

Scientific Note

Contribution to the knowledge of *Copeocoris truncaticornis* (Stål) (Heteroptera: Pentatomidae)Contribución al conocimiento de *Copeocoris truncaticornis* (Stål) (Heteroptera: Pentatomidae)Eduardo I. Faúndez^{1,2} & David A. Rider¹

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Abstract. The first record of *Copeocoris truncaticornis* (Stål, 1865) from Entre Ríos Province, Argentina is given, filling the distributional gap in the country. In addition, a cephalic atrophy is described. Morphological sternal characters are described, including a sulcate mesosternum and basal tubercle of mesosternum. The significance of these characters in the current classification and its generic and tribal importance is discussed.

Key words: Argentina, Heteroptera, morphology, new record, Pentatomidae, teratology.

Resumen. Se entregan los primeros registros de *Copeocoris truncaticornis* (Stål, 1865) para la provincia de Entre Ríos, Argentina, llenando el vacío distribucional en ese país. Adicionalmente se describe una atrofia cefálica. Se describen y analizan algunos caracteres de la morfología esternal de la especie, incluyendo un surco y tubérculo mesoesternal. Se discute la importancia a nivel genérico y tribal de estos caracteres en la clasificación actual del género y grupos cercanos.

Palabras clave: Argentina, Heteroptera, morfología, nuevo registro, Pentatomidae, teratología.

The Pentatomidae is a family of heteropterans currently comprising 4937 species classified in 939 genera (Faúndez *et al.* 2017). In South America, many pentatomid species are well known because of their economic importance (Faúndez and Carvajal 2011). The Pentatominae is the largest subfamily of Pentatomidae containing 3475 species classified in 660 genera (Rider *et al.* 2016). Several pentatomines have a high economic impact because they damage plants commonly consumed by humans, and become widespread pests (Faúndez *et al.* 2016).

Copeocoris truncaticornis (Stål, 1865) (Fig. 1) is a little known pentatomine species known from Argentina, Brazil, and Uruguay (Barcellos and Grazia 1998). In Argentina, this species has been recorded only from the provinces of Buenos Aires and Misiones. Here we provide the first record from Entre Ríos Province, filling the distributional gap in Argentina:

Examined material. ARGENTINA: Entre Ríos, Liebig, I-1974, Carpintero leg. 2♂♂ 3♀♀. Entre Ríos, Colón, IV-1995, P. Verne leg. 2♂♂ (all material deposited in the United States National Museum of Natural History, Smithsonian Institution, Washington DC, USA).

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Among the examined material, a male from Liebig exhibited a light cephalic atrophy, which is described below:

Paraclypeal atrophy in *C. truncaticornis* (Stål)

The specimen has the right paraclypeus slightly shortened as compared to the left paraclypeus (Fig. 2). In addition, the malformed paraclypeus is slightly wider than the normal one. Because of this, the malformed paraclypeus is bent slightly inwards, resulting in a slightly concave lateral margin (Fig. 2).

Paraclypeal atrophies are usually due to failures during the molting process (Štusák and Stehlík 1980). In pentatomids, it appears that species with large, elongate, and contiguous paraclypei are more susceptible to this kind of teratosis (Faúndez and Rider 2017). Furthermore, it seems to be more prevalent in species that also have the thoracic sterna medially sulcate. In fact, Faúndez and Rider (2017) suggested that the thoracic sulcus may serve to protect the antennae (they had observed several species with their antennae placed within this sulcus when at rest); it should be noted that the most common form of teratosis in pentatomids is malformations of the antennae. Placement of the antennae inside the thoracic sulcus leaves the elongate paraclypei somewhat unprotected and is more often a contact zone, and thus, it is consequently more prone to develop a teratosis. On the other hand, paraclypeal atrophies seem to be less detrimental to the specimen than having damaged antennae.

Finally, in Argentina previously there are only two teratological cases known in a Pentatomidae species. These cases belong to *Loxa deducta* Walker 1867. One including an abdominal atrophy; and the other a binary unilateral schistomely (Faúndez *et al.* 2017b). Therefore, the case here described is the first one affecting the mandibular plates of an Argentinean pentatomid.

Comments on morphology and classification

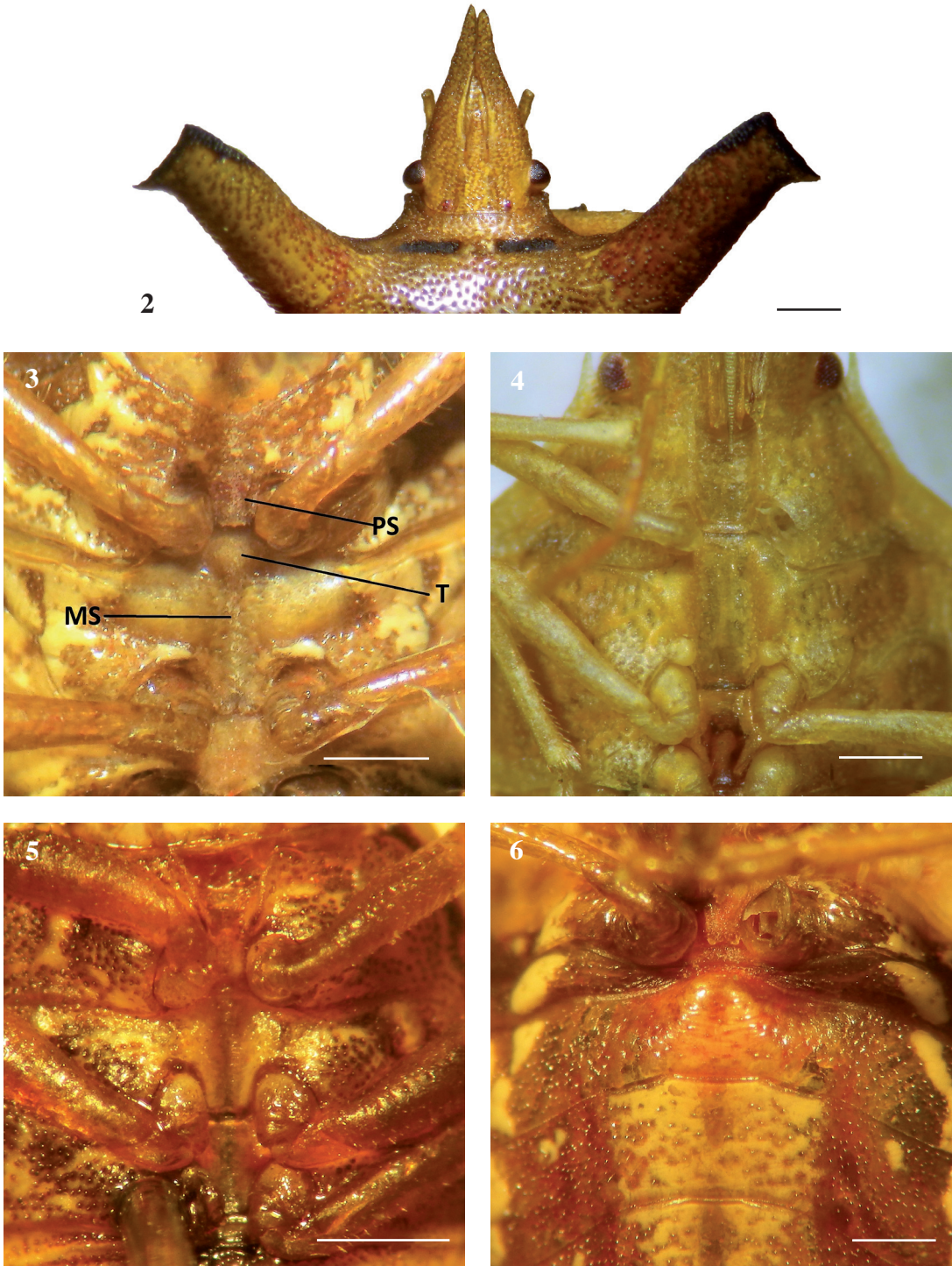
When Barcellos and Grazia (1998) revalidated *Copeocoris* to include its only species *C. truncaticornis*, they mentioned that this species had very distinct morphology among South American pentatomines. There are, however, several characters that they did not discuss, or that they misinterpreted slightly (e.g., the presence of a prosternal and mesosternal sulcus [Fig. 3]). Also, Barcellos and Grazia (1998) mentioned, as a distinctive character, the presence of a prosternal tubercle. This tubercle, however, is actually part of the mesosternum (Fig. 3), not the prosternum. The presence of this tubercle is very interesting as it is similar in appearance as structures found on the mesosternum in some species that have a mesosternal carina rather than those species that have a sulcate mesosternum. *Copeocoris*, with the presence of the prosternal and mesosternal sulcus, as well as the elongate head, somewhat resembles several genera of the tribe Aeptini. The prosternal sulcus in most aeptine genera is usually relatively deep and these are elevated, forming lateral carinae. Additionally, none of the Aeptini (African or Australian) have the basal tubercle in the mesosternal sulcus (e.g., Figs. 4-5). Therefore, although they share a similar appearance, and the presence of a sternal sulcus, it is likely that *Copeocoris* is not closely related to the Aeptini or related groups. In fact, the presence of a sternal sulcus may be a secondary condition, with the loss of the sternal carina (the basal tubercle may represent the vestigial carina). In addition, the presence of a basiabdominal tubercle in *Copeocoris* (Fig. 6) seems to confirm this hypothesis, as most groups having a sulcate sternum do not have a basiabdominal tubercle or spine. According to Rider *et al.* (2016) and Faúndez (2017) the structure of the thoracic sternum (sulcate or carinate) may be an important character for determining the higher

classification of the Pentatomidae. They suggested that the presence of a sternal sulcus may be the primitive condition, and that nearly all groups possessing such a sulcus may be related to each other. *Copeocoris* may be exceptional, however, as the sternal sulcus in this case is probably a derived condition, and the associated basal tubercle of mesosternum may be a good indicator of the derived condition; thus it would be a good character to include in future phylogenetic analyses of the family.

At present, *Copeocoris* is included in the Carpocorini. But the Carpocorini currently contains many genera, especially from South America that may not actually belong in that tribe. As further phylogenetic studies are completed, many of these genera may be reclassified and placed in other tribes (Faúndez and Verdejo 2010; Faúndez and Rider 2014; Faúndez *et al.* 2014, 2017a; Rider *et al.* 2016). Given the special morphology of this genus, it is likely that this genus will eventually be transferred to another tribe, but at present it is hard to determine in which tribe it might belong in. Until further studies can be conducted, it is probably best to still leave it in the Carpocorini.



Figura. 1. *Copeocoris truncaticornis* (Stål). 1. Habitus, specimen from Entre Ríos. Scale: 1 mm.



Figuras 2-6. 2. *Copeocoris truncaticornis* (Stål), specimen with cephalic atrophy. 3. *Copeocoris truncaticornis* (Stål), prosternum and mesosternum. PS = prosternal sulcus, MS = mesosternal sulcus, T = prosternal tubercle. 4. *Hillieria acuminata* Distant, 1910 (Pentatominae: Aeptini), prosternum and mesosternum. 5. *Aeptus singularis* Dallas, 1851 (Pentatominae: Aeptini), prosternum and mesosternum. 6. *C. truncaticornis*, basiaabdominal tubercle. Scale: 1 mm.

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