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Redescription of *Triatoma melanica* Neiva & Lent, 1941, new status (Hemiptera: Reduviidae: Triatominae)

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Abstract

Triatoma brasiliensis melanica Neiva and Lent is elevated to species status based on comparison of its morphology, biology, ecology, crossing experiments, allozymes, and mtDNA sequences with those of other members of the *T. brasiliensis* species complex. The taxon is redescribed from specimens from northern Minas Gerais State, Brazil.

Key words: *Triatoma melanica* **stat. nov.**, *Triatoma brasiliensis* complex, Chagas disease vector, taxonomy, morphology, Brazil

Introduction

Individual specimens of *Triatoma brasiliensis* Neiva, 1911 vary greatly in color, a fact that has led to the description of two melanic forms as subspecies: *T. brasiliensis melanica* Neiva and Lent, 1941 and *T. brasiliensis macromelasoma* Galvão, 1956 (Neiva and Lent 1941; Galvão 1956). However, Lent and Wygodzinsky (1979) considered these subspecies to be synonyms of *T. brasiliensis*, stating that intergrading forms between them are frequent in the natural environment.

Studies of morphology (Costa 1997; Costa *et al.* 1997a), biology (Costa and Marchon-Silva 1998), ecology (Costa *et al.* 1998, 2002), crossing experiments (Costa *et al.* 2003b), allozymes (Costa *et al.* 1997b), and mtDNA sequences (Monteiro *et al.* 2004) have been carried out in order to clarify whether the melanic forms of *T. brasiliensis* species represent different phenotypic variations of the same species or are distinct evolutionary units. The results suggest that *T. brasiliensis melanica* is indeed an independent evolutionary

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unit and the most differentiated form of the complex, with a genetic composition incompatible and hybrids inviable with other members of the *T. brasiliensis* complex (Costa *et al*. 2003b). A review of this group, which includes *T. brasiliensis brasiliensis, T. brasiliensis macromelasoma, T. brasiliensis melanica*, and a new species from Bahia State, is in preparation.

Here we raise *T. brasiliensis melanica* to species status and redescribe it based on specimens from northern Minas Gerais State, Brazil.

Material and methods

The material studied has been deposited in the Coleção Entomológica do Instituto Oswaldo Cruz — Fiocruz, Rio de Janeiro, Brazil (CEIOC). The type of *T. brasiliensis melanica* is lost. Therefore, the specimens were identified based on the literature and on comparisons with previously determined material of the other members of the complex deposited in the Herman Lent Collection, including the type of *T. brasiliensis* in the Cesar Pinto Collection (Gonçalves *et al*. 1993). The description incorporates the taxonomic characteristics for Triatominae proposed by Galvão (1956) and Lent and Wygodzinsky (1979).

Triatoma melanica Neiva and Lent, 1941, stat. nov.

(Fig. 1)

Length of male 20.3–24.0 mm, of female 21.0–24.0 mm; width of pronotum (posterior lobe) of male 3.5–4.7 mm, of female 3.5–5.0 mm; width of abdomen of male 6.7–8.3 mm, of female 7.0–10.5 mm. All measurements are in Table 1.

Overall color yellowish-brown.

Head black. Head twice as long as wide across eyes (1:0.40–0.65), length often equal to length of pronotum (1:0.65:1.00). Anteocular region five times as long as postocular region (1:0.20), the latter with sides slightly rounded. Clypeus distinctly but not abruptly widened behind middle. Genae tapering distally but apices narrowly rounded, not pointed, slightly projecting beyond apex of clypeus. Jugae widely rounded apically. Eyes in lateral view approaching but not attaining level of under surface and remote from level of upper surface of head. Ratio width of eye to synthlipsis 1:1.40–2.35. Antenniferous tubercles inserted slightly posterior to middle of anteocular region. First antennal segment attaining level of apex of clypeus; second segment subcylindrical, beset with declivous setae shorter than diameter of segment. Ratio of antennal segments 1:4.2–5.8:2.2–3.8:2.0–2.2. Rostrum thick, as dark as head capsule, with medium-sized hairs on first and on underside of second segment, and with long and very numerous hairs on upper surface of second and on entire third segment; hairs especially dense dorsally at junction of second and third segments. First rostral segment reaching level of apex of antenniferous tubercles, second seg-

ment to level of middle of eyes. Ratio of rostral segments 1:1.5–3.8:0.6–1.6. Neck dark, with a pair of light-colored spots laterally. Pronotum very sparsely granulose, overall color dark. Anterior lobe with discal tubercles yellow. Posterior lobe with pair of conspicuous trapezoidal yellowish marks, these not extending to anterior lobe. Anterior lobe with very low discal tubercles; lateral tubercles absent. Posterior lobe coarsely wrinkled. Submedian carinae evanescent on posterior fourth of hind lobe. Humeral angles rounded, slightly angular. Scutellum black, posterior process with yellow apex; scutellum coarsely wrinkled, with distinct central depression; posterior process of scutellum as long as main body of scutellum, subcylindrical, but slightly compressed laterally, apex slightly elevated, rounded. Hemelytra extending to base or apex of seventh urotergite; corium light yellow, discal cells entirely or almost entirely dark brown; clavus entirely dark; membrane fumose, light yellowish brown, as light as light-colored areas of corium; veins of membrane brown; lumen of cells each with more or less extensive, irregularly shaped sooty spot extending over central portion. Legs dark, with light yellow markings on trochanters; femora entirely dark; apices of tibiae slightly yellow. Legs slender, fore femur 6–7 longer than wide. Fore and mid femora prominent below subapically or with 1–2 weak denticles.

TABLE 1. Measurements (in mm) of *Triatoma melanica* **stat. nov.** based on 10 males and 10 females from Espinosa, Minas Gerais State, Brazil.

Gender	Male					Female				
Variables	min.	max.	X	S^2	S	min.	max.	X	S^2	S
Total length	20.3	24.0	21.75	0.011	0.103	21.0	24.0	22.70	0.009	0.095
Length of head	3.5	5.3	4.18	0.003	0.056	3.5	4.8	4.25	0.003	0.057
Width of head	1.0	1.2	1.07	0.000	0.009	1.0	1.3	1.18	0.000	0.012
Synthlipsis	0.8	1.2	1.03	0.000	0.012	1.0	1.3	1.18	0.000	0.009
Width of eyes	0.5	0.7	0.56	0.000	0.007	0.5	0.7	0.57	0.000	0.007
Length of 1st antennal segment	0.8	1.0	0.90	0.000	0.008	0.8	0.8	0.83	0.000	0.000
Length of 2nd antennal segment	3.2	4.8	4.14	0.002	0.045	3.5	3.7	3.58	0.000	0.012
Length of 3rd antennal segment	1.8	3.2	2.53	0.002	0.048	1.8	2.5	2.17	0.002	0.047
Length of 4th antennal segment	1.2	2.2	1.11	0.007	0.087	2.2	2.7	2.42	0.001	0.035
Length of 1st rostral segment	0.8	1.3	1.11	0.000	0.013	0.8	1.5	1.18	0.000	0.018
Length of 2nd rostral segment	1.5	3.2	2.38	0.003	0.056	1.5	3.2	2.38	0.002	0.051
Length of 3rd rostral segment	0.8	1.8	1.18	0.001	0.031	0.8	1.0	0.90	0.000	0.009
Length of pronotum	3.2	4.3	3.54	0.001	0.033	3.0	3.7	3.33	0.000	0.021
Anterior width of pronotum	1.8	3.0	2.56	0.002	0.046	1.8	3.2	2.95	0.002	0.041
Posterior width of pronotum	3.5	4.7	4.25	0.002	0.048	3.5	5.0	4.65	0.002	0.045
Width of abdomen	6.7	8.3	7.39	0.004	0.062	7.0	10.5	8.52	0.012	0.110

Males with spongy fossula on fore tibia; fossula absent in females. Abdomen slightly flattened below, delicately striate transversally, sparsely setose. Spiracles adjoining connexival suture. Venter black; spiracles enclosed in minute yellow area. Connexival segments on disc with yellow rectangular spot; wide black spot enclosing intersegmental sutures; yellow and black spots of about identical size, occupying entire width of segments. Abdomen of female very wide, lateral portions of urotergites exposed.

Male genitalia. As described by Lent and Jurberg (1978). [According to Costa *et al.* (1997a) the variation in male genital structures of *T. brasiliensis* is not correlated with the different chromatic forms. Therefore, these structures are not useful to distinguish *T. melanica*.]

FIGURE 1. *Triatoma melanica* **stat. nov.**, male, from Espinosa (Minas Gerais State, Brazil), dorsal habitus.

Material examined. Brazil, Minas Gerais State: Espinosa (14°55`34``S, 42°49`09``W), 10 males and 10 females (CEIOC); Porteirinha (15°44`36``S, 43°01`42``W), 5 males and 2 females (CEIOC). The type of *T. brasiliensis melanica* is lost.

Diagnosis. *Triatoma melanica* can be distinguished from the other members of the *T. brasiliensis* species complex by the following combination of features: (1) pronotum with pair of conspicuous trapezoidal yellowish marks on posterior lobe, these marks not extending to anterior lobe; (2) hemelytra with discal cells entirely or almost entirely dark brown; and (3) males with a spongy fossula only on the fore tibia.

Discussion

The chromatic patterns and geographic distributions of a total of 2,010 specimens of the *T. brasiliensis* species complex, collected from 1994 to 2002, were compared. The *T. melanica* pattern (220 specimens) was found in the municipalities of Espinosa and Porteirinha (northern Minas Gerais State).

Rearing of several colonies in the laboratory showed that the *T. melanica* color pattern is stable, homogeneous, and very distinct from the other patterns observed in the *T. brasiliensis* complex (Costa 1997; Costa *et al.* 1997a). In addition a large genetic distance between *T. melanica* and the other members of the complex was revealed. These distances were greater than those observed between other valid species of Triatominae (Monteiro *et al.* 2004). Additionally, the F2 hybrid adults generated from the *T. brasiliensis* (female) X *T. melanica* (male) crosses showed reduced fertility; and adults from the *T. brasiliensis* (male) X *T. melanica* (female) were sterile (Costa *et al.* 2003b).

Epidemiological studies and control measures require a precise taxonomic determination of the species of the *T. brasiliensis* complex. According to data based on captures made by the National Health Foundation — Brazil (Funasa) from 1993 to 1999, *T. melanica* is found in sylvatic environments and rarely invades households in Minas Gerais State. In contrast, the other members of the complex are frequently found colonizing the peri- and intradomicile, and *T. brasiliensis* presents the highest rates of infestation in northeastern Brazil (Costa *et al.* 2003a).

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