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A bizarre new species of *Phytocoris* (*Ktenocoris*) from the Balearic Islands (Hemiptera: Heteroptera: Miridae)

J. RIBES[1], S. PAGOLA-CARTE[2]

[1]Museu de Ciències Naturals (Zoologia); Passeig Picasso s/n; 08003 Barcelona; Catalunya; España;
E-mail: 4354jrr@comb.es
[2]Azpeitia 3, 7. D; E-20010 Donostia (Gipuzkoa); E-mail: pagolaxpc@telefonica.net

Abstract

Phytocoris (*Ktenocoris*) *pseudocellatus* **n. sp.** is described on a single male specimen collected at light in the Balearic Island of Formentera (western Mediterranean). A pair of mamelon-like protuberances resembling ocelli on vertex appears as an unexpected and unique character. Its placement within the subgenus *Ktenocoris* is discussed.

Key words: *Phytocoris* (*Ktenocoris*) *pseudocellatus* **n. sp.**, Heteroptera, Miridae, Balearic Islands, taxonomy, ocelli.

Resumen

***Una extraña nueva especie de* Phytocoris (Ktenocoris) *de las Islas Baleares* (*Hemiptera: Heteroptera: Miridae*)**

Se describe *Phytocoris* (*Ktenocoris*) *pseudocellatus* **n. sp.** a partir de un ejemplar macho capturado mediante trampa de luz en la isla balear de Formentera (Mediterráneo occidental). La presencia de un par de protuberancias de tipo mamelón similares a ocelos es un carácter único e inesperado. Se discute su ubicación dentro del subgénero *Ktenocoris*.

Palabras clave: *Phytocoris* (*Ktenocoris*) *pseudocellatus* **n. sp.**, Heteroptera, Miridae, Islas Baleares, taxonomía, ocelos.

Laburpena

Phytocoris (Ktenocoris) *espezie berri eta bitxi bat Balear Uharteetan* (*Hemiptera: Heteroptera: Miridae*)

Phytocoris (*Ktenocoris*) *pseudocellatus* **n. sp.** deskribatzen da, Formentera balear uhartean (mendebaldeko Mediterraneoa) argi-tranpa baten bidez harrapatutako ale ar batean oinarrituta. Ozeloen antzeko titiburu-itxuradun protuberantzia pare bat izatea ezusteko ezaugarri bereizgarria suertatzen da. *Ktenocoris* subgeneroaren barruko kokapena eztabaidatzen da.

Gako-hitzak: *Phytocoris* (*Ktenocoris*) *pseudocellatus* **n. sp.**, Heteroptera, Miridae, Balear Uharteak, taxonomia, ozeloak.

Introduction

Under the Palaearctic concept for the internal arrangement of *Phytocoris* Fallén, 1814, the subgenus *Ktenocoris* Wagner, 1954 consists of more than thirty species of mainly Mediterranean distribution. Up to 36 species were included in the Palaearctic Catalogue (Kerzhner and Josifov, 1999). As far as known, no subsequent additions of new species have been made to this subgenus, and only one synonyny (Rieger, 2006) has to be noted. Therefore, with the current description of a new species below, a total of

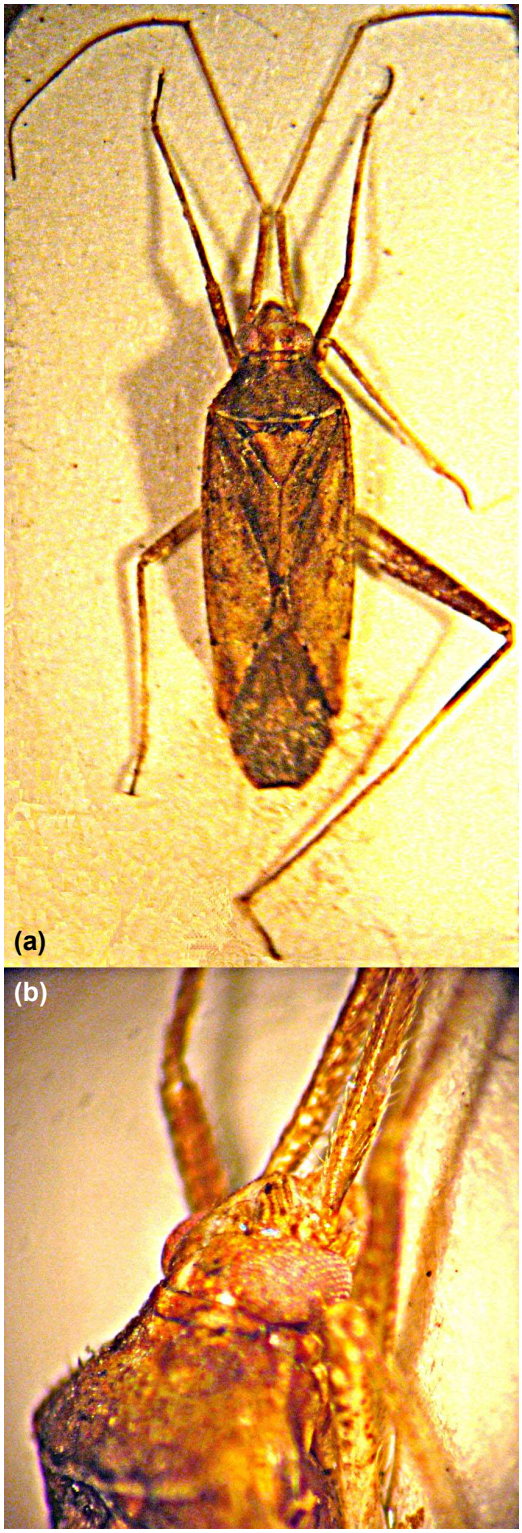

FIGURE 1. *Phytocoris* (*Ktenocoris*) *pseudocellatus* **n. sp.**: (a) Habitus; (b) Laterodorsal view of head and pronotum.

36 species are nowadays included in *Ktenocoris*, 13 of them living in the Iberian-Balearic area (Kerzhner and Josifov, 1999; Pagola-Carte and Zabalegui, 2007).

A single male of *Phytocoris* (*Ktenocoris*) which could not be ascribed to any known species was collected by the lepidopterist F. Vallhonrat at light trap in the Balearic Island of Formentera. Surprisingly, the new species shares the type locality, and practically the same biotope, with another *Phytocoris* species of recent description, *P.* (*Compsocerocoris*) *degregorioi* J. Ribes & E. Ribes, 2002.

Description

Phytocoris (*Ktenocoris*) *pseudocellatus* n. sp.

Macropterous male (Fig. 1a). Length = 5.10 mm. Body elongate, subparallel-sided, 3.78 x longer than basal width of pronotum. Dorsal vestiture consisting of strong, dark, semierect setae intermixed with fine, whitish, reclining or almost adpressed pale setae; the latter more or less visible depending on the light incidence angle. General dorsal coloration yellow, with quite diverse spots and patches or stripes reddish to brown on different parts of the body and appendages. Matt, hemelytra hardly shining.

Head, in front view, nearly as high as wide. In lateral view, longer than high, elliptical, showing the largely prominent clypeus and the weakly convex frons; clypeus slightly curved and abruptly separated from frons by a distinct notch (Fig. 1b). Frons rounded and leaving clypeus partially visible from above. Diatone = 0.81 mm. Ocular index = 1.66. Eyes globose. A pair of smooth, shiny mamelon-like protuberances resembling ocelli distinctly located between eyes (Fig. 2). Those ocelliform structures are on the posterior region of both large, reddish spots adjacent to eyes, separated from each other by a yellow triangle forward directed. Another yellow triangle backward directed separates such reddish spots from the grill-shaped lateral stripes on the frons, which are reddish and well marked. Vertex totally filled by both red spots and both longitudinally adjoining, yellow triangles. Genae only slightly protruding laterally. Bucculae bearing an anterior processus, triangular, wide and partially concealing segment I of rostrum. Rostrum surpassing the anterior third of abdomen.

Antennae 1.16 x as long as body length. Total length

= 5.92 mm. Length of antennal segments (in mm): I–II–III–IV = 1.10–2.02–1.55–1.25. Segment I narrowed and bent basally, bearing dense, white, adpressed setae forward directed, and strong, dark, erect setae particularly near base, no longer than the diameter of the segment. Coloration of segment I reddish brown, irrorated, with a pair of irregular, patchy, ill-defined rings basally. Segment II slightly darkened, with its base narrowly whitish and the apex imperceptibly black. Segment III somewhat darker than II, with the apex narrowly black. Segment IV similar to III but with both base and apex black.

Ratio segment I / diatone = 1.36. Ratio segment I / basal width of pronotum = 0.82. Ratio segment II / basal width of pronotum = 1.50.

Pronotum trapezoidal, 2.08 x as wide as long (excluding collar) and 1.66 x as wide as diatone. Basal width = 1.35 mm. Length (excluding collar) = 0.65 mm. Lateral margins weakly sinuate. Posterior margin convex and imperceptibly sinuate in the middle. General coloration brown, with a small, yellow spot on anterior margin, following the middle yellow areas on vertex and collar. Posterior margin bordered by a narrow, yellow stripe; subbasal area bearing four black, setigerous tubercles, the external pair being less distinct. Calli undifferentiated. Pronotal collar approximately as thick as width of antennal segment I; yellow with two large, reddish spots, following the two spots on vertex.

Mesoscutum narrow, sloping backwards, black with a pair of smooth, orangish calli near anterior angles. Scutellum large, flattened, plateau-like, with sparse, minute, reddish punctuation and ending in a stylet-like apex. Scutellum (including mesoscutum) triangular, 1.33 x as wide as long (length = 0.60 mm; width = 0.80 mm).

Hemelytra largely surpassing apex of abdomen. Ratio length of scutellum (including mesoscutum) / claval suture = 0.70. Corium mainly yellow, diversely variegated with ill-defined, mostly longitudinal spots, patches and stripes, the most conspicuous and interconnected ones being located along the external region of clavus and the internal region of mesocorium. External region of exocorium with a narrow, black stripe unevenly interrupted and ending in a distinct, black dot at the anteroexternal angle of cuneus. Cuneus elongate, triangular, with four black dots along interior margin (two of them at anterointerior and posterior angles, respectively), following anteriorly as a black stripe unevenly interrupted along

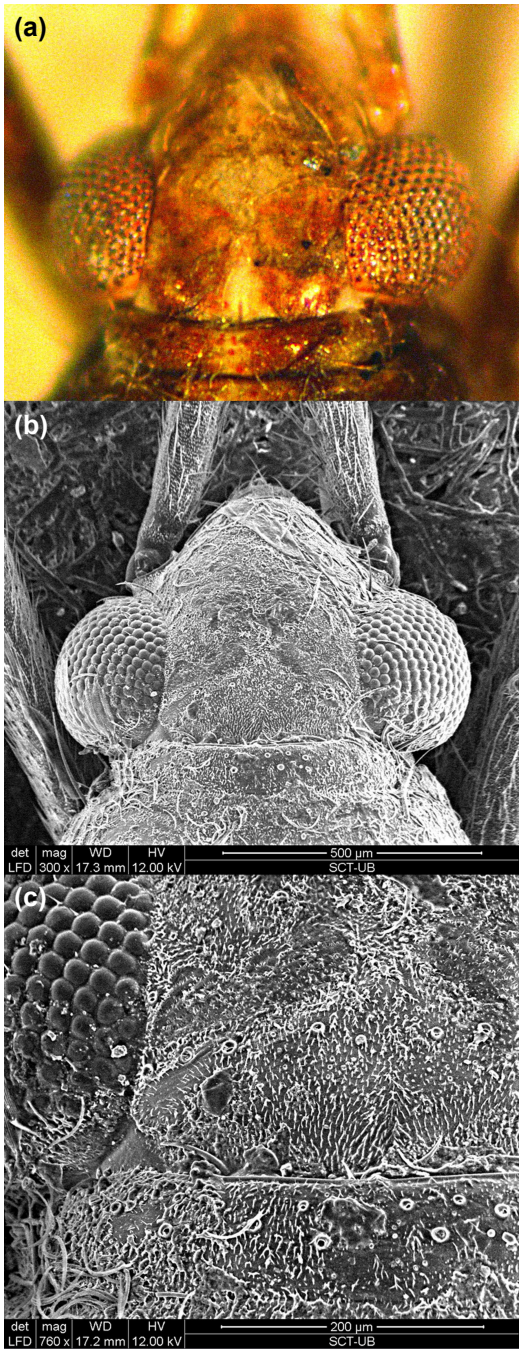

FIGURE 2. *Phytocoris* (*Ktenocoris*) *pseudocellatus* **n. sp.** Dorsal view of the head, showing the pair of mamelon-like protuberances resembling ocelli: (a) Colour photograph; (b) Scanning electron micrograph; (c) Detail for the left protuberance, the better defined one. (Note the great amount of lepidopteran scales visible in (b) and (c), in addition to the mirid's vestiture, due to the collecting method used).

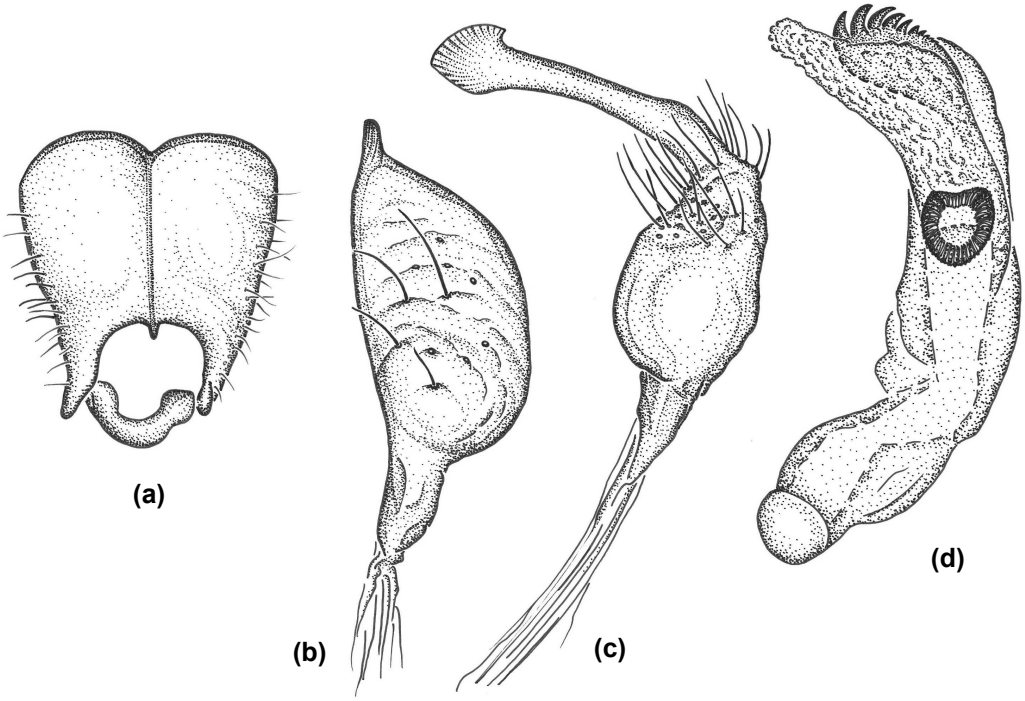

FIGURE 3. *Phytocoris* (*Ktenocoris*) *pseudocellatus* **n. sp.** Male genitalia: (a) Pygophore; (b) Right paramere; (c) Left paramere; (d) Endophallus at rest, including the apical comb.

mesocorium-membrane margin. Length of cuneus = 0.85 mm. Membrane and its veins black irrorated, excluding transversal venation, which is yellow; three distinct pale spots: one of them, posterior to the smaller cell, another one near the posterior angle of cuneus, and a third one between the posterior angle of cuneus and the apex of membrane; further spots less distinct.

Legs with dense, white, adpressed setae; tibiae bearing semierect, dark spines. Anterior legs with femora brown, vaguely reddish irrorated; tibiae of similar colour but also showing two ill-defined, yellow rings: one subcentral, the other subapical. Middle legs with femora yellow in the basal 2/3, brown irrorated in the apical 1/3; tibiae yellow to largely brownish basally. Posterior legs with femora yellow in the basal 1/2, brown irrorated in the apical 1/2; tibiae as those of middle legs. Pro-, meso- and metatarsi yellowish, with the tarsomere III dark. Length of posterior tibiae = 4.45 mm. Ratio posterior tibiae / basal width of pronotum = 2.79. Length of metatarsus = 0.26 mm. Length of metatarsomeres (in mm): I–II–III = 0.08–0.10–0.12.

Ventrally, thoracic sternites smooth, glabrous, patchy darkened; abdominal sternites dark, partially irrorated, covered with sparse, white, adpressed setae.

Pygophore and male genitalia[1]. Pygophore (Fig. 3a) troncoconical, about 1.25 x longer than wide. Genital opening U-shaped and bearing a small but conspicuous middle tubercle as the ending of the longitudinal rim of dorsum. Two knobs on the sides of the opening, above paramere bases: the left one protruding and larger than the right one. Right paramere (Fig. 3b) large, semicircular with the primary apophysis black and mamelon-like. Left paramere (Fig. 3c) with the primary apophysis triangular, striated, sharp-pointed, provided with a convex crest, and connected to the body of the paramere by a long, slender shaft forming an angle of about 90º; body of the paramere somewhat collapsed externally and with a stout sensory lobe internally; lacking teeth and densely covered with setae. Endophallus at rest

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

(Fig. 3d) showing two membranous lobes apically, the shortest one including an apical comb with about 10 curved teeth, the apical 4-5 teeth large and strong, the remaining ones small and even decreasing 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, ♂. Balearic Islands (Illes Balears), the Pityusic Islands (Illes Pitiüses), Formentera Island (illa de Formentera), Es Caló, Camí sa Pujada (Roman road), 50 m alt., UTM 31SCC78, 23-IX-2008, Francesc Vallhonrat *leg*.

A red, typewritten label is now added below: «HOLOTYPE / *Phytocoris* (*Ktenocoris*) / *pseudocellatus* **n. sp.** / J. Ribes & Pagola-Carte, 2009». The specimen is mounted on a card, with the genitalia glued on a second card below. Deposited in the collection of J. Ribes (Barcelona).

Etymology:

The new species is named «*pseudocellatus*» for the pair of unexpected, mamelon-like protuberances resembling ocelli located on vertex.

Biology and distribution:

The only known specimen (one male) was collected at light in the Balearic Island of Formentera. As it was collected in the second half of September, it is likely to be a late summer species.

Discussion

Phytocoris pseudocellatus **n. sp.** is included in the subgenus *Ktenocoris* Wagner, 1954 as it clearly shows all the distinguishing characters (Wagner, 1974), particularly the shape of head, the coloration of antennae, and the subbasal area of the posterior margin of pronotum.

Being as conservative as possible with Wagner's (1974) and Wagner and Weber's (1978) keys for the Euromediterranean species of *Ktenocoris*, but also dealing with those taxa described afterwards or not included in those keys (Kiritshenko, 1952; Josifov, 1974; Carapezza, 1984, 1995, 1997; Linnavuori, 1984; Rieger, 1986, 1989) and with the nomenclatural changes occurred in this period (see in Kerzhner and Josifov, 1999; Rieger, 2006), a number of artificial and progressively excluding groupings can be outlined within *Ktenocoris*. The new species does not belong to the following groups:

- with a peculiar coloration pattern in pronotum and scutellum (*crux*).
- different to *crux* and with tibiae without dark rings (*biconicus*, *nevadensis*, *nodistylus*, *phrygicus*, *raunoi*, *seidenstueckeri*).
- different to previous groups and with article I of antennae quite long and slender and bearing setae clearly longer than width of the article (*nowickyi*, *ulmi*).
- different to previous groups and with tibiae bearing distinct dark dots (*flammula*, *italicus*, *obliquoides*, *santolinae*, *schaeuffelei*).
- different to previous groups and with dorsal vestiture mainly consisting of pale hairs (*acuminatus*, *exoletus*, *sardus*, *tridens*).
- different to previous groups and with article I of antennae quite long (*austriacus*).
- different to previous groups and with anterior edge of the genital opening bearing a bifid lobe (*furcifer*, *pseudinsignis*, *pyrounakifer*, *weidneri*) or a broad lobe (*cossyrensis*).

Among the remaining species, *P.* (*K.*) *pseudocellatus* **n. sp.** is easily separated by the particular combination of characters in the genitalic structures. Specifically, its pygophore is quite different to that of *conifer*, *jordani*, *lindbergi*, *muminovi*, *poecilus*, *tener* and *varipes*; its right paramere is completely different to that of *adiacritus*, *conifer*, *falcatus*, *lindbergi*, *muminovi*, *poecilus*, *tener*, *varipes*, *vittiger* and *wagneri*; its left paramere distinguishes it from *adiacritus*, *conifer*, *falcatus*, *jordani*, *lindbergi*, *muminovi*, *tener*, *vittiger*, *wagneri* and *zebra*; and its endophallic comb is totally different to that of *adiacritus*, *conifer*, *falcatus*, *lindbergi*, *muminovi*, *poecilus*, *tener*, *vittiger* and *varipes*. The largest similarities in some of those structures (but not simultaneously in all of them) can be found in *jordani*, *varipes* and *zebra*, but their external morphology (coloration and proportions) is also different.

Two further characters of external morphology deserve a special attention. On the one hand, its small size. Carapezza (1995) stated that *P.* (*K.*) *cossyrensis* (length = 4.9–5.5 mm) was the smallest species in the subgenus described up till then. *P.* (*K.*) *pseudocel-*

latus **n. sp.** undoubtedly is also among the smallest known species of *Ktenocoris*.

On the other hand, the unexpected presence of mamelon-like protuberances resembling ocelli (Figs. 1a, 2a) not only is an outstanding taxonomic character, but also a surprising finding which relevance for mirid morphology studies goes beyond the purpose of this paper. Nevertheless, it has to be noticed that scanning electron microscopy has revealed the relief not so well defined in the right protuberance as on the left one (Figs. 2b-c). We have not been able to find any previous record of such structures in the subgenus *Ktenocoris* when comparing material of several species, nor in the available literature on Miridae except Isometopinae. Crepuscular or nocturnal activity is quite well documented in the genus *Phytocoris*, with a number of species being attracted to light traps (Stonedahl, 1988; Wheeler, 2001). Consequently, if more detailed studies reveal the presence of photoreceptors in *P.* (*K.*) *pseudocellatus* **n. sp.**, the development of such structures could be interpreted as an adaptation for nocturnal living.

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