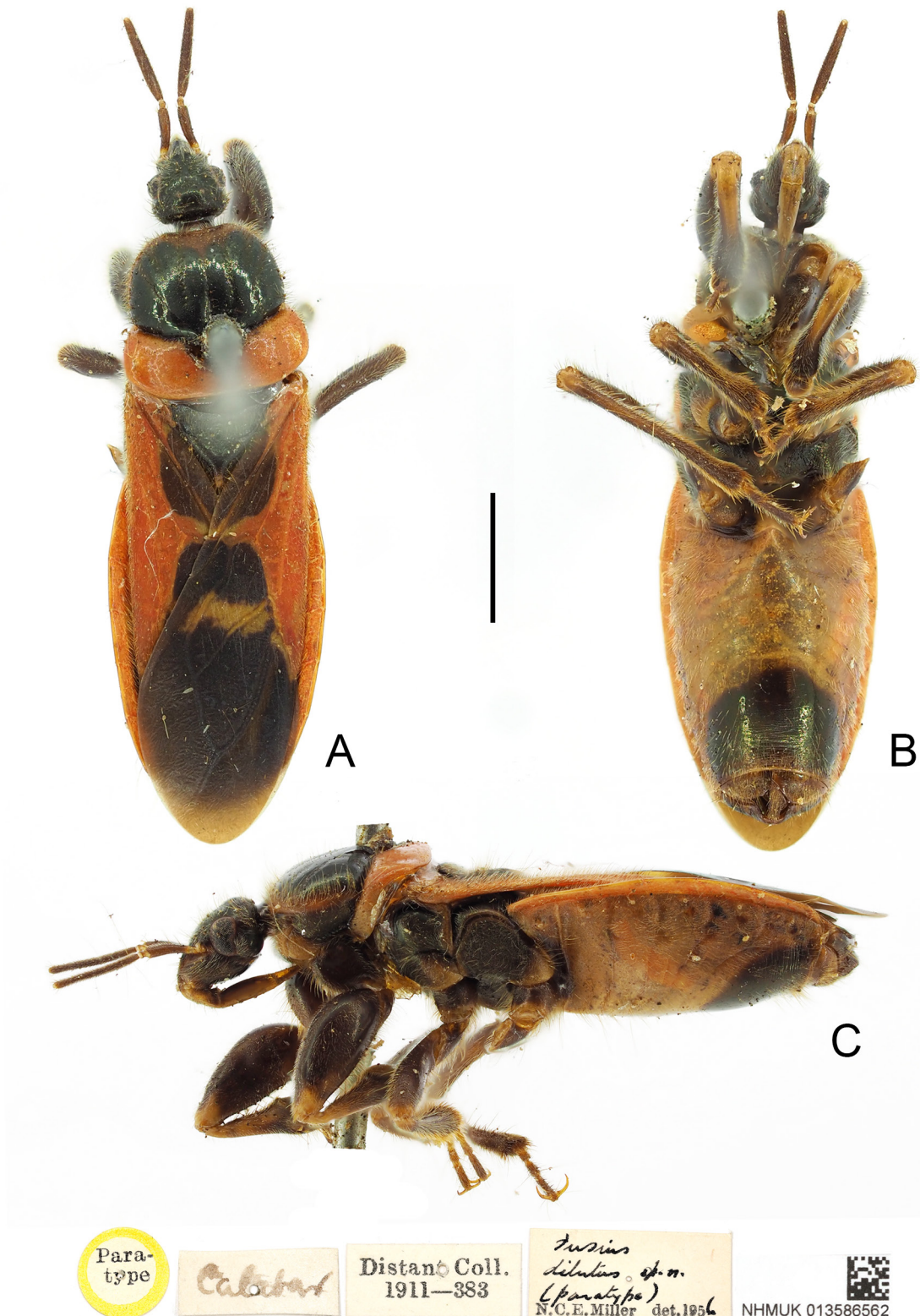


Fig. 2. *Fusius dilutus* Miller, 1957, paratype, ♀ (NHMUK 013586562), habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar = 2.00 mm.

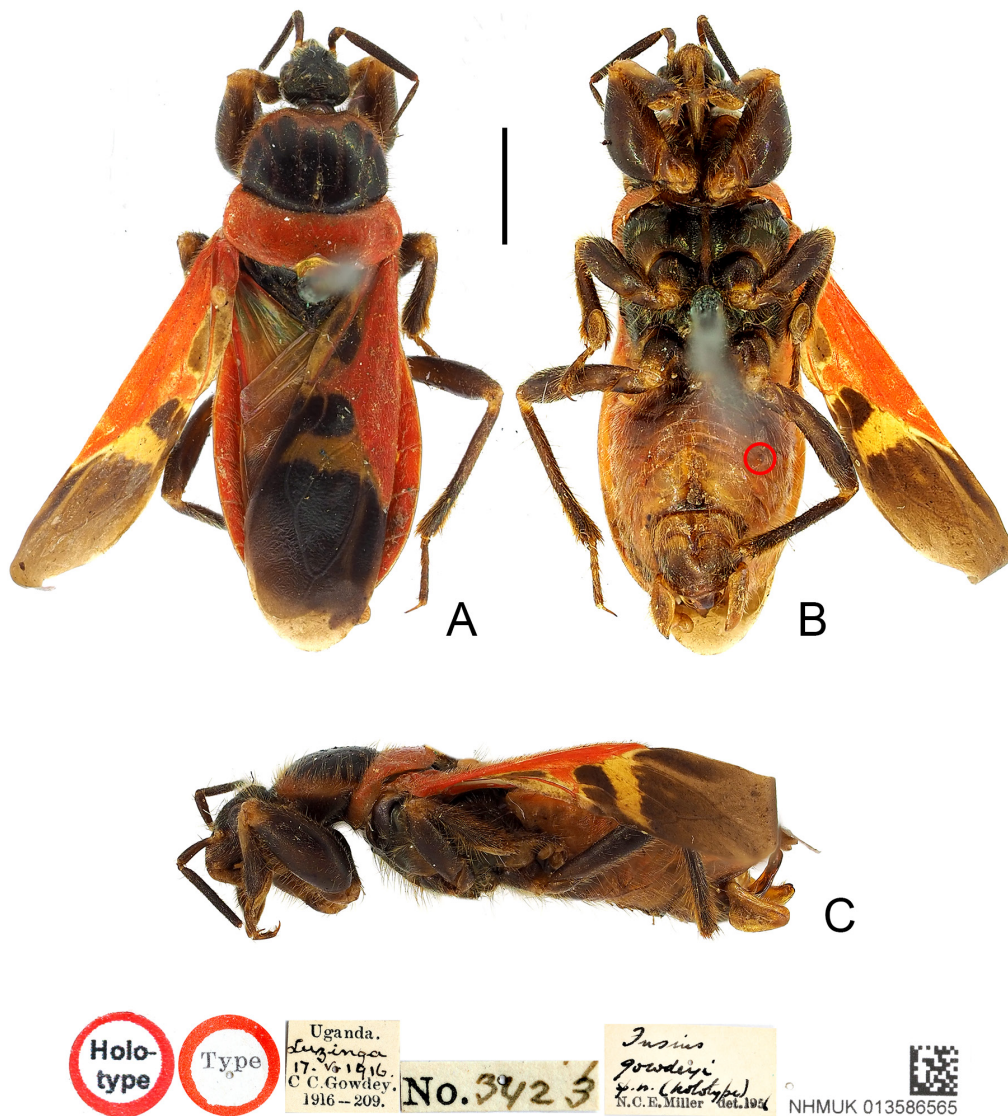


Fig. 3. *Fusius gowdeyi* Miller, 1957, holotype, ♂ (NHMUK 013586565), habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar = 2.00 mm.

Holotype of *Fusius liberiensis* Miller, 1957

LIBERIA • ♂; “Holotype; Type; Sinoe. Liberia. P.H. Nouman. 1905. 159.; *Fusius liberiensis* sp. n. (holotype) N.C.E. Miller det. 1956”; NHMUK 013586567 (Fig. 4).

Additional material

KENYA • 1 ♂; “DR VANSOMEREN MARAGOLI, OCTOBER: 1924; V.G.L. van Someren Collection. Brit. Mus. 1959-468”; NHMUK.

NIGERIA • 1 ♂; “NIGERIA: Ibadan; Moor Plantation. 22. iii. 1956. V.F. Eastop. B.M. 1956-283”; NHMUK.

SIERRA LEONE • 1 ♀; “S. Leone 67 71”; NHMUK.

Redescription

MEASUREMENTS [in mm, ♂ (n = 7), ♀ (n = 4)]. Body length 8.54–9.42 (♂), 9.62–9.65 (♀); maximum width of abdomen 2.90–3.04 (♂), 3.11–3.62 (♀); head length 1.43–1.60 (♂), 1.74–1.76 (♀); length of anteocular part 0.65–0.78 (♂), 0.79–0.82 (♀); length of postocular part 0.42–0.44 (♂), 0.43–0.48 (♀); head width 1.12–1.19 (♂), 1.15–1.20 (♀); eye width in dorsal view 0.21–0.23 (♂), 0.21–0.22 (♀); width of interocular space 0.60–0.69 (♂), 0.69–0.72 (♀); width of interocellar space 0.31–0.35 (♂), 0.35–0.36 (♀); lengths of visible labial segments I:II:III = 0.60–0.61: 0.92–0.93: 0.51–0.55 (♂), 0.62–0.65: 0.98–0.99: 0.49–0.51 (♀); lengths of antennal segments I:II:III:IV = 0.75–0.79:1.59–1.72:1.11–1.30:?(♂), 0.78–0.90:1.56–1.58:1.08–1.27:?(♀); length of anterior pronotal lobe 1.50–1.60 (♂), 1.60–1.79 (♀); length of posterior pronotal lobe 0.85–0.87 (♂), 0.87–0.91 (♀); width of anterior pronotal lobe

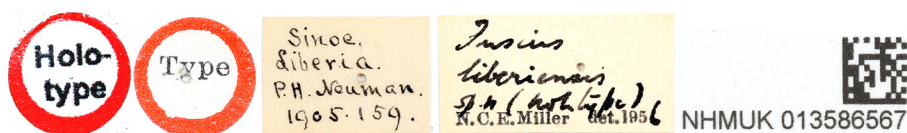
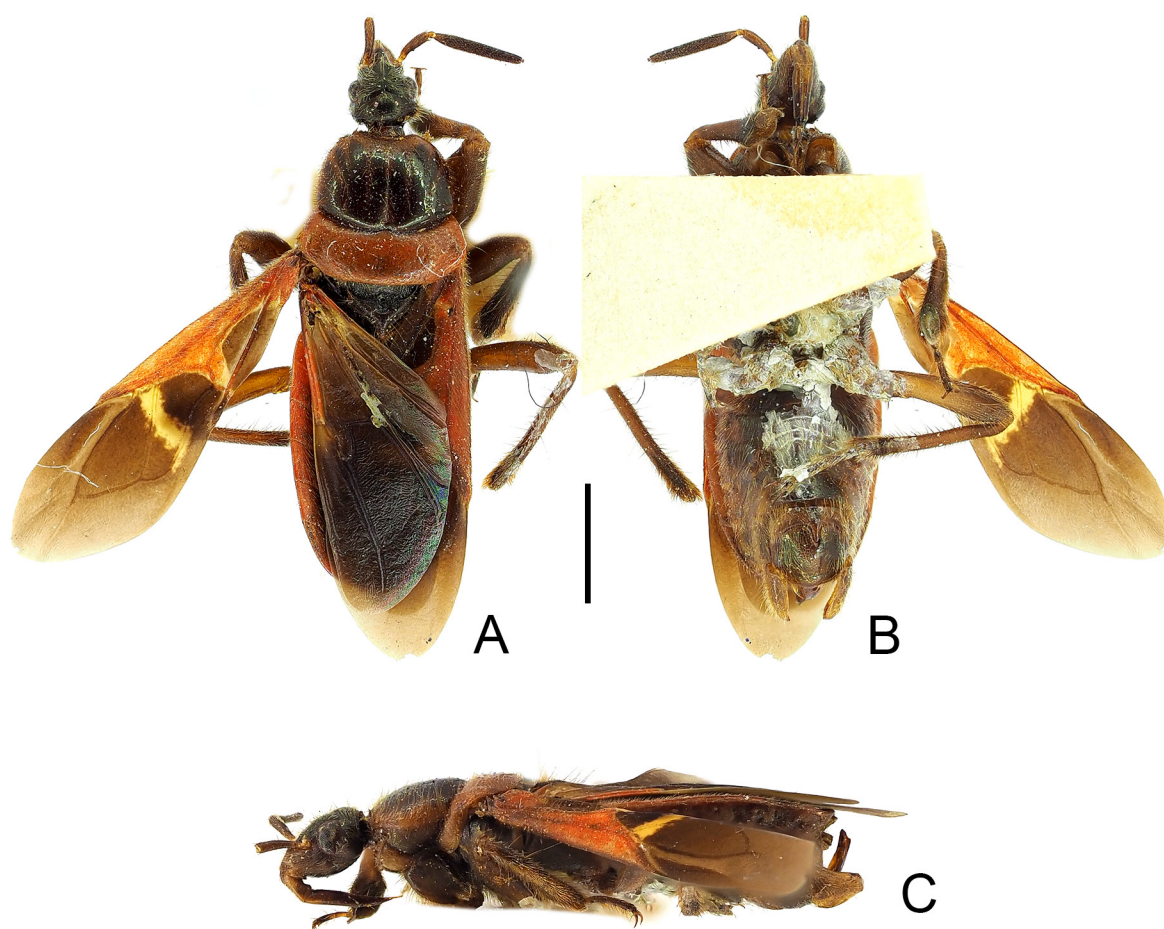


Fig. 4. *Fusius liberiensis* Miller, 1957, holotype, ♂ (NHMUK 013586567), habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar = 2.00 mm.

2.21–2.24 (♂), 2.30–2.51 (♀); width of posterior pronotal lobe 2.70–2.74 (♂), 2.71–2.97 (♀); scutellum length 1.10–1.12 (♂), 1.36–1.42 (♀); maximum width of scutellum 1.11–1.19 (♂), 1.48–1.52 (♀); hemelytron length 6.70–6.82 (♂), 6.76–7.03 (♀).

COLORATION. Body color black and red in large part (Figs 1–4); head black with labium brown; antenna with scape blackish brown, remaining segments black (Figs 1–4); anterior lobe of pronotum black with red stripes, red stripes thin and obscure (Figs 3A, 4A), or even only anterior margin of anterior lobe red (Figs 1A, 2A), posterior lobe of pronotum red (Figs 1A, 2A, 3A, 4A); scutellum, pleura and sterna black (Figs 1–4); coxae, trochanters and femora blackish brown, apices of coxae, bases of trochanters and apex of fore femur with irregular yellow markings; tibiae dark brown to blackish brown, basal half of dorsal surface of fore tibia and most bases of mid and hind tibiae yellow; tarsi brown (Figs 1–4); base of clavus red, middle part with an oblong black spot, apex yellowish white; corium red with a triangular black spot on area between Cu and Pcu; membrane blackish brown with a yellowish white band crossing two cells, margins of band irregular, apical part of membrane paler (Figs 1A, 2A, 3A, 4A); connexivum red with inner part sometimes reddish brown (Figs 1–4); second to seventh abdominal sternites of male yellowish brown (Fig. 3B) to blackish brown (Figs 1B, 4B), eighth abdominal sternite yellowish brown (Figs 1B, 3B, 4B), male genitalia brown (Fig. 3B) to blackish brown (Figs 1B, 4B); second to sixth abdominal sternites of female yellowish brown to blackish brown, seventh abdominal sternite black with anterior margin yellowish brown, female genitalia brown (Fig. 2B).

STRUCTURE. AS in generic description. Fifth abdominal sternite of male with a small process on left side (Figs 1B, 3B, in red circles). This process is not the typical extragenital structure which present on some species of other peiratine genera such as *Ectomocoris* Mayr, 1865, *Microsandalus* Stål, 1866, *Neopirates* Miller, 1952, *Peirates* Serville, 1831 and *Phalantus* Stål, 1863 (Ghuri 1964; Malipatil *et al.* 2023) as it is located on the fifth abdominal sternite while others are all located on the seventh sternites.

MALE GENITALIA. Median pygophore process strongly twisted (Fig. 5A–B), knife-shaped in lateral view with apex truncated (Fig. 5C); left paramere (Fig. 5D) slightly longer than right paramere (Fig. 5E), apex of left paramere truncated (Fig. 5D), apex of right paramere with a small mastoid process (Fig. 5E); apical margin of dorsal phallosclerite arcuate (Fig. 5F); process on lower right corner of lateral phallosclerite distinct and round (Fig. 5I). Other structures as in generic description.

Distribution

Nigeria: Calabar, Ibadan; Cameroon; Gabon: Libreville; Uganda: Luzinga Village, South of Lake George; Liberia: Sinoe; Kenya: Maragoli; Sierra Leone; Guinea: Mount Nimba (Villiers 1963); Tanzania: Pemba Island (Dispons 1969) Zaire [DR Congo] (Maldonado Capriles 1990).

Remarks

In the original description, Miller (1957) recorded that all four paratypes of *F. dilutus* Miller, 1957 are males. However, after examining the type specimens, we found that one paratype from Calabar (NHMUK 013586562) and the paratype from the Cameroons (NHMUK 013586563) are female (see detailed specimen information above).

In his revision of *Fusius*, Dispons (1969) realized that the characters Miller (1957) used to separate these species were relatively inconspicuous and that some of them were only intraspecific differences. Therefore, *F. dilutus*, *F. gowdeyi* Miller, 1957 and *F. liberiensis* Miller, 1957 were included in one group with the bicolor anterior lobe of the pronotum, the presence of the asymmetrical process on the fifth abdominal sternite and the same type of the male genitalia, and the latter two species were degraded as subspecies of *F. dilutus* (Dispons 1969). Dispons (1969) also described another two subspecies of *F. dilutus*, *F. dilutus vicinus* Dispons, 1969 and *F. dilutus anonymus* Dispons, 1969. In the key Dispons

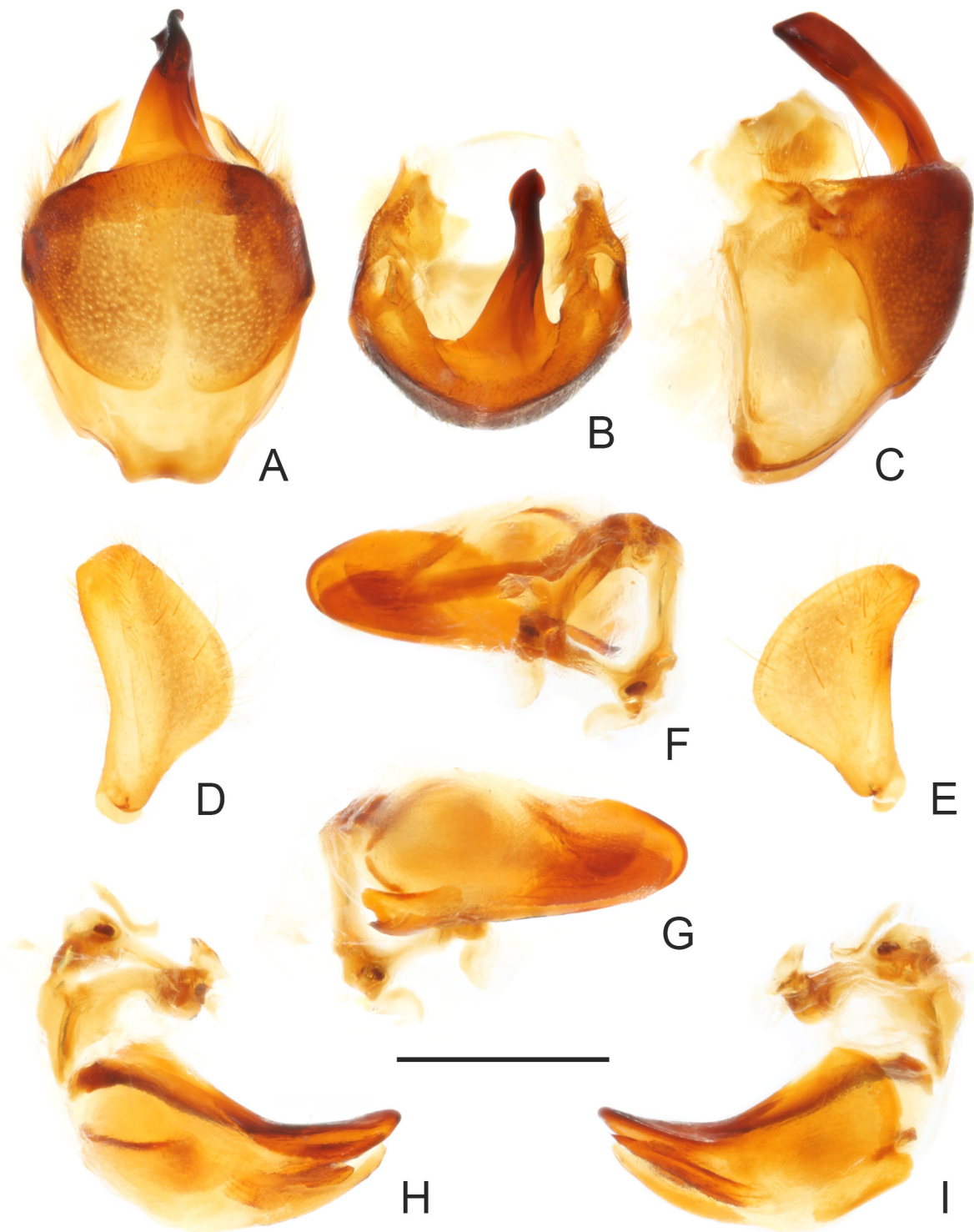


Fig. 5. Male genitalia of *Fusius dilutus* Miller, 1957, non-type specimen from Nigeria (NHMUK). A–C. Pygophore. D. Left paramere. E. Right paramere. F–I. Phallus. A, G. Ventral view. B. Caudal view. C, H, I. Lateral view. D, E. Outer ventrolateral view. F. Dorsal view. Scale bar: A–E = 1.00 mm; F–I = 0.90 mm.

(1969) provided, the following characters were used to distinguish the five subspecies of *F. dilutus*: the anterior lobe of the pronotum with coppery green luster or not, the red area along the anterior margin of the anterior lobe of the pronotum narrow or wide and the pronotal transverse sulcus nearly straight or distinctly angulate medially.

After examining type specimens and other material of these taxa, we found that the coppery green luster may have faded in some dry specimens, for example, the luster is not obvious in holotypes of *F. dilutus* (Fig. 1A) and *F. liberiensis* (Fig. 4A) as Miller (1957) and Dispons (1969) recorded that could be a diagnostic character. The red area along the anterior margin of the anterior lobe of the pronotum could be a character that changes continuously, varying from thin and obscure to distinct and moderately wide. Dispons (1969) recorded that the pronotal transverse sulcus is nearly straight in *F. dilutus dilutus* and distinctly angulate medially in *F. dilutus liberiensis* and *F. dilutus gowdeyi*. However, we observed that the pronotal transverse sulcus of the holotype of *F. dilutus* (Fig. 1A) is also angulate medially, and on the contrary, the pronotal transverse sulcus of the holotype of *F. gowdeyi* (Fig. 3A) seems straighter. So, the shape of the pronotal transverse sulcus is not a stable character to distinguish different subspecies neither. Besides, the presence of the asymmetrical process on the fifth abdominal sternite is indeed observed in all male type specimens of these taxa, which could be a structural diagnosis of *F. dilutus*.

Moreover, the variations of the characters mentioned above are independent of distribution, and according to the label information and existing literature, the distribution of this species is continuous across central Africa and mainly at low altitude (see Fig. 16, circular marks). In particular, the type locality of *F. dilutus anonymus* is unknown (Dispons 1969), which makes it harder to assign specimens into this subspecies.

To sum up, the morphological and distributional differences of the taxa discussed above are insufficient to classify them into different subspecies. Hence, we regard *F. gowdeyi* Miller, 1957, *F. liberiensis* Miller, 1957, *F. dilutus anonymus* Dispons, 1969, and *F. dilutus vicinus* Dispons, 1969 as junior subjective synonyms of *F. dilutus* Miller, 1957.

***Fusius distinctus* Miller, 1957**
Figs 6–9

Fusius distinctus Miller, 1957: 62. Type locality: Belgian Congo [DR Congo].

Fusius sylvestris Miller, 1957: 62. Type locality: Uganda: Mpanga Forest. **Syn. nov.**

Fusius distinctus distinctus – Dispons 1969: 3. — Maldonado Capriles 1990: 358.

Fusius distinctus sylvestris – Dispons 1969: 4. — Maldonado Capriles 1990: 358.

Diagnosis

Body color black and red in large part; anterior lobe of pronotum entirely black, posterior lobe of pronotum red; legs blackish brown to black, except tarsi brown; most apex of clavus yellowish white; humerus on posterior lobe of pronotum distinct and plump; median pygophore process slender and tapered, apical half slightly twisted in caudal view, knife-shaped in lateral view with apex sharp; apex of right paramere with a round process; apical margin of dorsal phallothecal sclerite roundly angulated; process on lower right corner of lateral phallothecal sclerite tiny and sharp.

Material examined

Holotype

DEMOCRATIC REPUBLIC OF THE CONGO • ♂; “Holotype; Type; E. BELG. CONGO: ix-x. 1946. T. H. E. Jackson. B.M.1946-354.; *Fusius distinctus* sp. n. (holotype) N.C.E. Miller det. 1956”; NHMUK 013586553 (Fig. 6).

Paratypes

CAMEROON • 1 ♂; “Paratype; FRENCH CAMEROONS: D’Ja Posten. Lat. 3.15 N. Long. 13.30. E. 15. v-1. vii. 1936. F.G. Merfield.; Brit. Mus. 1936-654.; *Fusius distinctus* sp. n. (paratype) N.C.E. Miller det. 1956”; NHMUK 013586554 • 1 ♀; “Paratype; FRENCH CAMEROONS: D’Ja Posten. Lat. 3.15 N. Long. 13.30. E. 15. v-1. vii. 1936. F.G. Merfield.; Brit. Mus. 1936-654.; *Fusius distinctus* sp. n. (paratype) N.C.E. Miller det. 1956”; NHMUK 013586555 (Fig. 7).

Holotype of *Fusius sylvestris* Miller, 1957

UGANDA • ♂; “Holotype; Type; Uganda Prot. Mpanga Forest. Toro. 4,800 ft. 13-23 nov. 1911. S.A. Neave., 1912-193; *Fusius sylvestris* sp. n. (holotype) N.C.E. Miller det. 1956”; NHMUK 013586556 (Fig. 8).

Additional material

DEMOCRATIC REPUBLIC OF THE CONGO • 2 ♂♂, 1 ♀; “BELGIAN CONGO: 30 mls. N of Beni on Mambasa rd. 3,000 ft. 18-20. ix. 1959.; Cambridge E. African. Exped B.M.1960-50”; NHMUK.

Redescription

MEASUREMENTS [in mm, ♂ (n = 5), ♀ (n = 2)]. Body length 9.78–9.90 (♂), 10.69–11.71 (♀); maximum width of abdomen 3.23–3.50 (♂), 3.68–3.71 (♀); head length 1.63–1.68 (♂), 1.67–1.82 (♀); length of anteocular part 0.87–0.89 (♂), 0.80–0.97 (♀); length of postocular part 0.39–0.42 (♂), 0.42–0.45 (♀); head width 1.18–1.22 (♂), 1.28–1.32 (♀); eye width in dorsal view 0.21–0.22 (♂), 0.21–0.26 (♀); width of interocular space 0.68–0.76 (♂), 0.81–0.84 (♀); width of interocellar space 0.20–0.29 (♂), 0.27–0.28 (♀); lengths of visible labial segments I:II:III = 0.54–0.60:1.06–1.10:0.46–0.51 (♂), 0.50–0.69:1.03–1.10:0.52–0.61 (♀); lengths of antennal segments I:II:III:IV = 0.86–0.84:1.71–1.77:–0.91:–? (♂), 1.00–1.01:1.59–1.87:–?–1.11:–? (♀); length of anterior pronotal lobe 1.60–1.71 (♂), 1.97–2.02 (♀); length of posterior pronotal lobe 0.90–1.10 (♂), 0.91–1.10 (♀); width of anterior pronotal lobe 2.30–2.51 (♂), 2.40–2.64 (♀); width of posterior pronotal lobe 2.88–3.22 (♂), 3.11–3.47 (♀); scutellum length 0.90–1.12 (♂), 0.83–1.06 (♀); maximum width of scutellum 1.23–1.29 (♂), 1.21–1.46 (♀); hemelytron length 6.99–7.41 (♂), 7.33–8.10 (♀).

COLORATION. Body color black and red in large part (Figs 6–8); head black with labium brown; antenna blackish brown to black (Figs 6–8); anterior lobe of pronotum black, posterior lobe of pronotum red (Figs 6A, 7A, 8A); scutellum, pleura and sterna black (Figs 6–8); legs blackish brown to black, except tarsi brown (Figs 6–8); base of clavus red, middle part with an oblong black spot, most apex yellowish white; corium red with a triangular black spot on area between Cu and Pcu; membrane blackish brown with a yellowish white band crossing two cells, margins of band irregular, apical part of membrane paler (Figs 6A, 7A, 8A); connexivum red with inner part sometimes reddish brown (Figs 6–8); abdominal sternites black with lateral area red (Figs. 6B, 6C, 7B, 7C, 8B, 8C).

STRUCTURE. As in generic description. Humerus on posterior lobe of pronotum distinct and plump (Figs 6A, 7A, 8A).

MALE GENITALIA. Median pygophore process slender and tapered, apical half slightly twisted in caudal view (Fig. 9B), knife-shaped in lateral view with apex sharp (Fig. 9C); left paramere (Fig. 9D) slightly longer than right paramere (Fig. 9E), apex of left paramere blunt (Fig. 9D), apex of right paramere with a round process (Fig. 9E); apical margin of dorsal phallosclerite roundly angulated (Fig. 9F); process on lower right corner of lateral phallosclerite tiny and sharp (Fig. 9I). Other structures as in generic description.

Distribution

DR Congo: Beni; Cameroon: East Province; Uganda: Mpanga Forest.

Remarks

The character Miller (1957) used to distinguish *F. distinctus* Miller, 1957 and *F. sylvestris* Miller, 1957 is “legs, abdomen ventrally, except narrowly ventro-laterally, black” in *F. distinctus*, or “legs, abdomen ventrally, except broadly ventro-laterally, piceous” in *F. sylvestris*. In Dispons’ revision (1969) of *Fusius*, *F. sylvestris* was degraded as subspecies of *F. distinctus* and the character he used in the key

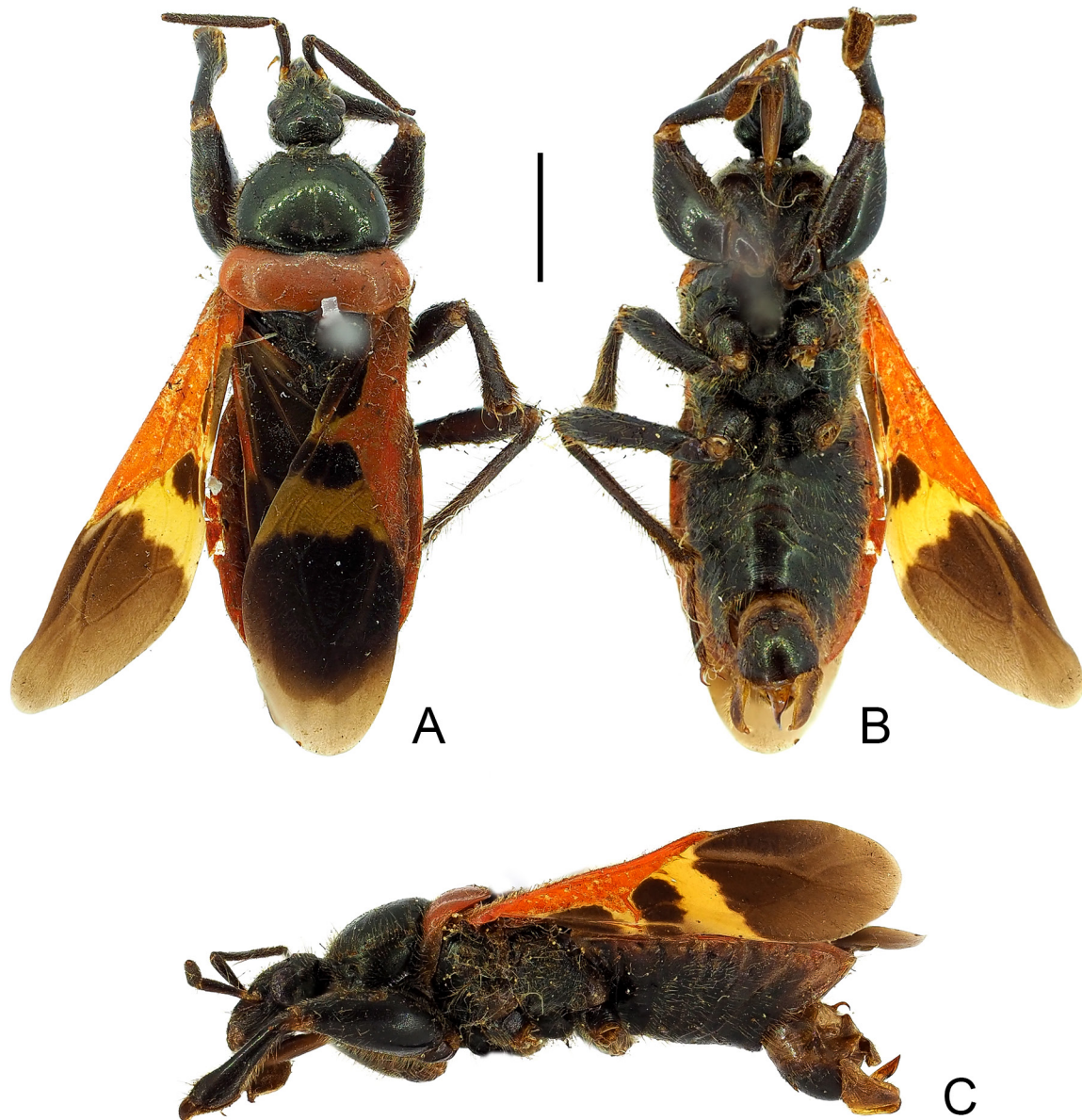
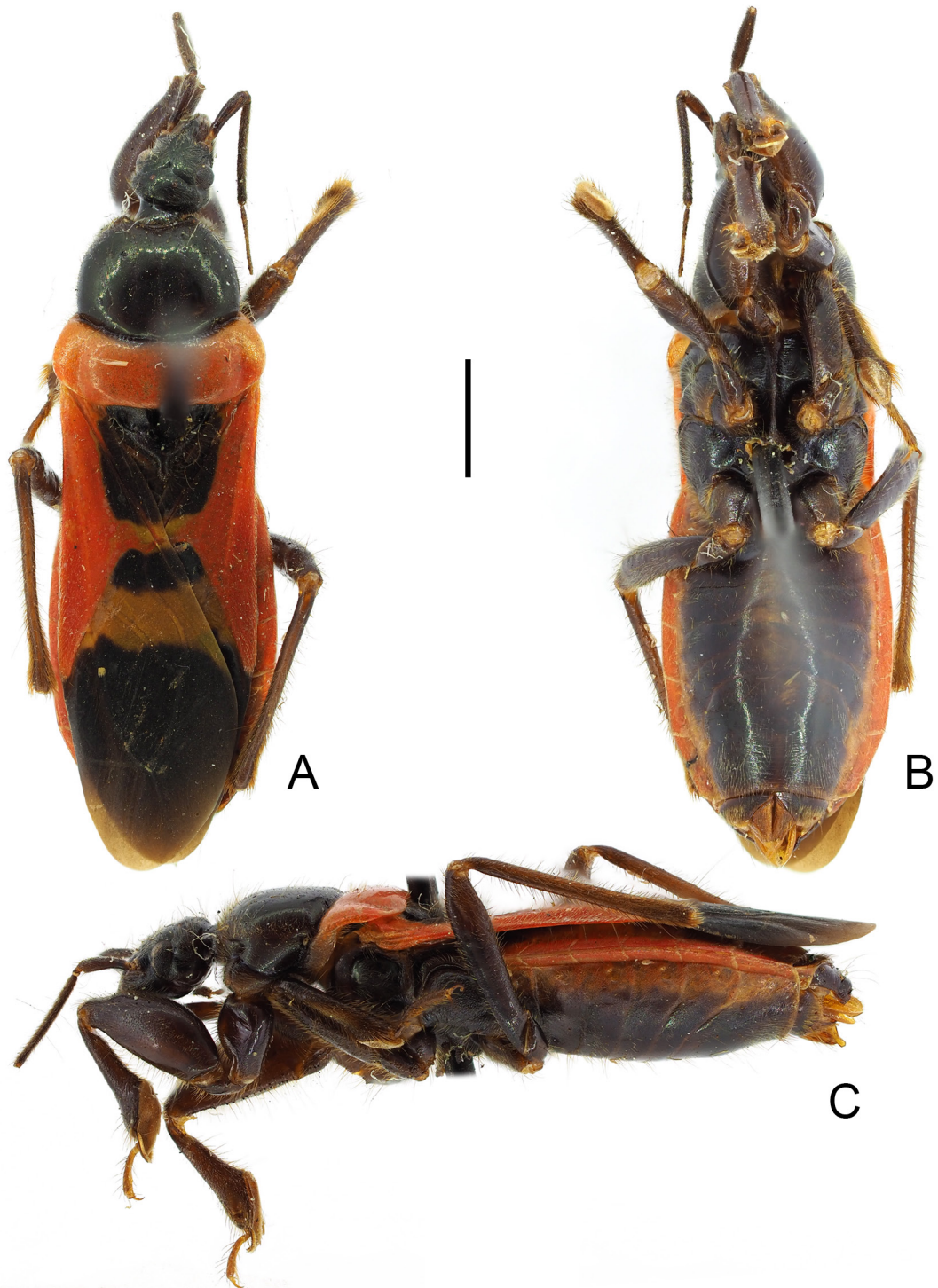


Fig. 6. *Fusius distinctus* Miller, 1957, holotype, ♂ (NHMUK 013586553), habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar = 2.00 mm.



Para-type

FRENCH CAMEROONS:
D'Ja Posten.
Lat.3.15.N. Long.13.30.E.
15.v-l.vii.1936.
F.G.Merfield.

Brit. Mus.
1936-654.

*Fusius
distinctus* sp.n.
(paratype)
N.C.E. Miller det. 1956

5

NHMUK 013586555



Fig. 7. *Fusius distinctus* Miller, 1957, paratype, ♀ (NHMUK 013586555), habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar = 2.00 mm.

to distinguish the two subspecies is “lateral part of abdominal sternites with narrow red band, rest area black” in *F. distinctus distinctus* or “lateral part of abdominal sternites with broad red band, rest area dark brown” in *F. distinctus sylvestris*.

Firstly, “black”, “piceous” and “dark brown” are relatively similar colors, and from our observation, the main colors of the abdominal sternites of the type specimens of these two nominal species are too similar to be well distinguished (Figs 6B, 7B, 8B). In addition, the red area on the lateral part of the abdominal sternites of the holotype of *F. distinctus* is relatively narrow indeed (Fig. 6C), but it is broad in the paratypes of *F. distinctus* (Fig. 7C), and not significantly narrower than that in the holotype of *F. sylvestris* (Fig. 8C). So, the color pattern of the abdominal sternites is an intraspecific variation and could not be a stable diagnostic character.

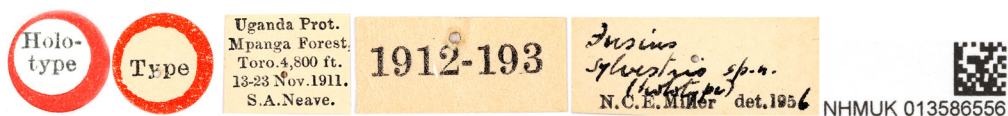
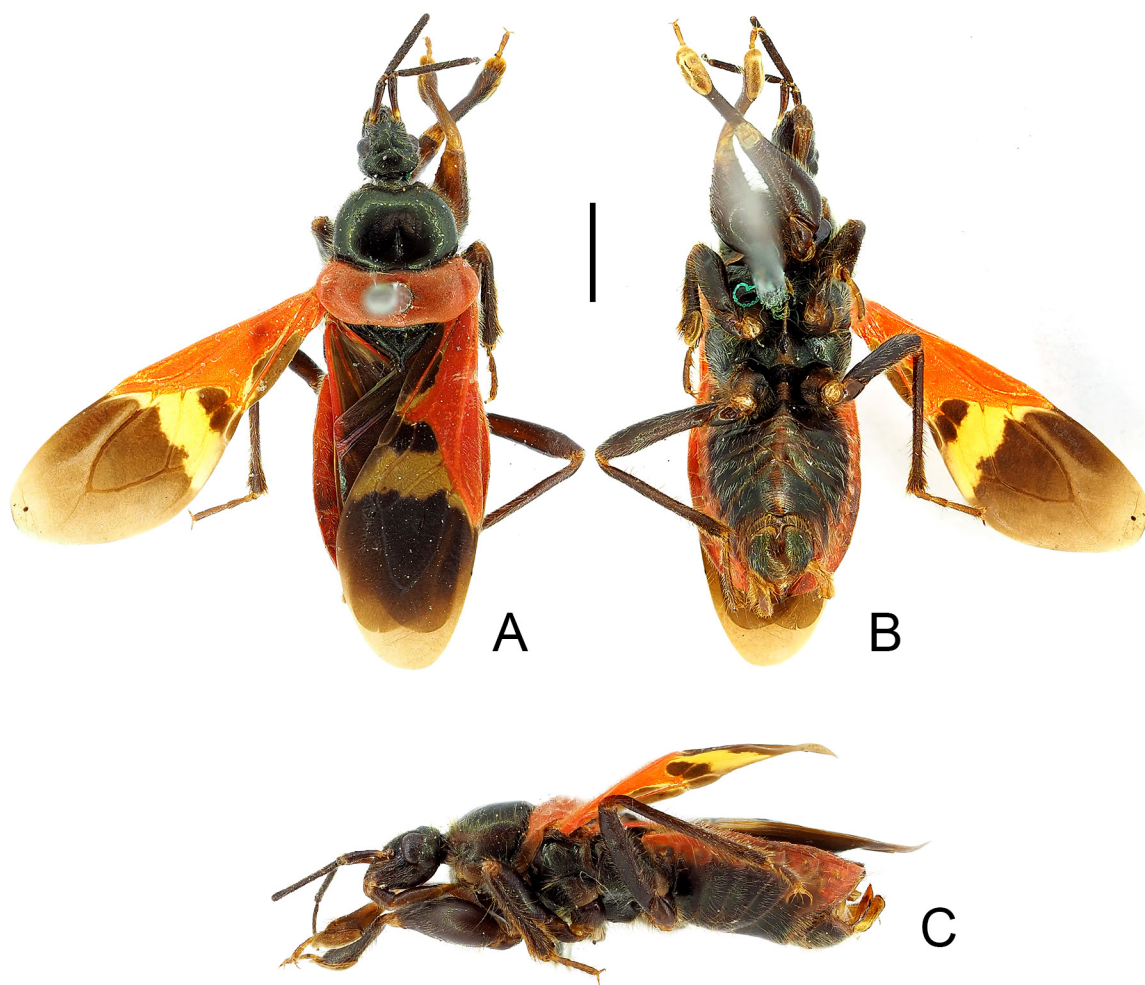


Fig. 8. *Fusius sylvestris* Miller, 1957, holotype, ♂ (NHMUK 013586556), habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar = 2.00 mm.

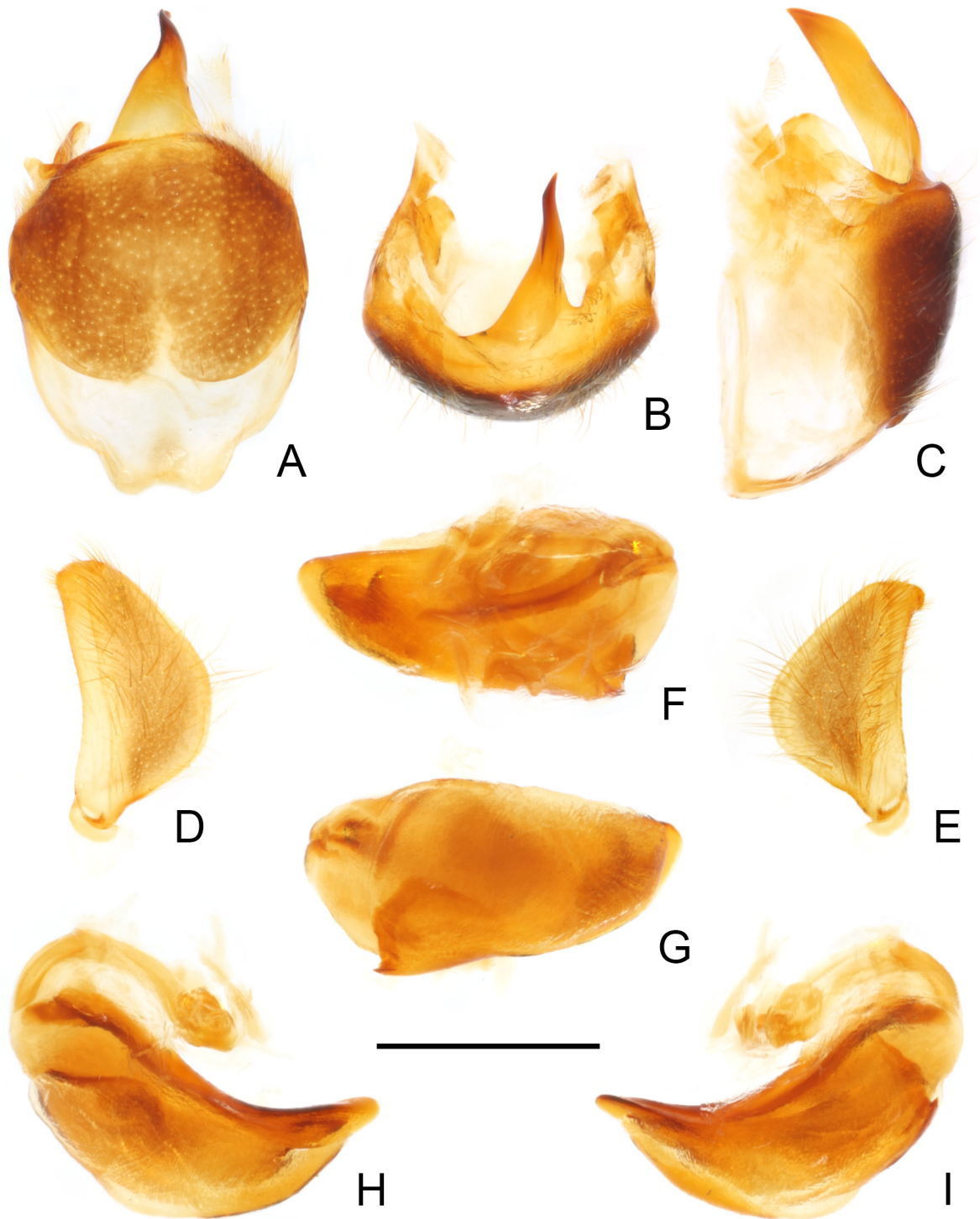


Fig. 9. Male genitalia of *Fusius distinctus* Miller, 1957, non-type specimen from DR Congo (NHMUK). A–C. Pygophore. D. Left paramere. E. Right paramere. F–I. Phallus. A, G. Ventral view. B. Caudal view. C, H–I. Lateral view. D–E. Outer ventrolateral view. F. Dorsal view. Scale bar: A–E = 1.00 mm; F–I = 0.85 mm.

The type localities of *F. distinctus* and *F. sylvestris*, DR Congo and Uganda, are two neighboring countries without obvious geographical barrier between them. Hence, as there is no distinct morphological differences and geographical isolation between the two subspecies Dispons (1969) proposed, we regard *F. sylvestris* Miller, 1957 as a junior subjective synonym of *F. distinctus* Miller, 1957.

Fusius hflavus (Reuter, 1881) stat. rev. et comb. nov.
Figs 10–11

Pirates (Fusius) H-flavum Reuter, 1881: 310. Type locality: Gabon.

Fusius hargreavesi Miller, 1957: 62. Type locality: Sierra Leone: Njala. **Syn. nov.**

Pirates H-flavum – Lethierry & Severin 1896: 125.

Fusius rubricosus var. *H. flavum* – Villiers 1948: 237.

Fusius hargreavesi – Villiers 1963: 514. — Maldonado Capriles 1990: 358.

Fusius rubricosus var. *H-flavum* – Dispons 1969: 2.

Diagnosis

Body color black and yellowish brown in large part; anterior lobe of pronotum black with yellowish brown stripes that are thin and obscure, or only anterior margin of anterior lobe yellowish brown; legs dark brown, apices of coxae, bases of trochanters, and apex of fore femur with irregular yellow markings, basal half of hind femur yellow; fore and hind tibiae with basal half yellow and apical half dark brown, mid tibia dark brown except most base yellow; clavus blackish brown except most base yellowish brown; sub-apical margin of sixth abdominal sternite of male strongly sclerotized and distinctly irregular; median pygophore process somewhat fusiform with basal part narrower than middle part, apical half twisted in caudal view, inner side of apex with a small process in lateral view.

Material examined

Lectotype (designated by present study)

GABON • ♂; “Typus; gabon; *Fusius H-flavum* Typ. Reut.”; NHRS-GULI 00000125 (Fig. 10).

Holotype of *Fusius hargreavesi* Miller, 1957

SIERRA LEONE • ♂; “HOLOTYPE; Type; NJALA SIERRA LEONE E. Hargreaves. DATE 1-VIII-26.; Pres. by Com. Inst. Ent. B.M. 1948-548.; *Fusius hargreavesi* sp. n. (holotype) N.C.E. Miller det. 1956; F.”; NHMUK 013586528 (Fig. 11).

Additional material

NIGERIA • 1 ♀; “Kano 4.X.55; Exped. Mus. G. Frey Nigeria-Kamerun Bechyne 1955-56; Pres. by Com. Inst. Ent. B.M. 1957-96”; NHMUK.

Redescription

MEASUREMENTS [in mm, ♂ (n = 1, holotype of *Fusius hargreavesi* Miller, 1957), ♀ (n = 1)]. Body length 8.43 (♂), 9.19 (♀); maximum width of abdomen 2.91 (♂), 2.88 (♀); head length 1.40 (♂), 1.39 (♀); length of anteocular part 0.65 (♂), 0.69 (♀); length of postocular part 0.38 (♂), 0.38 (♀); head width 1.08 (♂), 1.10 (♀); eye width in dorsal view 0.12 (♂), 0.13 (♀); width of interocular space 0.75 (♂), 0.79 (♀); width of interocellar space 0.27 (♂), 0.31 (♀); lengths of visible labial segments I:II:III = 0.44:0.88:0.34 (♂), 0.47:0.93:0.55 (♀); lengths of antennal segments I:II:III:IV = 0.48:1.33:?:? (♂), 0.62:1.27:0.65:0.91 (♀); length of anterior pronotal lobe 1.50 (♂), 1.48 (♀); length of posterior pronotal lobe 0.78 (♂), 0.76 (♀); width of anterior pronotal lobe 2.10 (♂), 2.09 (♀); width of posterior pronotal lobe 2.57 (♂), 2.54 (♀); scutellum length 0.76 (♂), 1.14 (♀); maximum width of scutellum 1.28 (♂), 1.30 (♀); hemelytron length 6.20 (♂), 6.59 (♀).

COLORATION. Body color black and yellowish brown in large part (Figs 10–11); head black with labium yellowish brown; antenna with scape brown, remaining segments blackish brown (Figs 10–11); anterior lobe of pronotum black with yellowish brown stripes, stripes thin and obscure (Fig. 10A), or even only anterior margin of anterior lobe yellowish brown (Fig. 11A), posterior lobe of pronotum yellowish brown

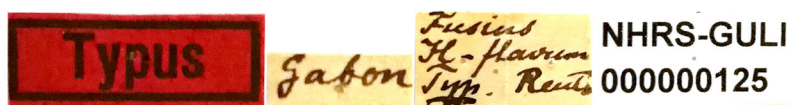
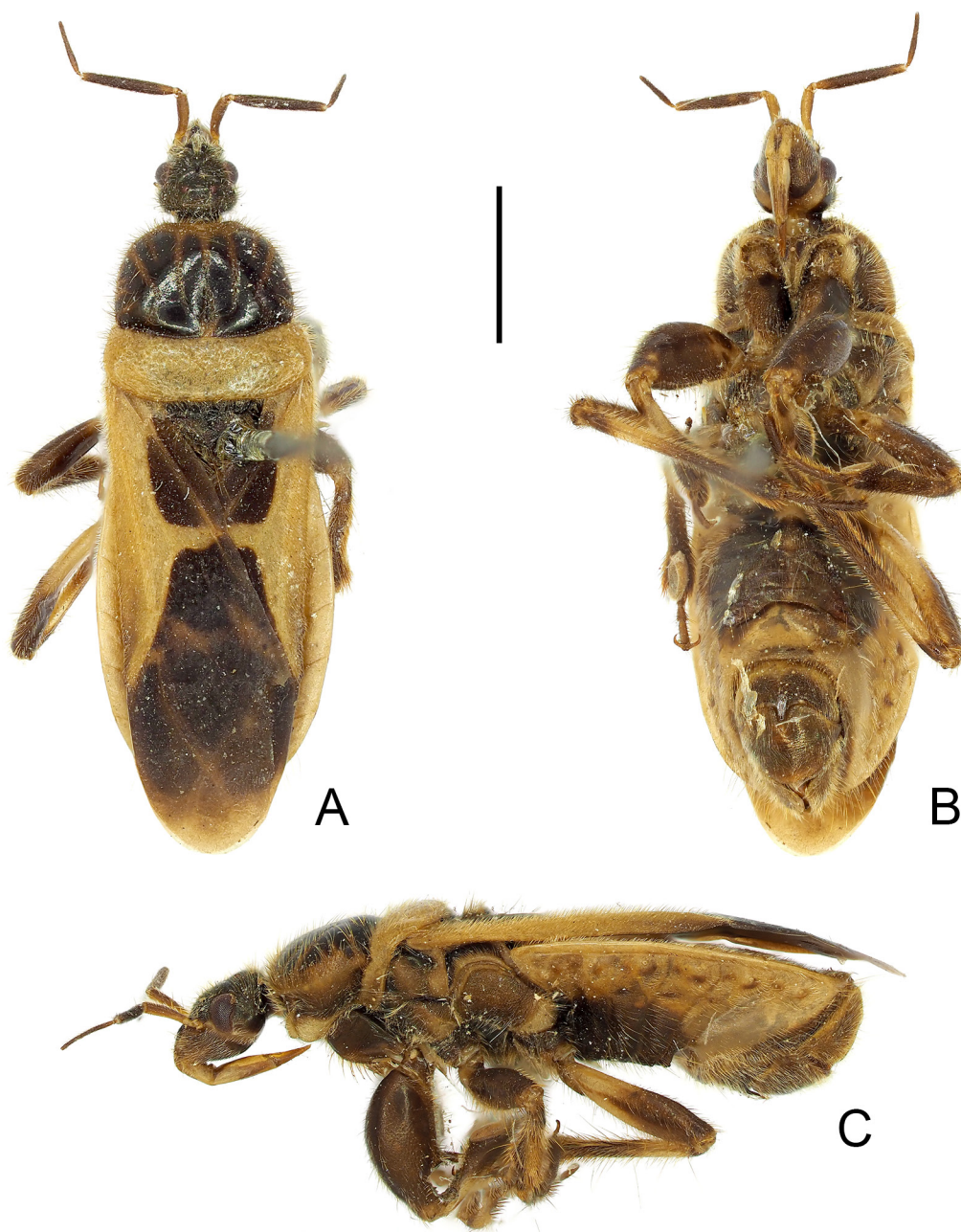


Fig. 10. *Fusius hflavus* (Reuter, 1881) stat. rev. & comb. nov., lectotype, ♂ (NHRS-GULI 00000125), habitus. **A.** Dorsal view. **B.** Ventral view. **C.** Lateral view. Scale bar = 2.00 mm.

(Figs 10A, 11A); scutellum, pleura and sterna dark brown to black (Figs 10–11); coxae, trochanters and femora dark brown, apices of coxae, bases of trochanters, and apex of fore femur with irregular yellow

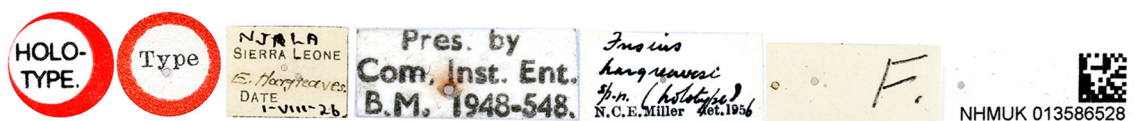
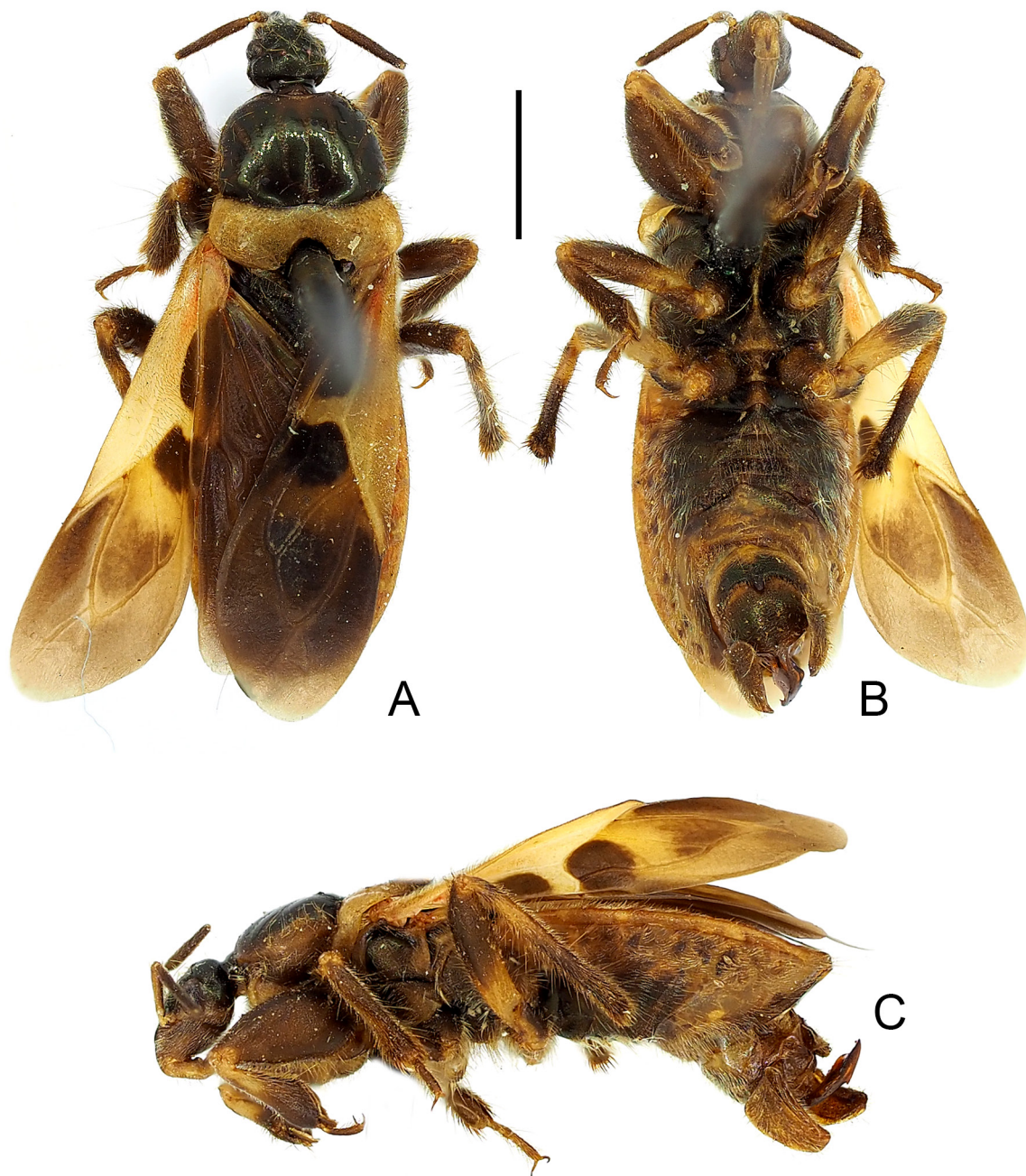


Fig. 11. *Fusius hargreavesi* Miller, 1957, holotype, ♂ (NHMUK 013586528), habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar: = 2.00 mm.

markings, basal half of hind femur yellow; fore and hind tibiae with basal half yellow and apical half dark brown, mid tibia dark brown except most base yellow; tarsi brown (Figs 10–11); clavus blackish brown except most base yellowish brown; corium yellowish brown with a triangular black spot on area between Cu and Pcu; membrane blackish brown with obscure yellow marking crossing two cells, apical part of membrane paler (Figs 10A, 11A); connexivum yellowish brown (Figs 1–4); second to sixth abdominal sternites blackish brown with lateral part yellowish brown, seventh sternite yellowish brown in large part with diffused brown markings, eighth sternite and genitalic part dark brown to blackish brown (Figs 10B–C, 11–C).

STRUCTURE. As in generic description. Sub-apical margin of sixth abdominal sternite of male strongly sclerotized and distinctly irregular (Figs 10B, 11B).

MALE GENITALIA. Median pygophore process somewhat fusiform with basal part narrower than middle part, apical half twisted in caudal view (Fig. 11B), inner side of apex with a small process in lateral view (Fig. 11C); left paramere slightly longer than right paramere [according to Miller's illustration (1957: 63, fig. 19c)].

Distribution

Gabon; Sierra Leone: Njala; Nigeria: Kano; Guinea: Mount Nimba (Villiers 1963); Senegal (Dispons 1969); Ivory Coast (Maldonado Capriles 1990).

Remarks

Pirates (Fusius) H-flavum Reuter, 1881 was regarded as a variety of *F. rubricosus* (Stål, 1855) by Villiers (1948), and he mentioned that this variety indicates individuals with the posterior lobe of the pronotum and the hemelytron yellow. The holotype of *F. hargreavesi* Miller, 1957 (Fig. 11) and the lectotype of *P. (Fusius) H-flavum* (Fig. 10) share the same color pattern. This color pattern is peculiar in *Fusius* as other species are all black and red in large part, which indicates that the above two nominal species could be a synonymy.

From the observation of the holotype of *F. hargreavesi* (Fig. 11B) and Miller's illustrations (Miller 1957: 63, fig. 19c), we could find that the median pygophore process of this species is somewhat fusiform with the basal part narrower than the middle part, the apical half twisted in caudal view, which is quite different from that of *F. rubricosus* (median pygophore process robust with basal half somewhat rectangular, apical half suddenly narrowed and tapered to apex, see Fig. 15A–B).

Therefore, here we revalidate the species status of *P. (Fusius) H-flavum* Reuter, 1881 and regard *F. hargreavesi* Miller, 1957 as its junior subjective synonym. According to the International Code of Zoological Nomenclature (ICZN 1999, Arts 28, 34.2 & 32.5.2.3), the current name of this species should be *Fusius hflavus* (Reuter, 1881) with the lower-case initial letter 'h', removing the hyphen and changing the gender accordingly.

Fusius rubricosus (Stål, 1855)

Figs 12–15

Pirates rubricosus Stål, 1855: 38. Type locality: South Africa: Limpopo.

Pirates basicollis Signoret in Fairmaire & Signoret, 1858: 310. Type locality: Caffraria. Synonymized by Stål 1865: 115.

Fusius ugandensis Miller, 1957: 62. Type locality: Uganda: Kampala. **Syn. nov.**

Fusius rubricosus – Stål 1865: 115. — Villiers 1948: 237. — Miller 1953: 589. — Maldonado Capriles 1990: 358.

Pirates rubricosus – Walker 1873: 111.

Pirates (Fusius) rubricosus – Stål 1874: 57.

Fusius ugandensis – Maldonado Capriles 1990: 358.

Diagnosis

Body color black and red in large part; anterior lobe of pronotum black, with distinct red stripes, posterior lobe of pronotum red; legs brown to dark brown, apex of fore femur, base of mid femur and basal half of hind femur yellow, tibiae with basal part yellow in various proportion; apex of clavus yellowish white; membrane with a yellowish white band in various size; sub-apical margin of sixth abdominal sternite of male strongly sclerotized and distinctly irregular; median pygophore process robust with basal half somewhat rectangular, apical half suddenly narrowed and tapered to apex; left paramere distinctly longer than right paramere; area near apex of right paramere with a round process; apical margin of dorsal phallosclerite bluntly rounded; process on lower right corner of lateral phallosclerite distinct and horned.

Material examined

Lectotype (designated in present study)

SOUTH AFRICA • ♂; “Typus; Caffraria.; J. Wahlb.; *rubricosus* Stål”; NHRS-GULI 000000133 (Fig. 12).

Holotype of *Fusius ugandensis* Miller, 1957

UGANDA • ♂; “HOLOTYPE; Type; UGANDA, KAMPALA 1-10. I. 1918 C C. GOWDEV.; *Fusius ugandensis* sp. n. (holotype) N.C.E. Miller det. 1956; 1918-65; G.”; NHMUK 013586530 (Fig. 13).

Additional material

DEMOCRATIC REPUBLIC OF THE CONGO • 1 ♂; “N. Rhodesia: Congo Border. Kipushi. 26.1.1928. H. Silvester Evans.; Pres. by Imp. Inst. Ent. Brit. Mus. 1932-154., 12. 28, C.”; NHMUK.

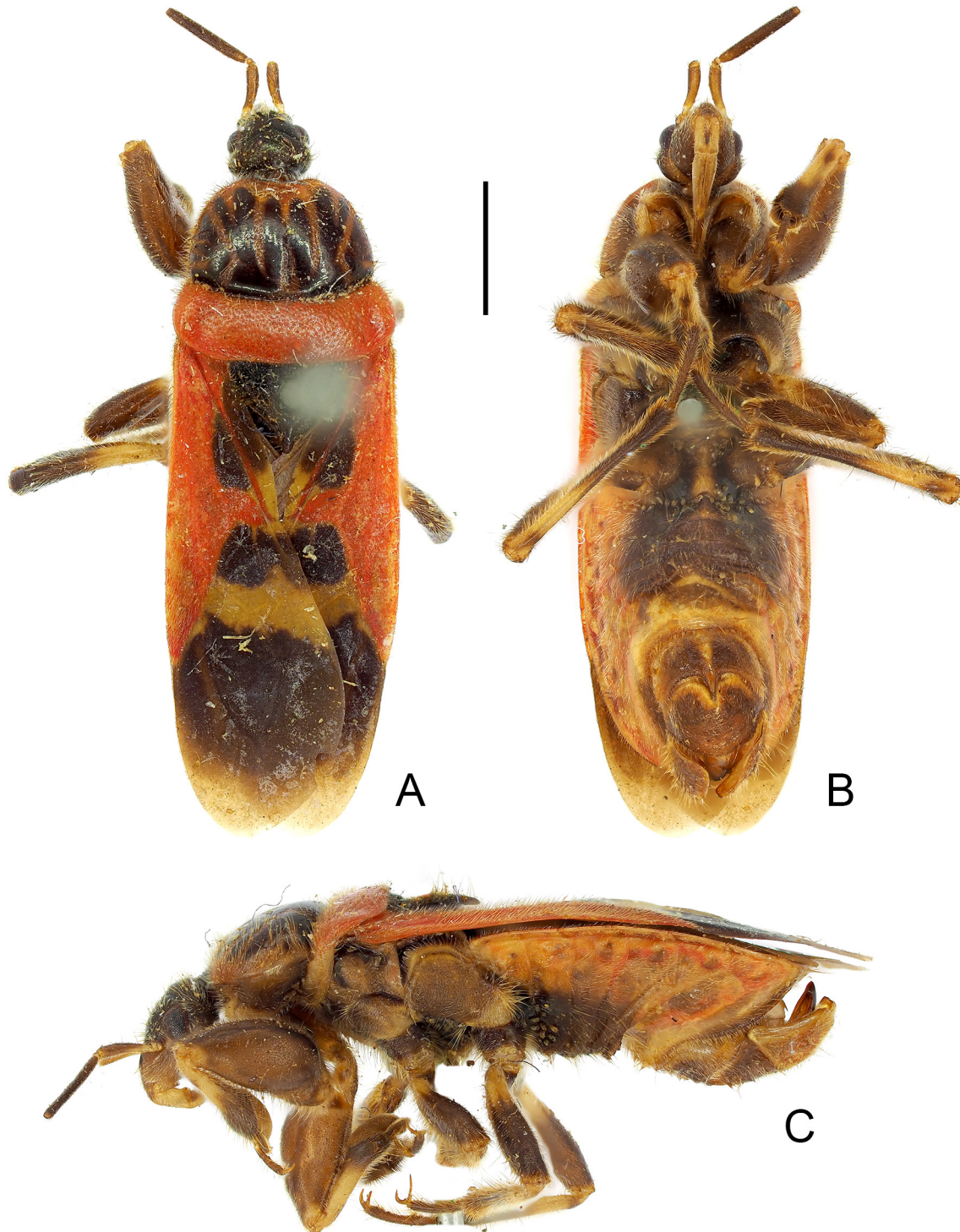
KENYA • 1 ♂; “Dr. van Someren. RABAI. May: 1928.; V.G.L. van Someren Collecton.; Brit. Mus. 1959-468”; NHMUK.

MALAWI • 1 ♂; “NYASSALAND. Milanji. B. Mrris. vii.-ix. 1963.; B.M.1976-210”; NHMUK.

SOUTH AFRICA • 3 ♂♂, 1 ♀; “Barberton (P. Rendall.); Distant Coll. 1911-383”; NHMUK • 1 ♂, 1 ♀; “SOUTH AFRICA: Transvaal n. Kruger National Park Pafuri. 22°27'S 31°17'E 21/1 1979 L. Braack ex. Impala carcass; 9 21/1 1200 B 196; Brit. Mus. 1979-537”; NHMUK • 1 ♂; “SOUTH AFRICA: Transvaal n. Kruger National Park Pafuri. 22°27'S 31°17'E 20/1 1979 L. Braack ex. Impala carcass; 8 20/1 1200 B 172; Brit. Mus. 1979-537”; NHMUK.

TANZANIA • 1 ♂; “TANG. TERR: Temdaguru. 24. VI. 25. East Africa Exp. W.E. Cutler. B.M. 1925-277”; NHMUK • 1 ♂; “Tanganyika Terr. 20. X. 1919. A. Loveridge.; Pres. by Imp. Bur. Ent. Brit. Mus. 1926-394”; NHMUK • 1 ♀; “Tanganyika Terr. 9. 1. 1917. A. Loveridge.; Pres. by Imp. Bur. Ent. Brit. Mus. 1926-394”; NHMUK.

ZIMBABWE • 1 ♀; “ZIMBABWE: A. Watsham B.M. 1985-248”; NHMUK.



Typus Caffra-
ria. J. Wahlb. *rubricosus* Stål NHRS-GULI
00000133

Fig. 12. *Fusius rubricosus* (Stål, 1855), lectotype, ♂ (NHRS-GULI 00000133), habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar = 2.00 mm.

Redescription

MEASUREMENTS [in mm, ♂ (n = 11), ♀ (n = 4)]. Body length 10.12–10.50 (♂), 10.59–11.41 (♀); maximum width of abdomen 3.00–3.53 (♂), 3.24–3.70 (♀); head length 1.65–1.69 (♂), 1.70–1.78 (♀); length of anteocular part 0.75–0.77 (♂), 0.77–0.83 (♀); length of postocular part 0.41–0.45 (♂), 0.49–0.51 (♀); head width 1.24–1.30 (♂), 1.27–1.27 (♀); eye width in dorsal view 0.23–0.26 (♂), 0.22–0.25 (♀); width of interocular space 0.78–0.82 (♂), 0.70–0.78 (♀); width of interocellar space 0.25–0.29 (♂), 0.29–0.29 (♀); lengths of visible labial segments I:II:III = 0.60–0.61:0.90–0.95:0.49–0.51 (♂), 0.50–0.61:1.03–1.10:0.49–0.68 (♀); lengths of antennal segments I:II:III:IV = 0.80–0.80:1.50–1.60:0.88–0.92:0.85–? (♂), 0.72–0.86:1.30–1.48:0.87–0.89:?? (♀); length of anterior pronotal lobe 1.80–2.00 (♂), 1.70–1.79 (♀); length of posterior pronotal lobe 0.91–1.09 (♂), 0.90–1.00 (♀); width of anterior pronotal



Fig. 13. *Fusius ugandensis* Miller, 1957, holotype, ♂ (NHMUK 013586528), habitus. A. Dorsal view. B. Ventral view. C. Lateral view. Scale bar = 2.00 mm.

lobe 2.50–2.78 (♂), 2.10–2.59 (♀); width of posterior pronotal lobe 3.10–3.44 (♂), 3.12–3.19 (♀); scutellum length 1.11–1.35 (♂), 1.11–1.37 (♀); maximum width of scutellum 1.60–1.69 (♂), 1.18–1.79 (♀); hemelytron length 7.00–8.11 (♂), 7.58–8.22 (♀).

COLORATION. Body color black and red in large part (Figs 12–14); dorsal surface of head black, ventral surface of head dark brown, labium yellowish brown; antenna with scape brown, remaining segments blackish brown (Figs 12–14); anterior lobe of pronotum black with red stripes, red stripes distinct, posterior lobe of pronotum red (Figs 12A, 13A, 14); scutellum black (Figs 12–14), pleura and sterna dark brown (Figs 12–13); coxae and trochanters dark brown; fore femur dark brown, apically with irregular yellow markings, mid femur dark brown except base yellow, hind femur with basal half yellow and apical half dark brown; tibiae dark brown with basal part yellow in various proportion; tarsi brown (Figs 12–14); base of clavus red, middle part with an oblong black spot, apex yellowish white (Figs 12A, 13A, 14); corium red with a triangular black spot on area between Cu and Pcu (Figs 12A, 13A, 14); membrane blackish brown with a yellowish white band around two cells, size of this band varies among individuals (Figs 12A, 13A, 14), sometimes not across membrane (Figs 13A, 14A), sometimes yellowish white area occupying large part of membrane (Fig. 14D), apical part of membrane paler (Figs 12A, 13A, 14A–C); connexivum reddish orange to red (Figs 12–14); second to sixth abdominal sternites brown to blackish brown in middle and yellowish brown in lateral part, seventh sternite yellowish brown with brownish markings on basal portion, eighth sternite and genitalic part brown to blackish brown (Figs 12B, 13B).

STRUCTURE. As in generic description. Sub-apical margin of sixth abdominal sternite of male strongly sclerotized and distinctly irregular (Figs 12B, 13B).

MALE GENITALIA. Median pygophore process robust with basal half somewhat rectangular, apical half suddenly narrowed and tapered to apex (Fig. 15A–B); left paramere (Fig. 15D) distinctly longer than right paramere (Fig. 15E), apex of left paramere rounded (Fig. 15D), area near apex of right paramere with a round process (Fig. 15E); apical margin of dorsal phallosclerite bluntly rounded (Fig. 15F); process on lower right corner of lateral phallosclerite distinct and horned (Fig. 15I). Other structures as in generic description.

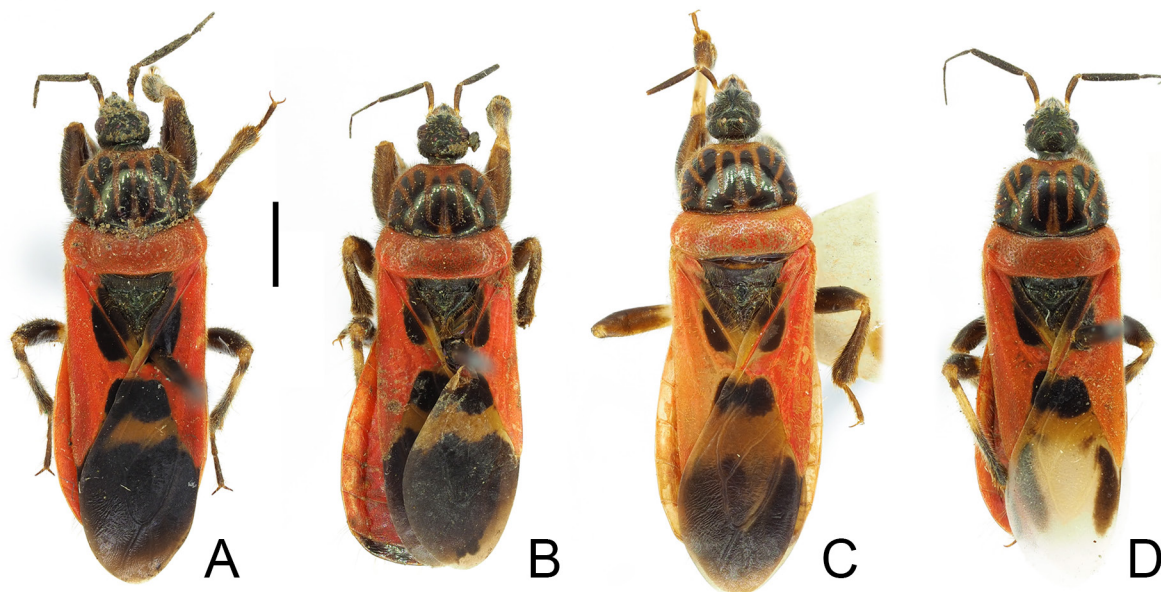


Fig. 14. Intraspecific variation in *Fusius rubricosus* (Stål, 1855). Scale bar = 2.00 mm.

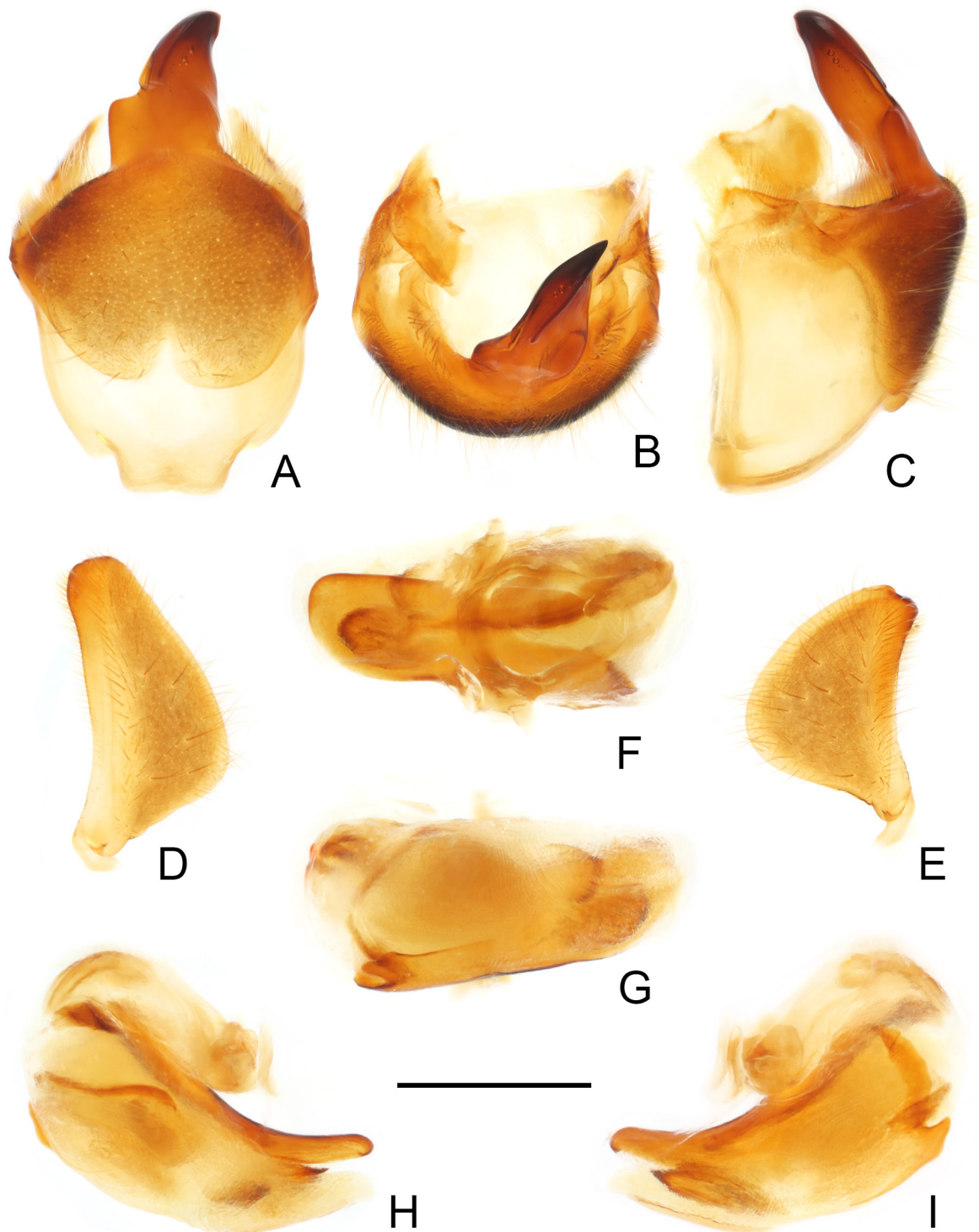


Fig. 15. Male genitalia of *Fusius rubricosus* (Stål, 1855), non-type specimen from South Africa (NHMUK). **A–C.** Pygophore. **D.** Left paramere. **E.** Right paramere. **F–I.** Phallus. **A, G.** Ventral view. **B.** Caudal view. **C, H–I.** Lateral view. **D–E.** Outer ventrolateral view. **F.** Dorsal view. Scale bar: **A–E** = 1.00 mm; **F–I** = 0.85 mm.

Distribution

South Africa: Limpopo, Kruger National Park; Uganda: Kampala; DR Congo: Kipushi; Kenya: Rabai; Malawi: Milanji hill; Tanzania: Tendaguru, Lake Manyara (Miller 1957); Zimbabwe; Mozambique: Caia (Miller 1957).

Remarks

The character Miller (1957) used to distinguish *F. rubricosus* (Stål, 1855) and *F. ugandensis* Miller, 1957 is “anterior margin of collar strongly concave” in *F. rubricosus*, or “anterior margin of collar feebly concave” in *F. ugandensis*. In his revision of *Fusius*, Dispons (1969) mentioned that the red stripes on the anterior lobe of the pronotum are very wide in *F. ugandensis*, and that the male genitalia of these two species were divided into different groups.

After examining type specimens and other material of these taxa, we found that the degree of curvature of the anterior margin of the pronotum is not a stable character, it is indeed more concave in the lectotype of *F. rubricosus* (Fig. 12A), but there are still some individuals of *F. rubricosus* with the nearly straight anterior margin of the pronotum (Figs 14A, 14C). And instead of being wider, the red stripes on the anterior lobe of the pronotum in the holotype of *F. ugandensis* (Fig. 13A) are even narrower than those in the lectotype of *F. rubricosus* (Fig. 12A), which could not be a diagnostic character between these two species either.

As for the male genitalia, the asymmetry of peiratine male genitalia makes it difficult to observe and record as the shape of the asymmetrical median pygophore process could look very different when viewed from a slightly different angle. Besides, the male genitalia of the holotype of *F. ugandensis* were not dissected from its body (Fig. 13), which indicates that the illustrations Miller drew (Miller 1957: 63, fig. 19d) were based on the observation from the outside only. Therefore, we speculate that the illustrated differences in the median pygophore process between *F. rubricosus* and *F. ugandensis* (Miller 1957; Dispons 1969) have been presented due to the different viewing angles. In addition, the left paramere distinctly longer than the right paramere is a unique character of the male genitalia of *F. rubricosus* (Figs 15D, 15E). From Miller’s illustrations (Miller 1957: 63, fig. 19), we could find that the left paramere is also distinctly longer than the right paramere in *F. ugandensis*, but only slightly longer than the right in other species of *Fusius*.

Though the type localities of *F. rubricosus* and *F. ugandensis*, South Africa and Uganda, are relatively far from each other, *F. rubricosus* is recorded to be widely distributed in eastern and southern Africa (Miller 1957). By reason of the foregoing, we regard *F. ugandensis* Miller, 1957 as a junior subjective synonym of *F. rubricosus* (Stål, 1855).

Discussion

Diagnostic characters and relationships of *Fusius* Stål, 1862

The diagnosis of *Fusius* is revised (see above) based on the observation of the four included species. This set of characters could separate this genus from all other genera of Peiratinae, especially the strongly compressed abdominal sternites and the large male genitalia.

In the Afrotropical Region, *Fusius* is most similar to the genus *Parapirates* Villiers, 1959 in general body shape. Besides the unique characters mentioned above, *Fusius* can also be distinguished from *Parapirates* by the following characters: the head longer than its width (vs the head shorter than its width in *Parapirates*); the fore tibia with the fossula spongiosa occupying about $\frac{2}{5}$ of the tibial length, the mid tibia with the fossula spongiosa occupying about $\frac{1}{3}$ of the tibial length (vs the fore tibia with the fossula spongiosa occupying no more than $\frac{1}{3}$ of the tibial length, the mid tibia with the fossula

spongiosa occupying only the apex of the ventral surface in *Parapirates*) and the abdomen oval (vs the abdomen nearly roundly rectangular in cross section in *Parapirates*). The species of *Fusius* with the red-black body color share the similar color pattern with *Peirates stridulus* (Fabricius, 1787) (recorded by Signoret in Fairmaire & Signoret 1858) and *Oblongiala zimbabwensis* Liu & Cai, 2020. However, the species of *Fusius* can be easily separated from the latter two species by the more robust body shape, the reduced collar process and the interocular distance more than three times as long as the width of the eye in dorsal view (vs the interocular distance less than 2.5 times as long as the width of the eye in dorsal view in *P. stridulus* and *O. zimbabwensis*).

Distribution and habitat of *Fusius* Stål, 1862

Fusius is mainly distributed in rainforests or savannas in Africa with relatively low altitude (Fig. 16). The distribution of *F. dilutus* extends from west to east across central Africa. *Fusius distinctus* has been only recorded in DR Congo, Cameroon and Uganda so far. *Fusius hflavus* is distributed in western Africa along the Gulf of Guinea while *F. rubricosus* widely occurs in southeast Africa. Peiratinae species

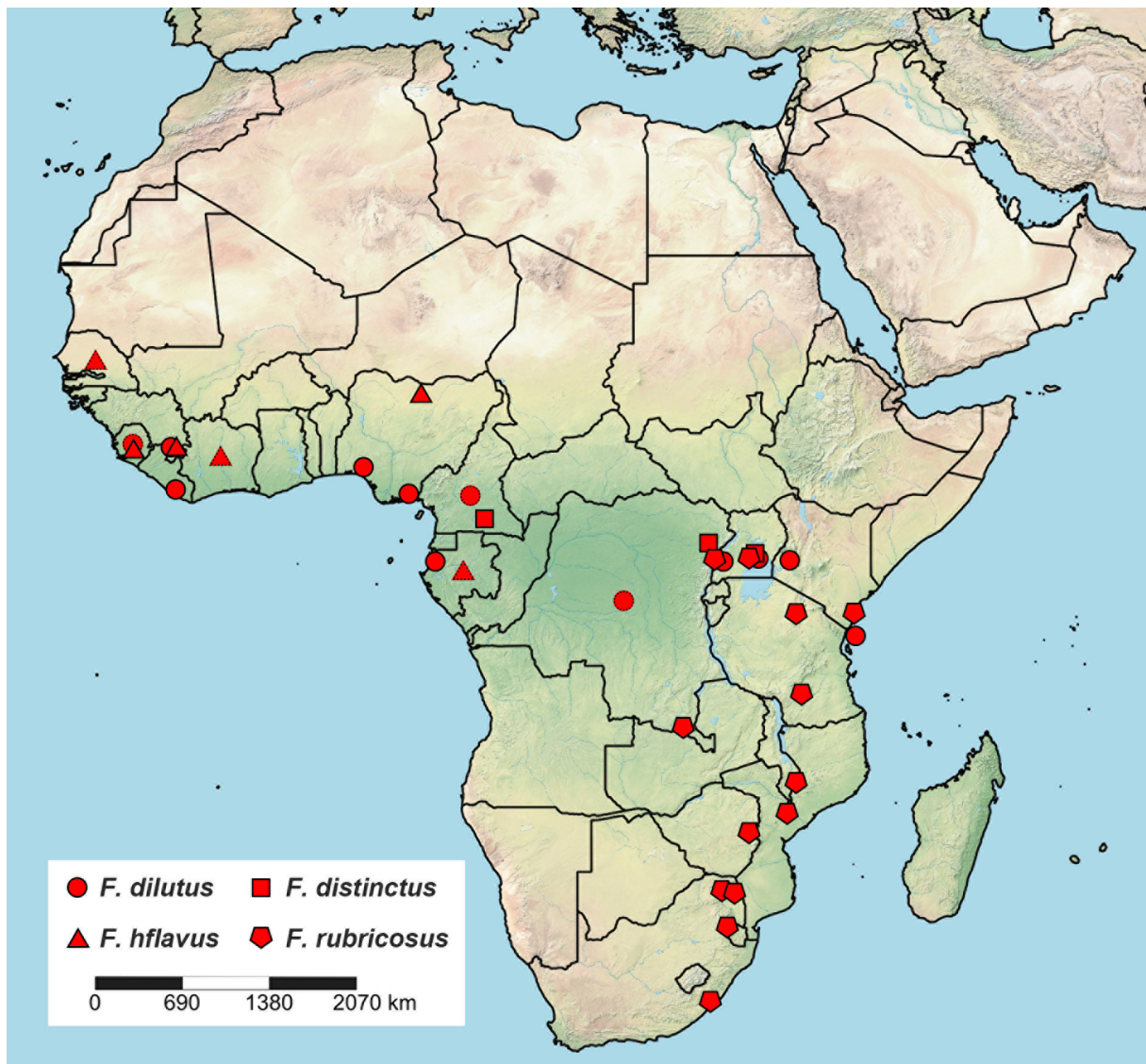


Fig. 16. Distribution of *Fusius* Stål, 1862.

are primarily ground dwelling and nocturnal (Weirauch *et al.* 2014), and Miller (1953) once recorded that he captured two females of *F. rubricosus* on grass stems and under a mass of cow-dung. It can be speculated that species of *Fusius* usually hide in some cryptic microhabitats such as in rotted wood, animal wastes and cracks of grass or rocks during the daytime to avoid the high temperature and become active at night.

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References

- Amyot C.J.-B. & Audinet-Serville J.G. 1843. *Histoire naturelle des Insectes. Hémiptères*. Librairie encyclopédique de Roret, Paris. <https://doi.org/10.5962/bhl.title.8471>
- Chłond D. 2007. Classification of the true bugs of the subfamily Peiratinae (Heteroptera: Reduviidae). *Genus Supplement* 14: 67–69.
- Chłond D. 2018. A taxonomic revision of the genus *Sirthenea* (Hemiptera: Heteroptera: Reduviidae) of the Old World. *Zootaxa* 4520: 1–85. <https://doi.org/10.11646/zootaxa.4520.1.1>
- Coscarón M.C. 1997. Revision of the genus *Peirates* Serville, with a cladistic and biogeographic analysis (Heteroptera: Reduviidae, Peiratinae). *Insect Systematics and Evolution* 28: 39–73. <https://doi.org/10.1163/187631297x00150>
- Coscarón M.C. 2002. Systematic analysis of *Calistocoris* Reuter, 1881, *Ceratopirates* Schouteden, 1933, and *Pachysandalus* Jeannel, 1916 (Heteroptera: Reduviidae: Peiratinae). *Annales du Musée royal de l'Afrique centrale, Sciences zoologiques* 290: 27–37.
- Coscarón M.C. & Morrone J.J. 1995. Systematics, cladistics, and biogeography of the *Peirates collarti* and *P. lepturoides* species groups (Heteroptera: Reduviidae: Peiratinae). *Entomologica Scandinavica* 26: 191–228. <https://doi.org/10.1163/187631295x00198>
- Dispons P. 1969. Les Piratinae de l'Institut royal des Sciences naturelles de Belgique (Hemiptera-Heteroptera, Reduviidae) Première note. *Bulletin de l'Institut royal des Sciences naturelles de Belgique* 45: 1–10.
- Fairmaire L. & Signoret A.V. 1858. Ordre des Hémiptères. In: J. Thomson, *Voyage au Gabon. Histoire naturelle des Insectes et des Arachnides recueillis pendant un voyage fait au Gabon en 1856 et en 1857 par M. Henry C. Deyrolle sous les auspices de MM. Le Comte de Mnischek et James Thomson précédée de l'histoire du voyage*. *Archives entomologiques* 2: 268–343. <https://doi.org/10.5962/bhl.title.11206>
- Ghauri M.S.K. 1964. A remarkable phenomenon amongst the males of Piratinae (Reduviidae, Heteroptera). *Annals and Magazine of Natural History* 7: 733–737. <https://doi.org/10.1080/00222936408651525>
- ICZN (International Commission on Zoological Nomenclature). 1999. *International Code of Zoological Nomenclature, Fourth Edition*. International Trust for Zoological Nomenclature, London. Available from <https://www.iczn.org/the-code/the-code-online/> [accessed 6 Nov. 2023].
- Jeannel R. 1919. *Voyage de Ch. Alluaud et R. Jeannel en Afrique Orientale (1911-1912). Résultats scientifiques. Insectes Hémiptères. III. Henicocephalidae et Reduviidae*. L. Lhomme, Paris. <https://doi.org/10.5962/bhl.title.152165>

- Lent H. & Wygodzinsky P. 1979. Revision of the Triatominae (Hemiptera, Reduviidae), and their significance as vectors of Chagas' disease. *Bulletin of the American Museum of Natural History* 163: 125–520. Available from <https://digitallibrary.amnh.org/items/bd3753d6-52a5-40bb-9911-f4330439547d> [accessed 6 Nov. 2023].
- Lethierry L.F. & Severin G. 1896. *Catalogue général des Hémiptères. Vol. II. Hétéroptères*. F. Hayez, Imprimeur de l'Académie royale de Belgique, Brussels. <https://doi.org/10.5962/bhl.title.15830>
- Liu Y., Chen Z., Webb M.D. & Cai W. 2020a. Revision of the assassin bug genus *Neopirates* (Heteroptera: Reduviidae: Peiratinae), with descriptions of two new species from Namibia. *European Journal of Entomology* 117: 343–351. <https://doi.org/10.14411/eje.2020.039>
- Liu Y., Chen Z., Webb M.D. & Cai W. 2020b. *Oblongiala zimbabwensis*, a new assassin bug genus and species from Zimbabwe, with a key to the Afrotropical genera of Peiratinae (Hemiptera: Heteroptera: Reduviidae). *Acta Entomologica Musei Nationalis Pragae* 60: 659–665. <https://doi.org/10.37520/aemnp.2020.047>
- Liu Y., Webb M.D. & Cai W. 2020c. Redescription of the African assassin bug *Ectomocoris proximus* (Hemiptera: Heteroptera: Reduviidae) with a new synonymy. *Zootaxa* 4834: 443–450. <https://doi.org/10.11646/zootaxa.4834.3.7>
- Liu Y., Lemaître V.A. & Cai W. 2021. Revalidation of the Australasian genus *Microsandalus* Stål stat. rev., with redescription of *M. umbrosus* Stål (Hemiptera: Reduviidae). *Austral Entomology* 60: 505–513. <https://doi.org/10.1111/aen.12555>
- Liu Y., Li H. & Cai W. 2022. Revision of the assassin bug genus *Sigicoris* stat. nov. based on morphological study and molecular phylogeny (Heteroptera: Reduviidae: Peiratinae). *Insects* 13: 951. <https://doi.org/10.3390/insects13100951>
- Maldonado Capriles J. 1990. *Systematic Catalogue of the Reduviidae of the World (Insecta: Heteroptera)*. A special edition of Caribbean Journal of Science, Mayagüez.
- Malipatil M.B., Liu Y. & Cai W. 2023. Revision of Australian *Ectomocoris* with the description of nine new species (Hemiptera: Heteroptera: Reduviidae). *Zootaxa* 5263: 451–504. <https://doi.org/10.11646/zootaxa.5263.4.1>
- Melo M.C. 2012. On the taxonomic placement of the genus *Sinnamarynus* (Hemiptera: Heteroptera: Reduviidae), and a new record of *S. rasahusoides* from Peru. *Check List* 8: 540–541. <https://doi.org/10.15560/8.3.540>
- Miller N.C.E. 1953. Notes on the biology of the Reduviidae of Southern Rhodesia. *Transactions of the Zoological Society of London* 27: 541–672. <https://doi.org/10.1111/j.1096-3642.1953.tb00233.x>
- Miller N.C.E. 1957. New genera and species of Ethiopian, Mascarene and Australian Reduviidae (Hemiptera-Heteroptera) in the British Museum (Natural History). *Bulletin of British Museum (Natural History)* 5: 29–81. <https://doi.org/10.5962/bhl.part.1507>
- Reuter O.M. 1881. *Ad cognitionem Reduviidarum mundi antique*. [Also published in *Acta Societatis Scientiarum Fennicae* 1883, 12: 269–339.]
- Schouteden H. 1931. Catalogues raisonnés de la faune entomologique du Congo belge. Part I. Hemiptera-Reduviidae. *Annales du Musée du Congo belge* 1: 97–161. <https://doi.org/10.5962/bhl.title.13842>
- Shorthouse D.P. 2010. SimpleMappr, an online tool to produce publication-quality point maps. Available from <https://www.simplemappr.net> [Accessed 7 May 2020].
- Stål C. 1855. Nya Hemiptera. *Öfversigt af Kongliga Vetenskaps-Akademiens Förhandlingar* 12: 181–192. Available from <https://www.biodiversitylibrary.org/page/15969933> [accessed 6 Nov. 2023].

Stål C. 1862. Hemiptera Mexicana enumeravit speciesque novas descripsit. *Entomologische Zeitung* 23: 437–462. Available from <https://www.biodiversitylibrary.org/page/8931517> [accessed 6 Nov. 2023].

Stål C. 1865. *Hemiptera Africana*. Vol. 3. Ex officina Norstedtiana, Stockholm [Holmiæ].
<https://doi.org/10.5962/bhl.title.8566>

Stål C. 1874. Enumeratio Reduviidarum Europae, Africae, Asiae, et Australiae. In: Enumeratio Hemipterorum, IV. *Kongliga Svenska Vetenskaps-Akademiens Handlingar* 12 (1): 3–97.
<https://doi.org/10.5962/bhl.title.12549>

Villiers A. 1948. *Faune de l'Empire français. IX. Hémiptères Réduviidés de l'Afrique noire*. Éditions du Muséum, Paris.

Villiers A. 1963. La Reserve Naturelle Integrale du Mont Nimba. X–XV. Hemiptera, Reduviidae. *Mémoires de l'Institut français d'Afrique noire* 66: 479–565.

Walker F. 1873. *Catalogue of the Specimens of Hemiptera Heteroptera in the Collection of the British Museum. Part VII*. Printed for the Trustees of the British Museum, London.
<https://doi.org/10.5962/bhl.title.9254>

Weirauch C., Bérenger J.-M., Berniker L., Forero D., Forthman M., Frankenberg S., Freedman A., Gordon E., Hoey-Chamberlain R., Hwang W.S., Marshall S.A., Michael A., Paiero S.M., Udah O., Watson C., Yeo M., Zhang G. & Zhang J. 2014. An illustrated identification key to assassin bug subfamilies and tribes (Hemiptera: Reduviidae). *Canadian Journal of Arthropod Identification* 26: 1–115. <https://doi.org/10.3752/cjai.2014.26>

Zhang G. & Weirauch C. 2011. Matching dimorphic sexes and immature stages with adults: resolving the systematics of the *Bekilya* group of Malagasy assassin bugs (Hemiptera: Reduviidae: Peiratinae). *Systematic Entomology* 36: 115–138. <https://doi.org/10.1111/j.1365-3113.2010.00551.x>

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