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The genus *Phalaecus* Stål, 1862 in French Guiana, description of *P. carmini* n. sp., and the female of *P. lineatus* Grazia, 1983 from Mitaraka (Hemiptera: Pentatomidae)

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Mitiraka Mountains (French Guiana) (photo Sylvain Hugel). In médaillon, *Phalaeucus carmini* n. sp., ♂ dorsal, holotype.

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# The genus *Phalaecus* Stål, 1862 in French Guiana, description of *P. carmini* n. sp., and the female of *P. lineatus* Grazia, 1983 from Mitaraka (Hemiptera: Pentatomidae)

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**KEY WORDS**  
Heteroptera,  
Pentatomoidea,  
Pentatomini,  
South America,  
Neotropics,  
Amazon rainforest,  
new species.

## ABSTRACT

Five species of the Neotropical genus *Phalaecus* Stål, 1862 were known up to now: *P. lineatus* Grazia, 1983, *P. nigromaculatus* Grazia, 1983, *P. paraense* Grazia, 1983, *P. pustulatus* (De Geer, 1773), and *P. ruckesi* Grazia, 1983. *Phalaecus pustulatus* was the only species mentioned from French Guiana. We mention here the first records of *P. lineatus*, *P. nigromaculatus*, and *P. ruckesi* to French Guiana. The female of *P. lineatus* is described for the first time, and a new species, *Phalaecus carmini* n. sp., is described. An identification key of the five adult *Phalaecus* species found in French Guiana is proposed, and color pictures of the habitus are given for the first time.

## RÉSUMÉ

*Le genre Phalaecus Stål, 1862 en Guyane, avec la description de P. carmini n. sp., et de la femelle de P. lineatus Grazia, 1983 au Mitaraka (Hemiptera: Pentatomidae).*

Cinq espèces du genre néotropical *Phalaecus* Stål, 1862 étaient connues jusqu'à présent: *P. lineatus* Grazia, 1983, *P. nigromaculatus* Grazia, 1983, *P. paraense* Grazia, 1983, *P. pustulatus* (De Geer, 1773), et *P. ruckesi* Grazia, 1983. *Phalaecus pustulatus* était la seule espèce connue en Guyane. Nous signalons ici, pour la première fois, la présence de *P. lineatus*, *P. nigromaculatus* et *P. ruckesi* en Guyane. La femelle de *P. lineatus* est décrite pour la première fois et une nouvelle espèce, *Phalaecus carmini* n. sp., est décrite. Une clé d'identification des adultes des cinq espèces de *Phalaecus* rencontrées en Guyane est proposée, et des images en couleurs de leur habitus sont montrées pour la première fois.

**MOTS CLÉS**  
Heteroptera,  
Pentatomoidea,  
Pentatomini,  
Amérique du Sud,  
néotropical,  
forêt pluviale amazonienne,  
espèce nouvelle.

## INTRODUCTION

*Phalaeus* Stål, 1862 was a monotypic genus until 1983, with the only known species *Phalaeus pustulatus* (De Geer, 1773) redescribed more precisely by Bergroth (1910). Grazia (1983) described four new species of *Phalaeus*: *P. lineatus* Grazia, 1983; *P. nigromaculatus* Grazia, 1983; *P. paraense* Grazia, 1983 and *P. ruckesi* Grazia, 1983. Specimens of the genus *Phalaeus* are relatively rare in collections: Grazia (1983) mentioned only 20 specimens conserved in eight museums in the world. She mentioned this genus only from the Amazon region: Brazil, Guyana, Surinam and French Guiana. *Phalaeus pustulatus* was mentioned in these four countries, *P. ruckesi* and *P. lineatus* from Surinam, *P. nigromaculatus* from Brazil and Surinam, and *P. paraense* from Brazil. She didn't provide identification key and presented black and white drawings of the adults of two species: *P. lineatus* and *P. nigromaculatus*, the male genitalia of the five species, and the female genitalia of three species: *P. nigromaculatus*, *P. pustulatus* and *P. ruckesi*, the females of *P. lineatus* and *P. paraense* remaining unknown. The biology of this genus is unknown including its host plants and its nymphs.

A total of 117 *Phalaeus* specimens were recently collected using different kind of traps in French Guiana. We found among those specimens some species never collected in French Guiana before as well as the presence of a new species and the female of *P. lineatus* discovered initially at Mitaraka during the 2015 expedition led by MNHN. The new species and the female of *P. lineatus* are described here, and a key is given to identify all the *Phalaeus* species from French Guiana using new characters shown on color pictures of their habitus, never published before (Fig. 1).

In order to compare genitalia of the new species with the other species of the genus, the dorsal views of the dissected male pygophores of five of the six species were photographed and shown side by side with the redrawn corresponding drawings from Grazia (1983). Also, to compare the female of *P. lineatus* to the females of the other species, the ventral views of female genital plates of *P. lineatus*, *P. nigromaculatus* and *P. pustulatus*, were photographed and drawn (Fig. 2).

## MATERIAL AND METHODS

Traditional UV-MV light traps, set up for more than 60 nights between 1995 and 2004, followed by the installation of automatic 20W LED trapping systems (Polyvie®, GemLight®) and glass interception traps in French Guiana, sorted and recorded all year since 2009 by the SEAG from Mana (Angoulême), Maripasoula (Mont Itoupé), Matoury, Régina (Nouragues, Crique Orfion), Roura (Montagne des Chevaux), St-Laurent-du-Maroni, Saül (point de vue), allowed us to access new specimens of *Phalaeus*. Other specimens of the *P. pustulatus* and *P. lineatus* were collected during the “Our Planet Reviewed” Guyane-2015 expedition in the Mitaraka range, in the core area of the French Guiana Amazonian Park, organized by the MNHN and Pro-Natura international (Touroult *et al.* 2018).

The localities of the 117 specimens of the genus *Phalaeus* are listed and associated to the name of the municipality they belong to. They were collected only in French Guiana and are mainly conserved in author's collection (coll. RL), and also in the MNHN (MNHN) and Hydreco (coll. Hydreco, Sinnamary, French Guiana, France) collections.

Measurements were performed on photos digitalized with a precision scale, by expanding, measuring and comparing them on a computer screen.

## ABBREVIATIONS

ERDF	European Regional Development Fund;
IRD	Institut de Recherche pour le Développement;
LED	Light Emitting Diode;
NDSU	North Dakota State University, Fargo;
SEAG	Société entomologique Antilles-Guyane;
UFRRGS	Universidade Federal do Rio Grande do Sul, Porto Alegre;
UFP	Universidade Federal do Para, Belém;
UV-MV	Ultraviolet produced by at least one 125W mercury-vapor lamp.

*Institutional collection*

MNHN Muséum national d'Histoire naturelle, Paris.

*Private collection*

coll. RL collection Roland Lupoli, Fontenay-sous-bois;  
coll. Hydreco Hydreco, Sinnamary, French Guiana.

## SYSTEMATICS

Order HEMIPTERA Linnaeus, 1758

Family PENTATOMIDAE Leach, 1815

Genus *Phalaeus* Stål, 1862

*Phalaeus pustulatus* (De Geer, 1773)

(Figs 1A; 2A-D)

*Cimex pustulatus* De Geer, 1773: 329.

*Phalaeus pustulatus* – Stål 1872: 47.

MATERIAL EXAMINED. — **French Guiana.** 51 specimens: 26 ♀, 25 ♂. Matoury, La Désirée (Mont Matoury) Polyvie trap (blue LED), 18.X.2014, 1 ♂, coll. RL. — Sinnamary, Route du barrage de Petit Saut, V.1995, Jean-Michel Bérenger leg., 1 ♀, coll. RL. — Ouanary, Montagne Bruyère 19.II.2001, Hydreco leg., 2 ♀, coll. Hydreco; 17.VIII.2001, Hydreco leg., 2 ♂, coll. Hydreco. — Roura, Montagne des Chevaux RN2 pK 22, automatic Light trap, 21.X.2012, 1 ♀, coll. RL; Polyvie trap (blue LED), 21.VIII.2014, 1 ♀, coll. RL; Polyvie trap (blue LED), 22.XI.2014, 1 ♀, coll. RL; Polyvie trap (blue LED), 20.XII.2014, 1 ♂, coll. RL; Polyvie trap (blue LED), 27.XII.2014, 1 ♂, coll. RL; Polyvie trap (blue LED), 24.I.2015, 1 ♀, coll. RL. — Régina, Piste Bélizon pK 32 (14.5 + 17.5), UV-MV light trap, 16.X.2004, Roland Lupoli leg., 1 ♂, coll. RL. — Nouragues, Saut Pararé, 4°02'N, 52°41'W, UV-MV light trap, 17.VII.2009, 1 ♂, coll. RL; UV-MV light trap, 19.VII.2009, 1 ♂, coll. RL; UV-MV light trap, 22.VII.2009, 1 ♂, coll. RL. — Nouragues, Camp Inselberg, 4°02'N, 52°41'W, UV-MV light trap, 10.VIII.2010, 1 ♀, coll. RL; automatic light trap, 9.X.2012, 1 ♀, coll. RL; Crique Orfion, Orapu RN 2 pK 65, Polyvie trap (blue LED) 1.X.2016, 1 ♀, coll. RL. — Mana, Acarouany, Forest 3 km before on D10, 16.IX.1998, Lupoli leg., 2 ♀, coll. RL; Laussat ouest, 05°28'31.6N, 053°35'07.3W, UV

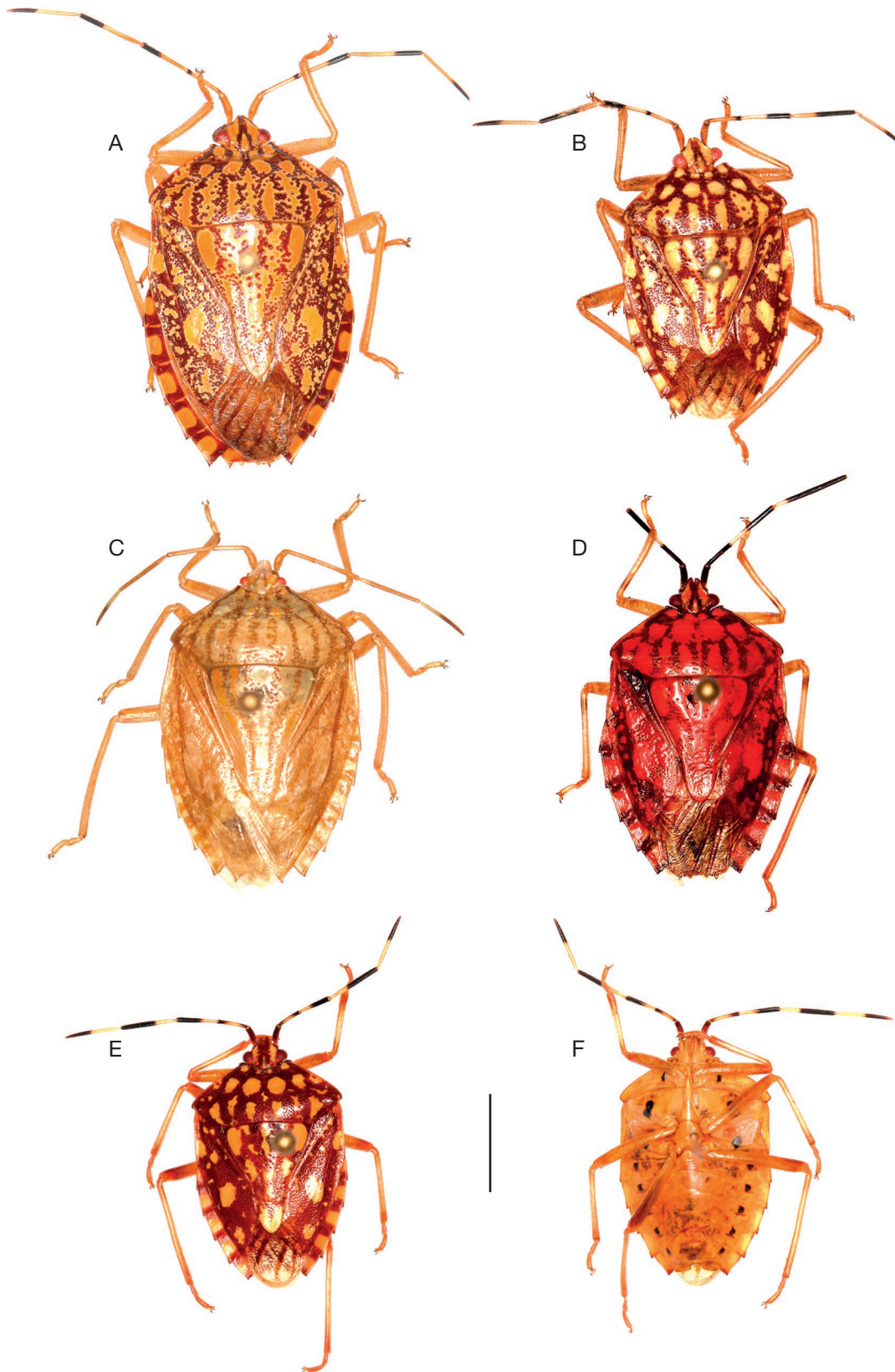


FIG. 1. — Habitus of *Phalaecus* spp. in French Guiana: **A**, *P. pustulatus* (De Geer, 1773), ♀ dorsal, Régina, Nouragues; **B**, *P. ruckesi* Grazia, 1983, ♂ dorsal, Roura, Montagne des Chevaux; **C**, *P. lineatus* Grazia, 1983, ♀ dorsal, Maripasoula, Massif du Mitaraka; **D**, *P. nigromaculatus* Grazia, 1983, ♀ dorsal, Roura, Montagne de Kaw; **E**, *Phalaecus carmini* n. sp., ♂ dorsal, Holotype, Sinnamary, route du barrage de Petit Saut; **F**, idem, ventral. Scale bar: 5 mm.



light trap, 12.V.2010, Greg Lamarre leg., 1 ♂, coll. RL; UV-MV light trap, 11.IX.2010, Greg Lamarre leg., 1 ♀, coll. RL. — Angoulême, Saut-Sabat RN1 pK 206+4, Polyvie trap (pink LED), 5.VIII.2016, 1 ♂, coll. RL. — St-Laurent-du-Maroni, Sommet Massif Lucifer (500 m), Polyvie trap (pink LED), 28.X.2014, 2 ♂, coll. RL. — Saül, VII.1980, Gérard Tavakilian leg., 1 ♀, MNHN; UV-MV light trap, 13.VIII.2009, 1 ♀, coll. RL. — Maripasoula, Borne 1, 02°12'50"N, 54°26'20"W, Cryldé trap, 25.IX.2006, Jean-Philippe Champenois leg., 1 ♀, coll. RL. — Mont Itoupé sommet 830 m, GemLight trap (UV & green LED), 11.I.2016, 1 ♀, coll. RL; Polyvie trap (pink LED), 16.I.2016, 1 ♂, coll. RL. — Mont Itoupé ouest 600 m, UV-MV light trap, 24.XI.2014, 1 ♂, coll. RL; Polyvie trap (pink LED), 11.I.2016, 2 ♂, coll. RL; GemLight trap (UV & green LED), 16.I.2016, 1 ♀, coll. RL; Polyvie trap (pink LED), 16.I.2016, 2 ♀, coll. RL. — Massif du Mitaraka, c. 2°14'N, 54°27'O, 25.II-26.III.2015, La Planète Revisitée – MNHN / PNI Guyane 2015 (APA 973-1), UV-MV light trap, 1.III.2015, 1 ♂, MNHN; Polyvie trap (blue LED), 3.III.2015, 1 ♂, coll. RL; Polyvie trap (pink LED), 13.III.2015, 1 ♂, coll. RL; Polyvie trap (blue LED), 17.III.2015, 1 ♂, coll. RL; Polyvie trap (pink LED), 19.III.2015, 1 ♀, MNHN; Polyvie trap (blue LED), 21.III.2015, 1 ♂, MNHN; Polyvie trap (blue LED), 25.III.2015, 1 ♀, MNHN; GemLight trap (UV & green LED), 25.III.2015, 2 ♂, coll. RL; GemLight trap (UV & green LED), 20.VIII.2015, 1 ♀, coll. RL; Polyvie trap (blue LED), 20.VIII.2015, 1 ♀, coll. RL; Polyvie trap (pink LED), 20.VIII.2015, 1 ♂ 2 ♀, coll. RL.

DISTRIBUTION. — Colombia: Nuqui (Choco), Leticia, Tarapaca, Puerto Nariño (Amazonas). Brazil: Parecis (Mato Grosso). Guyana: Rupununi, Moraballi Creek. Surinam: Kraka & Brownsberg (Brokopondo), Nickerie (Sipaliwini). French Guiana: Matoury, Sinnamary, Ouanary, Roura, Régina, Mana, St-Laurent du Maroni, Saül, Maripasoula (present paper).

REMARK

Although our male specimens fit on descriptions of this species made by Bergroth (1910) and Grazia (1983), these specimens (Fig. 2B) do not agree completely with the pygophore illustration of Grazia (Grazia 1983: 178, fig. 1 and Fig. 2A). Shapes of ventral and dorsal rims of the pygophore look similar but parameres from our specimens are much smaller, never go beyond the ventral rim and their tridimensional form is not clearly represented in the illustration. Bergroth (1910) and Grazia (1983) mentioned this species was previously collected from French Guiana, but no locality was reported. This species is the most “common” *Phalaeacus* species, and it is actually well distributed among nine municipalities all over French Guiana. More than a third of the specimens were collected with UV-MV light traps, and about two third were attracted by LED automatic light traps. Since the previous distribution reported by Grazia (1983), this species was also mentioned from Colombia by Torres Gutiérrez (2005).

*Phalaeacus ruckesi* Grazia, 1983

(Figs 1B; 2E-G)

*Phalaeacus ruckesi* Grazia, 1983: 183.

MATERIAL EXAMINED. — French Guiana. 2 ♂. Roura, Montagne des Chevaux RN2 pK 22, Polyvie trap (blue LED), 5.X.2013, 1 ♂, coll. RL; GemLight automatic trap, 12.X.2013, 1 ♂, coll. RL.

DISTRIBUTION. — Surinam: Nickerie (Sipaliwini) & Kamp-O. French Guiana: Roura (present paper).

REMARK

This species was only collected in Surinam more than 50 years ago. It is mentioned for the first time from French Guiana with two males collected at the same place using LED automatic light traps only in October 2013. So, a total of three males and two females of this species are known. A color picture of the habitus is given here for the first time.

*Phalaeacus lineatus* Grazia, 1983

(Figs 1C; 2H-J)

*Phalaeacus lineatus* Grazia, 1983: 186.

MATERIAL EXAMINED. — French Guiana. 60 specimens: 18 ♀, 42 ♂. Maripasoula, massif du Mitaraka, c. 2°14'N, 54°27'O, 25.II-26.III.2015, La Planète Revisitée – MNHN / PNI Guyane 2015 (APA 973-1), MNHN, UV-MV light trap, 25.II.2015, 1 ♂, coll. RL; Polyvie trap (pink LED), 3.III.2015, 7 ♂, coll. RL; GemLight trap (UV & green LED), 7.III.2015, 2 ♂, coll. RL; Polyvie trap (pink LED), 11.III.2015, 1 ♂, coll. RL; GemLight trap (UV & green LED), 13.III.2015, 1 ♂, coll. RL; Polyvie trap (pink LED), 20.III.2015, 5 ♂, 1 ♀, coll. RL; Polyvie trap (pink LED), 21.III.2015, 9 ♂, 1 ♀, coll. RL; GemLight trap (UV & green LED), 21.III.2015, 3 ♂, 2 ♀, MNHN; Polyvie trap (pink LED), 25.III.2015, 7 ♂ et 1 ♀, coll. RL; GemLight trap (UV & green LED), 25.III.2015, 6 ♀, 2 ♂, coll. RL; Polyvie trap (blue LED), 20.VIII.2015, 2 ♂, 2 ♀, MNHN; Polyvie trap (pink LED), 20.VIII.2015, 2 ♂, 2 ♀, coll. RL. — Saül, Point de vue, Polyvie trap (blue LED), 20.II.2017, 1 ♀, coll. RL; Polyvie trap (blue LED) 6.IV.2017, 2 ♀, coll. RL.

DISTRIBUTION. — Surinam: Pepeeje. French Guiana: Maripasoula and Saül (present paper).

DIAGNOSIS. — According to the original description of the male holotype from Surinam by Grazia (1983). Dorsal surface globally pale yellow-ocher as well as legs (Fig. 1C). Pronotum with ten longitudinal lines formed by brownish shallow punctures. Base of scutellum with four longitudinal punctured lines in the continuation of the four central pronotal longitudinal lines, only the two external lines reaching the apex. Corium with irregular punctured network of lines, formed by brownish shallow punctures, leaving large irregular pale yellow-ocher impunctate spots. Connexivum impunctate and almost concolorous, weakly marked alternatively with pale rufous spots. Antennomeres I to IV concolorous, apical half of antennomere V slightly darker.

Genital plates impunctate pale yellow-ocher (Fig. 2J) as well as ventral surface. Gonocoxites 8 oval with a ratio length/width larger than 1.5, reaching the posterior margin of gonocoxites 9. Gonocoxites 9 and laterotergites 9 are on the same plane. Apex of laterotergites 8 conical and very similar to the female of *P. pustulatus* (Fig. 2D) but slightly more inclined outwardly. Laterotergites 9 narrow, basally covered by gonocoxites 8, so their lateral margins are not protruding over the lateral sides of gonocoxites 8. Proctiger cylindrical.

DESCRIPTION OF FEMALE

*Measurements (mm)*

Total length: 15.7-17.2; pronotum width (at humeral angles): 9.0-9.6; abdomen width: 10.0-10.9; head length: 1.6-1.9; head width across the eyes: 2.3-2.5; pronotum length: 3.5-3.6; Antennomeres I: 1.2-1.5, II: 1.6-1.7, III: 2.2-2.6, IV: 3.1-3.3, V: 2.7-2.8.

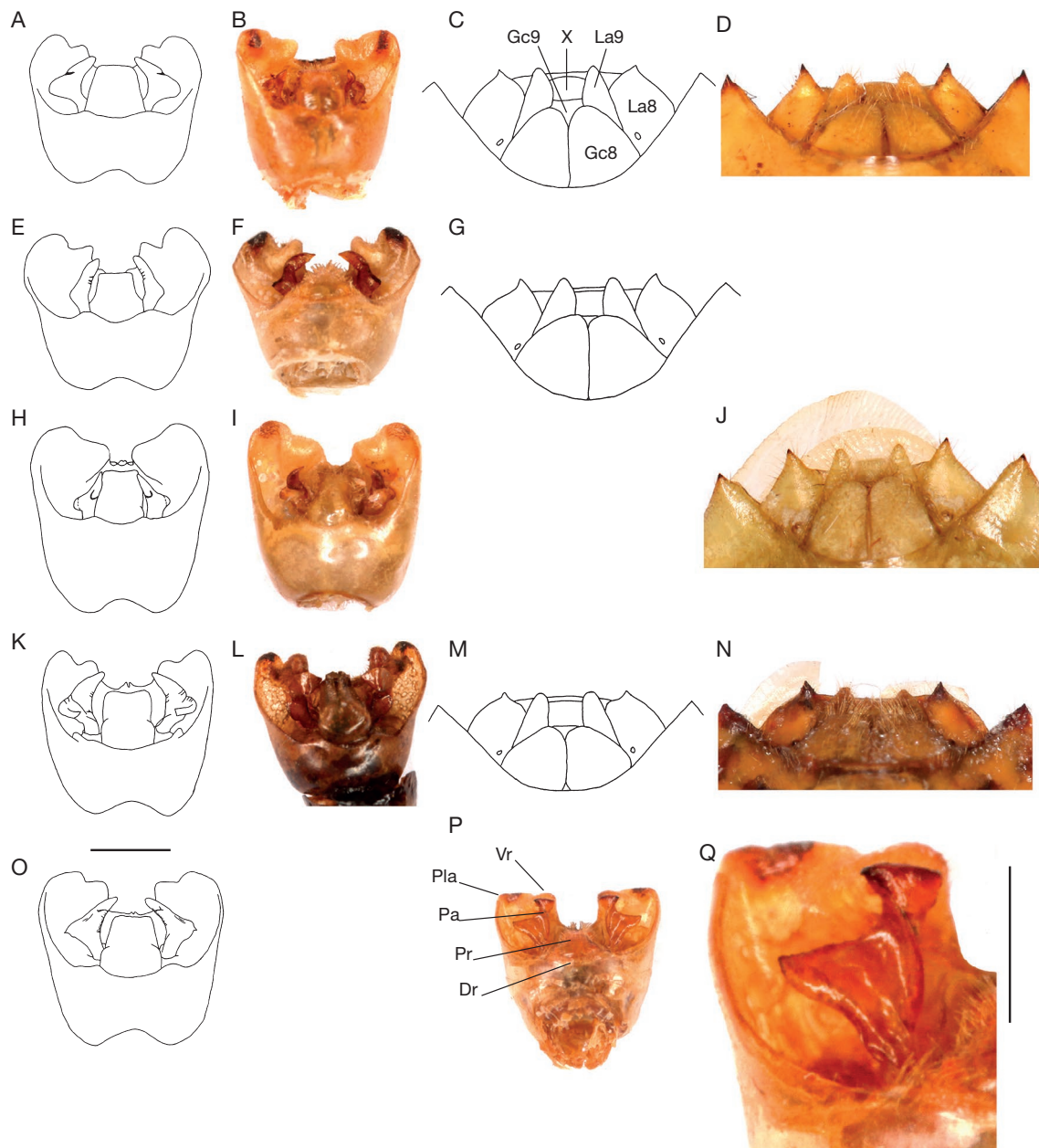


FIG. 2. — Male and female genitalia in *Phalaecus* spp.: **A**, *P. pustulatus* (De Geer, 1773) ♂, pygophore, dorsal; **B**, *idem* from Régina, Piste Bélizon; **C**, *idem* ♀ genital plates, ventral; **D**, *idem* from Régina, Nouragues; **E**, *P. ruckesi* Grazia, 1983 ♂ pygophore, dorsal; **F**, *idem* from Roura, Montagne des Chevaux; **G**, *idem* ♀, genital plates, ventral; **H**, *P. lineatus* Grazia, 1983 ♂, pygophore, dorsal; **I**, *idem*, from Maripasoula, Massif du Mitaraka; **J**, *idem* ♀, genital plates, ventral, from Maripasoula, Massif du Mitaraka; **K**, *P. nigromaculatus* Grazia, 1983 ♂, pygophore, dorsal; **L**, *idem*, from Roura, Montagne des Chevaux; **M**, *idem* ♀, genital plates, ventral; **N**, *idem*, from Roura, Montagne de Kaw; **O**, *P. paraense* Grazia, 1983 ♂, pygophore, dorsal; **P**, *P. carmini* n. sp. ♂, pygophore, dorsal, from Sinnamary, Route du barrage de Petit Saut; **Q**, *idem*, detail of the right paramere. Abbreviations: ♀ genitalia: **Gc8**, Gonocoxites 8; **Gc9**, Gonocoxites 9; **La8**, Laterotergites 8; **La9**, Laterotergites 9; **X**, abdominal segment X or Proctiger. ♂ genitalia: **Dr**, dorsal rim; **Vr**, ventral rim; **Pla**, posterolateral angle; **Pa**, paramere; **Pr**, abdominal segment X or Proctiger. Scale bars: A-P, 1 mm; Q, 0.5 mm. A, C, E, G, H, K, M, O are original drawings adapted from Grazia (1983).

#### REMARK

Described previously only from the male holotype collected in 1952, this species is mentioned here for the first time in French Guiana with 60 specimens collected in 2015 and 2017 from two localities (57 from Mitaraka, three from Saül), in-

cluding more than twice more males than females (sex ratio close to 2:1). The males may be more attracted by lights than females. Conversely, *P. pustulatus* sex ratio is close to 1:1. The female of *P. lineatus* is described here and this species is photographed for the first time.

*Phalaeus nigromaculatus* Grazia, 1983  
(Figs 1D; 2K-N)

*Phalaeus nigromaculatus* Grazia, 1983: 185.

MATERIAL EXAMINED. — French Guiana. 2 specimens: 1 ♀, 1 ♂. Roura, Montagne de Kaw, pK 37.5, hand catching, 12.VI.2003, Alexandre Bout leg., 1 ♀, coll. RL. — Montagne des Chevaux RN2 pK 22, Glass interception trap, 19.II.2012, 1 ♂, coll. RL.

DISTRIBUTION. — Brazil: Mato Grosso (Humbolt) & Amapa (Rio Amapari). Surinam: Brokopondo (Browsberg). French Guiana: Roura (present paper).

REMARK

This species does not seem to be attracted by lights. The female specimen was collected by sight and the male specimen with a glass interception trap. Also Grazia (1983) did not mention the use of light traps to collect the three specimens observed, 1 ♀ & 1 ♂ from Brazil and 1 ♀ from Surinam. This species is photographed for the first time. The dorsal color of the female collected is globally red although the color of the male is mostly dark orange.

*Phalaeus carmini* n. sp.  
(Figs 1E, F; 2P, Q)

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TYPE MATERIAL. — **Holotype**. ♂, French Guiana. Guyane [Sinamary], Route du barrage de Petit Saut PK 21, PL [piège lumineux = UV-MV light trap], 29.IV.2002, Lupoli leg., MNHN.

**Paratype**. ♂ same data as Holotype, coll. RL.  
♀, unknown.

DISTRIBUTION. — French Guiana: Sinnamary.

ETYMOLOGY. — Name based in the carmine red colored body, and the rufous femora, tibiae and tarsus.

DIAGNOSIS. — *Phalaeus carmini* n. sp. can be distinguished from the other species of the genus by the dorsal carmine red background (Fig. 1E). *Phalaeus lineatus* has a dorsal pale yellow ocher color and antennae without contrasting black spots (Fig. 1C). *Phalaeus nigromaculatus* has a general red or orange dorsal color and contrasting dark areas, and has entirely black antennomeres I and II (Fig. 1D). *Phalaeus pustulatus* is larger, has a more elongated body shape and antennomeres I not dark (Fig. 1A). *Phalaeus ruckesi* is more similar to *P. carmini* n. sp., but the background color is brown and light spots occupy a larger area on corium in *P. ruckesi* (Fig. 1B). Also the longitudinal stripe on the head is proportionally broader in *P. carmini* n. sp. (Fig. 1E) than in the other species. The shape of the ventral rim of the pygophore and shape of the parameres (Fig. 2Q) easily separate *P. carmini* n. sp. from the other species. *Phalaeus carmini* n. sp. is the only species in which ventral rim is not bifid and whose parameres are quite large, occupying a large part of the genital cup on each side, and not boot or hook shaped but a very specific shape as shown in Fig. 2Q.

DESCRIPTION OF MALE

Measurements (mm)

Total length: 12.5-12.8; pronotum width (at humeral angles): 7.6-7.8; abdomen width: 7.6-7.8; head length: 1.6-1.7;

head width across the eyes: 2.2-2.3; pronotum length: 2.7-2.8; Antennomeres: I: 1.0-1.1, II: 1.5-1.6, III: 2.2-2.3, IV (missing in paratype): 2.80, V (missing in paratype): 2.80.

Coloration

Dorsal surface carmine red with light orange spots (Fig. 1E). Carmine red surface associated with concolorous deep and dense punctures uniformly distributed on pronotum, scutellum and corium; light orange spots impunctate. Ventral surface yellow and impunctate, except few concolorous punctures on prosternum (Fig. 1F). Small black macules around each abdominal spiracles and at the base of each thoracic coxae. Antennomeres I carmine red, II yellow but basally and apically black, III and IV yellow with apical two third black, V yellow with apical half black. Legs yellow with distal part of femora, proximal and distal apices of tibiae and tarsi reddish.

Head

Clypeus shorter than the mandibular plates. Central longitudinal carmine red line surrounded by two light orange spots. This line thicker than in all other species. Ocelli bright red.

Thorax

Anterolateral margins of the pronotum straight. Pronotum carmine red with sixteen large light orange impunctate spots aligned in three transversal rows (4-6-6).

Abdomen

Scutellum carmine red with two large light orange impunctate spots on each basal angle, one large at the apex, and few other smaller and irregular spots in between. Each corium carmine red with three large yellow impunctate macules (and about ten other smaller ones), one in the middle, one at the apex and one at the anterolateral margin of the exocorium. The area covered by all light orange impunctate spots smaller than half of the corium surface. Connexivum impunctate alternately carmine red and light orange (Fig. 1E).

Male genitalia

Pygophore, parameres and proctiger light orange and impunctate. In dorsal view, ventral rim almost straight, from the posterolateral angles of pygophore to the central U-shaped excavation (Fig. 2P). This large U-shaped orthogonal excavation as wide as the quarter of the width of the pygophore. Dorsal rim slightly sinuated, leaving base of parameres exposed. Proctiger trapezoidal with short setae (Fig. 2P). Parameres quite big, not boot or hook-shaped and occupying a large part of the genital cup on each side; parameres flat and triangular with an outer laterally directed triangular lobe and an inner large and laterally curved lobe (Fig. 2Q).

REMARK

Grazia *et al.* (2015) published a dorsal picture of a *Phalaeus* sp. female specimen from Peru (Yuyapichis, 21.IX.2004). Its dorsal surface is carmine red with light orange spots like



KEY TO SPECIES OF *PHALAEUS* STÅL, 1862

1. Dorsal surface pale yellow with longitudinal light brown to ocher stripes on pronotum and scutellum; connexivum alternating light brown and pale yellow areas; antennomeres I to IV concolorous, apical half of V suffused with dark brown ..... *Phalaeus lineatus* Grazia, 1983  
 — Pronotum and scutellum without clear longitudinal stripes but with a lacy pattern of color with dark background and yellow to red spots; connexivum contrasted with alternating dark spots and lighter spots on each abdominal segment; antennomeres III, IV, V with large contrasting black spots ..... 2
2. Antennomeres I and II all-black glossy, the  $\frac{2}{3}$  apical of antennomeres III black, and more of the the  $\frac{4}{5}$  apical of antennomeres IV and V black ..... *Phalaeus nigromaculatus* Grazia, 1983  
 — Clear contrasted spots with a different color than the background dorsal surface; antennomeres I and II not entirely black glossy with only a distal black ring on second segment, and in *P. carmini* n. sp. also a distal dark ring on first segment. Antennomeres III-V with black areas smaller than above ..... 3
3. One large central impunctate orange spot on each corium, surrounded by numerous small orange coalescent spots (forming a network of impunctate light spots) occupying a large part of the surface whose darker background is punctuated; black apical spot on antennomeres IV shorter than half of its length ..... *Phalaeus pustulatus* (De Geer, 1773)  
 — Small spots of the corium in lower number than above and generally separated from each other, not coalescent. Clear spots therefore are well individualized and more contrasted with respect to the background; black apical spot on antennomeres IV larger than or equal to half of its length ..... 4
4. Antennomeres I black matt, black apical part on antennomeres III larger than half of its length; red carmine background color; legs yellow with rufous tarsus, knees and apex of tibiae ..... *Phalaeus carmini* n. sp.  
 Antennomeres I brownish, black apical part on antennomeres III less than half of its length; brown background color; legs brownish almost concolorous ..... *Phalaeus ruckesi* Grazia, 1983

in *P. carmini* n. sp., but the distribution of these spots on the corium surface is more similar to *P. ruckesi*. Also, antennomeres I are brownish, black apical part on antennomeres III is less than half of its length, the head central longitudinal stripe is thin and legs are orange and concolorous like in *P. ruckesi*. This specimen should be compared to the *P. ruckesi* females holotype and paratype for correct identification.

According to the description of Grazia (1983), *Phalaeus paraense* Grazia, 1983 appears to be close to *P. ruckesi* but is distinguished by its antennomeres II, which are entirely reddish ocher, and male genitalia (Fig. 2O). Only the male holotype of this species is known.

## DISCUSSION

The new species *P. carmini* n. sp. is described from French Guiana and was not found elsewhere, bringing to six the number of species belonging to the genus *Phalaeus*, five of which occur in French Guiana. Four of them: *P. carmini* n. sp., *P. lineatus*, *P. nigromaculatus*, and *P. ruckesi*, are reported from French Guiana for the first time. The genital plates of the female of *P. lineatus* are different and can be distinguished from the other species, except from *P. carmini* n. sp. and *P. paraense*, since their females are still unknown. The male pygophores of all the species are now described and five of them dorsally photographed. Pygophores are different enough between species to distinguish them: in dorsal view, the ventral rim and parameres shapes are actually good characters (see Fig. 2). New characters, never mentioned before, are moreover used in the key in order to identify more

easily the adults of the *Phalaeus* species by comparing their dorsal habitus.

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## REFERENCES

- BERGROTH E. 1910. — Note on the genus *Phalaeus pustulatus* Stål. *Entomological News* 21: 18-21. <https://biodiversitylibrary.org/page/2592645>
- DE GEER C. 1773. — *Mémoires pour servir à l'histoire des insectes* 3. Hasselberg, Stockholm, i-viii, 1-696. <https://doi.org/10.5962/bhl.title.14802>
- GRAZIA J. 1983. — Sobre o genero *Phalaeus* Stål, 1862 com a descrição de quatro novas espécies (Heteroptera, Pentatomidae). *Revista Brasileira de Entomologia* 27 (2): 177-187.
- GRAZIA J., PANIZZI A. R., GREVE C., SCHWERTNER F., CAMPOS L. A., GARBELOTTO T. A. & FERNANDES J. A. M. 2015. — Stink Bugs (Pentatomidae) in PANIZZI A. R. & GRAZIA J. (eds), *True Bugs (Heteroptera) in the Neotropics*. Springer, New York: 681-756.
- STÅL C. 1872. — Enumeratio hemipterorum 2. *Kongliga Svenska Vetenskaps Akademiens Handlingar* 10 (4): 1-159. <https://biodiversitylibrary.org/page/41918312>
- TORRES GUTIÉRREZ C. 2004. — La tribu Pentatomini (Hemiptera: Pentatomidae) en Colombia in FERNANDEZ E., ANDRADE G. & AMAT G. (eds), *Insectos de Colombia* Volume 3. Universidad Nacional de Colombia, Bogota: 61-128.
- TOUROULT J., POLLET M. & PASCAL O. 2018. — Overview of Mitaraka survey: research frame, study site and field protocols, in TOUROULT J., “Our Planet Reviewed” 2015 large-scale biotic survey in Mitaraka, French Guiana. *Zoosystema* 40 (13): 327-365. <https://doi.org/10.5252/zoosystema2018v40a13>. <http://zoosystema.com/40/13>

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