

## On *Phytocoris (Exophytocoris) brunneicollis* Wagner, 1961, and *minor* Kirschbaum, 1856 (Hemiptera, Heteroptera, Miridae)

by S. PAGOLA-CARTE\* & Ch. RIEGER\*\*

\*Azpeitia 3, 7. D, E – 20010 Donostia (Gipuzkoa), Spain <pagolaxpc@telefonica.net>

\*\*Lenbachstraße 11, D – 72622 Nürtingen, Germany <christian.rieger@kabelbw.de>

**Summary.** – The new synonymy of *Phytocoris (Exophytocoris) brunneicollis* Wagner, 1961, under *P. (E.) minor* Kirschbaum, 1856, is proposed, after critical review of the previously presumed distinguishing characters, and based on the examination of abundant, mainly Iberian material.

**Résumé.** – A propos de *Phytocoris (Exophytocoris) brunneicollis* Wagner, 1961, et *minor* Kirschbaum, 1856 (Hemiptera, Heteroptera, Miridae). Les auteurs proposent la synonymie de *Phytocoris (Exophytocoris) brunneicollis* Wagner, 1961, avec *P. (E.) minor* Kirschbaum, 1856. L'étude d'un abondant matériel issu principalement de la péninsule Ibérique a permis, après examen critique des caractères sensés séparer les deux espèces, d'établir cette synonymie.

**Resumen.** – Acerca de *Phytocoris (Exophytocoris) brunneicollis* Wagner, 1961, y *minor* Kirschbaum, 1856 (Hemiptera, Heteroptera, Miridae). Se propone la nueva sinonimia de *Phytocoris (Exophytocoris) brunneicollis* Wagner, 1961 con *P. (E.) minor* Kirschbaum, 1856, tras una revisión crítica de los caracteres considerados hasta el presente discriminantes, y gracias al examen de abundante material principalmente ibérico.

**Key words.** – Hemiptera, Heteroptera, Miridae, *Phytocoris brunneicollis*, *Phytocoris minor*, taxonomy, n. syn.

*Phytocoris (Exophytocoris) minor* Kirschbaum, 1856, is a Middle and Western Mediterranean species known from a limited number of countries (KERZHNER & JOSIFOV, 1999); in the Iberian Peninsula it is rather frequent on several *Pinus* species. *P. (E.) brunneicollis* Wagner, 1961, was described from central Portugal and has subsequently been recorded only once, from central Spain (RIEGER, 1989). WAGNER (1961a) created the subgenus *Exophytocoris* of *Phytocoris* to accommodate the single species *P. (E.) brunneicollis*, separating it from the remaining subgenera and species of *Phytocoris* by the male genitalia, the colouration of antennae and the shape of head. The subgenus *Ribautomiris* was also described by WAGNER (1961b) but the name remained unavailable until the fixation of *Phytocoris minor* Kirschbaum, 1856, as the type species by WAGNER & WEBER (1964). They separated it from *Phytocoris s. str.* by the shorter segment I of antennae and the different shape of head. The subgenera *Exophytocoris* Wagner, 1961, and *Ribautomiris* Wagner & Weber, 1964, were distinguished in the key by WAGNER (1974) as follows.

- *Ribautomiris* (including *P. buxi*, *cedri*, *fieberi*, *minor*, *oleae*, *parvuloides*, *parvulus*, *pinihalepensis*, *scituloides*, *scitulus* and *tauricola*): small species of 3.8–6.0 mm length, antennal segment II not uniformly pale yellow and shorter than III + IV.

- *Exophytocoris* (including only *P. brunneicollis*): larger species, longer than 6.0 mm, antennal segment II uniformly pale yellow and longer than III + IV, antennal segments III and IV uniformly black.

RIEGER (1989), after examination of newly collected material from Albacete (Spain) and comparison with the type material of *brunneicollis* from Estremadura and S<sup>a</sup> de Estrela (Portugal), concluded that they were conspecific and that the differences between *brunneicollis* and *minor* did not support the existence of two different subgenera. As a result, he synonymized *Ribautomiris* under *Exophytocoris* but retained both species as valid.

The present study is motivated by the high variability found in additional Iberian material of *P. minor*, including specimens morphologically close to *P. brunneicollis*, together with

the reexamination of the previous Portuguese and Spanish specimens of *P. brunneicollis*. As a result of a comprehensive study of external morphology and male genitalia, we propose now to synonymize both species.

#### RESULTS AND DISCUSSION

The specimens examined are listed below. Numbers in brackets will be used to refer to them in the text below and the names “*brunneicollis*” and “*minor*” will be used according to the previous identification of the specimens. The following sections deal with the most relevant characters on which we have focused, *i. e.* those regarded as distinguishing characters (descriptions or identification key by Wagner).

- [1]: *brunneicollis* ♂, holotypus (MZHF), Lusit. Estremadura / S. Pedro de Muel / 28-30.V.59 Lindberg // HOLOTYPUS / Phytocoris / brunneicollis / n. sp. / E.Wagner det. // Coll. / Lindberg.
- [2]: *brunneicollis* ♂, paratypus (MZHF), Lusit. Estremadura / S. Pedro de Muel / 28-30.V.59 Lindberg // PARATYPUS / Phytocoris / brunneicollis / n. sp. / E.Wagner // Coll. / Lindberg // Mus. Zool. H: fors / Spec. typ. No 11437 / Phytocoris / brunneicollis EW // Phytocoris / brunneicollis E.W.
- [3]: *brunneicollis* ♂, paratypus (MZHF), Lusit. Estremadura / S. Pedro de Muel / 28-30.V.59 Lindberg // PARATYPUS / Phytocoris / brunneicollis / n. sp. / E.Wagner // Coll. / Lindberg.
- [4]: *brunneicollis* ♂, paratypus (MZHF), Lusit. S<sup>a</sup> Estrela / Penhas da Saùde / 4.-6.VI.59 Lindberg // PARATYPUS / Phytocoris / brunneicollis / n. sp. / E.Wagner // Coll. / Lindberg.
- [5]: *brunneicollis* ♂, Coll. Rieger (Nürtingen), Hisp. (Albacete) / Sierra de Alcaraz / Fábricas de Riópar / 21.9.1984, Grimm // brunneicollis / E.W. / Chr. Rieger det. 87.
- [6]: *brunneicollis* ♀, Coll. Rieger (Nürtingen), Hisp. (Albacete) / Sierra de Alcaraz / Fábricas de Riópar / 21.9.1984, Grimm // brunneicollis / E.W. / Chr. Rieger det. 87.
- [7]: *minor* ♂, Coll. Rieger (Nürtingen), GR (Fokida), Delfi / Kulturland W, Lichtfang / 22.28 E 38.28 N / 16.08.1996, leg.Rieger // minor / Kb. / Chr. Rieger det. 99.
- [8]: *minor* ♂, Coll. J. Ribes (Barcelona), Cornudella / (Priorat) / 12-VIII-04 Vallh. / CATALONIA.
- [9]: *minor* ♂, Coll. J. Ribes (Barcelona), Cornudella / (Priorat) / 12-VIII-04 Vallh. / CATALONIA.
- [10]: *minor* ♂, Coll. J. Ribes (Barcelona), El Mascà / Ports / 29-VIII-73 Ribes.
- [11]: *minor* ♀, Coll. J. Ribes (Barcelona), El Mascà / Ports / 29-VIII-73 Ribes.
- [12]: *minor* ♀, Coll. Pagola-Zabalegui (Donostia), El Mascà / Ports / 29-VIII-73 Ribes.
- [13]: *minor* ♂, Coll. J. Ribes (Barcelona), Valldoreix / (Vallès Occid.) / 14-VII-63 Ribes.
- [14]: *minor* ♀, Coll. J. Ribes (Barcelona), Valldoreix / (Vallès Occid.) / 14-VII-63 Ribes.
- [15]: *minor* ♂, Coll. Pagola-Zabalegui (Donostia), Els Torms / (Les Garrigues) / 21-VIII-65. Ribes / Catalonia // *Pinus halepensis*.
- [16]: *minor* ♂, Coll. Pagola-Zabalegui (Donostia), Borredà / 880 m; *Pinus sylvestris* / Borredà / BARCELONA 31TDG16 / 5-08-2005 / S. Pagola Carte leg.
- [17]: *minor* ♂, Coll. Pagola-Zabalegui (Donostia), Frauca (NA-125, Km 5) / 280 m; *Pinus halepensis* / Tutera / NAFARROA 30TXM26 / 21-05-2003 / S. Pagola Carte leg.
- [18]: *minor* ♂, Coll. Pagola-Zabalegui (Donostia), Frauca (NA-125, Km 5) / 280 m; *Pinus halepensis* / Tutera / NAFARROA 30TXM26 / 21-05-2003 / S. Pagola Carte leg.
- [19]: *minor* ♂, Coll. J. Ribes (Barcelona), Frauca (NA-125, Km 5) / 280 m; *Pinus halepensis* / Tutera / NAFARROA 30TXM26 / 21-05-2003 / S. Pagola Carte leg.
- [20]: *minor* ♀, Coll. Pagola-Zabalegui (Donostia), Frauca (NA-125, Km 5) / 280 m; *Pinus halepensis* / Tutera / NAFARROA 30TXM26 / 21-05-2003 / S. Pagola Carte leg.
- [21]: *minor* ♀, Coll. Pagola-Zabalegui (Donostia), Frauca (NA-125, Km 5) / 280 m; *Pinus halepensis* / Tutera / NAFARROA 30TXM26 / 21-05-2003 / S. Pagola Carte leg.
- [22]: *minor* ♀, Coll. Pagola-Zabalegui (Donostia), Frauca (NA-125, Km 5) / 280 m; *Pinus halepensis* / Tutera / NAFARROA 30TXM26 / 21-05-2003 / S. Pagola Carte leg.
- [23]: *minor* ♂, Coll. Pagola-Zabalegui (Donostia), Bitoria / 800 m; *Pinus sylvestris* / Erriberagoitia / ARABA 30TWN03 / 23-07-2004 / S. Pagola Carte leg.
- [24]: *minor* ♀, Coll. Pagola-Zabalegui (Donostia), Bitoria / 800 m; *Pinus sylvestris* / Erriberagoitia / ARABA 30TWN03 / 23-07-2004 / S. Pagola Carte leg.

- [25]: *minor* ♀, Coll. Pagola-Zabalegui (Donostia), Bitoria / 800 m; *Pinus sylvestris* / Erriberagoitia / ARABA 30TWN03 / 23-07-2004 / S. Pagola Carte leg.
- [26]: *minor* ♂, Coll. Pagola-Zabalegui (Donostia), Lalastra-Ribera / 910 m; *Pinus sylvestris* / Gobiaran (Valderejo Parke Nat.) / ARABA 30TVN8146 / 5-07-2005 / S. Pagola Carte leg.
- [27]: *minor* ♀, Coll. Pagola-Zabalegui (Donostia), Lalastra-Ribera / 910 m; *Pinus sylvestris* / Gobiaran (Valderejo Parke Nat.) / ARABA 30TVN8146 / 12-07-2005 / S. Pagola Carte leg.
- [28]: *minor* ♂, Coll. Pagola-Zabalegui (Donostia), Ribera / 750-800 m; *Pinus sylvestris* / Gobiaran (Valderejo Parke Nat.) / ARABA 30TVN8144 / 12-07-2005 / S. Pagola Carte leg.
- [29]: *minor* ♀, Coll. Pagola-Zabalegui (Donostia), Ribera / 750-800 m; *Pinus sylvestris* / Gobiaran (Valderejo Parke Nat.) / ARABA 30TVN8144 / 12-07-2005 / S. Pagola Carte leg.

**Total length and general colouration.** – If all the specimens [1-29] are taken into account, the total length ranges between 4.6 mm [13] and 6.5 mm [1, 4], with an average value of 5.56 mm. Females are generally shorter, although the smallest specimen [13] is a male *minor* from Catalonia. The specimens of *brunneicollis* [1-6] are among the largest ones. However, most *minor* from Nafarroa [17-21] are 5.9–6.1 mm long whereas one paratypus male of *brunneicollis* [2] and one female of *brunneicollis* from Albacete [6] are only 5.9 mm and 5.8 mm long, respectively. RIEGER (1989) argued that the differences in length between *Exophytocoris* and *Ribautomiris* were of small extent to be considered as subgeneric characters. Now we add that they are neither useful to separate the species *brunneicollis* and *minor*. It seems that both the size and the general body colouration of the specimens show a higher variability among than within populations. Moreover, a correlation can be observed between the size and the colour, from smaller + paler towards larger + darker. Some specimens from Catalonia and the one from Greece are simultaneously the smallest and most greyish. Those from Araba (several localities), being of intermediate length, are the most reddish tinged. Those from Nafarroa are bigger and more brownish. Finally, all the specimens identified as *brunneicollis* (type series and specimens from Albacete) are the longest and darkest ones. Nevertheless, their darkness is not far from the colour observed in the darkest “brown” individuals of *minor*, in contrast to what could be expected from WAGNER’s (1961a) fig. 6a and WAGNER’s (1974) fig. 124a. Furthermore, the presumed darkness may be interpreted, at least in part, as an artefact of the moistening due to the killing substance used. In fact, as commented by RIEGER (1989), the specimens of *brunneicollis* from Albacete (better preserved) are not as dark as those of the type series (worse preserved).

**Morphometric measures.** – Ocular index: WAGNER (1961a, 1974) provides the values of 0.59 (males) for *brunneicollis* and 0.67 (males) and 1.12 (females) for *minor*. According to our measurements, in the holotypus (male) of *brunneicollis* [1] it is really 0.59, but it is 0.64, 0.69 and 0.69 in other specimens examined (also males) of the type series [2, 3, 4]. In the male of *brunneicollis* from Albacete [5] it is 0.60. For *minor*, the ocular index ranges between 0.56 [9] and 0.68 [16, 20] in the specimens examined. Concerning females, the one of *brunneicollis* from Albacete [6] has an ocular index of 1.09, whereas it ranges between 0.98 [15] and 1.22 [14] in *minor*. As summarized in table I, *brunneicollis* and *minor* are indistinguishable according to their ocular index. Therefore, we provide the ranges and average values for males and females from the whole set of specimens examined.

Table I. – Ocular index. Ranges and average values for all the specimens of *brunneicollis* and *minor* (males and females) examined.

|         | <i>brunneicollis</i> | <i>minor</i> | all specimens      |
|---------|----------------------|--------------|--------------------|
| males   | 0.59 – 0.69          | 0.56 – 0.68  | 0.56 – 0.69 (0.62) |
| females | 1.09                 | 0.98 – 1.22  | 0.98 – 1.22 (1.14) |

Ratio of antennal segments II / III+IV: following to WAGNER's key (1974) this ratio is  $>1$  in *brunneicollis* and  $<1$  in *minor*. We have not been able to properly measure any of the specimens considered as *brunneicollis*, since all of them lack some segments, but for 18 *minor* examined it ranges between 0.93 [9] and 1.20 [10], with an average value of 1.04 and being generally  $<1$  in females and  $>1$  in males. In addition, a quick check of the relationship "ratio II / III+IV vs. total length" shows a positive correlation: the longer the individual, the greater the ratio, independently of its consideration as *brunneicollis* or *minor* and without possibility of separation into different entities.

**Colouration of antennae and tibiae.** – Segment II of antennae: according to WAGNER (1961a), in *brunneicollis* it is "uniformly pale yellow with a longitudinal, broken, darker line on the innerside", although it is stated to be "uniformly pale yellow" in his subsequent key (WAGNER, 1974), in contrast to *minor*, in which it is "not uniformly pale yellow". Although this segment is always pale, a high variability of shades (yellow, cream, greyish) has been observed among the material studied (fig. 1-7), including rather dark *brunneicollis* (fig. 1) and quite pale *minor* (fig. 7).

Segment III of antennae: according to WAGNER (1961a), in *brunneicollis* it is "black, with a short, whitish ring at its base", although it is stated to be "uniformly black" in his subsequent key (WAGNER, 1974), in contrast to *minor*, illustrated as bearing one basal and one middle pale rings (WAGNER, 1974: fig. 117a). Actually, there exists a high variability in the colour pattern of this segment for both presumed species, as revealed by our study (fig. 1-7). However, the basal pale ring seems to be always present, in accordance with the original description of *brunneicollis* (WAGNER, 1961a). Unfortunately, the specimens of the type series [1-4] lack the antennal segments II to IV.

Tibiae: the colour pattern described and illustrated by WAGNER (1961a: fig. 6e; 1974: 124e) for the anterior tibia has not been found in the specimens examined of the type series [1-4]. With respect to these specimens, they fit the statement in the description of the subgenus *Exophytocoris* (WAGNER, 1961a: p. 115): "Tibiae without rings". In the specimens of *brunneicollis* from Albacete [5-6] rings can be observed. Some of the specimens studied of *minor* clearly show three dark and two pale rings in the anterior tibiae, in some others they are almost indistinct, and in some others there is no trace of them.

**Male genitalia.** – The parameres and the comb-like sclerotized process of the vesica have been examined for a number of specimens of *brunneicollis* [3, 4, 5] and *minor* [7, 8, 10, 16, 17, 18, 23, 28]. Their shape (fig. 8-16) is basically the same, showing only small differences due to individual variability.

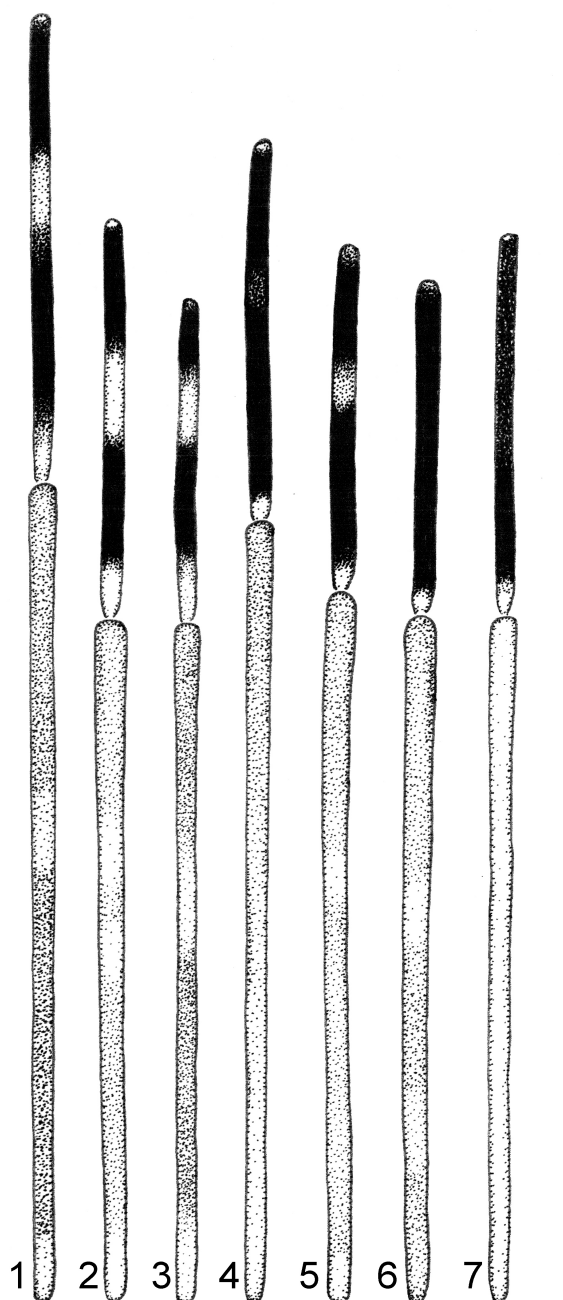


Fig. 1-7. – Segments II and III of antennae of some of the specimens examined. – 1, [6]; – 2, [7]; – 3, [8]; – 4, [10]; – 5, [18]; – 6, [20]; – 7, [29]. Scale bar = 2 mm.

Right paramere. The illustrations for *minor* (WAGNER, 1974: fig. 118d) and for *brunneicollis* (WAGNER, 1961a: fig. 6h; WAGNER, 1974: fig. 124h; RIEGER, 1989: fig. 2a) represent the same structure, under different views or for different specimens bearing small differences, but all are included within the variability shown in the present fig. 8-11.

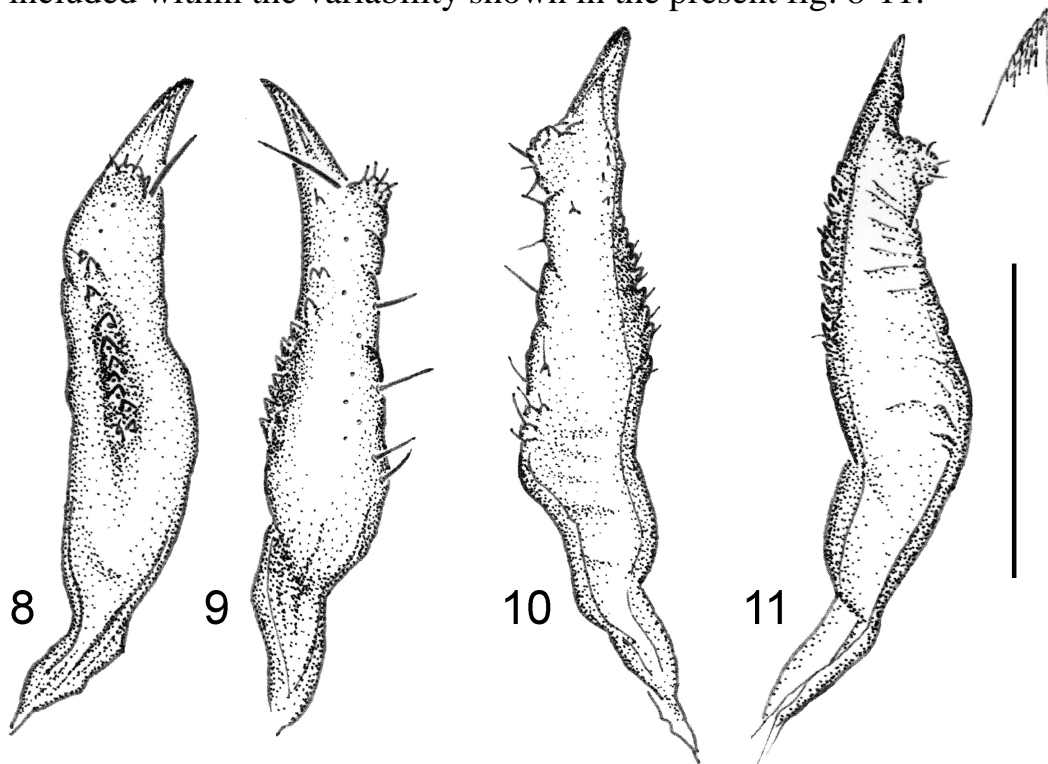


Fig. 8-11. – Right paramere in different views and specimens: – 8, [17]; – 9, [17]; – 10, [18]; – 11, [10]. Scale bar = 0.2 mm.

Left paramere. Our fig. 12-13 is similar to the paramere illustrated by RIEGER (1989: fig. 2b) for *brunneicollis*. This is the basic shape for all the specimens of *brunneicollis* or *minor*. The illustration by WAGNER (1974: fig. 118e) for *minor* is quite inaccurate (hairs, denticles, etc.). On the other hand, it must be noticed that one of the paratypes of *brunneicollis* [3] bears an “incorrect” left paramere (fig. 17) on the card below. It might be a teratology or simply a mistake during manipulation of material belonging to different genera or families. For its shape, it could belong to any species of the *Stenodemini* genus *Trigonotylus*. Most probably, this bizarre or misplaced paramere might be the origin of WAGNER’s (1961a, 1974) fig. 6i and fig. 124i, respectively, which present an aberrant left paramere disproportionate to the right paramere or to the comb of the vesica.

Comb of the vesica. The previous illustrations for *brunneicollis* (WAGNER, 1961a: fig. 6l-m; WAGNER, 1974: fig. 124l-m; RIEGER, 1989: fig. 2c) are included in our fig. 14-16. We have not observed the structure shown in WAGNER’s (1974) fig. 118f, which we consider erroneous or an incorrect interpretation of the same “bivalvism” (with teeth in only one of the valves).

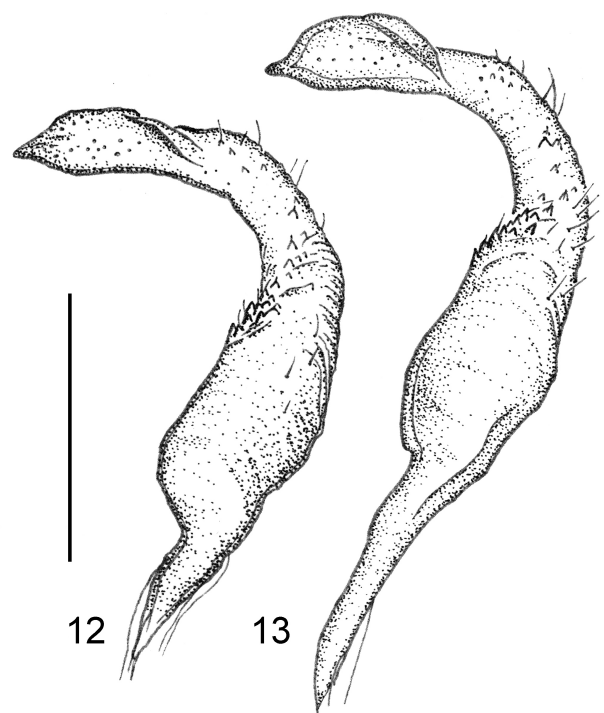


Fig. 12-13. – Left paramere of specimens. – 12, [17]; – 13, [18]. Scale bar = 0.2 mm.

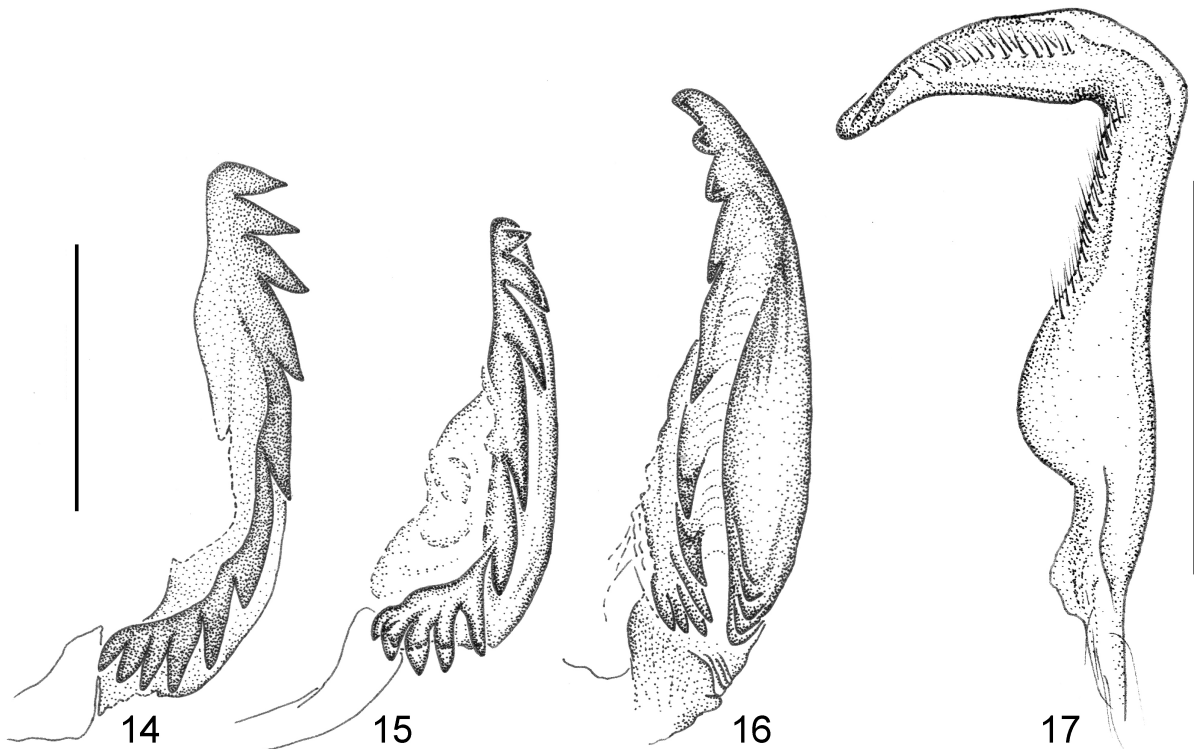


Fig. 14-17. – 14-16, Comb of the vesica in different views and specimens. – 14, [18]; – 15, [23]; – 16, [18]. – 17, “Incorrect” left paramere found together with one of the paratypes [3]. Scale bars = 0.2 mm.

#### CONCLUSION

All the specimens examined belong to a single species of high morphological variability concerning total size and colouration of body, antennae and tibiae. They cannot be separated into two different taxonomic entities, since the mentioned characters overlap and the genitalia are identical in all of them. Hence, we propose the following synonymy: *Phytocoris minor* Kirschbaum, 1856 = *Phytocoris (E.) brunneicollis* Wagner, 1961, **n. syn.** Due to the complex history of the taxa involved, a short nomenclatorial clarification is needed. After this act, the subgenus *Exophytocoris* Wagner, 1961, is maintained and *Phytocoris brunneicollis* Wagner, 1961, continues being its type species (I. M. Kerzhner, *pers. comm.*).

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