

New species of New World Tambiniini from palms
(Hemiptera: Fulgoroidea, Tropiduchidae)

Lois B. O'Brien[1]

Abstract : One new genus and species, *Diambon remanei* nov gen. nov. spec. from Trinidad and two new species of *Athestia* Melichar, 1914, *A. excelsa* nov. spec. from Mexico and *A. aschei* nov. spec. from Argentina, are described and illustrated. *Biruga* Fennah, 1944 is resurrected with its type-species *B. chapadae*. The genus Athestia is redescribed, and the genera and species of New World Tambiniini are keyed. All of the new species were collected from palms.

Zusammenfassung: Eine neue Gattung und Art, *Diambon remanei* nov. gen. nov. spec. aus Trinidad sowie zwei neue Arten der Gattung *Athestia* Melichar, 1914, *A. excelsa* nov. spec. aus Mexico und *A. aschei* nov. spec. aus Argentinien werden beschrieben. *Biruga* Fennah, 1944 wird mit ihrer Typusart *B. chapadae* wieder errichtet. Die Gattung *Athestia* wird wiederbeschrieben. Ein Schlüssel der Tambiniini der Neuen Welt wird präsentiert. Alle neu beschriebenen Arten wurden von Palmen gesammelt.

Key words: Auchenorrhyncha, planthoppers, key, *Athestia, Biruga, Diambon*

1. Introduction

The New World tropiduchid genus *Athestia* Melichar was erected in the Tambiniini in 1914 for *A. elongata* from Paraguay. It was followed by the genus *Biruga* Fennah in 1944 with the species *B. chapadae* Fennah from Brazil and *B. chariclo* Fennah in 1974 from Mexico, the latter taken in quarantine from *Chamaedorea* palm fronds. In 1982 Fennah synonymized the two genera when he revised the tribal classification of the tropiduchids, leaving *Athestia* the only New World genus in the Tambiniini (the rest being found in Asia).

One new species, used for the symbol of the convention of the Sociedad Mexicana de Entomologia in 2007, is being described here, along with another from Argentina, and a new genus and species from Trinidad. Fennah's *Biruga* with its original species *chapadae* (1944) is here resurrected from synonymy because of its distinct straight and oblique nodal line.

Kirkaldy (1907:9, 93) erected the tribe Tambiniini in what was then Tropiduchinae with "costal area very narrow, not veined transversely. *Isporisa, Colgorma, Ossa, Tambinia*, and perhaps *Paricana*, &c" Melichar (1914) described *Athestia* and included it with 15 other genera in the tribe, including a key to these genera, 8 of which were New World. Although Fennah published 2 papers on Antillean tropiduchids in 1945, it was not until 1982 that he revised the tribal classification and reduced the number of New World genera in Tambiniini to one by synonymizing his *Biruga* Fennah 1944 with *Athestia* Melichar 1914. Although in his key to tribes he characterized Tambiniini as "tegmen with nodal line straight and very oblique" [*Biruga*], in his description of the tribe he added, "if not, 3 uneven subapical cells present" [*Athestia*, and now also *Diambon*].

[1] Research Associate, California Academy of Sciences; E-Mail: lbobrien@cox.net

2. Methods

Genitalia were cleared overnight in cold potassium hydroxide solution and placed in glycerin for observation and then storage. The wording on each label on a specimen is listed inside brackets, each line is separated by a forward slant "/" Type specimens bear labels such as [Paratype /genus/species/L.B.O'Brien 2010]. The holotype from Mexico will be deposited in Coleccion Nacional de Insectos, Instituto de Biologia, UNAM, in Mexico City (CNIN); the other two holotypes in California Academy of Sciences (CAS), with paratypes in the author's collection, the respective countries, and Florida State Collection of Arthopods (FSCA). Abbreviations used for museums are those found on line in the Bishop Museum list of insect collections.

3. Results

Athestia Melichar 1914

The characters pertinent to the species I am placing in *Athestia* which are listed in Melichar's description (based on a single species) are vertex long; rostrum very short; pronotum with a single marginal carina between eye and tegula on each side; forewings long, 4 x as long as broad, three sectors from the basal cell, with 3 subapical cells and 9-15 apical cells (Melichar used 9-10). Hind legs with 2 or 3 spines (Melichar and Fennah had three in their species).

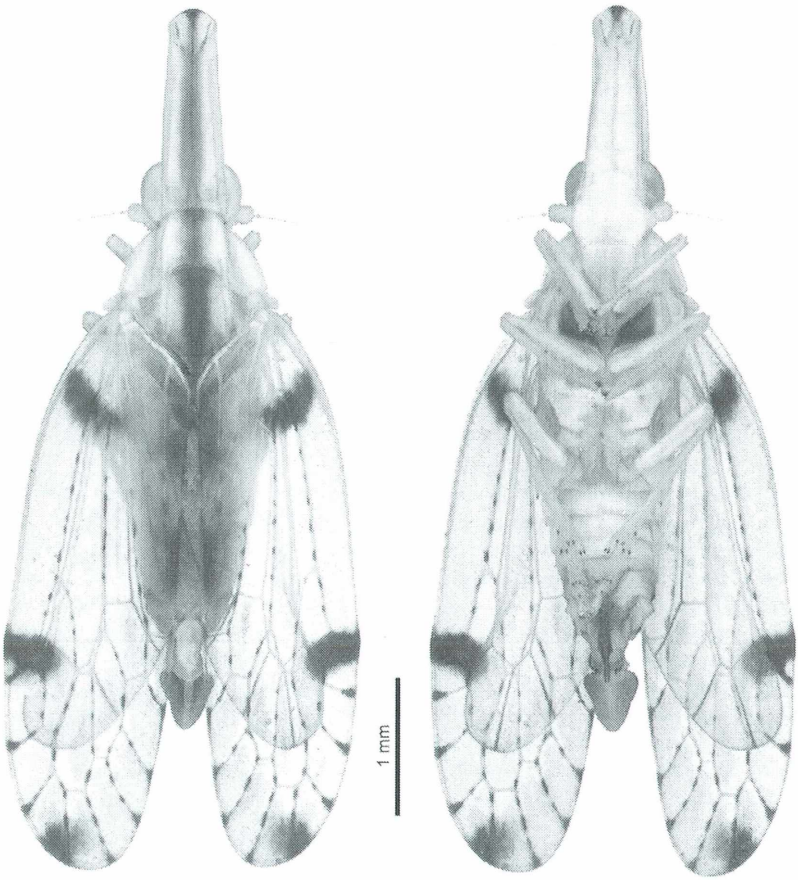
I have not seen a specimen of Melichar's species, but his description of the morphology of the genus is very complete. He mentions only one pronotal marginal carina, but does not describe the expanded and leaflike surface that *Biruga* and the *Athestia* species (other than the unexamined *A. elongata*) have.

Athestia excelsa nov. spec.

Figs. 1, 2, 5-7, 13

Length 5-6.5 mm. Form elongate triangular. Frons in midline longer than broad (about 3.1:1); flat, with median carina; with lateral margins slightly converging distad at basal fifth, then gradually diverging, becoming convex at level of antenna. Vertex in midline longer than broad (about 3.1:1), slightly concave, medially carinate, lateral margins slightly foliaceous and elevated. In lateral view, eyes elongate, gena elongate triangular, frons scarcely visible near tip, lateral marginal carinae of frons and vertex meeting to form edge of broad rounded apex. Antennal flagellum equaling width of vertex. Pronotum long, about ½ length of vertex; with normal median carina; lateral carinae parallel, slightly foliaceous; and foliaceous marginal carinae (1 each side); surface depressed between lateral and marginal carinae and below marginal carinae. Anterior margin of pronotum slightly convex, lateral margins almost straight, posterior margin sinuate. Mesonotum slightly broader than long, weakly tricarinate. Posterior tibiae with 2 lateral spines, six apical; first tarsomere with 6 spines, second with 2. Forewing with R, M, and Cu forking behind middle, R at level of claval apex, forming 8 or 9 apical and 3 subapical cells.

Stramineus, with brown shading along the midline, a trident shaped dark marking at the apex of the vertex, paler lateral longitudinal lines along the thorax. Forewings with veins maculate, three large spots on each wing, and small dark triangles on the veins at the wing margins (figs. 1, 2) Venter of pronotum dark.



Figs 1-2. *Athestia excelsa* nov. spec., female, dorsal and ventral view.

Genitalia: Pygofer deeply indented dorsally for 10th and 11th segment, which scarcely exceed it (fig. 5). Genital styles with 2 elongate basal projections angled dorsally, the outer bifurcate with two dark points on one tip, 1 on the other; the second inner projection with a pale tip; apex of style strongly bent inward (fig. 6). Aedeagal complex straight, ballooning at apex, with 2 asymmetrically placed short sharp apical projections (fig. 6). Apical half of female 10th segment depressed dorsally, keeled below, shape as figured (figs. 7, 1, 2).

Specimens examined: Holotype male, allotype female, 10 male and 11 female paratypes: [Mexico, Nayarit/ El Resbalon, Aca-/poneta 14-VII-/2007, L.D. Ortega] [under leaves/palm, 1.5m. high].Holotype to CNIN, 5 paratypes to Coleccion Entomologica del Instituto de Fitosanidad, Colegio de Postgraduados, Montecillo, Estado de Mexico (CEAM), rest CAS, FSCA, BMNH and LBOB.

Comparative notes: This species resembles most closely *chariclo* from Mexico, with a similarly shaped and marked frons and vertex, maculation of the veins of the forewing, and venation. It differs from *chariclo* in the comparative length and width of the frons and vertex which are both longer in chariclo, and in the distinctive three round spots on each forewing in *excelsa*, versus 2 and a disperse dark band in *chariclo*. Dr. Napoles reports that the common name of the palm these were collected on is palma real, which would be one of two species of *Sabal* in the area.

Etymology: The specific name is the Latin excelsa, meaning distinguished, because it was the symbol of the Sociedad Mexicana de Entomologia convention in 2007.

Athestia aschei nov. spec.

Figs. 3, 8, 9, 14

Length 5-6.5mm. Form elongate triangular. Frons in midline longer than broad (about 2.5:1); slightly undulating from base to apex, medially carinate, with lateral margins convex at level of antenna, then converging distad, apex smoothly rounding, not slightly expanded, but median carina slightly raised and visible in lateral view. Vertex in midline longer than broad (about 2:1), slightly concave, with median carina, with lateral margins slightly foliaceous and elevated. In lateral view, eyes elongate, gena elongate triangular, frons visible near tip, carinae of frons and vertex meeting before tip. Antennae with oval second segment, third segment equaling width of vertex. Pronotum long, about 1/3 length of vertex; with median carina, 2 lateral subparallel elevated foliaceous carina, and platelike marginal carinae (1 each side) slightly angled upward; surface depressed between lateral and marginal carinae and below marginal carina. Anterior margin of pronotum almost transverse, slightly convex, lateral margins convex, posterior margin sinuate. Mesonotum slightly longer than broad, tricarinate. Posterior tibiae with 2 lateral spines, six apical; first tarsomere with 5 spines, second with 2. Forewing with R, M, and Cu forking behind middle, R at level of claval apex, forming 8-9 apical and 3 subapical cells.

Stramineus, with brown shading along the midline of vertex, pronotum, and median disk of mesonotum; abdomen brown dorsally and ventrally with apical margins of each segment pale; dark median spot on clypeus and thoracic venter. Forewings usually transparent, sometimes with dark shading at base and at apex of clavus; veins dark except crossveins and short areas behind most forks pale; two large spots on each wing, and small flattened triangles on the veins at the wing margins dark.

Genitalia: Pygofer indented dorsally to 1/4 its length for 10th and 11th segment (fig. 8). Genital styles with 2 elongate basal projections angled dorsally, anterior toothed; apical area thickened and bent anterad outside thin inner area; aedeagal complex slightly curved upward in lateral view (fig. 9).

Specimens examined: Holotype, allotype and 12 male, 9 female paratypes: [ARGENTINA, Mis. 16/km.NE.Jardin Amer-/ica I-22-1989, C.&L./O'Brien & G. Wibmer] [on Butia/ capitata]; 5 male, 1female paratypes: [ARGENTINA, Mis./Hotel Victoria,Hwy./12, I-22-1989, C.&L./O'Brien & G. Wibmer] [on Butia/ capitata]; 1 female paratype [ARGENTINA, Mis./10 km.N.El Dorado,/ I-21-1989, CW&L./O'Brien & G. Wibmer] [on Butia/ capitata](CAS, LBOB, FSCA, BMNH, MLPA); 1 female paratype: [Corumba/ Brazil/ Acc.No.2966] [highland] [April] (CMNH)

Comparative notes: *A. aschei* can be distinguished from the other species by the dark veins of most of the forewing, with pale crossveins and short pale areas behind the forks in R, M, and Cu.

Etymology: The species is dedicated to Dr. Manfred Asche, an illustrious former student and friend of Dr. Remane.

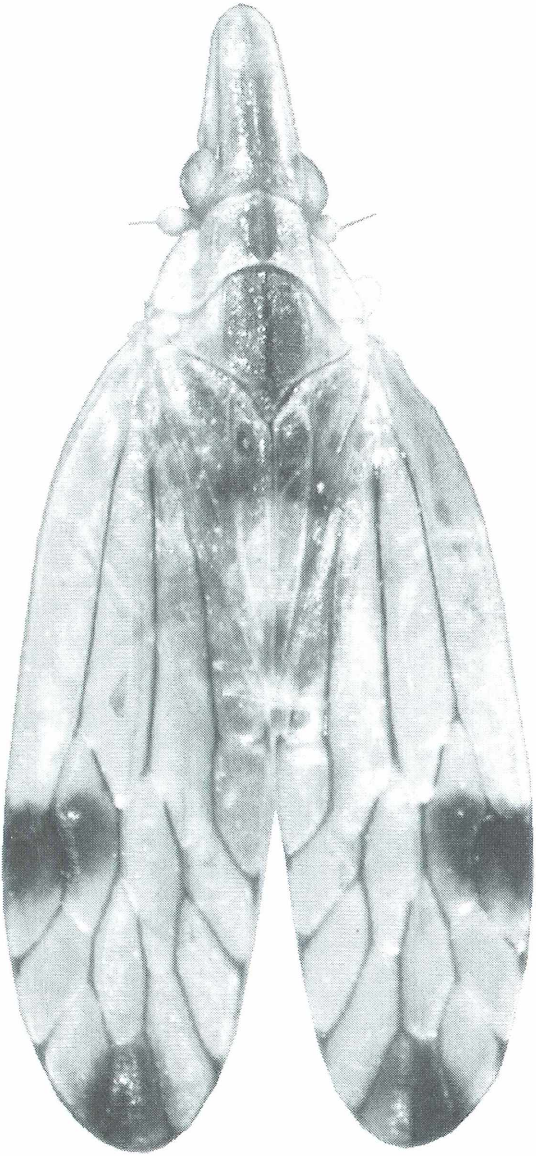


Fig. 3. *Athestia aschei* nov. spec., dorsal view.

Diambon nov. gen.

Vertex about twice as long as broad, strongly angled ventrad apically, lateral margins raised.

Frons medially carinate; flat near frontoclypeal suture but margins angled at midlength to reach lateral margins of vertex, leaving middle of disk raised; lateral margins strongly expanded at level of antennae in semicircles, causing gena to be raised here, with lateral ocellus on gena facing more forward than laterad. Pronotum medially carinate, with lateral carina diverging apically; with two lateral marginal carinae between eye and tegula. Forewings about 4.5 times as long as broad, sides almost parallel, asymmetrically rounded at apex, with three subapical cells and 13 apical cells, the inner apical cells larger than the outer. Hind tibia with three lateral spines and five apical (1 separate and four arranged in a diagonal line). First hind tarsomere with five spines (1 separate and four in a diagonal line); second tarsomere with two spines. Pale green, usually with red stripes on margins of vertex.

Comparative notes: Diambon has two marginal lateral carinae on the pronotum, while *Biruga* and *Athestia* have one flattened foliaceous carina. *Biruga* differs from the other two genera by having the cross veins of the forewing arranged in a diagonal transverse line. *Diambon* also differs from the others in the inner apical cells of the forewing being larger than the outer apical cells and in having the lateral ocellus on a ridge under the antenna, facing more anterad than laterad.

Etymology: A masculine noun from the Greek for two (di) ridges(ambon), for the two lateral marginal carinae on the pronotum between the eye and tegula.

Diambon remanei nov. spec.

Figs. 4, 10-12, 15-16

Length 5.5-6.5mm. Vertex twice as long as broad, medially carinate, with foliaceous lateral carinae raised; disk sunken, flat, sloping downward towards apex. Frons as above, lateral margins at midpoint bending dorsad to meet those of vertex near apical eighth of vertex. Pronotum less than half length of vertex (ratio 2.3/1), lateral carinae angled; 2 lateral marginal carinae between eye and tegula. Body and wings pale green, fading to stramineus, with lateral carinae of vertex red. Forewing hyaline, tinged with green, veins concolorous except spots at apex of clavus and in stigmal area brown. Sometimes stigmal line of crossveins brown, or brown X visible at middle of clavus through transparent forewings, from a colored vein of each crossed hind wing.

Genitalia: Pygofer indented dorsally about 0.9 of its length for 10th segment, which is about 2 x as long as pygofer in dorsal view (fig. 14). Genital style divided into two lobes, one resting horizontally, the other rising laterally, with a small sharp projection at tip (figs. 11, 12). Aedeagal process with asymmetrical spines on venter (fig. 12).

Specimens examined: Holotype male, allotype female, and 1 male and 8 female paratypes: [TRINIDAD, N.Range,/ Arima-Blanchisseuse/ Rd.Textel, nr. Morne/Bleu 2300' May12, 1985] [on small palm/*Geonoma / interrupta*] [Collectors: L.B. /& C. W. O'Brien]; 1 male and 2 female paratypes [TRINIDAD, N.Range/ Arima-Blanchisseuse/ Rd, mi.10.5, V-10-1985/C.W.& L.B. O'Brien]. Three nymphs were collected on the palm at the first locality as well. Holotype and allotype deposited at CAS, others at FSCA, LBOB, BMNH, UWIC.

Comparative notes: This species is similar to *A. elongata* in having red lines along the vertex, but in this case it is the foliaceous margins which are red on the vertex and also

gena, not a line near the margin. But *Diambon* has two marginal carinae on the pronotum, and *Athestia* has one. See also the comparative notes of the genera under *Diambon*.

Etymology: With pleasure I dedicate this species to Dr. Reinhard Remane, an outstanding researcher, professor, and collector.

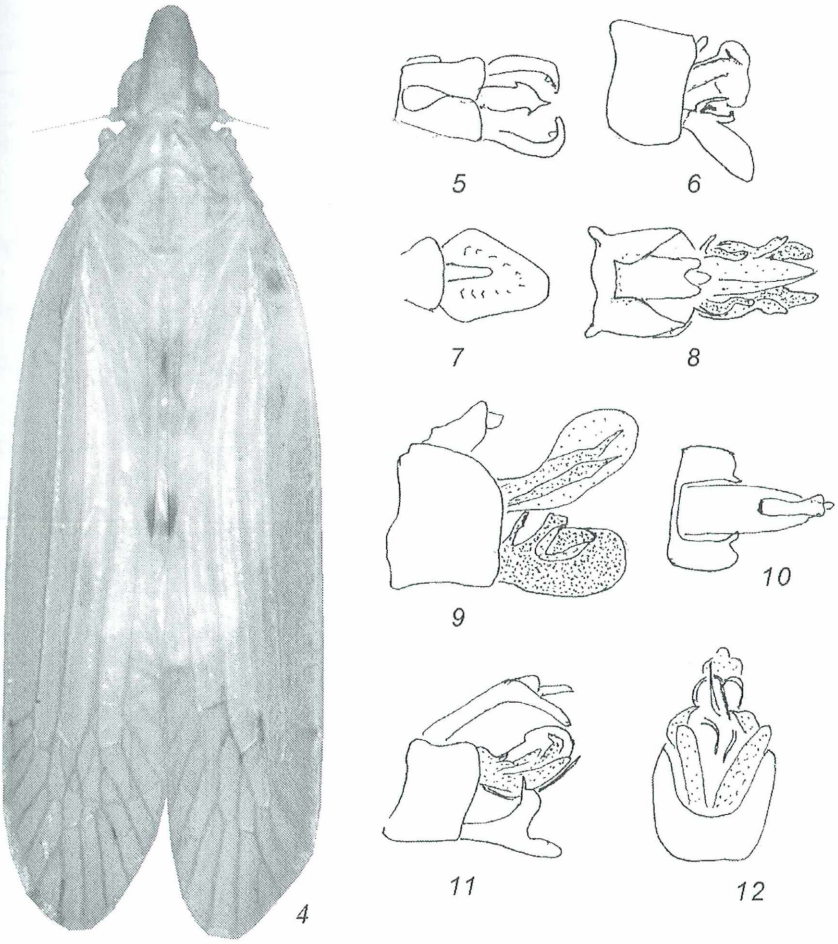


Fig. 4 (left). *Diambon remanei* nov. gen. nov. spec., dorsal view.

Figs 5-12 (right): Genitalia. 5-6 *Athestia excelsa*, dorsal and lateral view of male genitalia; 7 *Athestia excelsa*, dorsal view of apical half of segments 10 & 11 in female; 8, 9 *Athestia aschei*, dorsal and lateral view of male genitalia. 10-12. *Diambon remanei*, dorsal, lateral, and ventral view of male genitalia.

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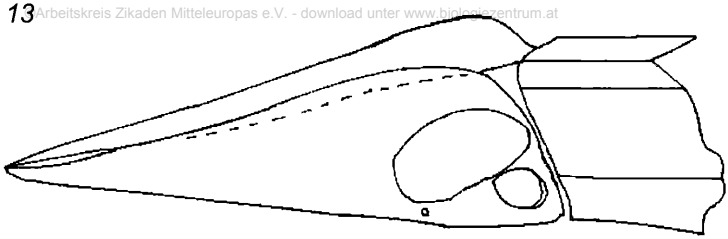

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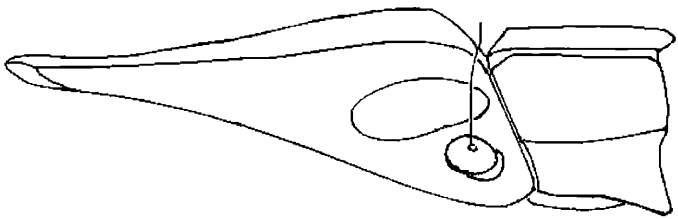

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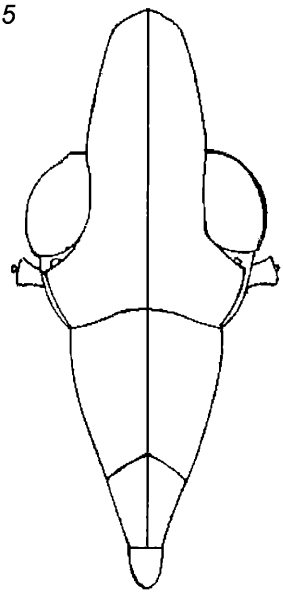

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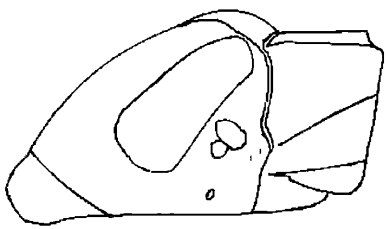

Figs. 13-16: Heads. 13 *Athestia excelsa*, lateral view of head; 14 *Athestia aschei*, lateral view of head; 15-16 *Diambon remanei*, ventral and lateral view of head.

Ecology of the new species

The host plants of the first two species described are not known, but the 4 other species are on palms. *A. chariclo* was intercepted at San Antonio, Texas, on fronds of *Chamaedorea*, from the Guadalajara area of Mexico in February, with both adults and nymphs present. Of the three species described here, *A. excelsa* was collected on a small *Sabal* palm in Mexico in July; *A. aschei* on *Butia capitata* in Argentina in January; and *D. remanei* on *Geonoma interrupta*, both adults and nymphs, in May.

Checklist of New World Tambiniini

Athestia Melichar, 114:71 (type-species *elongata*)
- *aschei* O'Brien, 2010 — Argentina (CAS)
- *chariclo* Fennah,1974:673-675, figs. 1-8 (*Biruga*), n. comb. Fennah 1982: Mexico (NMNH)
- *elongata* Melichar, 1914:72, fig. 21 — Paraguay (MMBC, Brno?)
- *excelsa* O'Brien, 2010 — Mexico (CNIN)

Biruga Fennah, 1944:6 (type-species *chapadae*)
- *chapadae* Fennah, 1944:6, figs. 27-33 — Brazil (AMNH, photo on line)

Diambon O'Brien, 2010 (type-species *remanei*)
- *remanei* O'Brien, 2010 — Trinidad (CAS)

Key to genera and species of New World Tambiniini

1. Cross veins of forewing forming a diagonal transverse line ..... *Biruga chapadae* Fennah
   Forewing with 3 uneven subapical cells present (figs. 1-4) 2
2. Pronotum with 2 marginal carinae between eye and tegula. ..... *Diambon remanei*, n.g,n.sp.
   Pronotum with a single marginal carina between eye and tegula (*Athestia*) 3
3. Green insect with vertex, frons, and pronotum with reddish or reddish orange stripes ..... *Athestia elongata* Melichar
   Stramineus, forewings hyaline, with brown markings 4
4. Veins of forewings with many small dashes of brown; vertex over 3 x as long as broad 5
   Veins of forewings mostly dark brown, with crossveins and some areas behind forks pale; vertex about twice as long as broad ..... *Athestia aschei*, n. sp.
5. Three large spots on each forewing; vertex 3.5 x longer than wide ..... *Athestia excelsa*, n.sp.
   Two large spots on each forewing and diffuse anterior band;, vertex 4 x longer than broad ..... *Athestia chariclo* Fennah

4. Acknowledgments

With pleasure I dedicate this paper to Dr. Remane. I thank Laura Delia Ortega A. for collecting the specimens of *Athestia excelsa* and Dr. Jesus Naples for sending me the specimens, photographs, and the information about them being the symbol of the Societal Mexicana de Entomologic convention. I also owe thanks to Margarethe Brummermann and Jack Nason, artists and photographers, for trying to teach me better techniques.

5. References

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