

Description of two new species of *Phytocoris* from Turkey (Hemiptera: Heteroptera: Miridae)

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Abstract

Two new species of the plant bug genus *Phytocoris*, subgenus *Exophytocoris*, are described from Turkey (Hemiptera: Heteroptera: Miridae: Mirinae): *Ph. (E.) matocqi* n. sp. and *Ph. (E.) pluotae* n. sp. Both belong to the «third group» of species *sensu* Linnavuori, due to the sclerotized basal process of the vesica formed by marginally dentate lamellae. Their unique combination of colour pattern, morphometric characters and male genitalia separate them from the other 7 known members of the group, being *Ph. (E.) parvuloides* Wagner, 1961 and *Ph. (E.) pinibalepensis* Lindberg, 1948 the most similar species. The contribution of this Eastern Mediterranean group of species to the rich mirid fauna of Turkey is briefly discussed.

Key words: *Phytocoris*, *Exophytocoris*, new species, Heteroptera, Miridae, Turkey, taxonomy.

Resumen

Descripción de dos nuevas especies de Phytocoris de Turquía (Hemiptera: Heteroptera: Miridae)

Se describen dos nuevas especies de miridos de Turquía del género *Phytocoris*, subgénero *Exophytocoris* (Hemiptera: Heteroptera: Miridae: Mirinae): *Ph. (E.) matocqi* n. sp. y *Ph. (E.) pluotae* n. sp. Ambas pertenecen al «tercer grupo» de especies *sensu* Linnavuori, dado que el proceso esclerotizado basal de la vesica está formado por láminas marginalmente dentadas. Su distintiva combinación de patrón de coloración, caracteres morfométricos y genitalia masculina permite separarlas de las restantes 7 especies del grupo, siendo *Ph. (E.) parvuloides* Wagner, 1961 y *Ph. (E.) pinibalepensis* Lindberg, 1948 las especies más parecidas. Se discute brevemente la contribución de este grupo de especies del Mediterráneo oriental a la rica fauna de miridos de Turquía.

Palabras clave: *Phytocoris*, *Exophytocoris*, nuevas especies, Heteroptera, Miridae, Turquía, taxonomía.

Laburpena

Phytocorisen Turkiako bi espezie berriren deskribapena (Hemiptera: Heteroptera: Miridae)

Turkiako bi espezie berri deskribatzen dira, miridoen *Phytocoris* generoko *Exophytocoris* subgeneroan (Hemiptera: Heteroptera: Miridae: Mirinae): *Ph. (E.) matocqi* n. sp. eta *Ph. (E.) pluotae* n. sp. Bi-biak «hirugarren espezie-taldean» *sensu* Linnavuori sailkatu daitezke, besikaren oinaldeko prozesu esklerotizatua ertz horzduneko lamelez osatuta baitago. Kolorazio-ereduaren, karaktere morfometrikoen eta arren genitaliaren konbinazioak bereizten ditu bi espezieak talde horretako beste kideengandik, antzekoenak *Ph. (E.) parvuloides* Wagner, 1961 eta *Ph. (E.) pinibalepensis* Lindberg, 1948 direlarik. Ekialdeko Mediterraneokoa den espezie-talde honek Turkiako miridoen faunari egiten dion ekarpena eztabaidatzen da laburki.

Gako-hitzak: *Phytocoris*, *Exophytocoris*, espezie berriak, Heteroptera, Miridae, Turkia, taxonomia.

Introduction

Thousands of plant bug species (Heteroptera: Miridae) still await description (Henry and Wheeler, 1988;

Wheeler, 2001; Cassis and Schuh, 2012; Ferreira *et al.*, 2015). Even in the better explored Western Palearctic, it is likely that hundreds of members of speciose genera such as *Phytocoris* Fallén, 1814 (subfamily Miri-

nae), *Orthotyphus* Fieber, 1858 (Orthotyphinae) or *Psallus* Fieber, 1858 (Phylinae) remain in such a situation.

Phytocoris is the largest genus known within Miridae, with more than 700 species described worldwide (Schuh, 2002-2013), *Exophytocoris* Wagner, 1961 being one of the subgenera in which Palearctic species are usually classified (Wagner and Weber, 1964; Wagner, 1974). According to the compilations by Kerzhner and Josifov (1999) and Aukema *et al.* (2013) and to the recent updatings by Carapezza (2016), Pagola-Carte and Rieger (2017), Aukema (2019) and Çerçi *et al.* (2019), 25 species have hitherto been ascribed to this subgenus.

The still poor understanding of the infrageneric diversity and phylogeny of *Phytocoris* (Stonedahl, 1988) concerns not only the global scale, but also taxonomic problems at regional levels, such as the controversial separation between subgenera *Exophytocoris* and *Compsocercocoris* Reuter, 1876 (Linnavuori, 1974, 1999; see also: Pagola-Carte, 2010: pp. 112, 115). Nevertheless, at least one of the groups of species established by Linnavuori (1994) within *Exophytocoris* (his «third group», which would be more correctly termed as *pinihalepensis*-group (A. Carapezza, pers. comm.)) seems to represent a reliable natural lineage. In the present paper, two new species from Turkey are described as belonging to that group, on the basis of unidentified material («species near *Ph. (E.) parvulus*») from Armand Matocq's collection. As a consequence, the subgenus and its «third group» (*sensu* Linnavuori, 1994) will afterwards consist of 27 and 9 species, respectively.

Throughout the description, measurements are based on all the males (2 and 2, respectively for each species) and females (2 and 1) of the type series and are given in millimetres (mm). For most morphometric characters, the whole range is given in parentheses after the average value. When possible and/or convenient (*e.g.* characters showing sexual dimorphism), measurements are indicated separately for males and females, rendering the ranges in those cases a summary of individual measurements due to the scarcity of available specimens (no more than two for each species and sex). If a character was not measurable in one given specimen (*e.g.* a missing antennal segment), the ranges (and derived ratios) were adapted accordingly. Measurements are given in greater detail in descriptions than in diagnoses. Female genitalia were not studied, due to the mentioned scarcity of specimens and because of the currently undeveloped comparative knowledge at species level. Concerning male structures, the pygophore has been thoroughly

examined in only one of the new species, given the difficulties for a proper and careful handling in the other.

Results

Phytocoris (Exophytocoris) matocqi n. sp.

(Figs. 1-3)

Type material:

HOLOTYPE: ♂, labelled «Turquie: Antalya: Akseki, / col Irmasan Geçidi, alt.1525 / m; 11-VII-1999 A. Matocq / leg.» [white, printed label; «/» indicates separation of lines]

PARATYPES: 1 ♂, 2 ♀♀, same data as the holotype.

A red, printed label is now added below: «HOLOTYPE [or PARATYPE] ♂ [or ♀] / *Phytocoris (Exophyto- / coris) matocqi* n. sp. / Pagola-Carte, 2019». The specimens are mounted on a card, one of the males (paratype) with the genitalic structures glued on a transparent card below. Deposited in the entomological collection of the Muséum National d'Histoire Naturelle (MNHN, Paris) (HT ♂), Armand Matocq collection (Paris) (PT ♂, PT ♀) and the author's collection (PT ♀).

Diagnosis:

Recognized as a species of *Phytocoris (Exophytocoris)* belonging to the third group (*sensu* Linnavuori, 1994) due to the sclerotized basal process of the vesica formed by marginally dentate lamellae. Small size: 4.1–4.4 mm. Distinguished from other species of the same group by its unique combination of: (a) General colouration: brown with two wide transverse paler bands on hemelytra; posterior margin of pronotum with a broad subbasal dark stripe of undulating shape; a mesal pale stripe from head vertex to apex of scutellum; (b) Colouration of antennae: segment II yellowish beige or dirty cream except for three rings: a white basal ring, a dark subbasal ring (both short or very short), and a dark apical ring (1/4 of segment length); segment III dark brown to blackish, with a white basal ring (short or very short); segment IV entirely dark brown to blackish; (c) Morphometric characters: very short antennal segment I, very long antennal segment II, resulting in a conspicuously low ratio segment I / diatone [= 0.61 (♂)]

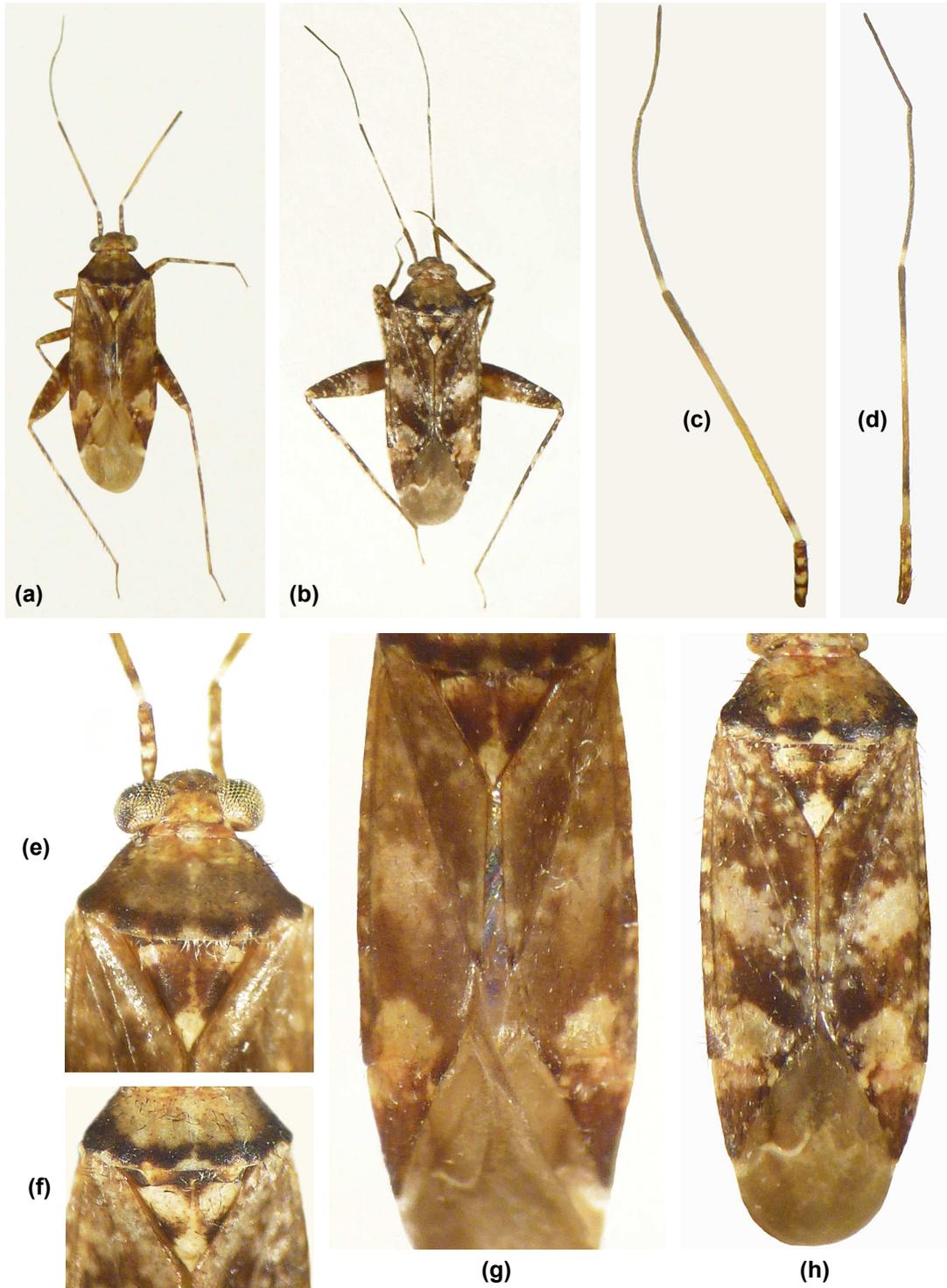


FIGURE 1. *Phytocoris* (*Exophytocoris*) *matocqi* n. sp., male (holotype) and female (paratypes): (a) Habitus, male; (b) Habitus, female; (c) Left antenna, male; (d) Left antenna, female; (e) Head, pronotum and scutellum, male; (f) Scutellum, female; (g) Hemelytra, male; (h) Pronotum, scutellum and hemelytra, female. (Proportion of antennal segment I not correctly shown due to different orientation in the vertical plane.)

and 0.66 (♀)] and a remarkably high ratio segment II / segment I [= 3.71 (♂) and 3.29 (♀)]; ocular index = 0.92 (♂) and 1.39 (♀); (d) Male genitalia: particularly left paramere (primary apophysis long and apically enlarged and sensory lobe slightly protruded) and vesica (sclerotized basal process formed by 7-8 marginally dentate lamellae, no obvious lobal sclerite, variously chitinized areas, including two main dentate longitudinal areas near secondary gonopore: one of them extending into a large spine immediately distal to secondary gonopore, the other one more basal and in connection with a rounded, hard structure).

Description:

General habitus: (Fig. 1)

Macropterous males and females. Length (mm): ♂♂ = 4.19 (4.13–4.25); ♀♀ = 4.20 (4.03–4.38). Body elongate to very slightly ovate, 3.60 (3.59–3.62) × (♂♂) and 3.29 (3.22–3.37) × (♀♀) longer than basal width of pronotum and 3.13 (3.06–3.21) × (♂♂) and 2.81 (2.80–2.82) × (♀♀) longer than maximum width. Dorsal vestiture consisting of strong, dark, semierect setae intermixed with fine, whitish, reclining pale setae. General dorsal colour brown, with well-defined disruptive pattern (particularly in females), most noticeably consisting of: two pale, wide, approximately transversal bands on hemelytra; pronotum roughly bicolor; a median pale stripe (more or less noticeable) from head vertex to apex of scutellum; reddish tinge limited to several small regions; dark-and-pale ringed appendages. Matt, but shining areas appearing dorsally where vestiture is rubbed off.

Head:

Slightly wider than high in front view and short, distinctly higher than long in lateral view. Markedly orthognathous. Frons evenly convex and only slightly protruded anteriorly of antennal fossae, about 1/3 (♂♂) or 1/2 (♀♀) of the eye length. Clypeus slightly convex in lateral view, almost completely concealed by frons in dorsal view, and meeting it along a moderate notch. Ground colour of vertex and frons orangish cream; vertex with red spots, medially pale; always bearing a pair of pale spots near inner margin of eyes; frons profusely marked by bilaterally branched brown striae. Clypeus maroon to brown, darker than mandibular and maxillary plates, also maroonish brown except marginally, pale. Diatone = 0.76–0.80 mm. Ocular index: ♂♂ = 0.92 (0.90–0.93); ♀♀ = 1.39 (1.37–1.41). Eyes globose, occupying about 4/5 (♂♂) or 3/5 (♀♀) of height of head in lateral view; maroonish with shiny golden areas in preserved

specimens. Maxillary plates in front view protruding laterally. Bucculae almost not concealing segment I of rostrum. Rostrum largely surpassing metacoxae; segments I and II pale; segment III brownish; segment IV brown. Antennae imperceptibly shorter than body length in both sexes. Length of antennal segments: I – II – III – IV = (0.45–0.53) – (1.68–1.85) – (1.00–1.13) – (0.65–0.70) mm. Segment I, particularly on proximal 2/3, bearing dark, erect setae, longer than the diameter of the segment (5/4 proportion), in addition to the dense, similarly dark, adpressed setae directed forward. Colour pattern of segments as in Figs. 1c-d. Segment I brown with three conspicuous pale spots, larger and/or better defined in males. Segment II mostly yellowish beige or dirty cream except for three rings, two of which show sexual dimorphism in their length: a white, basal ring, short in females (1/10 of segment length) and very short in males (1/20); a dark, subbasal one, similarly short in females (1/10 of segment length) and very short in males (1/20); and a dark, long (1/4), apical ring; segment II slightly thicker in males than in females. Segment III slightly narrower than II, dark brown to blackish, with a white, basal ring which is short in females (1/8 of segment length) and very short in males (1/16). Segment IV slightly narrower than III, entirely dark brown. Ratio segment I / diatone: ♂♂ = 0.61 (0.59–0.63); ♀♀ = 0.66 (0.66–0.67). Ratio segment II / basal width of pronotum: ♂♂ = 1.52 (1.46–1.57); ♀♀ = 1.35 (1.35–1.36). Ratio segments II / I: ♂♂ = 3.71 (3.70–3.72); ♀♀ = 3.29 (3.24–3.33). Ratio segments II / III+IV = 0.97–1.06.

Thorax:

Pronotum (Figs. 1e, f, h) trapezoidal to bell-shaped, 1.81–1.93 × as wide as long (including collar) and 1.49–1.63 × wider than diatone. Basal width = 1.15–1.30 mm. Mesal length (including collar) = 0.60–0.68 mm. Gently declivant anteriorly. Lateral margins moderately arcuate. Posterior margin convex. Centrally light brown, gradually becoming yellowish anteriorly, with conspicuous calli being the palest region, tinged with red. Whole pronotum traversed by a mesal pale stripe (cream colour). Posterior margin with a broad, subbasal dark stripe, continuous but formed by coalescence of six large spots, giving an undulating aspect, only (if) interrupted medially, extending latero-anteriorly and occupying a big portion of pronotal surface. Pronotal collar subequal in length to the width of antennal segment I; yellow to orange with reddish tinge, except for a median pale spot. Scutellum *sensu stricto* triangular, slightly wider

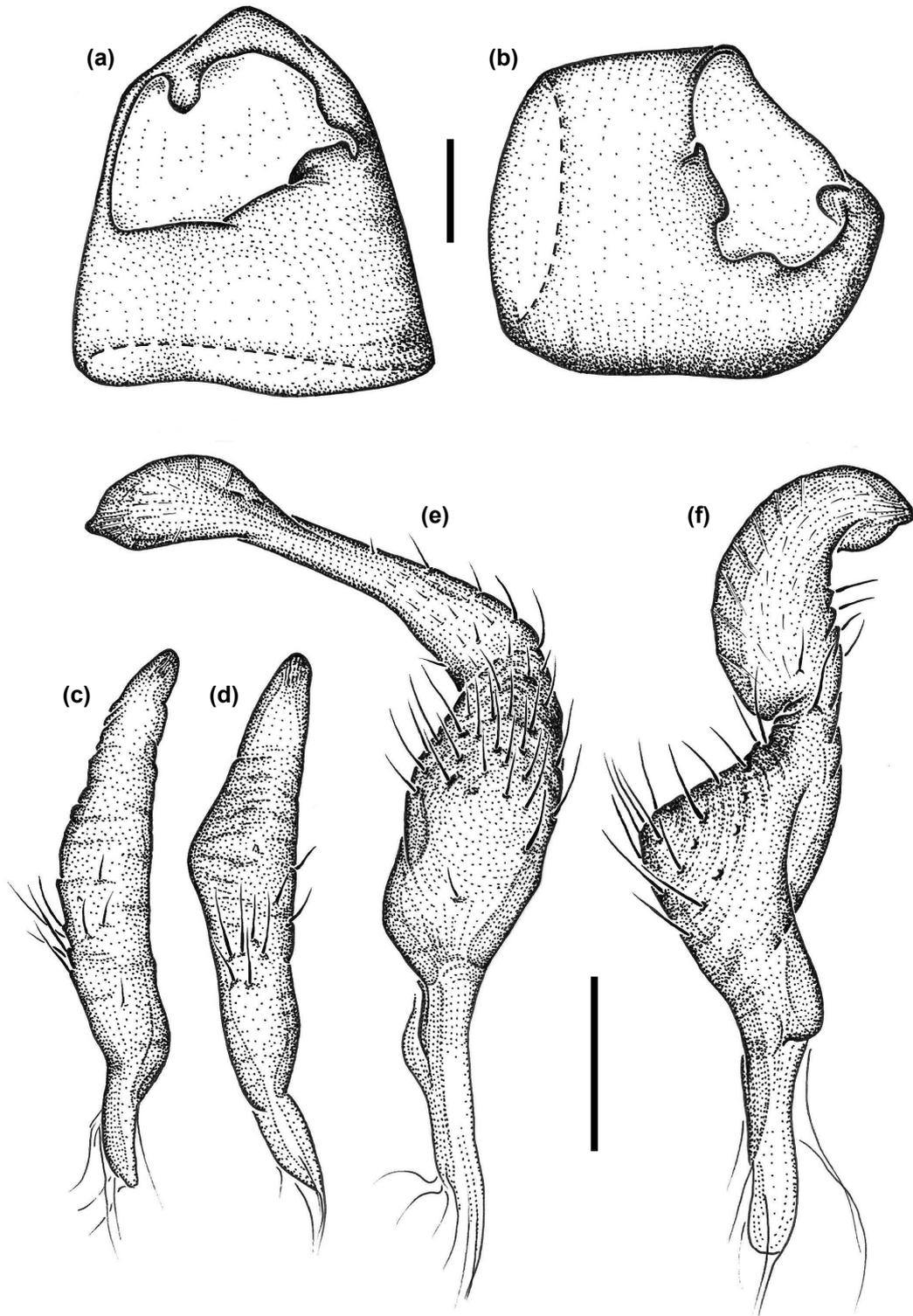


FIGURE 2. *Phytocoris (Exophytocoris) matocqi* n. sp., male genitalia: (a)-(b) Pygophore; (c)-(d) Right paramere; (e)-(f) Left paramere (Scale bars: (a)-(b) = 0.2 mm; (c)-(f) = 0.1 mm).

than long; apex acute; brown except for a median, pale stripe of cream colour, ending in the largely pale apex; additionally, more or less pale on basal angles, particularly in females (Fig. 1f: a female with scutellum very pale; compare with Figs. 1e (male) and 1h (female)). Mesoscutum narrowly exposed, brown with a pair of orangish cream areas on lateral ridges, which are larger and paler in females. Scutellum + mesoscutum moderately raised. Pronotum laterally (propleura) dark brown to maroon and broadly pale distally. Meso- and metapleura similarly coloured, with distal margins pale. Coxae, trochanters and scent efferent system also pale.

Hemelytra:

Subparallel-sided, largely surpassing apex of abdomen (Figs. 1g-h). General colour of corium brown, mottled with light brown or beige and with two broad pale areas: the anterior one, beige, oblique on each corium (as a distinctive «V»-shaped stripe) and including the apical region of clavus; the posterior one, occupying the posterior 1/5 of corium and extending to basal 1/2 of cuneus (as a pair of distinctive large spots), sometimes (males) tinged with red posteriad of cuneal fracture; alternatively, the oblique, wide, dark stripe between both pale areas forming a distinctive «V»-shaped pattern of dark brown. Exocorium noticeably coloured with approx. 15 alternating dark and pale spots, larger in posterior 1/2. Apex of cuneus largely brown. A darker brown spot at the anal angle of corium, followed by two smaller stripes on inner margin of cuneus. Membrane brownish grey, darker basally; longitudinal veins anteriorly dark, concolor, and posteriorly (including transversal veins) pale, in connection with a small pale area on the membrane margin immediately posterior to cuneus.

Legs:

With dense, mostly pale, adpressed setae; tibiae bearing semierect, amber coloured spines, longer (up to twice) than tibial width. Femora brown from the very basis to apex, irrorated with cream coloured spots unevenly distributed, smaller on anterior marginal and submarginal areas, more abundant on apical 2/3; profemora the palest, metafemora the darkest. Tibiae with colour ranging from cream to brown and consisting of faint rings; protibiae and mesotibiae with three pale rings and four brown rings, the former shorter except for the basal dark ring, which is the shortest; apical dark ring being the longest; metatibiae with ill-defined colour pattern, showing only two conspicuous, pale rings in all

specimens. All tarsi of roughly equal colour: light brown with tarsomere III darker. Length of metatibiae = 2.45–2.83 mm. Ratio metatibia / basal width of pronotum = 2.13–2.26. Length of metatarsomeres (relative proportions): I – II – III = 6 – 8 – 10.

Abdomen:

Light brown to yellowish: medially paler and laterally darker, sometimes as a pair of brown longitudinal stripes, sometimes tinged with red. Pygophore and female genitalic segments darker than previous sternites.

Male genitalia:

Pygophore (Figs. 2a-b) troncoconical to subtriangular, slightly longer than wide, apically pointed. Genital opening large, margin with a conspicuous, dorsally acute tubercle above the base of left paramere. Right paramere as in Figs. 2c-d: elongate, with a subbasal belt of setae. Left paramere as in Figs. 2e-f: edentate, with primary apophysis long and apically enlarged and sensory lobe slightly protruded; abundant setae on the sensory lobe, sparser and shorter more distally. Vesica as in Fig. 3: sclerotized basal process (= spiculum) formed by 7-8 marginally dentate lamellae; no obvious lobal sclerite; variously chitinized areas, including two main dentate longitudinal areas near secondary gonopore: one of them extending into a large spine immediately distal to secondary gonopore, the other one more basal and in connection with a rounded, hard structure.

Female genitalia:

Not studied (see Introduction).

Etymology:

I dedicate the name of the new species to the prominent heteropterist Armand Matocq (Muséum National d'Histoire Naturelle (MNHN), Paris), collector of the specimens, for so kindly sharing with me his vast experience and knowledge, particularly on Miridae, for his hospitality and camaraderie.

Type locality:

Turkey, province of Antalya, Akseki at 1525 m (Western Taurus Mountains, Anatolian Peninsula).

Distribution and biology:

Only known from the type locality. Collected on a species of Pinaceae of the genera *Abies*, *Cedrus* or *Larix*.

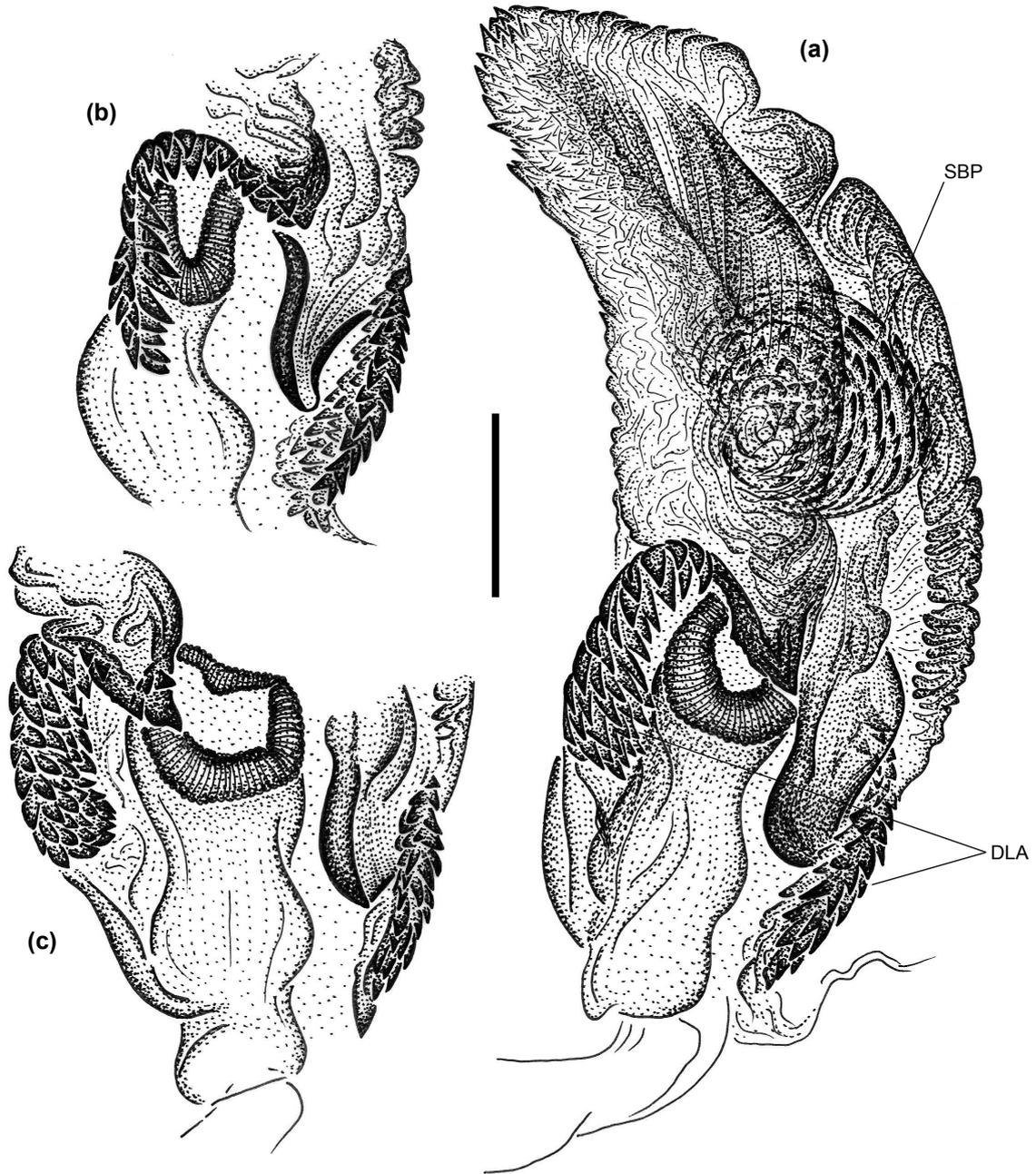


FIGURE 3. *Phytocoris* (*Exophytocoris*) *matocqi* n. sp., male genitalia: (a) Vesica; (b)-(c) Additional views of the dentate longitudinal areas near secondary gonopore (Abbreviations: DLA = dentate longitudinal area; SBP = sclerotized basal process or spiculum) (Scale bar = 0.1 mm).

***Phytocoris (Exophytocoris) pluotae* n. sp.**

(Figs. 4-5)

Type material:

HOLOTYPE: ♂, labelled «Turquie: Antalya: Akseki, / col Irmasan Geçidi, alt.1525 / m; 11-VII-1999 A. Matocq / leg.» [white, printed label; «/» indicates separation of lines]

PARATYPES: 1 ♂, 1 ♀, same data as the holotype.

A red, printed label is now added below: «HOLOTYPE [or PARATYPE] ♂ [or ♀] / *Phytocoris (Exo-phyto- / coris) pluotae* n. sp. / Pagola-Carte, 2019». The specimens are mounted on a card, one of the males (paratype) with the genitalic structures glued on a transparent card below. Deposited in the entomological collection of the Muséum National d'Histoire Naturelle (MNHN, Paris) (HT ♂), Armand Matocq collection (Paris) (PT ♂) and the author's collection (PT ♀).

Diagnosis:

Recognized as a species of *Phytocoris (Exophytocoris)* belonging to the third group (*sensu* Linnavuori, 1994) due to the sclerotized basal process of the vesica formed by marginally dentate lamellae. Small size: 3.7–4.3 mm. Distinguished from other species of the same group by its unique combination of: (a) General colouration: stramineous with two oblique, brown stripes on mesocorium converging at the anal angle of hemelytra; posterior margin of pronotum with a distinct but narrow subbasal dark stripe; without mesal pale stripe along pronotum and scutellum; (b) Colouration of antennae: segment II dirty cream except for two very short rings: a white basal ring and a brownish subbasal ring; segment III dark brown to blackish, with two white, very short, rings: a basal one and an apical one; segment IV entirely dark brown to blackish; (c) Morphometric characters: very short antennal segment I, very long antennal segment II, resulting in a low ratio segment I / diatone [= 0.68 (♂) and 0.75 (♀)] and a high ratio segment II / segment I [= 3.09 (♂) and 2.75 (♀)]; ocular index = 1.00 (♂) and 1.56 (♀); (d) Male genitalia: particularly the left paramere (primary apophysis long, pre-apically narrowed and bent prior to the apical enlargement, which is moderate, and sensory lobe large, triangular) and the vesica (sclerotized basal process formed by 4 marginally dentate lamellae, a small lobal sclerite present, variously chitinized areas, including two dentate longitudinal areas near secondary gonopore: one adjacent to it and a less noticeable one more distant).

Description:

General habitus: (Fig. 4)

Macropterous males and females. Length (mm): ♂♂ = 4.04 (3.75–4.33); ♀ = 4.25. Body elongate to slightly ovate, 3.30 (3.26–3.33) × (♂♂) and 3.40 × (♀) longer than basal width of pronotum and 2.70 × (♂♂) and 2.66 × (♀) longer than maximum width. Dorsal vestiture consisting of pale to brown (mostly golden) semierect setae intermixed with fine, whitish, reclining pale setae. General dorsal colour light yellow ochre (stramineous) tinged with orangish, with two oblique, brown stripes on mesocorium converging at the anal angle of hemelytra: the anterior one long, adjacent to claval suture, the posterior one shorter, roughly parallel to cuneal fracture; without mesal pale stripe along pronotum and scutellum; pronotum distinctly pale with a distinct but narrow subbasal dark stripe; red to brown irrorations on legs, head and antennal segment I. Female darker than males (in examined specimens). Moderately shiny.

Head:

Slightly wider than high in front view and short, distinctly higher than long in lateral view. Markedly orthognathous. Frons evenly convex and only slightly protruded anteriorly of antennal fossae, about 1/3 (♂♂) or 1/2 (♀) of eye length. Clypeus slightly convex in lateral view, almost completely concealed by frons in above view, and meeting it along a moderate notch. Ground colour of vertex and frons light yellowish with orangish tinge; vertex markedly pale with a pair of orange spots posteriorly of eyes, hardly visible under anterior margin of pronotum; frons bearing faint, orangish bilateral striae. Clypeus and mandibular plates whitish with a red to maroon transversal band; apex of clypeus also white-and-red patterned (♂♂) or browned (♀); maxillary plates and bucculae maroon or brown with whitish spots; the whole «face» showing a somewhat chequered appearance. Diatone = 0.79–0.83 mm. Ocular index: ♂♂ = 1.00 (0.93–1.07); ♀ = 1.56. Eyes globose, occupying about 3/4 (♂♂) or 2/3 (♀) of height of head in lateral view; maroonish in preserved specimens. Maxillary plates in front view protruding laterally. Bucculae almost not concealing segment I of rostrum. Rostrum clearly surpassing metacoxae; pale or with reddish tinge, segment IV infuscated. Antennae subequal in length to body in both sexes. Length of antennal segments: I – II – III – IV = (0.53–0.60) – (1.60–1.80) – (0.98–1.00) – (0.68–0.73) mm. Segment I bearing erect setae, brownish to amber coloured, longer than the diameter of the



FIGURE 4. *Phytocoris* (*Exophytocoris*) *pluotae* **n. sp.**, male (holotype): (a) Habitus; (b) Right antenna; (c) Head and pronotum; (d) Scutellum and hemelytra. (Proportion of antennal segment I not correctly shown due to different orientation in the vertical plane.) (The arrow indicates a vegetal remain stuck to the specimen, or a parasite.)

segment, in addition to dense, dark, adpressed setae directed forward. Colour pattern of segments as in Fig. 4b. Segment I whitish with red ($\sigma\sigma$) to brown (φ) irrorations or even forming four wide rings (φ). Segment II dirty cream except for a pair of faint rings: a white, basal ring and a brownish, subbasal one, both very short (jointly about 1/8 of segment length). Segment III dark brown to blackish, with two white, very short rings: a basal one ($<1/10$ of segment length) and an apical one (about 1/20). Segment IV entirely dark brown to blackish. Width of antennal segments: I > II > III > IV. Ratio segment I / diatone: $\sigma\sigma = 0.68$ (0.67–0.70); $\varphi = 0.75$. Ratio segment II / basal width of pronotum: $\sigma\sigma = 1.39$ (1.36–1.42); $\varphi = 1.32$. Ratio segments II / I: $\sigma\sigma = 3.09$ (3.05–3.13); $\varphi = 2.75$. Ratio segments II / III+IV = 0.93–1.09.

Thorax:

Pronotum (Fig. 4c) trapezoidal to very slightly bell-shaped, 1.82–1.88 × as wide as long (including collar) and 1.43–1.61 × wider than diatone. Basal width = 1.13–1.33 mm. Mesal length (including collar) = 0.60–0.73 mm. Gently declivent anteriorly. Lateral margins almost straight. Posterior margin convex. Uniformly stramineous, except for: callar region, gradually yellowish; anterior ring, orangish, particularly its lateral areas; and a dark brown, subbasal stripe, slightly wider than the visible part of mesoscutum, medially as long (broad) as the width of antennal segment I, and laterally vanishing gradually. Pronotal collar subequal in length to the width of antennal segment I. Scutellum *sensu stricto* triangular, slightly wider than long; ending in an acute apex; yellowish or stramineous to light brownish. Mesoscutum narrowly exposed, orangish with a pair of stramineous areas on lateral ridges. Scutellum + mesoscutum (Fig. 4d) moderately raised. Pronotum laterally (propleura) stramineous to brown, with reddish tinge. Meso- and metapleura similarly coloured, with distal margins pale. Coxae, trochanters and scent efferent system also pale.

Hemelytra:

Subparallel-sided, largely surpassing apex of abdomen (Fig. 4d). Ground colour of corium stramineous; two oblique, brown stripes on mesocorium, converging at anal angle (in-between area also darkened in the female studied); anterior one long, adjacent to claval suture, sometimes invading clavus; posterior one broader and more transversal, roughly parallel to cuneal fracture. In some specimens, reddish tinge medially on mesocorium anterior to

cuneus. Exocorium irrorated or mottled with red to reddish brown. Cuneus stramineous with reddish tinge; inner margin bearing two dark brown spots, the anterior larger than the posterior. Membrane greyish but densely mottled with brownish grey; a pair of paler areas posterior to cells; longitudinal veins anteriorly dark, concolor, but largely pale posteriorly (including transversal veins).

Legs:

With dense, mostly pale, adpressed setae; tibiae bearing semierect, pale to amber spines, longer (twice) than tibial width. Femora pale with red-maroon (mainly $\sigma\sigma$) to brown (φ) spots (pro-, meso- and posterior 1/2 of metafemora) or similarly red-maroon to brown with pale (whitish to yellowish) spots (anterior 1/2 of metafemora). Tibiae with the same combination of colours as femora, with a pattern of irrorated, small ($\sigma\sigma$) or larger (φ) spots, but not forming noticeable rings, except a very faint, pale, subbasal ring on metatibiae. All tarsi of roughly equal colour: pale with tarsomere III darker apically. Length of metatibiae = 2.60–2.88 mm. Ratio metatibia / basal width of pronotum = 2.13–2.31. Length of metatarsomeres (relative proportions): I – II – III = 5 – 7 – 9.

Abdomen:

Stramineous to light brown, darker and sometimes tinged with red laterally. Pygophore and female genitalic segments slightly darker than previous sternites.

Male genitalia:

Pygophore troncoconical to subtriangular, slightly longer than wide. Margin of genital opening large, with a bulbous, rounded tubercle above the base of left paramere. Right paramere as in Figs. 5a-b: elongate, with a sub-median belt of setae. Left paramere as in Fig. 5c: edentate, with primary apophysis long, pre-apically narrowed and twisted prior to the apical enlargement, which is moderate; sensory lobe large, triangular, with abundant setae; setae sparser and shorter more distally. Vesica as in Fig. 5d: sclerotized basal process (= spiculum) formed by 4 marginally dentate lamellae; a small lobal sclerite present; variously chitinized areas, including two dentate longitudinal areas near secondary gonopore: a conspicuous area adjacent to secondary gonopore and a less noticeable ridge more distant.

Female genitalia:

Not studied (see Introduction).

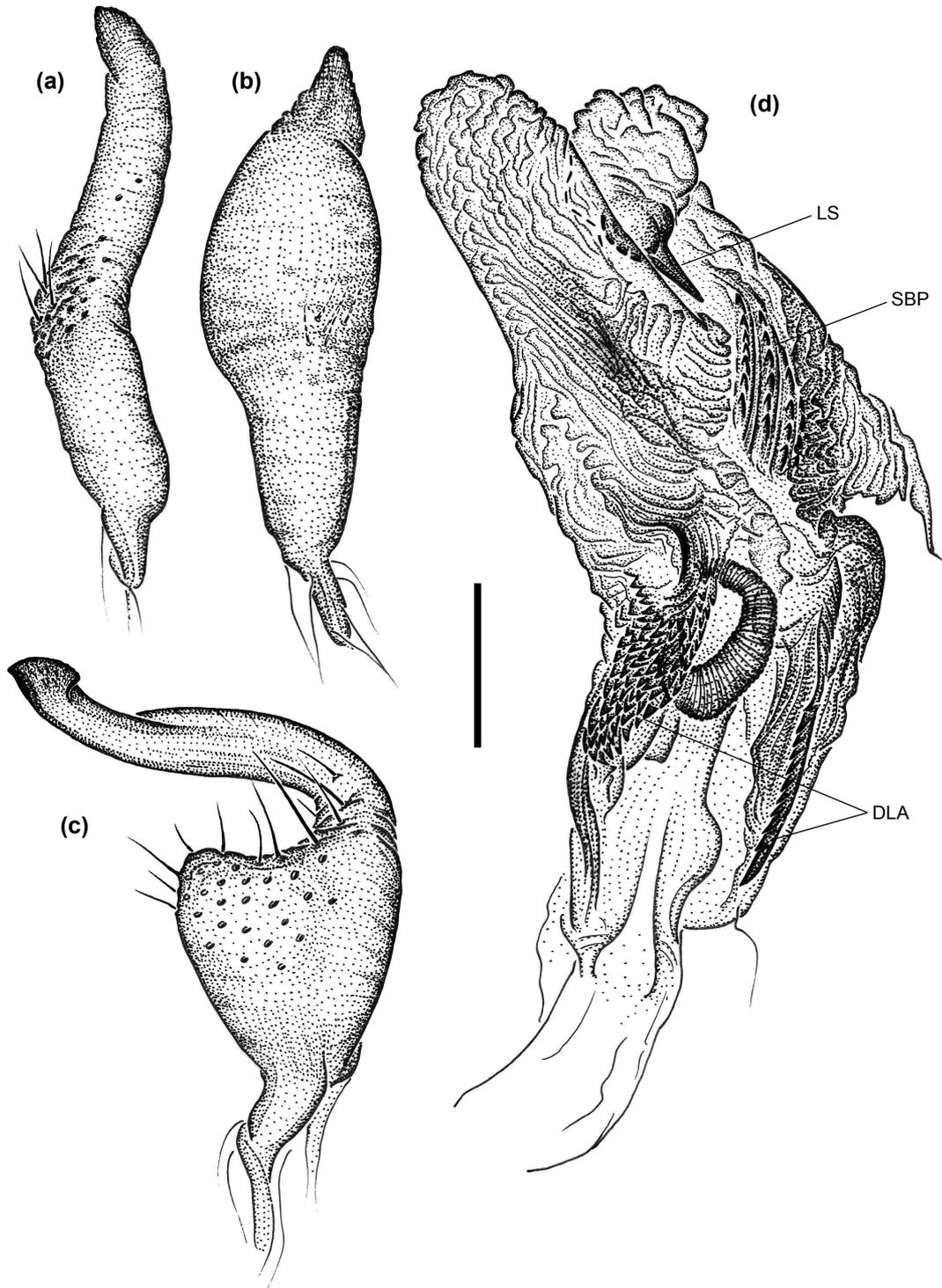


FIGURE 5. *Phytocoris* (*Exophytocoris*) *pluotae* n. sp., male genitalia: (a)-(b) Right paramere (probably slightly deformed during manipulation); (c) Left paramere; (d) Vesica (Abbreviations: DLA = dentate longitudinal area; LS = lobal sclerite; SBP = sclerotized basal process or spiculum) (Scale bar = 0.1 mm).

Etymology:

I dedicate the name of the new species to the renowned heteropterist Dominique Pluot-Sigwalt (Muséum National d'Histoire Naturelle (MNHN), Paris), for her kind help and advice in my research, and in recognition of her detailed knowledge on insect morphology.

Type locality:

Turkey, province of Antalya, Akseki at 1525 m (Western Taurus Mountains, Anatolian Peninsula).

Distribution and biology:

Only known from the type locality. Collected on a species of Pinaceae of the genera *Abies*, *Cedrus* or *Larix*.

Discussion

Among the enormously diverse genus *Phytocoris*, both *matocqi* n. sp. and *pluotae* n. sp. can be placed in the subgenus *Exophytocoris* [= *Ribautomiris* Wagner, 1961 (Rieger, 1989, syn.)] due to the following combination of characters (Wagner, 1974; Linnavuori, 1999; Carapezza, 2016): hemelytra not ornamented with regular dense orangish or red mottling, right paramere entirely sclerotized, left paramere edentate, antennal segment I shorter than diatone, antennal segment III dark brown with pale base, head in lateral view higher than long and frons moderately convex, with a shallow depression between it and the base of clypeus. Besides, they are generally small species (< 6 mm) with reddish or reddish brown patterns.

More specifically, both *Ph. (E.) matocqi* n. sp. and *Ph. (E.) pluotae* n. sp. undoubtedly belong to the third group of species of *Exophytocoris*, as established by Linnavuori (1994): species in which the sclerotized basal process (= spiculum) of the vesica is not comb-like, as usually in *Phytocoris*, but formed of several marginally dentate lamellae. In addition, there are often dentate longitudinal areas or ridges near the secondary gonopore and sometimes also denticulations on the sclerotized apical portion.

Up to now, this «third group» (or *pinibalepensis*-group) consisted of 7 species; alphabetically: *Ph. (E.) carapezzai* Çerçi, Koçak & Tezcan, 2019, *Ph. (E.) koronis* Linnavuori, 1992, *Ph. (E.) parvuloides*

Wagner, 1961 [= *Ph. (Ph.) malickyi* Rieger, 1995 (Çerçi and Koçak, 2017, syn.)], *Ph. (E.) pinibalepensis* Lindberg, 1948, *Ph. (E.) raunolinnavuorii* Carapezza, 2016, *Ph. (E.) scituloides* Lindberg, 1948 and *Ph. (E.) zenobia* Linnavuori, 1994. Curiously, it is a group of relatively recent discovery in the context of miridology of Eastern Mediterranean, since all its members have been described from mid-20th century onwards; four out of the seven species, just in the last three decades.

Two of those species deserve a comment: *Ph. (E.) parvuloides* and *Ph. (E.) raunolinnavuorii* lack the characteristic spiculum formed of several marginally dentate lamellae, the former lacking such structure completely, the latter bearing instead a spindle-shaped esclerotized process formed by several imbricated apically dentate strips. However, they both have dentate longitudinal areas near the secondary gonopore as well as other sclerotized structures in the vesica: denticulations on its sclerotized apical portion in *Ph. (E.) parvuloides* and a lobal sclerite in *Ph. (E.) raunolinnavuorii*. A lobal sclerite is also present in *Ph. (E.) carapezzai* and, as shown above, in *Ph. (E.) pluotae* n. sp.

Each of the new species shows a unique combination of characters, as summarized in their diagnoses (general colouration + colouration of antennae + morphometric characters + male genitalia, particularly left paramere and vesica). Externally, in addition to their distinguishing dorsal colour pattern, both *Ph. (E.) matocqi* n. sp. and *Ph. (E.) pluotae* n. sp. have characteristically a very short antennal segment I and a very long antennal segment II, which results in a low ratio segment I / diatone and a high ratio segment II / segment I (see Table 1 for comparison with other species). Concerning the colouration of antennae, the segment III has basal and apical pale rings in *Ph. (E.) pluotae* n. sp., similarly to *Ph. (E.) carapezzai*, *Ph. (E.) parvuloides*, *Ph. (E.) pinibalepensis* and *Ph. (E.) scituloides*, and only a basal pale ring in *Ph. (E.) matocqi* n. sp., similarly to *Ph. (E.) koronis*, *Ph. (E.) raunolinnavuorii* and *Ph. (E.) zenobia*. Both new species, however, can be distinguished from the others mainly by the pattern of segment II (Fig. 6).

Table 1 is provided in an attempt to gather much of the diagnostic information (morphometry and male genitalic structures) on every species of the «third group», or *pinibalepensis*-group, with comparative purposes.

Concerning relevant morphometric characters, they can be summarized as follows:

		Morphometric characters					Male genitalia				
		Length (mm)	Ocular index	Ant.I / Diat.	Ant.II / Pron.	Ant.II / Ant.I	Vesica			Left paramere	
							SBP(MDL)	LS	DLA	Apophysis apex	Sensory lobe
<i>Ph. (E.) carapezzai</i> ⁽¹⁾	♂♂	4.00–4.60	0.6–0.8	0.8	1.3	2.5	yes	yes (long & thick)	yes (2?)	strongly enlarged	slightly protruded
	♀♀										
<i>Ph. (E.) koronis</i> ^(2,3)	♂♂	4.75	1.14	1.0–1.03	1.5	2.32	yes (3)	no	yes (1)	digitate	slightly protruded
	♀♀	5.5	1.3		1.44	2.14					
<i>Ph. (E.) parvuloides</i> ^(3,4,5)	♂♂	3.7–4.1	0.94	0.7	1.50	2.80–2.85	no	no	yes (2)	enlarged	slightly protruded
	♀♀	3.5–3.95	1.52	0.8	1.38						
<i>Ph. (E.) pinihalepensis</i> ^(3,5,6,9)	♂♂	4.0–4.2	0.86	0.59	1.25–1.30	2.5–2.8	yes (10)	no	?	digitate	slightly protruded
	♀♀	3.9–4.3	1.36								
<i>Ph. (E.) raunolinnavuorii</i> ⁽⁷⁾	♂♂	4.8–5.4	1.18–1.26	0.80–0.84	1.45	2.75	different	yes (oval + tooth)	yes (1)	enlarged (blade-like)	strongly protruded
	♀♀	4.7–5.1	1.40–1.46	0.85–0.92	1.31–1.35						
<i>Ph. (E.) scituloides</i> ^(3,5,6,8)	♂♂	4.6–5.0	0.70–0.86	0.86	1.43	2.2	yes (5)	no	yes (2)	tapered	slightly protruded
	♀♀		1.23–1.30		1.23						
<i>Ph. (E.) zenobia</i> ⁽³⁾	♂♂	4.5	1.3	0.82–0.9	1.14–1.28	2.16–2.3	yes (5)	different	yes (1)	tapered	moderately protruded
	♀♀										
<i>Ph. (E.) matocqi n. sp.</i> ⁽⁹⁾	♂♂	4.13–4.25	0.90–0.93	0.59–0.63	1.46–1.57	3.70–3.72	yes (7-8)	no	yes (2)	enlarged	slightly protruded
	♀♀	4.03–4.38	1.37–1.41	0.66–0.67	1.35–1.36	3.24–3.33					
<i>Ph. (E.) plutae n. sp.</i> ⁽⁹⁾	♂♂	3.75–4.33	0.93–1.07	0.67–0.70	1.36–1.42	3.05–3.13	yes (4)	yes (small)	yes (2)	moderately enlarged	strongly protruded
	♀♀	4.25	1.56	0.75	1.32	2.75					

SOURCES: (1) Çerçi *et al.*, 2019; (2) Linnavuori, 1992; (3) Linnavuori, 1994; (4) Wagner, 1961; (5) Wagner, 1974; (6) Lindberg, 1948; (7) Carapezza, 2016; (8) Linnavuori, 1974; (9) own data.

ABBREVIATIONS: SBP(MDL) = sclerotized basal process formed by marginally dentate lamellae (how many) / LS = lobal sclerite / DLA = dentate longitudinal areas near secondary gonopore.

TABLE 1. Several diagnostic characters of external morphometry and male genitalia for each species of *Phytocoris* (*Exophytocoris*) of the third group *sensu* Linnavuori (1994) [= *pinihalepensis*-group]. Sources and abbreviations indicated at the bottom.

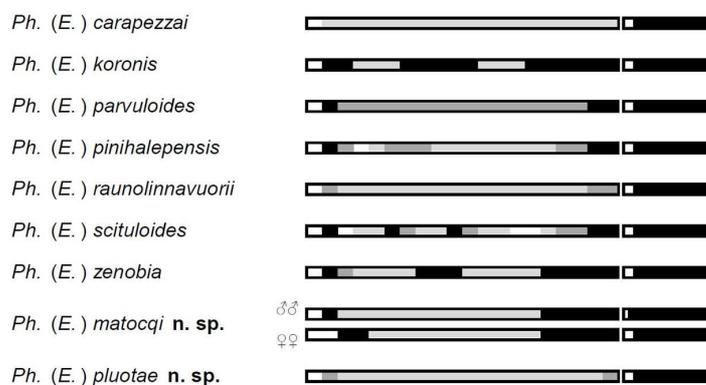


FIGURE 6. Schematic representation of antennal segments II and III in all known species of *Phytocoris* (*Exophytocoris*) of the third group *sensu* Linnavuori (1994). Differences in length and segment proportions between species have been overlooked.

- (1) Total length seems to be little informative in the *pinihalepensis*-group, except for the slightly larger size of *Ph. (E.) koronis*, *Ph. (E.) raunolinnavuorii* and *Ph. (E.) scituloides*.
- (2) Ocular index is clearly greater in *Ph. (E.) koronis*, *Ph. (E.) raunolinnavuorii* and *Ph. (E.) zenobia*, but differences are much subtler among the other species.
- (3) Ratio antennal segment I / diatone is comparatively high in *Ph. (E.) koronis* and low in *Ph. (E.) parvuloides*, *Ph. (E.) pinihalepensis*, *Ph. (E.) matocqi n. sp.* and *Ph. (E.) pluotae n. sp.*
- (4) Ratio antennal segment II / pronotum width is approximately similar in *Ph. (E.) koronis*, *Ph. (E.) parvuloides*, *Ph. (E.) raunolinnavuorii*, *Ph. (E.) scituloides* and *Ph. (E.) matocqi n. sp.*, while in *Ph. (E.) pluotae n. sp.* it is more similar to *Ph. (E.) carapezzai* and *Ph. (E.) pinihalepensis*.
- (5) Ratio antennal segments II / I is markedly greater in both new species, particularly in *Ph. (E.) matocqi n. sp.* Among the other taxa, it is higher in *Ph. (E.) parvuloides*, *Ph. (E.) pinihalepensis* and *Ph. (E.) raunolinnavuorii*.

Following the identification keys by Wagner (1974: 151-154) and Linnavuori (1994: 42), both new species are close to *Ph. (E.) pinihalepensis*, *Ph. (E.) parvuloides* and *Ph. (E.) scituloides*. As shown above, even though relevant differences exist in their particular combination of characters, *Ph. (E.) matocqi n. sp.*

and *Ph. (E.) pluotae n. sp.* are probably most similar to *Ph. (E.) parvuloides* and *Ph. (E.) pinihalepensis*, respectively. Nevertheless, their general dorsal colouration (pronotum and/or scutellum and/or hemelytra) is also distinguishing from them (see Figs. 1 and 4).

Concerning male genitalia, the high diversity found within the «third group» is also critical for the separation of both new species. The left paramere in *Ph. (E.) pluotae n. sp.* is unique, being *Ph. (E.) raunolinnavuorii* the most similar species due to the strongly protruded sensory lobe; however, the apex of the apophysis in the former and the vesica in the latter are completely different between them. The left paramere of *Ph. (E.) matocqi n. sp.* is rather similar to that of *Ph. (E.) parvuloides*; however, the vesica of the latter lacks the sclerotized basal process, which is present and formed by 7-8 marginally dentate lamellae in the former.

According to current knowledge, the *pinihalepensis*-group of *Ph. (Exophytocoris)* is strictly formed by Eastern Mediterranean species (see map on Fig. 7). The characteristic structure of their vesica, together with such biogeographical pattern, strongly suggest the possibility of a natural or monophyletic lineage, with the likely exception of *Ph. (E.) raunolinnavuorii* whose distinguishing characters «probably deserve to be regarded as forming a group of its own» (Carapezza, 2016).

On the other hand, the rich entomodiversity of Asian Turkey can be emphasized. Only in the sub-

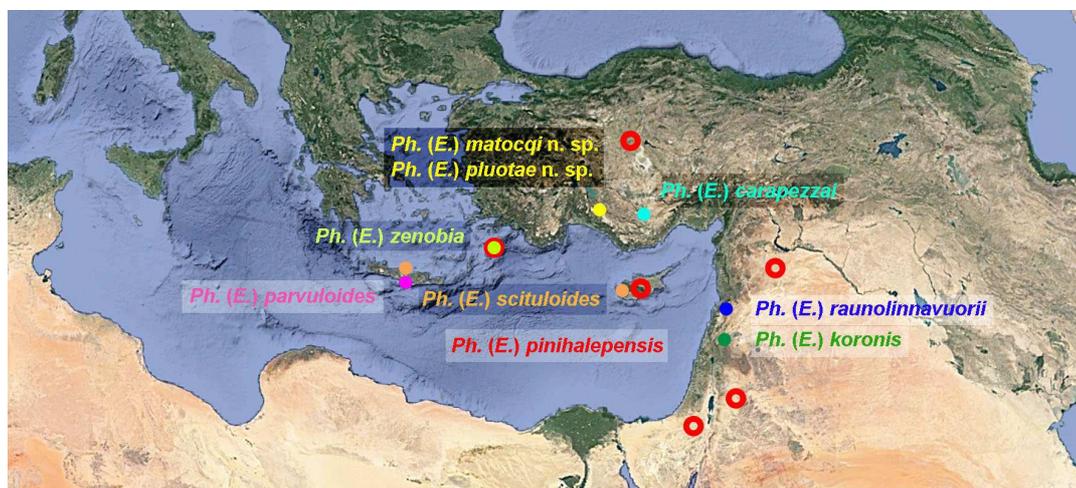


FIGURE 7. Known distribution of the 9 species of *Phytocoris* (*Exophytocoris*) belonging to the third group *sensu* Linnavuori (1994) [= *pinihalepensis*-group]. For *Ph. (E.) pinihalepensis*, empty circles refer to whole countries instead of more localized records (Base map modified from Google Earth).

genus *Exophytocoris* up to 9 species have hitherto been recorded; alphabetically: *Ph. (E.) carapezzai*, *Ph. (E.) loralis* Wagner, 1976, *Ph. (E.) oleae* Linnavuori, 1962, *Ph. (E.) matocqi n. sp.*, *Ph. (E.) parvulus* Reuter, 1880, *Ph. (E.) pinihalepensis*, *Ph. (E.) pluotae n. sp.*, *Ph. (E.) scitulus scitulus* Reuter, 1908 and *Ph. (E.) tauricola* Linnavuori, 1965 (Kerzhner and Josifov, 1999; Aukema *et al.*, 2013; Çerçi and Koçak, 2017; Aukema, 2019; Çerçi *et al.*, 2019; present work).

Ph. (E.) matocqi n. sp. and *Ph. (E.) pluotae n. sp.* were collected at the same locality and data at the western Taurus Mountains, in southern Turkey. Recently, *Ph. (E.) carapezzai* has been described from Karaman (Çerçi *et al.*, 2019), about 120 km to the East. It is likely that the whole chain of Taurus Mountains, with altitudes above 3000 m, represents an interesting area of diversification.

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versität Hamburg (ZMUH)) for allowing me comparison with type specimens of *Ph. (E.) parvuloides* and *Ph. (E.) loralis*. Thanks are also given to Attilio Carapezza (Palermo) and Christian Rieger (Nürtingen) for reviewing the article.

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