

Phytocoris (Exophytocoris) diversitatis n. sp.
from Calabria, southern Italian Peninsula
(Hemiptera: Heteroptera: Miridae)

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Abstract

Phytocoris (Exophytocoris) diversitatis n. sp. (Hemiptera: Heteroptera: Miridae: Mirinae) is described from a single male specimen from Calabria (southern Italian Peninsula). According to the shape of the endophallic comb, a «subgroup» of species is defined consisting of *Pb. (E.) parvulus* Reuter, 1880, *Pb. (E.) fieberi* Bolívar, 1881 and the new species. *Pb. (E.) diversitatis* n. sp. can be easily separated from *Pb. (E.) fieberi* by the male genitalia and from *Pb. (E.) parvulus* by characters of external morphology, including the processes of the pygophore. A close relationship between *Pb. (E.) parvulus* and the new species is suggested.

Key words: *Phytocoris (Exophytocoris) diversitatis* n. sp., Heteroptera, Miridae, Calabria, Italian Peninsula, taxonomy.

Resumen

Phytocoris (Exophytocoris) diversitatis n. sp. de Calabria, Península Itálica meridional (Hemiptera: Heteroptera: Miridae)

Se describe *Phytocoris (Exophytocoris) diversitatis* n. sp. (Hemiptera: Heteroptera: Miridae: Mirinae) a partir de un macho de Calabria (Península Itálica meridional). Se define un «subgrupo» de especies por la forma del peine del endofalo, integrado por *Pb. (E.) parvulus* Reuter, 1880, *Pb. (E.) fieberi* Bolívar, 1881 y la nueva especie. *Pb. (E.) diversitatis* n. sp. puede separarse fácilmente de *Pb. (E.) fieberi* por la genitalia masculina y de *Pb. (E.) parvulus* por caracteres de morfología externa, incluyendo las espinas del pigóforo. Se sugiere una estrecha relación entre *Pb. (E.) parvulus* y la nueva especie.

Palabras clave: *Phytocoris (Exophytocoris) diversitatis* n. sp., Heteroptera, Miridae, Calabria, Península Itálica, taxonomía.

Laburpena

Phytocoris (Exophytocoris) diversitatis n. sp., Calabriakoa, Italiar Penintsularen hegoaldea (Hemiptera: Heteroptera: Miridae)

Phytocoris (Exophytocoris) diversitatis n. sp. (Hemiptera: Heteroptera: Miridae: Mirinae) deskribatzen da Calabriako (Italiar Penintsularen hegoaldea) ale ar batean oinarrituta. Endofaloaren orraziaren formaren arabera, espezie-«azpitalde» bat proposatzen da, *Pb. (E.) parvulus* Reuter, 1880, *Pb. (E.) fieberi* Bolívar, 1881 eta espezie berria osatzen dutena. *Pb. (E.) diversitatis* n. sp. erraz bereiz daiteke *Pb. (E.) fieberitik* arren genitaliarengatik eta *Pb. (E.) parvulusetik* kanpo-morfologiaren zenbait karaktererengatik, pigoforoaren arantzak barne. Gertutasun handia iradokitzen da *Pb. (E.) parvulus* eta espezie berriaren artean.

Gako-hitzak: *Phytocoris (Exophytocoris) diversitatis* n. sp., Heteroptera, Miridae, Calabria, Italiar Penintsula, taxonomia.

Introduction

With more than 700 species described worldwide and more and more new members being described each year (see, for example, recent papers: Carpintero and Chérot, 2014; Yasunaga and Schwartz, 2015; Carapezza, 2016), *Phytocoris* Fallén, 1814 is the largest genus known within the family Miridae of true bugs (Hemiptera: Heteroptera). In spite of the lack of comprehensive studies dealing with the internal arrangement of the genus at a world scale, the Palaearctic subgenera (see: Wagner, 1974; Kerzhner and Josifov, 1999; Aukema *et al.*, 2013) have been considered to reflect phylogeny better than other regional infra-generic groupings (Stonedahl, 1988). Most European authors continue ascribing the species to those subgenera, notwithstanding that some problems may arise (see, for example, discussion by Pagola-Carte, 2010: pp. 112, 115).

A male specimen of *Phytocoris* from Calabria (southern Italian Peninsula) was sent to Ch.R. for study. Belonging to the subgenus *Exophytocoris* Wagner, 1961, it could not be ascribed to any of its 23 known species. Consequently, it is described below as a new species.

Description

Phytocoris (Exophytocoris) diversitatis n. sp.

Macropterous male (Fig. 1a). Length = 4.25 mm. Body elongate to very slightly ovate, 3.65 × longer than basal width of pronotum and 3.00 × longer than maximum width. Dorsal vestiture consisting of strong, dark (also pale on head and pronotum), semierect setae intermixed with fine, whitish, reclining pale setae; the latter particularly abundant on hemelytra and more or less visible depending on the light incidence angle. General dorsal colour brown, with some darker areas and some paler ones including faint reddish tinge on several regions of head, pronotum, exocorium and cuneus; head and appendages with not strongly marked pale-and-dark patterns. Matt; only head, pronotum and scutellum hardly shining.

Head slightly wider than high in front view and short, distinctly higher than long in lateral view. Frons evenly convex and only slightly produced anteriorly to antennal fossae, about one half of the eye length.

Clypeus markedly convex in lateral view, not completely concealed by frons in above view, and meeting it along a distinct notch. Ground colour of vertex, frons and clypeus yellow with areas of reddish tinge, more conspicuously near the eyes and posteriorly, as a pair of submedial stripes which are extended to the pronotal collar. Clypeus laterally tinged towards suturae with genae and bucculae. Maroon colour areas: below antennal fossae, most of genae and below eyes; even deeper maroon in bucculae, excepting anterior edges. Diatone = 0.76 mm. Ocular index = 1.33. Eyes globose, occupying about three-fifths of height of head in lateral view; maroonish. Genae in front view protruding laterally. Bucculae slightly concealing segment I of rostrum. Rostrum slightly surpassing metacoxae; segments I and II pale; segment III brownish; segment IV black.

Antennae slightly shorter than body length. Length of antennal segments: I – II – III – IV = 0.67 – 1.47 – 1.04 – 0.73 mm. Segment I, particularly on the proximal two-thirds, bearing dark, erect setae, longer than the diameter of the segment (5/4 proportion), in addition to the dense, similarly dark, adpressed setae forward directed. Colour pattern of segments as in Fig. 1b. Segment I with five brown and four pale ill-defined rings; the basal and apical brown rings clearly longer and slightly more noticeable. Segment II mostly dark with three pale rings: a white, short (10% of segment length), basal ring; a short (8%), subbasal ring of dirty cream colour; and a whitish post-median ring which is the most conspicuous one (20%); apical dark portion almost black and representing the longest ring (30% of segment length). Segment III slightly narrower than II, dark brown to blackish, with a white, basal ring which is very short (10% of segment length) and a much shorter apical ring of cream colour. Segment IV slightly narrower than III and dark brown.

Ratio segment I / diatone = 0.88. Ratio segment I / basal width of pronotum = 0.58. Ratio segment II / basal width of pronotum = 1.26.

Pronotum trapezoidal, 2.00 × as wide as long (including collar) and 1.53 × as wide as diatone in dorsal view of the insect (but see discussion concerning dorsal view of the pronotum itself). Basal width = 1.16 mm. Length (including collar) = 0.58 mm. Lateral margins rather straight. Posterior margin convex and imperceptibly sinuate in the middle. Mostly brown with irregular, darker spots. Gradually darkening posteriad and laterad, with a continuous subbasal area which becomes diluted towards the posterolateral angles in connection with the darkening of the lateral



FIGURE 1. *Phytocoris* (*Exophytocoris*) *diversitatis* n. sp., holotype: (a) Habitus; (b) Right antenna (Scale bar = 2 mm).

sides. Pronotal collar subequal in length to the width of antennal segment I; quite pale with reddish tinge, particularly as a pair of submedial stripes.

Scutellum (including mesoscutum) triangular, $0.86 \times$ as wide as long (length = 0.66 mm; width = 0.96 mm). Mesoscutum sloping backwards; yellowish to brown and with reddish tinge. Scutellum ending in an acute apex; pale brown with a pair of small, dark brown areas laterally near apex.

Hemelytra subparallel-sided, largely surpassing apex of abdomen. Ratio length of scutellum (including mesoscutum) / claval commissure = 0.71. General colour of corium brown, particularly uniform on the anterior 3/4 of mesocorium. Clavus dark brown with inner areas paler. Mesocorium posteriorly with a large

spot of light brown to cream colour preceded by an oblique dark stripe (darker than the rest of mesocorium) beginning at the anal angle; the pale spot continues on the cuneus, with reddish tinge posteriorly to cuneal fracture; the oblique dark stripe extends anteriorly towards medial fracture. Apex of cuneus brown. Exocorium cream to reddish brown irrorated with darker brown spots unevenly distributed but more extended at the anteroexternal angle of cuneus. Inner margin of cuneus with three to four irregular spots, the anterior one being the largest and most distinct. Membrane brownish grey mottled with pale spots; two greater spots behind cells; longitudinal veins anteriorly dark, and posteriorly (including transversal veins) pale.

Legs with dense, mostly pale, adpressed setae; tibiae bearing semierect, yellow spines, slightly longer than tibial width. Femora mostly brown with pale (white to cream) spots; basal fifth of all femorae distinctly pale; metafemora with a greater brown area apically. Tibiae with colour ranging from cream to brown and consisting of faint rings; protibiae with three pale and three brown subequal rings; mesotibiae with three pale and two brown rings, the third pale one being the longest, equal to the apical half of tibia; metatibiae with only basal half showing noticeable rings, two brownish and one pale. All tarsi of roughly equal colour: tarsomere I light brown; tarsomere II cream; tarsomere III dark brown and basally paler (in metatarsomeres one-half of its length paler). Length of posterior tibiae = 2.78 mm. Ratio posterior tibiae / basal width of pronotum = 2.39. Length of metatarsomeres (relative proportions): I – II – III = 6 – 7.5 – 8.5.

Ventrally castaneous, except for a large pale area on thorax including all coxae. Thoracic sternites smooth, glabrous.

Pygophore and male genitalia. Pygophore (Fig. 2a) troncoconical, approximately as wide as long. Genital opening small, with the anterior margin straight and bearing a pointed spine to each side: the one on the left side slightly longer and with a much wider basis than the one on the right side. Right paramere as in Fig. 2b: elongate, with the primary apophysis dark, apparently without setae (probably a few scattered, short setae, lost in the holotype). Left paramere as in Fig. 2c: with primary apophysis quite long and sensory lobe reduced; abundant setae on the sensory lobe and fewer more distally. Endophallus (Fig. 2d) including an apical comb (Fig. 2e) with 16 teeth, the apical three of them forming an arc; lacking sclerotized processus (ACH = *armature chitineuse*) and true spiculum; secondary gonopore large, quite distinct, and lacking processes or plates.

Female unknown.

Type material:

Holotype: ♂, labelled «N 38°41'18" E 15°56'18" / Italy-Kalabrien. Parghelia, / Fundort 2, ca. 500 m westlich / vom Hotel Santa Lucia / 28.07.2011 / leg. Peter Göricke».

A red, typewritten label is now added below: «HOLOTYPE / *Phytocoris* (*Exophyto-* / *coris*) *diversitatis* n. sp. / Pagola-Carte & Rieger, 2017». The specimen is mounted on a card, with the genitalic structures glued on a transparent card below. Deposited in the collection of Ch. Rieger (Nürtingen).

Etymology:

The new species is named «*diversitatis*», a Latin adjective genitive of the noun «*diversitas*», as an expression of the authors' astonishment caused by the high diversity of the genus *Phytocoris* and particularly by the surprising combination of characters in the new species.

Type locality:

Italy: Calabria: Parghelia: N 38°41'18" E 15°56'18".

Distribution and biology:

Only known from the type locality. The holotype was most probably collected on *Chamaecyparis* sp. (Cupressaceae).

Discussion

Phytocoris diversitatis n. sp. is included in the subgenus *Exophytocoris* Wagner, 1961 according to the distinguishing characters provided by Wagner for the synonymized subgenus *Ribautomiris* Wagner & Weber, 1964 (see: Wagner, 1974; Rieger, 1989). Hitherto 23 species are considered to belong in *Exophytocoris* (Kerzhner and Josifov, 1999; Aukema *et al.*, 2013; Carapezza, 2016). Within the subgenus three groups of species have been proposed by Linnavuori (1994) according to the shape of the endophallic structures. In the most speciose group the comb is blade-like and marginally dentate, whereas it is trough-shaped with both margins dentate in the second group and provided with several marginally dentate lamellae in the third group.

Among the species of the first group, *Pb. (E.) parvulus* Reuter, 1880 and *Pb. (E.) fieberi* Bolívar, 1881 constitute a subgroup since they share a subtype of endophallic comb. It consists of the strongly sclerotized row of teeth, which apically forms an arc, arising from a roughly semi-conical and less sclerotized basis. Tamanini (1982: p. 103: fig. 3e-f) illustrated the comb of *Pb. (E.) parvulus* in two views but only its sclerotized part. Pagola-Carte (2010: p. 114: 3c) illustrated that of *Pb. (E.) fieberi* in several views and entirely. In spite of the apparent differences suggested by the drawings, both species share the same type (or subtype) of endophallic comb, as we have recently verified. In the present paper we show (see Figs. 2d-e) that *Pb. (E.) diversitatis* n. sp. is a further species in this subgroup. In our opinion, these three species could be closely related.

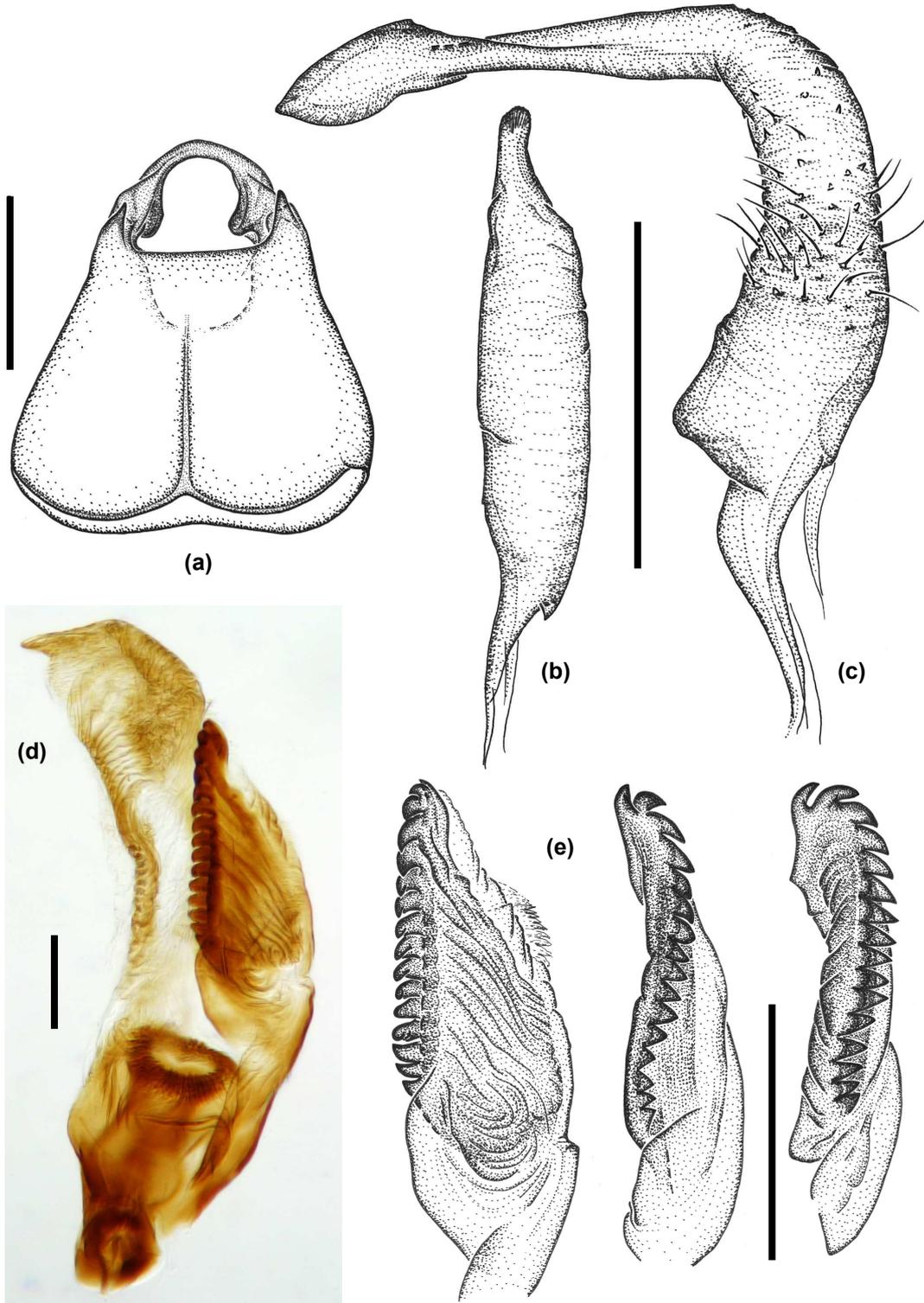


FIGURE 2. *Phytocoris* (*Exophytocoris*) *diversitatis* n. sp., holotype: (a) Pygophore (genital structures removed, setae omitted and apical region emphasized); (b) Right paramere; (c) Left paramere; (d) Endophallus; (e) Apical comb of the endophallus in different views (Scale bars: (a) = 0.5 mm; (b), (c), (e) = 0.2 mm; (d) = 0.1 mm).

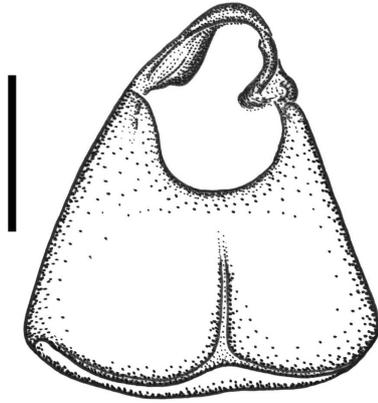


FIGURE 3. *Phytocoris (Exophytocoris) fieberi* Bolívar, 1881: Pygophore, sketch (Scale bar = 0.5 mm).

Moreover, the male genitalia of *Ph. (E.) parvulus* and that of *Ph. (E.) diversitatis* n. sp. are so strongly similar that these two species could hardly be distinguished by only examining the parameres and the endophallic comb. The comparison between Tamanini's drawings (1982: p. 103: fig. 3) for *Ph. (E.) parvulus* and our drawings (Figs. 2b-e) for the new species reveals no more than a single noticeable difference, *i.e.* the number of teeth of the comb: 19 and 16, respectively, even when this number is susceptible to a certain variability. Thus, the separation of *Ph. (E.) diversitatis* n. sp. from *Ph. (E.) parvulus* is not based on the male genitalia but on several, noteworthy characters of external morphology, particularly summarized as the general shape and proportions of the body and the development of the processes adjacent to the genital opening of the pygophore (see characters in detail later).

On the other hand, *Ph. (E.) fieberi* can be clearly separated from *Ph. (E.) parvulus* by the general external morphology and from *Ph. (E.) diversitatis* n. sp. by the male genitalia (for *Ph. (E.) fieberi* see, respectively, figs. 2 and 3 in Pagola-Carte, 2010). In addition, the examination of its pygophore (Fig. 3) has revealed to be quite different: shorter and with the genital opening anteriorly rounded and laterally lacking conspicuous processes or spines (compare to Figs. 2a and 4c). A greater phylogenetic distance may be suspected between *Ph. (E.) fieberi* and the other two species than between the latter ones.

The following distinguishing characters allow an unequivocal separation of *Ph. (E.) diversitatis* n. sp. from *Ph. (E.) parvulus*:

- Body shape of the male (compare Figs. 1a and 4a). More elongate, ratio body length / width = 3.00 (*Ph. (E.) parvulus* = 2.60–2.70). Consequently, hemelytra more clearly subparallel-sided and pronotum less transverse, 1.73 × as wide as long (in perpendicular view of the pronotum) (*Ph. (E.) parvulus* = 2.00 aprox.).
- Colour pattern (compare Figs. 1a and 4a). Less contrasted, mainly brown, markedly darker. Some photos of *Ph. (E.) parvulus* are also available on the internet and in the book by Wachmann *et al.* (2004: fig. 103).
- Processes of the pygophore (compare Figs. 2a and 4c). Both strongly developed and pointed (*Ph. (E.) parvulus*: both less developed and the left one of lobe-like rather than spine-like appearance).

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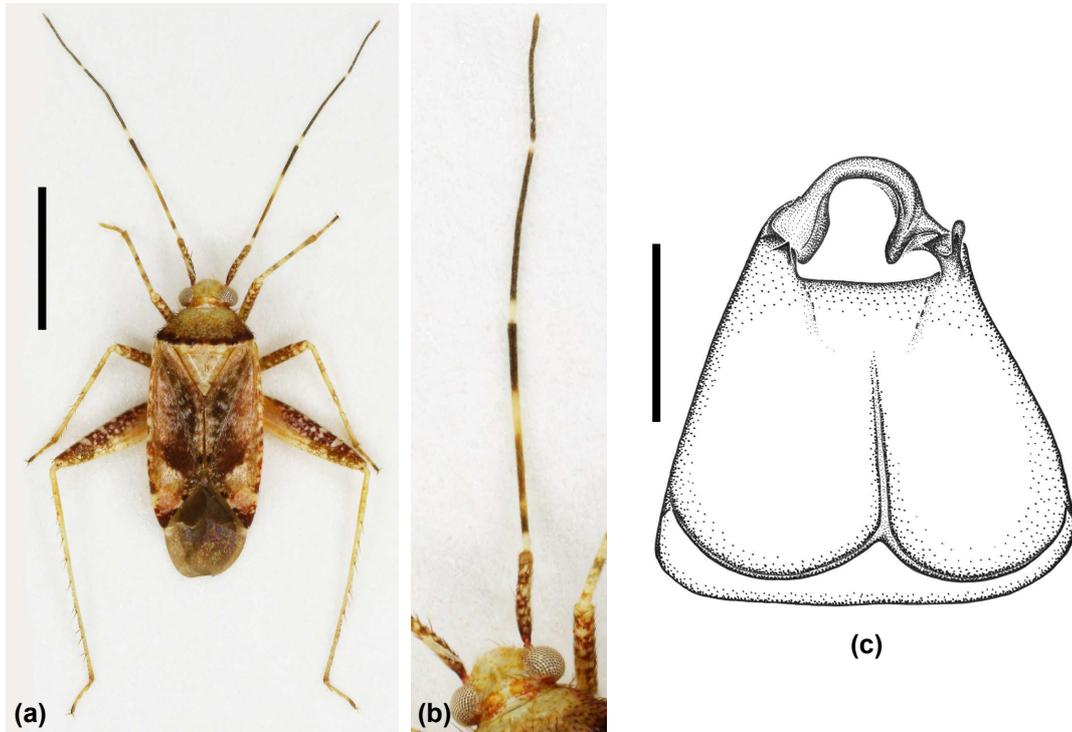


FIGURE 4. *Phytocoris* (*Exophytocoris*) *parvulus* Reuter, 1880: (a) Habitus; (b) Right antenna; (c) Pygophore (genital structures removed, setae omitted and apical region emphasized) (Scale bars: (a) = 2 mm; (c) = 0.5 mm) (Specimens from: (a)-(b) Istria, Croatia; (c) West Greece; Ch. Rieger leg., det., coll.).

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