

## A new genus and species of Bennarellini from Costa Rica (Hemiptera: Fulgoromorpha: Cixiidae)

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### Abstract

A new genus, *Noabennarella* gen. nov. and a new species, *Noabennarella costaricensis* **spec. nov.**, from Costa Rica, are described. Considering *Noabennarella* as an example, general descriptions of Bennarellini characters, including first detailed descriptions of male and female genitalia, are given.

**Key words:** Auchenorrhyncha, planthoppers, Cixiidae, new species, morphology

### Introduction

Bennarellini Emeljanov is a small neotropical tribe within the family Cixiidae Spinola. It comprises only two genera and three species: *Bennarella* Muir, 1930 with *B. bicoloripennis* Muir, 1930 (known from Brazil and Guyana) and *B. fusca* Muir, 1930 (Brazil); and *Amazobenna* Penny, 1980 with *A. reticulata* Penny, 1980 (Brazil). Bennarellini has been separated from Bennini Metcalf by Emeljanov (1989), based mainly on the morphology of their unique abdominal appendages (see Figs. 1, 2, 3, 5). These appendages must be considered as a clear autapomorphy of Bennarellini. Superficially similar ones are present only in two other Fulgoromorpha taxa at all, namely in the Cixiidae tribe Bennini Metcalf and in the family Achilixiidae. In both taxa, the morphology of their abdominal appendages is completely different from that of Bennarellini (see Fig. 6, and O'Brien & Wilson 1985, Wilson 1989, Holzinger et al. 2003, Tsaur 1988).

In the course of a field trip to Costa Rica, the second author collected Bennarellini specimens that belong to an obviously undescribed species. Regarding the generic concepts of the two known Bennarellini genera *sensu* Penny (1980), these specimens also represent a new genus. Thus we describe *Noabennarella* nov. gen. to accommodate the

new species *Noabennarella costaricensis* sp. nov. As Bennarellini species have had only scant attention in scientific papers during the last century, we give here, using *Noabennarella* as an example, a general description of Bennarellini characters and first detailed descriptions of male and female genitalia.

***Noabennarella* gen. nov.**

Type species: *Noabennarella costaricensis* sp. nov.

Etymology: The name is an arbitrary combination of letters. Gender: Feminine.

Description

Medium sized cixiids (body length incl. wings in males about 6 mm, females 8.5 mm) with body laterally compressed and wings in resting position steeply inclined (Figs 1, 2, 26).

Frons long and slender (Figs 10, 13), evenly rounded in lateral aspect, without carina on vertex. Hind border straight. Median keel distinct, lateral keels strongly produced, semicircular in lateral view (Figs 9, 10, 13, 14). Median and lateral ocelli distinct. Scapus short, ringlike, pedicellus cylindrical, about 1.5 times as long as wide.

Pronotum short, lateral carinae distinct. Mesonotum with indistinct median and distinct lateral carinae. Fore wings long, slender, surpassing tip of abdomen by half their total length (Fig. 1). R and MA three-forked, MP bifurcate. Cubital area of the fore wing reduced in favour of the medial area, thus fore wings slightly widened apically (Fig. 12). Legs very long, metatibiae without macrosetae, apically with 6 spines (Figs 23, 24). Tarsus with 6+5 apical spines, platellae not present.

Segments four and five with large abdominal processes, bearing 3+2 sensory pits (Figs 1, 2, 3, 5). Two additional sensory pits on 6<sup>th</sup> abdominal segment.

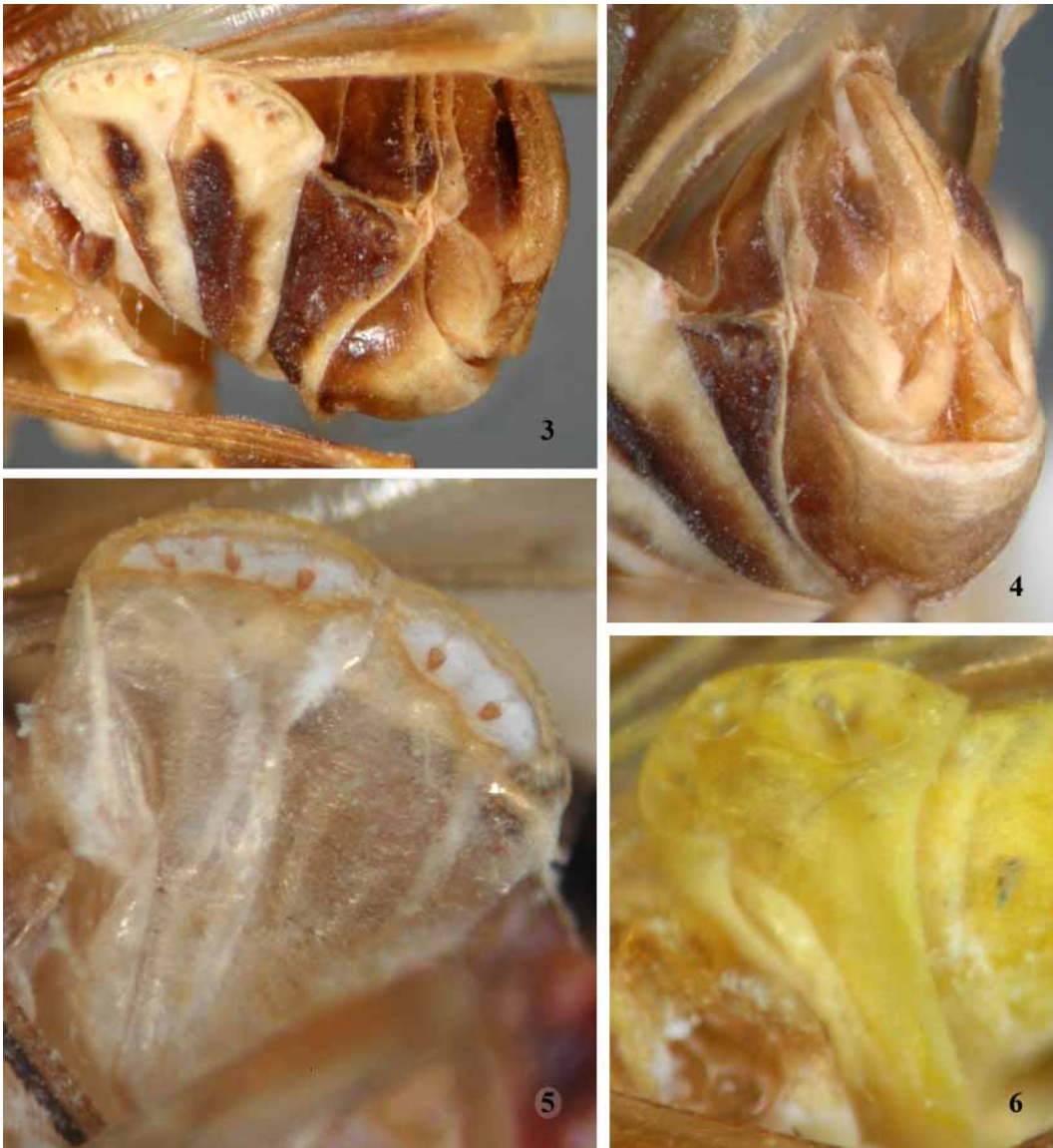
Male genital and anal segment more or less symmetrical (Figs 19, 21, 22). Aedeagus with shaft and flagellum well developed, shaft with set of movable spines, flagellum long and slender, in repose bent to the left side (Figs 16, 17).

Apex of female abdomen truncate, without wax plate. Ovipositor evenly curved, at rest adjacent to abdomen (Figs 3, 4). Ductus ejaculatorius wound helix-like, with three windings (Fig. 25).

Note: We studied one female *Noabennarella* specimen with a wing coloration distinctly different from that of *N. costaricensis*. This specimen (see Figs. 3, 4, 25, 26) is labelled "Peru: Monon Valley, Tingo Maria, XI-21-1954 // E.I.Schlinger & E.S.Ross collectors // *Amazobenna reticulata*" and stored in the collection of the Californian Academy of Sciences. We do not know if different wing coloration patterns or sexual dimorphism exist within *Noabennarella* and if this female belongs to *N. costaricensis* or represents another undescribed species.



**FIGURES 1–2.** Habitus of *Noabennarella costaricensis* **spec. nov.**, lateral and dorsal view, with abdominal appendages clearly visible.



**FIGURES 3–6.** 3, *Noabennarella* sp., female abdomen, lateral view; 4, same, ventral aspect; 5, abdominal appendages of *Noabennarella* sp.; 6, abdominal appendages of *Bebaiotes* sp. (Achilixiidae).

#### Differential diagnosis

*Noabennarella* can be easily distinguished from other Bennarellini by the shape of the head (especially frons) and its keels and by the venation of the fore wings. In *Amazobenna* and *Bennarella* the frons is much broader, and the lateral keels are directed laterally (see Figs 7, 8, 9, 10, 13, 14, 15). CuA and MP veins are strongly arched near the apex (Fig. 12), whereas they are straight in *Bennarella*, and in *Amazobenna* only CuA is strongly arched.

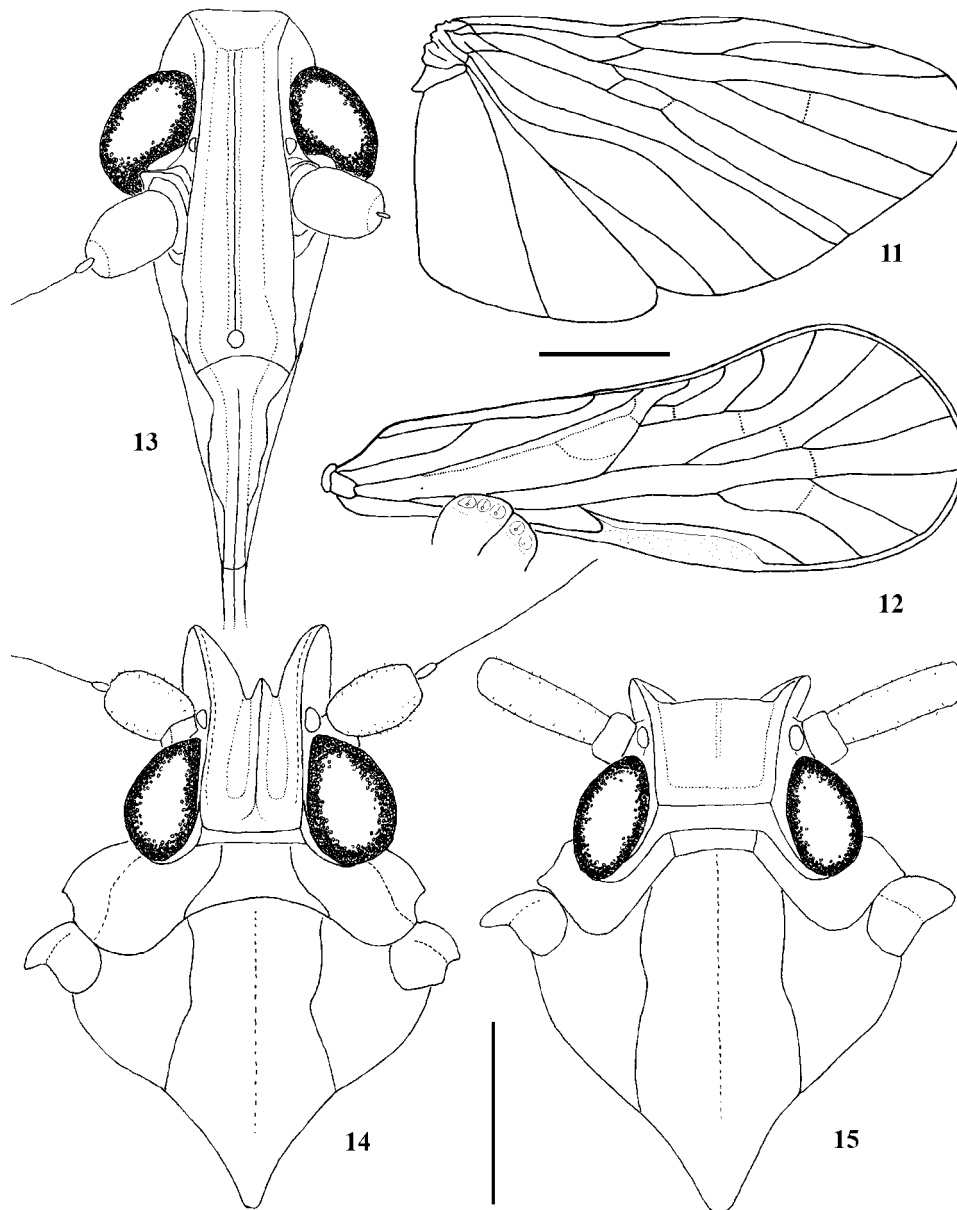
*Noabennarella costaricensis* spec. nov.

Type material: Holotype ♂: Costa Rica: Piedras Blancas National Park, Esquinas Rainforest Lodge [8°41'54"N, 83°12'16"W, 130 m a.s.l.], May 21, 2006, light trap in primary rain forest, Gernot Kunz leg., in coll. of the Institute for Faunistics and Animal Ecology, Graz. Paratype: 1 ♂, same location as holotype, May 24, 2006, in coll. G. Kunz.



**FIGURES 7–10.** 7, *Amazobenna reticulata* Penny, head of holotype, lateral aspect (photo: A. Henriques); 8, same, frontal aspect (photo: A. Henriques); 9, *Noabennarella costaricensis* spec. nov., head, lateral aspect; 10, same, frontal aspect.





**FIGURES 11–15.** 11, *Noabennarella costaricensis* **spec. nov.**, hind wing; 12, same, fore wing; 13, same, head in frontal aspect; 14, same, head and thorax in dorsal aspect; 15, *Bennarella bicoloripennis* Muir, head and thorax in dorsal aspect. Scale bar: 1 mm.

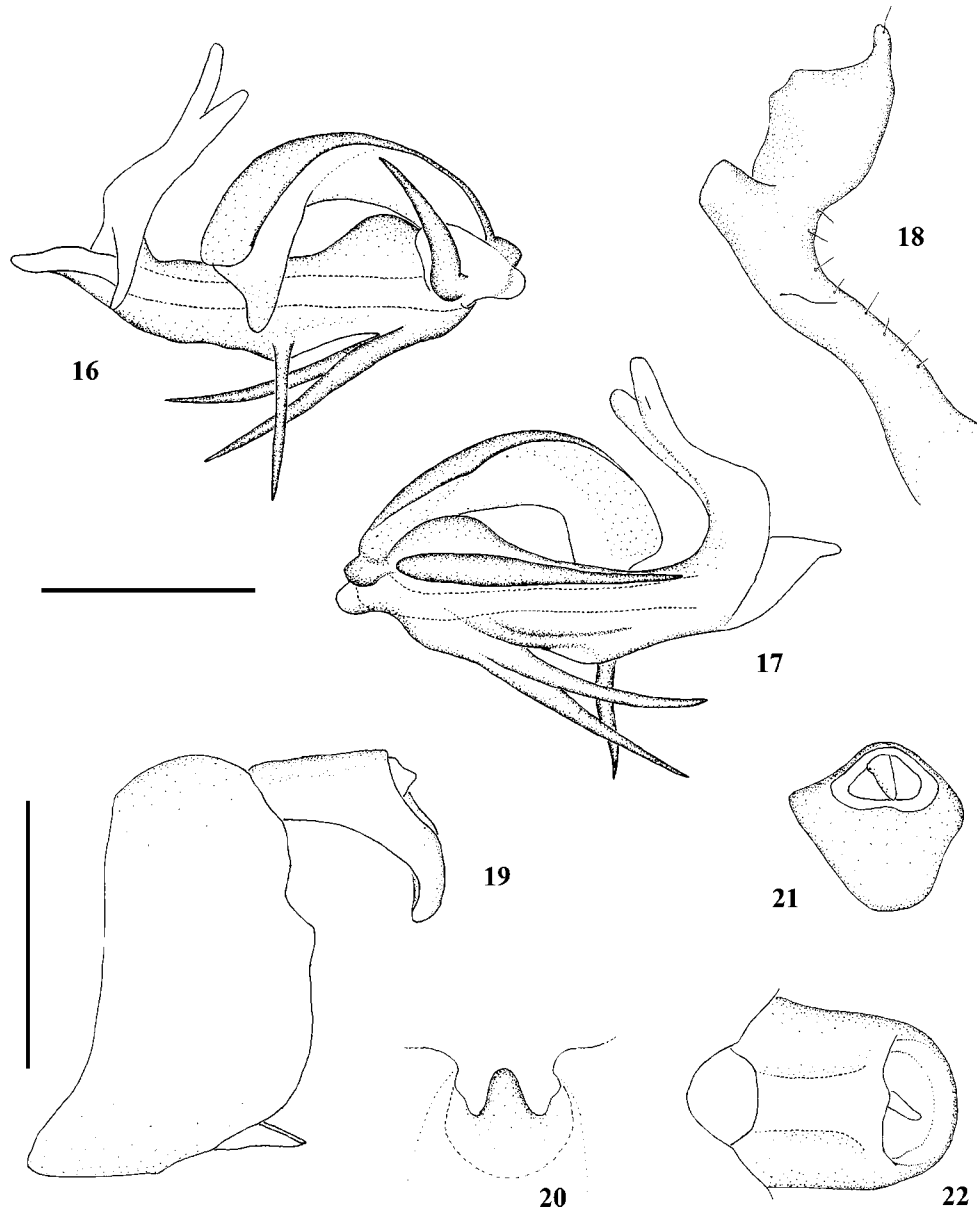
#### Description

Body length: 3.2 mm, 5.9–6.0 mm incl. wings.

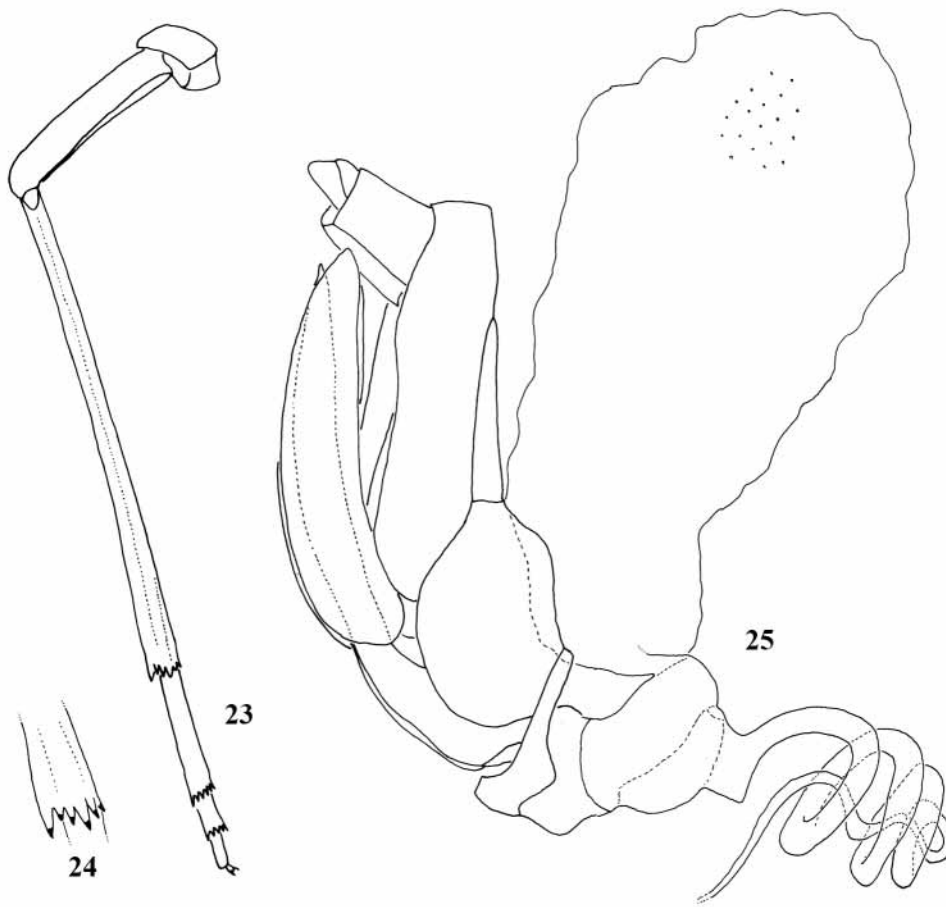
Coloration: Head and thorax dorsally straw-coloured, ventrally lighter. Abdomen dorsally dark brownish. Body partially covered with wax. Lateral keels of frons inside and outside with blackish spot (Figs 9, 10). A small, comma-shaped blackish spot surrounds the lateral ocellus and progresses apically. Legs straw-coloured. Wings opaque, veins

straw-coloured, cells creamy white with fuscous markings in a reticulate pattern. With a large blackish spot at apex of Sc and additional dark spots in centres of apical cells and at apices of veins (Fig. 1).

Morphology of head, thorax, abdomen as described for genus (see Figs 9, 10, 11–14, 23, 24, 26).



**FIGURES 16–22.** 16, *Noabennarella costaricensis* **spec. nov.**, aedeagus, left lateral view; 17, same, right lateral view; 18, genital style, inner maximum view; 19, male genital and anal segment (aedeagus and styli omitted), left lateral view; 20, ventromedian process of male genital segment, ventral view; 21, male anal segment, caudal aspect; 22, same, dorsal aspect. Scale bar: 0.25 mm for Figs 16–18, 0.5 mm for Figs 19–22.



**FIGURES 23–26.** 23, *Noabennarella costaricensis* **spec. nov.**, hind leg; 24, same, apex of tibia of hind leg; 25, *Noabennarella* spec., inner female genitalia; 26, *Noabennarella* spec., habitus of female.



Shaft of aedeagus with five movable, more or less straight spines: one ventromedian spine directed to left, and four apical spines: one very long on right side, one small and broader on left side, and two long and slender spines ventrally (Figs 16, 17). Genital styles spoonshaped, apical part with smaller truncate lobe medially and broader lateral lobe laterally, latter produced into a roundish tip (Fig. 18).

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