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RESEARCH ARTICLE

A new species of *Beamerana* Young, 1952 (Hemiptera: Cicadellidae: Typhlocybinae) from southeastern Brazil

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Abstract: A new species of the Neotropical leafhopper genus *Beamerana* Young, 1952 (Hemiptera: Cicadellidae: Typhlocybinae) is described and illustrated based on the specimens from Minas Gerais, southeastern Brazil. *Beamerana boomerang* **sp. nov.** differs from its congeners by the fore wing venation and the male genitalia. A key to the species of *Beamerana* is provided. The genus is recorded for Brazil for the first time.

Key words: Leafhopper, Auchenorrhyncha, Cicadomorpha, Empoascini, *Beamerana*, taxonomy, Neotropical Region.

Introduction

Beamerana Young, 1952 (Hemiptera: Cicadomorpha: Cicadellidae: Typhlocybinae: Empoascini) was erected to accommodate *Erythroneura tropicalis* Osborn, 1928 from Bolivia. Young (1952) also synonymized *E. similis* Osborn, 1928 with *B. tropicalis*. Ruppel (1975) described two new species from Panama, *B. rubriumera* Ruppel, 1975 and *B. multipunctata* Ruppel, 1975. Herein a new species of *Beamerana* is described and illustrated based on male and female specimens from Viçosa municipality, Minas Gerais State, southeastern Brazil.

Material and methods

The type locality, "Mata do Paraíso", occupies an area of approximately 194 ha, at altitude between 600 and 700 m a.s.l. The vegetation is of secondary Atlantic Forest, subtype Tropical Subcaducifolia Forest sensu Alonso (1977), under progressive regeneration. Descriptions of the study area were provided by Coelho & Da-Silva (2003), Gonçalves *et al*. (2007, 2009), and Coelho & Nessimian (2009).

The specimens were collected with "Luiz de Queiroz" light trap (Silveira Neto & Silveira 1969), using 15W, 100v, U.V. light bulbs, adapted according to Ferreira & Martins (1982). The light trap was suspended at a height of about 2.5 meters above ground level and operated from 6:00 p.m. to 6:00 a.m. The type specimens are deposited in Coleção Entomológica Professor José Alfredo Pinheiro Dutra, Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil (DZRJ).

For morphological study of the genitalia, the abdomen was removed and dipped in a warm solution of 10% KOH (modified from Oman 1949). For illustration, the genitalia were mounted in glycerin jelly (Pennak 1978). The color pattern herein described is the post-mortem coloration. In living or recently collected individuals, the coloration can be more vivid than in old preserved specimens. Morphological terminology follows mainly Young (1952), except for the wings based on Dworakowska (1993), and female genitalia based on Blocker & Triplehorn (1985) and Viraktamath & Dietrich (2011).

Results

Genus *Beamerana* Young, 1952

Beamerana Young 1952: 110. Type-species: *Erythroneura tropicalis* Osborn, 1928; by original designation.

Diagnosis: Fore wings with apical cells elongated, much longer than broad, sessile basally; outer apical cell open basally, not attaining wing apex; bases of apical cells forming a continuous transverse line or cells II and III discontinuous. Hind wings with vein AA branching from vein AP_1 near its base; submarginal vein present, extending around wing apex and confluent with apex of vein $RP+MP_1$; fusion of R with M occurring at distal third of wing; vein CuA fused with apical portion of vein MP_2; vein CuP confluent with submarginal vein near midlength of wing, basad to m-cua. Male genitalia with subgenital plate with macrosetae on external margin medially; pygofer without setae, with conspicuous process arising from posterior margin; style elongate, slender, without preapical lobe or apical extension; apical portion curved, with few microsetae; aedeagal shaft with ornamentations like fish scales and/or excrescences or apical process; aedeagal apodeme well developed, except in *B. multipunctata*; anal hooks present or not.

Distribution: Panama, Bolivia, Brazil.

Key to species of *Beamerana* (males)

1. Aedeagus with shaft densely ornamented, without process in subapical area (Figs. 2J–K, 4C–D); pygofer process not falciform (Figs. 2G, 4F–G) 2

– Aedeagus with shaft not ornamented, bearing two pairs of subapical processes (Fig. 4E); pygofer process falciform, truncated apically (Fig. 4H); Panama . . . . . *B. rubriumera*

2. Aedeagus with shaft ornamented with sinuous row of setiform excrescences (Fig. 4C); pygofer process inverted L-shaped (Fig. 4F); Bolivia . . . . . *B. tropicalis*

– Aedeagus with shaft ornamented with small excrescences, without setiform excrescences (Figs. 2J–K, 4D); pygofer process different (Figs. 2G, 4G) 3

3. Aedeagus without conspicuous dorsal apodeme (Fig. 4D); pygofer process delicate, thin apically (Fig. 4G); Panama . . . . . *B. multipunctata*

– Aedeagus with a well-developed dorsal apodeme (Figs. 2J–K); pygofer process robust, V-shaped (resembling a boomerang) (Fig. 2G); Brazil . . . . . *B. boomerang* **sp. nov.**

***Beamerana boomerang* sp. nov.** (Figs. 1–3)

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Diagnosis: Fore wings with bases of apical cells 2 and 3 distinctly discontinuous; pygofer short and quadrangular, lacking of anal hook, process with internal branch extending across posterior margin and external branch directed posteroventrally; aedeagus with dorsal apodeme well-developed, stem falciform densely ornate with small excrescences.

Description

Male: Total length 3.5–3.8 mm. General color (Fig. 1) whitish-yellow; eyes reddish-brown. Crown with anterior margin projected medially; face slightly longer than wide. Pronotum approximately 1.5 times as long as crown, margin of laterobasal angles not exceeding width of head. Fore wing milky-white, apex pale-brown, veins yellowish; basal half of apical cells with rounded spots forming a pale-brown transverse bar; outer apical cell with a conspicuous subapical red spot; cells cua and cup with irregular beige spots on central and apex regions, anterior one V-shaped with inner branch smaller; veins RP, MP_1 and MP_2+CuA_1 parallel; base of apical cells II and III not continuous, apical cell II shorter than adjacent cells. Hind wing (Fig. 2B) typical for the genus.

Figure 1. *Beamerana boomerang* **sp. nov.**, habitus of the male. **A,** laterodorsal view; **B,** dorsal view.

Subgenital plate (Figs. 2C–D) triangular, with strong internal folds; external margin with two small and stout setae in basal region, five macrosetae distributed along median

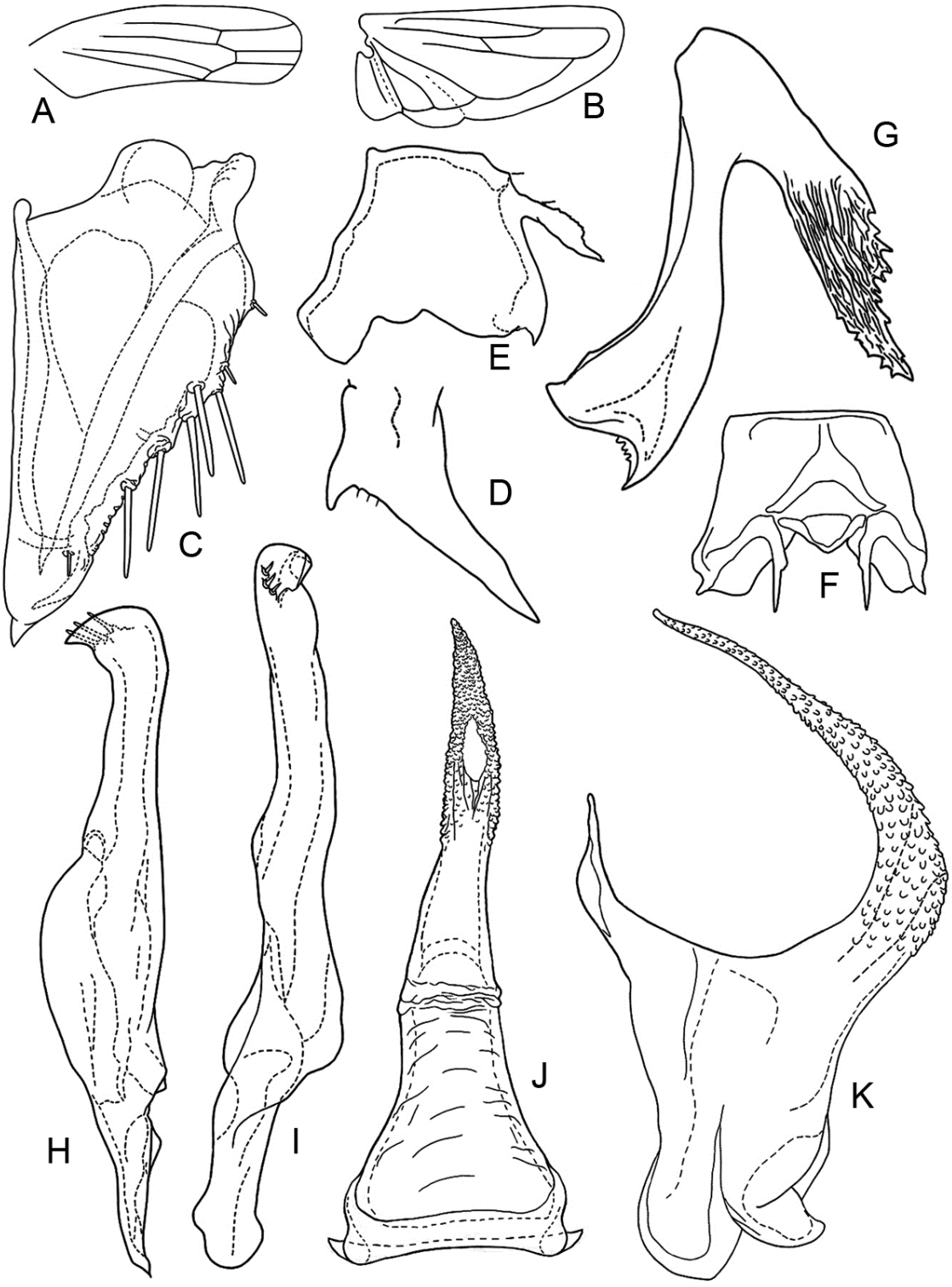

Figure 2. *Beamerana boomerang* **sp. nov.**, male. **A,** fore wing; **B,** hind wing; **C,** subgenital plate; **D,** apex of subgenital plate, lateral view; **E**, pygofer, lateral view; **F**, pygofer, dorsal view; **G**, process of pygofer, lateral view; **H,** style, ventral view; **I,** style, lateral view; **J,** aedeagus and connective, ventral view; **K,** aedeagus, lateral view.

region, and a small stout seta near margin subapically; apex sharply pointed, produced into small and robust spine, with long internal projection, laterally compressed, with pointed apex

directed dorsally and with three uniseriate microsetae at its base. Pygofer (Figs. 2E–F) almost quadrangular (in lateral view), with posterior margin well-defined by the presence of strong and robust V-shaped process; pygofer process (Fig. 2G) with internal branch extending across posterior margin and external branch directed posteroventrally, with apical half gradually tapered, sculptured by deep longitudinal groves, margins irregularly serrate. Style (Figs. 2H–I) with apex slightly enlarged, curved internally and with an acute short projection bearing three small setae. Connective horizontal (Fig. 2J), linear and plate-shaped. Aedeagus (Figs. 2J–K) with broad base, atrial complex and dorsal apodeme well-developed, stem falciform densely ornate with small excrescences, gradually tapering to apex; apex pointed, directed dorsally; gonopore ventral on base of apical half.

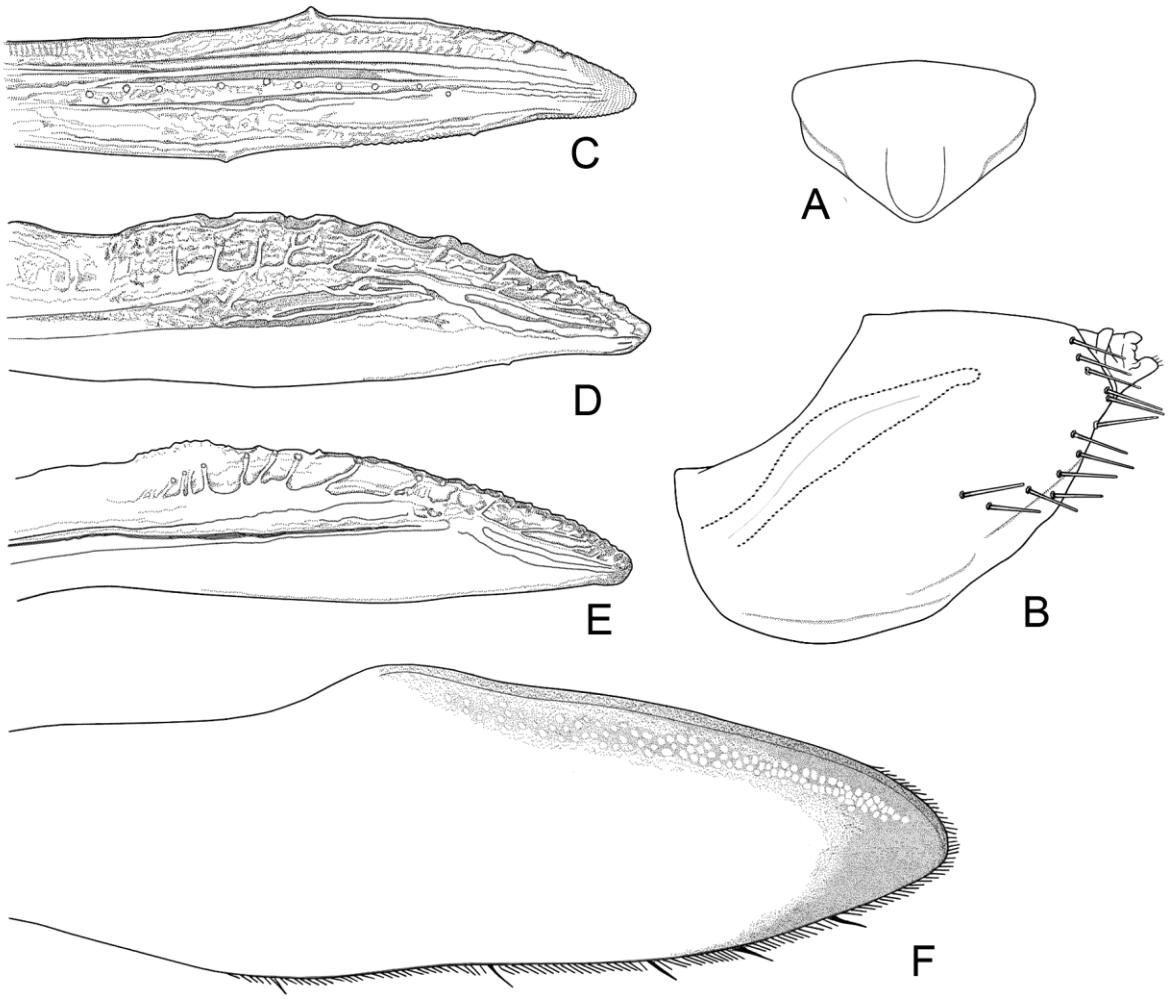

Figure 3. *Beamerana boomerang* **sp. nov.**, female. **A,** seventh sternite, ventral view; **B,** pygofer, lateral view; **C,** valvulae I; **D,** right valvulae II; **E**, left valvulae II; **F,** valvulae III.

Female: Total length 3.5–3.9 mm. Color and external morphology as in male.

Sternite VII (Fig. 3A) triangular in shape, with apex broad and rounded; central area of apical half with a slight U-shaped linear depression. Pygofer (Fig. 3B) oval in shape, caudal margin slightly truncate with four setae; ventral margin with nine setae.

Valvula I (Fig. 3C): apical margin finely crenulated; dorsal margin with 3 inconspicuous broad and flattened pre-apical teeth and a short spiniform knob; apex narrowed and rounded; ventral margin with two spines, one small near apex and other larger and more basal.

Right valvula II (Fig. 3D): dorsal margin with enlarged thickness, with robust teeth, narrower and round-contoured near apex, and gradually broader and flat-contoured toward base; apex truncated, dorsally angulate; ventral margin thin, with a small spine near apex similarly to valvula I. Left valvula II (Fig. 3E): dorsal margin about half as thick as dorsal margin of right valvula II, contour irregularly crenulated; apex narrowed and broadly rounded, ventral margin thin.

Valvula III (Fig. 3F): apex rounded, dark brown; dark coloration extending along dorsal and ventral margins; ventral margin and apex covered in small bristles, ventral margin with five sparsely distributed longer bristles; dorsal margin with cluster of rounded delicate clear prints near apex, gradually individualized toward base.

Type material: Holotype ♂, BRAZIL, Minas Gerais State, Viçosa, Mata do Paraíso (20°48'07" S; 42°51'31" W), 22.x.1986, P.S.F. Ferreira leg. [DZRJ]. Paratypes: 6 ♂♂, 6 ♀♀, same locality and collector as in holotype: 1 ♂ – 02.xii.1981; 1 ♀ – 27.i.1982; 1 ♂ – 22.x.1986; 1 ♂ – 30.iii.1988; 1 ♀ – 20.v.1988; 1 ♀ – 14.x.1992 [DZRJ].

Etymology: Noun in apposition, from Dharuk (Australian aboriginal language) word *bumarin*, through the English word *boomerang*, allusive to the strong and robust "V" process in male pygofer.

Distribution: Brazil (Minas Gerais).

Discussion

Beamerana boomerang **sp. nov.** is so far the only species of the genus known to occur in Brazil. It differs from its congeners by the forewing venation and the male genitalia. In Typhlocybinae, the alignment of apical cells II and III in fore wings had been routinely considered as a genus-level characteristics. *Beamerana* was described as possessing bases of apical cells forming a continuous transverse line (Fig. 4A) (Osborn 1928; Young 1957), but in *B. rubriumera* the cells are slightly discontinuous (Fig. 4B) and in *B. boomerang* **sp. nov.** bases of apical cells II and III are distinctly discontinuous (Fig. 2A). Therefore the diagnosis of the genus is presently expanded to also include species with fore wings apical cells basally discontinuous.

The new species resembles *B. tropicalis* by the presence of a dense sculpturing on the stem and well-developed dorsal apodeme of the aedeagus (Figs. 2J–K), besides the lack of anal hook on the pygofer (Figs. 2E–F); it differs in the absence of setiform excrescences on the aedeagus (Figs. 2J–K) (cf. Osborn 1928; Young 1957).

In addition to the discontinuous bases of apical cells II and III of fore wings, *B. boomerang* **sp. nov.** and *B. rubriumera* have some other similarities such as the pygofer short and quadrangular, the lack of anal hook (Figs. 2E–F), and the dorsal aedeagal apodeme well-developed (Figs. 2J–K). However, *B. rubriumera* differs from *B. boomerang* **sp. nov**. by the presence of processes in the apical region of the aedeagus and the lack of excrescences on the aedeagal shaft (Fig. 4E) (Ruppel 1975).

B. multipunctata resembles *B. boomerang* **sp. nov**. by the presence of sculpturing on the stem of the aedeagus (Fig. 4D); it differs by the more elongate pygofer, with an anal hook present (Fig. 4G), and by the aedeagus with excrescences sparsely distributed and with an inconspicuous dorsal apodeme (Fig. 4D) (Ruppel 1975).

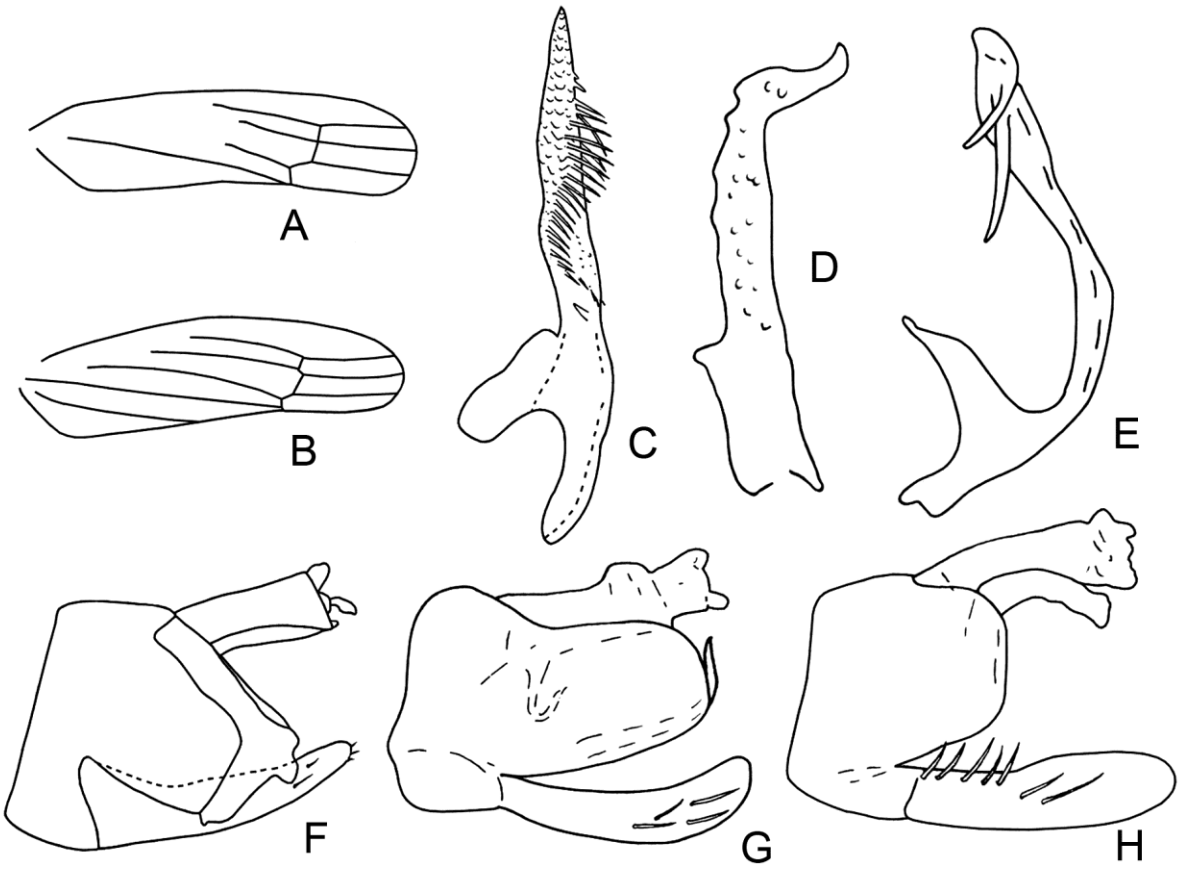

Figure 4. *Beamerana* species, males. **A,** fore wing of *B. tropicalis*; **B,** fore wing of *B. rubriumera*; **C,** aedeagus of *B. tropicalis*; **D,** aedeagus of *B. multipunctata*; **E,** aedeagus of *B. rubriumera*; **F,** pygofer of *B. tropicalis*; **G,** pygofer of *B. multipunctata*; **H,** pygofer of *B. rubriumera* (**A, C, F** modified from Young 1952; **B, D–E, G–H** modified from Ruppel 1975).

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