

Phytocoris (s. str.) *pseudobscuratus* n. sp. from Murcia, Spain (Hemiptera: Heteroptera: Miridae)

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Abstract

Phytocoris (s. str.) *pseudobscuratus* n. sp. is described from Murcia, Spain, in the subarid southeastern region of the Iberian Peninsula. Its small size and other characters of external morphology and male genitalia separate it from the remaining species of the subgenus. Although externally it is close to *Pb.* (s. str.) *obscuratus* Carvalho, 1959, both species strongly differ in the male genitalic structures.

Key words: *Phytocoris* (s. str.) *pseudobscuratus* n. sp., Heteroptera, Miridae, Murcia, Iberian Peninsula, taxonomy.

Resumen

***Phytocoris* (s. str.) *pseudobscuratus* n. sp. de Murcia, España (Hemiptera: Heteroptera: Miridae)**

Se describe *Phytocoris* (s. str.) *pseudobscuratus* n. sp. de Murcia, España, en la región subárida del sudeste de la Península Ibérica. Su pequeño tamaño y otros caracteres de morfología externa, así como la genitalia masculina, la separan del resto de especies del subgénero. Aunque externamente resulta próxima a *Pb.* (s. str.) *obscuratus* Carvalho, 1959, ambas especies difieren sustancialmente en las estructuras de la genitalia masculina.

Palabras clave: *Phytocoris* (s. str.) *pseudobscuratus* n. sp., Heteroptera, Miridae, Murcia, Península Ibérica, taxonomía.

Laburpena

***Phytocoris* (s. str.) *pseudobscuratus* n. sp. Murtziakoa, Espainia (Hemiptera: Heteroptera: Miridae)**

Phytocoris (s. str.) *pseudobscuratus* n. sp. deskribatzen da Murtziakoa (Espainia), Iberiar Penintsularen hegoekialdeko eskualde azpilehorrekoa hain zuzen. Bere tamaina txikiaren eta kanpo-morfologiaren eta arren genitaliaren beste ezaugarri batzuen bitartez bereizten da subgeneroaren beste espezieetatik. Kanpoko itxurarengatik *Pb.* (s. str.) *obscuratus* Carvalho, 1959 espezieetik gertu dirudien arren, bi espezieak oso ezberdinak dira arren genitaliaren egiturak kontuan harturik.

Gako-hitzak: *Phytocoris* (s. str.) *pseudobscuratus* n. sp., Heteroptera, Miridae, Murtzia, Iberiar Penintsula, taxonomia.

Introduction

The nominal subgenus of *Phytocoris* Fallén, 1814 includes 36 known species and one subspecies in the Palearctic Region (Kerzhner and Josifov, 1999), some of which (*dimidiatus* Kirschbaum, 1856, *longipennis* Flor, 1861, *populi* (Linnaeus, 1758) and *tiliae tiliae* (Fabricius, 1777)) also belong to the Nearctic fauna (Stonedahl, 1988; Wheeler and Henry, 1992; Wheeler *et al.*, 2006).

To our knowledge, no subsequent descriptions of new

species have been added to this subgenus. Therefore, with the current description below, a total of 37 species are nowadays included in *Phytocoris* (s. str.), 10 of them (plus one subspecies) living in the Iberian-Balearic area (Kerzhner and Josifov, 1999).

A single male of *Phytocoris* (s. str.) which could not be ascribed to any known species was collected by Ch. R. at light trap in Totana (Murcia, Spain), in the subarid southeastern region of the Iberian Peninsula.

Description

Phytocoris (s. str.) *pseudobscuratus* n. sp.

Macropterous male (Fig. 1b). Length = 4.6 mm. Body elongate to slightly ovate, 3.12 x longer than basal width of pronotum and 2.55 x longer than maximum width. Dorsal vestiture consisting of strong, dark (also pale on head), semierect setae intermixed with fine, whitish, reclining pale setae; the former quite short on mesocorium; the latter more or less visible depending on the light incidence angle. General dorsal coloration brown, with some darker areas, black spots and reddish tinge on exocorium and cuneus; head and appendages with marked pale-and-dark patterns. Matt, hemelytra hardly shining.

Head slightly higher than wide in front view and short, higher than long in lateral view. Frons evenly convex and only slightly produced anteriorly to antennal fossae. Clypeus markedly convex in lateral view, concealed by frons in above view, and meeting it along a distinct notch. Ground coloration of vertex, frons and clypeus cream to pale yellow, but heavily marked with pale to dark brown and black; vertex with two pairs of black spots connected by diagonal dark brownish stripes; posteriorly tinged with reddish; a middle, narrow, pale line; lateral striae on frons very dark and converging medially towards a pale spot; below it and upon clypeus, a black spot; upper half of clypeus pale yellow, lower half black and being part of a black lateral area continuing under antennal fossae, most of the genae and upper part of bucculae, the eyes and latero-ventral sides of pronotum; apex of clypeus narrowly pale. Diatone = 0.90 mm. Ocular index = 1.33. Eyes globose, occupying about two-thirds of height of head in lateral view. Genae in front view quite protruding laterally. Bucculae slightly concealing segment I of rostrum. Rostrum surpassing metacoxae and extending through the anterior third of abdomen; segments I and II pale with reddish tinge; segment III brown; segment IV blackish.

Antennae not very long, approximately as long as body length. Length of antennal segments (segment IV lacking in the holotype): I–II–III = 0.82–1.70–1.15 mm. Segment I bearing, all along it, pale, erect setae, longer than the diameter of the segment (4/3 proportion), in addition to the dense, darker, adpressed setae forward directed. Coloration pattern of segment I as in Fig. 2b, with two complete, wider and better defined rings: the basal pale and the apical

black; and two pairs of alternatively dark and pale, incomplete (only dorsal and inner regions of segment), narrower and not so well defined rings. Segment II black with a large pale ring occupying basal 1/4 and another pale ring 0.5 x as long as basal one and dividing the dark region in two parts of similar length. Segment III somewhat narrower than II, dark with a small, pale, basal ring slightly longer than 1/10 the length of segment.

Ratio segment I / diatone = 0.90. Ratio segment I / basal width of pronotum = 0.55. Ratio segment II / basal width of pronotum = 1.14.

Pronotum trapezoidal, 2.23 x as wide as long (excluding collar) and 1.65 x as wide as diatone. Basal width = 1.49 mm. Length (excluding collar) = 0.67 mm. Lateral margins weakly sinuate. Posterior margin convex and distinctly sinuate in the middle. Anterior region, including calli, yellowish with brown and reddish spots. Posterior region brown with minute spots from which the black, semierect setae arise. Subbasal area of the posterior margin bearing four black, setigerous tubercles interconnected by an irregular dark stripe; posterolateral angles of pronotum also darkened, following the darkening of pronotal lateral sides. Pronotal collar slightly narrower than the width of antennal segment I (5/6 proportion); yellow with two large, reddish spots, and a middle yellow spot following the yellow middle area on vertex.

Scutellum (including mesoscutum) triangular, 0.82 x as wide as long (length = 0.82 mm; width = 1.00 mm). Mesoscutum sloping backwards; yellowish to brown, darkened medially and with a pair of dark depressions laterally. Scutellum swollen centrally and ending in an acute apex; cream and brown and with a pair of middle, diverging, black stripes which enclose a median yellow line and another pair of minute, longitudinal, reddish brown stripes near apex (Fig. 1b).

Hemelytra subparallel-sided to weakly rounded laterally, largely surpassing apex of abdomen. Ratio length of scutellum (including mesoscutum) / claval suture = 0.73. General coloration of corium pale brown, particularly uniform on the anterior 3/4 of mesocorium. Clavus brown, only slightly darker anteriorly. Mesocorium posteriorly with a large pale spot of cream color preceded by an oblique dark brown stripe beginning at the anal angle. Reddish tinge on the posterior half of exocorium and on the anterior and external parts of cuneus. Exocorium, particularly its outer margin, irrorated with darker brown or reddish spots unevenly distributed and a distinct, black dot at the anteroexternal angle of cuneus.

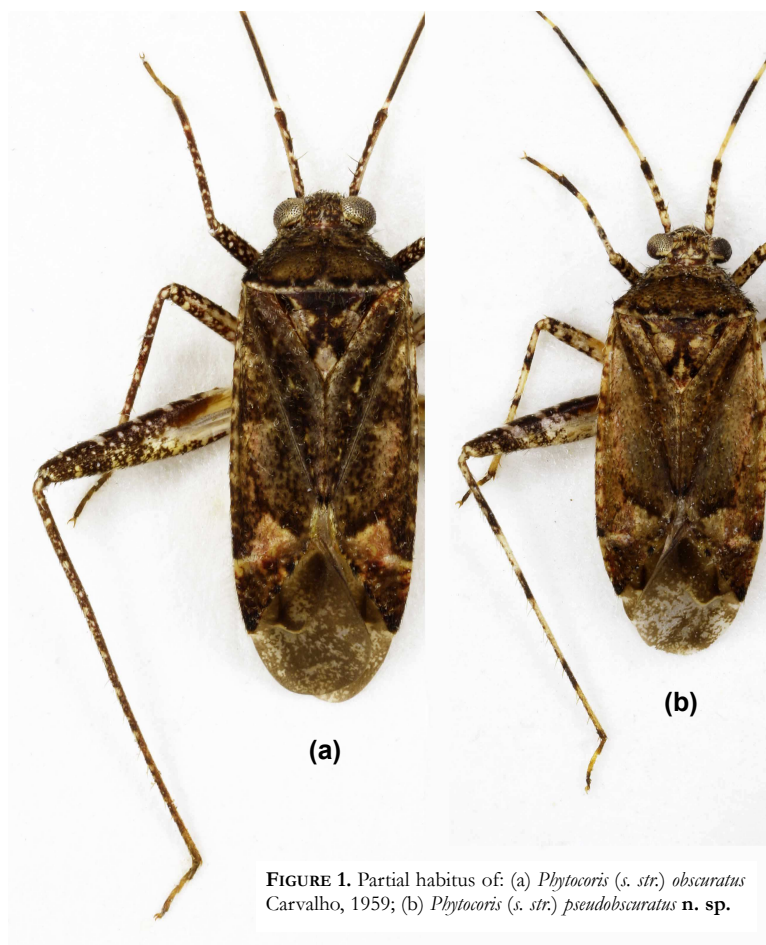


FIGURE 1. Partial habitus of: (a) *Phytocoris (s. str.) obscuratus* Carvalho, 1959; (b) *Phytocoris (s. str.) pseudobscuratus* n. sp.

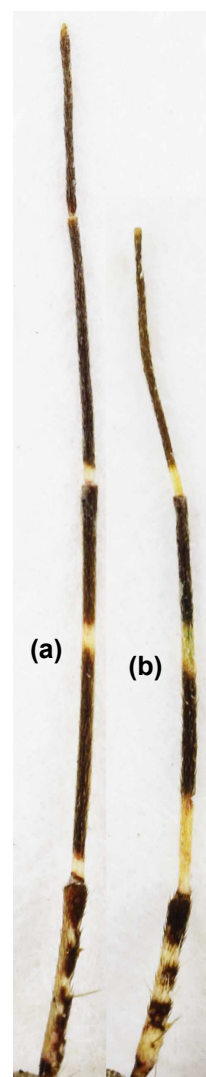


FIGURE 2. Left antenna of: (a) *Phytocoris (s. str.) obscuratus* Carvalho, 1959; (b) *Phytocoris (s. str.) pseudobscuratus* n. sp. (segment IV lacking).

Cuneal fracture pale. Cuneus with the apex black and additional, small, irregular spots along inner margin, ending in a distinct, larger, black dot at the anal angle. Membrane and its longitudinal veins anteriorly dark, and posteriorly (including transversal veins) pale and irrorated or mottled.

Legs with dense, mostly pale, adpressed setae; tibiae bearing semierect, pale spines. Anterior legs with femora mainly pale with dark spots, these being larger and more abundant apically; coloration of tibiae consisting of three pale and three dark rings, the most apical being the most dark (blackish) and well

defined. Middle legs with femora similar to anterior ones; tibiae with four pale and three dark rings; the central dark ring markedly narrower than both contiguous pale rings. Posterior legs with femora dark irrorated or sprinkled with minute, pale spots, except for an extensive pale, basal area and two oblique, pale stripes in the apical half; tibiae with four pale and three dark rings, although somewhat less distinct than those of anterior and middle legs. Tarsomeres I and III brown and tarsomere II orangish cream in all tarsi, except in metatarsi, with the tarsomere III only brown in its apical half, being

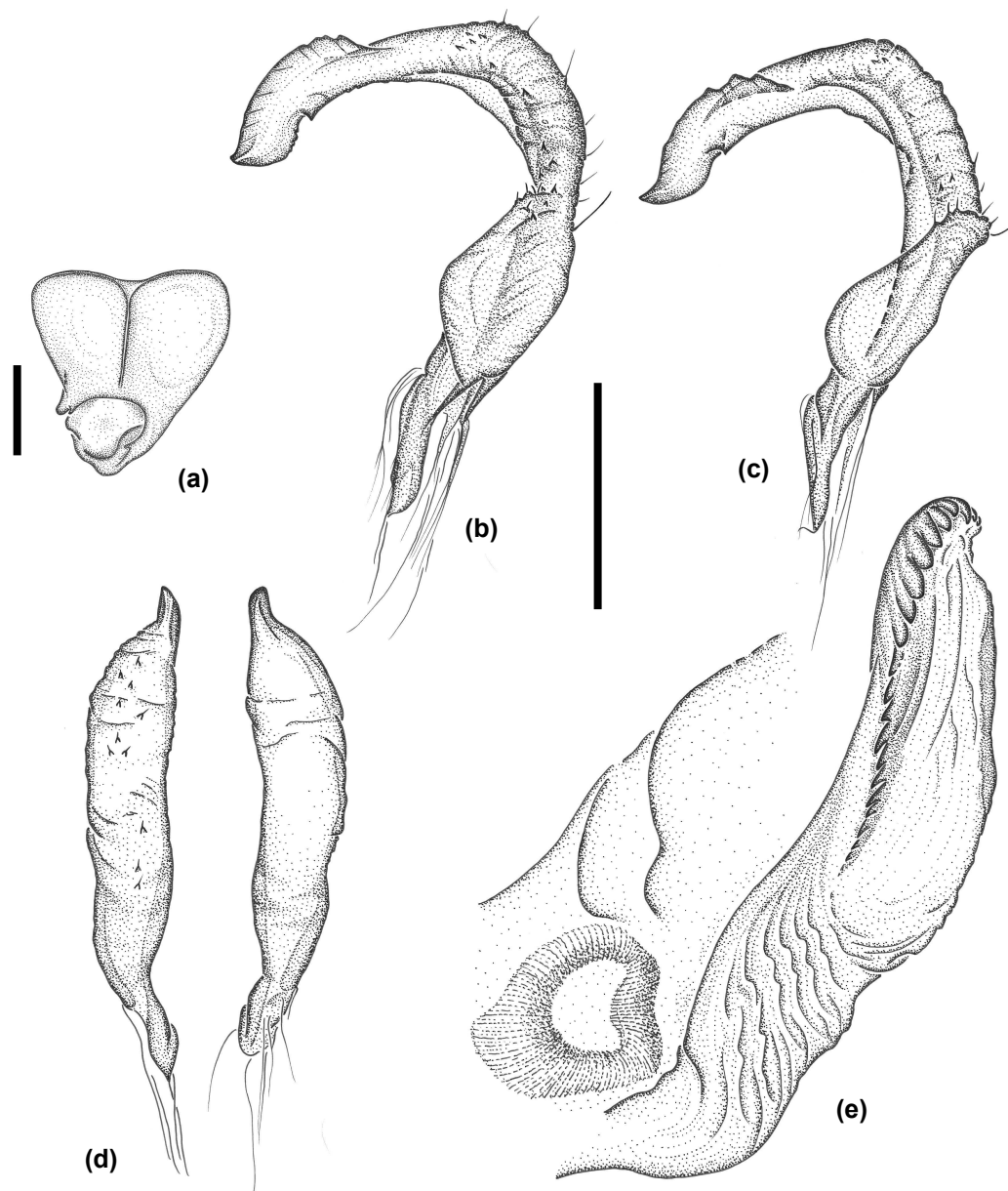


FIGURE 3. *Phytocoris* (s. str.) *pseudobscuratus* n. sp. Male genitalia: (a) Pygophore; (b)-(c) Left paramere, two views; (d) Right paramere, two views; (e) Apical comb of the endophallus (Scale bar = 0.2 mm; except for (a): 0.5 mm).

the basal half similar in coloration to tarsomere II. Length of posterior tibiae = 3.3 mm. Ratio posterior tibiae / basal width of pronotum = 2.24. Length of metatarsomeres (relative proportions): I-II-III = 6-7-8.

Ventrally dark, except for a large pale area on thorax including all coxae. Thoracic sternites smooth, glabrous; abdominal sternites covered with sparse, short, white, adpressed setae.

Pygophore and male genitalia⁽¹⁾. Pygophore (Fig. 3a) troncoconical, approximately as wide as long. Genital opening bearing a knob on the left side, above left paramere base. Right paramere (Fig. 3d) elongate, with the primary apophysis dark and bearing scattered, short setae. Left paramere (Fig. 3b-c) with the primary apophysis quite long and with several small indentations on the crest and a large one on the opposite side; shaft strongly curved; shaft and body of the paramere with a thick, more or less cylindrical, external region and a thin, flattened, internal region; sensory lobe flattened, forming a distinct plane and showing a rhomboidal shape together with the body of paramere; small setigerous teeth on the apical zone of sensory lobe and on body and shaft. Endophallus including an apical comb (Fig. 3e) with about 21 teeth, the apical 5-6 teeth forming an arc and the basal 13 teeth decreasing in size progressively basally; lacking sclerotized processus (*ACH* = *armature chitineuse*) and true spiculum; secondary gonopore large, quite distinct, and lacking processes or plates.

Female unknown.

Type material:

Holotype ♂, with a white, typewritten label: «SP-Murcia; Totana / Ortsrand W, Lichtfang / 1.30 W 37.46 N / 05.08.1995, leg.Rieger».

A red, typewritten label is now added below: «HOLOTYPE / *Phytocoris* (s. str.) / *pseudobscuratus* n. sp. / Rieger & Pagola-Carte, 2009». The specimen is mounted on a card, with the genitalia glued on a transparent card below. Deposited in the collection of Ch. Rieger (Nürtingen).

Etymology:

The new species is named «*pseudobscuratus*» for its external resemblance to *Phytocoris* (s. str.) *obscuratus* Carvalho, 1959. [It has to be noted that the species *obscuratus* was originally described as «*obscurus*» by Reuter (1875), but this name was a junior primary homonym of *Phytocoris obscurus* Rambur, 1839; see Kerzhner and Josifov, 1999: p. 158]. It is an adjective.

Biology and distribution:

The only known specimen (one male) was collected at light in the subarid southeastern region of the

Iberian Peninsula. Given the collecting locality and data, it is likely to be a summer species and might live on coniferous trees and/or deciduous trees or shrubs, similarly to many of the species belonging to this subgenus.

Discussion

Phytocoris pseudobscuratus n. sp. is included in the nominal subgenus of *Phytocoris* Fallén, 1814 according to the distinguishing characters given by Wagner (1974: p. 162), with the exception of its total length (smaller than the range of 5.2–8.2 mm for the species known at that time) and the shape of head in lateral view (higher than long instead of longer than high)⁽²⁾.

When using Wagner's (1974) keys (mainly based on external morphology), the new species runs to couplet 15(20), in which *longipennis* Flor, 1861, *nitidicollis* Reuter, 1908 and *tiliae* (Fabricius, 1777) are included for sharing the character «pale rings of middle tibiae wider than the dark ring between them». However, *Ph. pseudobscuratus* n. sp. is very different to those species in many other aspects.

In fact, its external morphology is rather similar to that of *Ph. obscuratus* Carvalho, 1959 (Fig. 1a) (as «*Ph. obscurus* Reuter, 1875» in Wagner's dichotomy 38(29)). Particularly:

- The segment II of antennae, distinctly shorter than in other species of the subgenus, as shown by the ratio «segment II / basal width of pronotum» (= 1.14), similar to that of *Ph. obscuratus* for which Wagner stated «Auffallen ist das kurze 2. Fühlerglied».
- The coloration, both dorsally and ventrally, and concerning both general appearance and detailed patterns such as those of head, pronotum or scutellum.

Nevertheless, it differs from *Ph. obscuratus* by the following characters (according to Wagner (1974) and to the Greek material examined⁽³⁾ from Ch. R. collection):

⁽²⁾ The head in other species of *Phytocoris* s. str., for instance *Ph. obscuratus*, is also higher than long.

⁽³⁾ Particularly one male from Nomos Lakonias, 5 km S Monemvasia (23°01'42"E 36°38'39"N), 13.–25.5.89, Ch. Rieger leg. and det.

⁽¹⁾ Chérot's terminology is partially followed: see, for example, Chérot and Carpintero, 2006; Carpintero and Chérot, 2008; Costa *et al.*, 2008.

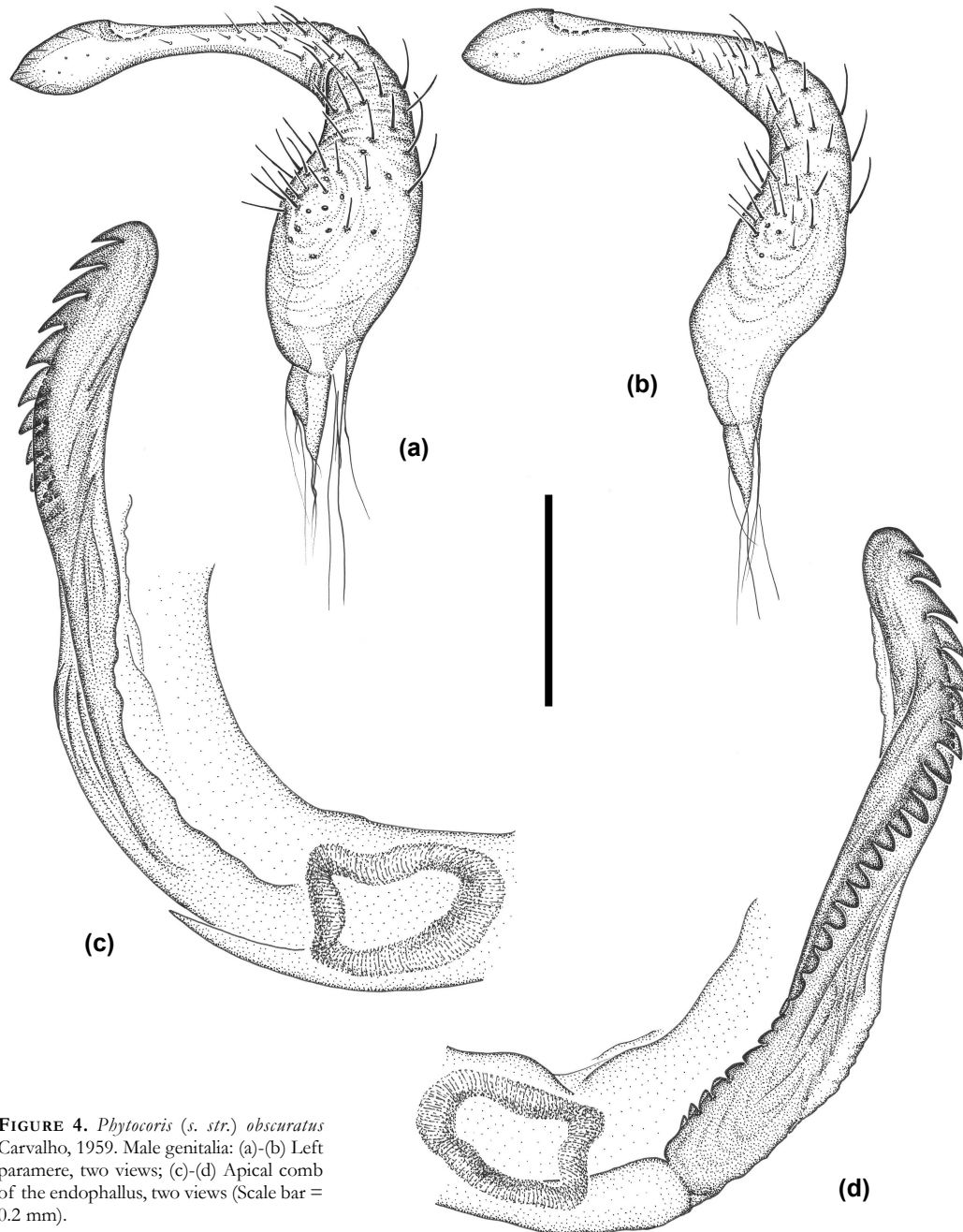


FIGURE 4. *Phytocoris* (s. str.) *obscuratus* Carvalho, 1959. Male genitalia: (a)-(b) Left paramere, two views; (c)-(d) Apical comb of the endophallus, two views (Scale bar = 0.2 mm).

- The ocular index, greater in *Ph. pseudobscuratus* n. sp. (= 1.33, male) than in *Ph. obscuratus* (= 0.9–1.0, males).
- The pattern of rings of segment II of antennae (compare Figs. 2a and 2b), specially by the longer

basal pale ring in *Ph. pseudobscuratus* n. sp.

- The pale and dark rings of all tibiae, very distinct in *Ph. pseudobscuratus* n. sp. and indistinct or almost indistinct in *Ph. obscuratus*, the tibiae of which are irrorated and with abundant, small pale spots

(approximately as described by Wagner: «Beine dunkel, Schienen mit undeutlichen hellen Ringen und kleinen Flecken»).

- The general shape (males), less slender in *Pb. pseudobscuratus* **n. sp.** than in *Pb. obscuratus*, as shown by the lower value of two ratios: «posterior tibiae / basal width of pronotum» (2.24 and 2.56, respectively) and «total length / maximum width» (2.55 and 2.70, respectively) in spite of a similar ratio «total length / basal width of pronotum» (3.12 for both species).
- The smaller size, only 4.6 mm in the holotype (male) of *Pb. pseudobscuratus* **n. sp.** and 4.9–5.6 mm (male) and 5.0–5.9 mm (female) in *Pb. obscuratus* according to Wagner (1974: p. 177), who stated that the latter was the smallest species in the subgenus, otherwise agreeing the subgeneric placement («Die kleinste Art der Untergattung, aber in Färbung, Zeichnung und Behaarung wie die übrigen Arten»). The new species has therefore a roughly similar size as *Pb. malickyi* Rieger, 1995, described from Kreta (males = 4.25–4.7 mm), although it is quite different from it in many aspects of external morphology and genitalia (Rieger, 1995).

Concerning the male genitalia, *Pb. pseudobscuratus* **n. sp.** would belong to the group of species showing an apical arc of teeth in the apical comb of the endophallus. It could be referred to as the «*dimidiatus*-group» of species, including *dimidiatus* Kirschbaum, 1856, *intricatus* Flor, 1861, *longipennis* Flor, 1861, *pallidicollis* Kerzhner, 1977, *scotinus* Kerzhner, 1977, *shablionskii* Kerzhner, 1988 and *zimannus* Wagner, 1975 (see also: Reichling, 1985; Kerzhner, 1988). Other characters of the male genitalia (particularly the shape of the left paramere) and the external morphology clearly separate the new species from them.

On the basis of the comparison between *Pb. pseudobscuratus* **n. sp.** and *Pb. obscuratus*, two interesting points can be outlined:

- (1) In the absence of comprehensive studies on relationships within the genus *Phytocoris*, the present infrageneric groupings (namely Palaearctic subgenera, Nearctic species-groups) are of limited application at world level (Stonedahl, 1988). More interestingly from a Palaearctic perspective, the phylogenetic relationships within (or even between) those subgenera are totally unknown, and species of similar external morphology but quite different genitalic structures, such as the pair *Pb. pseudobscuratus* **n. sp.** and *Pb. obscuratus*,

could be the result of convergence phenomena. The comparison of their left paramere (compare Figs. 3b-c and 4a-b) and apical comb of the endophallus (compare Figs. 3e and 4c-d), together with the difficulties in including the new species in Wagner's (1974) keys, reflect, in our opinion, the deep divergence between the species (natural relationships and their (artificial) arrangements for identification purposes (basically Wagner's keys), as well as the probably more reliable phylogenetic meaning of similarities in male genitalic structures than in characters of the external morphology⁽⁴⁾.

- (2) The apical comb of the endophallus in the specimens examined of *Pb. obscuratus*, besides being different from that of *Pb. pseudobscuratus* **n. sp.**, is also different from Wagner's drawing and text (Wagner, 1974: Fig. 133m). In fact, it has about 28 teeth (Fig. 4d) and not the only 11-12 apparent from an inadequate view or rotation angle (Fig. 4c).

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⁽⁴⁾ In fact, in agreement with Chérot (pers. comm.), we see that the major problem of present Miridae taxonomy at generic (or related) level is precisely those artificial arrangements of species inherited from XIX and early XX centuries' heteropterists. This is a general problem which can be observed in many Phylinae, Orthotylinae and Mirinae, but it is exacerbated in *Phytocoris* only by the size of the group (more than 700 species known). The *Phytocoris* complex should be treated on a world scale in order to clarify its internal relationships.

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