

The Brazilian species of the genus *Arhacia* Herrich-Schäffer, 1855 with description of a new species (Lepidoptera: Notodontidae, Dicranurinae)

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Abstract

Two species of *Arhacia* Herrich-Schäffer, 1855 are recorded from Brazil: *A. combusta* (Herrich-Schäffer, 1854) (= *postbrunnea* Rothschild, 1917, syn. n.), and *A. imitata* Becker, sp. n. Images of adults and genitalia are presented.

KEY WORDS: Lepidoptera, Notodontidae, Dicranurinae, *Arhacia*, new species, new synonym, Brazil, Neotropical.

Las especies brasileñas del género *Arhacia* Herrich-Schäffer, 1855, con la descripción de una especie nueva (Lepidoptera: Notodontidae, Dicranurinae)

Resumen

Dos especies de *Arhacia* Herrich-Schäffer, 1855 se registran para Brasil: *A. combusta* (Herrich-Schäffer, 1854) (= *postbrunnea* Rothschild, 1917, syn. n.) y *A. imitata* Becker, sp. n. Se presentan imágenes de los adultos y de la genitalia.

PALABRAS CLAVE: Lepidoptera, Notodontidae, Dicranurinae, *Arhacia*, nueva especie, nueva sinonimia, Brasil, Neotropical.

Introduction

The Neotropical genus *Arhacia* Herrich-Schäffer, 1855 included four species: *A. combusta* (Herrich-Schäffer, [1854]) from Brazil, *A. imitans* (Schaus, 1911) and *A. lignaris* Schaus, 1911, from Costa Rica, and *A. postbrunnea* Rothschild, 1917 from French Guiana (BECKER, 2014). In the author's collection two species from Brazil are present, one of them described below as new. *Arhacia* is related to *Truncaptera* Becker, 2014 both in external pattern and shape of genitalia, especially to the *fascis*-group. They can be easily distinguished by the antenna, short ciliated in *Arhacia* whereas long pectinated in the other.

Material and methods

This work is based on 29 specimens: 15 specimens (9 g. s.) in VOB, 14 specimens in AMC, and on the type-material in the USNM and the NHMUK. Synoptic collections, representing all the species were taken to these institutions and compared with the types deposited there. The holotype of the new species is provisionally deposited in VOB, and will be transferred, together with the collection, to a Brazilian institution in the future. Genitalia were prepared following the methods described by ROBINSON (1976). Terms for morphological characters follow HODGES (1971).

Abbreviations

AMC	= Alfred Moser collection, São Leopoldo, Rio Grande do Sul, Brazil
BA	= Bahia State, Brazil
FW	= Forewing
g. s.	= genitalia slide
HW	= Hind wing
MNHU	= Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
NHMUK	= The Natural History Museum, London, UK (formerly The British Museum of Natural History)
PR	= Paraná State, Brazil
RJ	= Rio de Janeiro State, Brazil
RS	= Rio Grande do Sul State, Brazil
SP	= São Paulo State, Brazil
TP	= Type-species
USNM	= United States National Museum, Washington, USA
VOB	= Vitor O. Becker collection, Serra Bonita Reserve, Camacan, Bahia, Brazil

Results

The material in the author's collection indicates that two species of *Arhacia*, have been collected in Brazil: a dark brown one, *A. combusta*, and a paler one, almost identical to *A. imitans* from Costa Rica, which has been wrongly identified, in all collection examined, as *A. combusta*. Differences in the genitalia confirmed their difference. There are two main reasons for such misidentifications: the absence of material of *A. combusta* in all collections, and the illustrations by DRAUDT (1932: pl. 147e), who figured the female of *A. combusta* and a paler male, with hind wings pale yellow, representing the undescribed species.

Arhacia Herrich-Schäffer, 1855

Aussereur. Schmett., **1**: 11

TS: *Anodonta combusta* Herrich-Schäffer, 1854. *Aussereur. Schmett.*, **1**: 78, figs 81-82

Arhacia combusta (Herrich-Schäffer, 1854) (Figs 1-3, 14)

Anodonta combusta Herrich-Schäffer, 1854. *Aussereur. Schmett.*, **1**: 78, figs 81-82. Syntype ♀, BRAZIL: No further data (MNHU) [examined]

Arhacia postbrunnea Rothschild, 1917. *Novit. Zool.*, **26**: 238, pl. 8, fig. 16. Holotype ♂, FRENCH GUIANA: St. Jean du Maroni (NHMUK) [examined], **syn. n.**

Diagnosis: Male 25 mm (56 mm wingspan) (Fig. 1), female FW 28-30 mm (60-66 mm wingspan) (Figs 2-3). Dark fuscous brown. FW bordered with double dark brown band; a dark brown dash at the middle of the wing, just below cell, from base to short distance before termen. Genitalia (Fig. 14) proportionally too small in relation to moth size and abdomen volume; ostium narrow; ductus short, twisted; corpus bursae globose, walls very thin; signum absent.

Material studied: 3 ♀♀ (2 g. s.), BRAZIL: BA, Boa Nova, caatinga, 14°36'S - 40°26'W, 750 m, 4-8-XII-2013 (Becker 150592; g. s. 5386, 5387).

Remarks: *A. combusta* was described from an unspecified number of specimens, at least one male and one female, as illustrated by HERRICH-SCHÄFFER (1854: figs 81-82). These illustrations clearly belong to the same species, showing both wings dark brown. SCHINTLMEISTER (2013: 46, fig. on front cover, inside), who examined the material deposited in all the European museums, found only one female at the MNHU. There is no information, either in the original description or in the labels, where the type-series was collected in Brazil. The type-locality of it is synonym, *A.*

postbrunnea, indicates it is an Amazonian species. The three specimens mentioned above, were collected in the Caatinga, a Brazilian biome poorly sampled.

***Arhacia imitata* Becker, sp. n.** (Figs 4, 5, 7-9, 13)

Material studied: Holotype ♂, BRAZIL: SP, São Luis do Paraitinga, 23°20'S - 45°06'W, 900 m, 12-17-XI-2001 (Becker 133850) (VOB). Paratypes: 1 ♂, 1 ♀, BA, Camacã, 15°23'S - 39°33'W, 800 m, 15-XI-1995, XI-2011 (Becker 106014 (g. s. 5392), 147001 (g. s. 5390)) (VOB); RJ, Nova Friburgo, 800 m, 22-I-1993 (Becker 85766 (g. s. 5391) (VOB); 4 ♂♂, PR, Telemaco Borba, 750 m, 15-XI-1995 (Becker 97149 (g. s. 4086) (VOB); 4 ♂♂, SP, São José do Barreiro, 22°43'S 44°36'W, 1580 m, 15-30-III-2020 (Thöny) (AMC, VOB); 1 ♂, SC, São Bento do Sul, Serra do Rio Natal, 26°19'S - 49°18'W, 600 m (Moser, Mielke & Casagrande) (AMC); 1 ♀, Idem, São Bento do Sul, Rio Vermelho, 800 m, III-2005 (Rank & Moser) (AMC); 5 ♂♂, 1 ♀, RS, Morro Reuter, Fazenda Padre Eterno, 29°32'S - 50°58'S, 500-600 m, 25-IX-1982, 24-X-1992, 8-X-1994, 20-X-2001, 11-14-X-2005 (Moser) (AMC); 1 ♂, Idem, São Francisco de Paula, Rio Santa Cruz, 700 m, 24-25-X-2005 (Moser) (AMC); 1 ♂, Idem, Encruzilhada do Sul, 30°47'S - 52°36'W, 9-10-XI-2018 (Moser) (AMC).

Diagnosis: Pale ochreous; FW bordered with a narrow, brown band; a brown dash along middle, just below cell, from base to a short distance before termen; HW pale yellow, tinged brown on tornus. Thorax and abdomen, dorsally, with a broad, rusty brown band along middle.

Description: FW male: 25-30 mm (55-62 mm wingspan) (Fig. 4), female: 28 mm (60 mm wingspan) (Fig. 5). Head dark brown; frons, in the middle, vertex, and labial palpi, ventrally, pale yellow; antenna ochreous. Thorax pale yellow; a broad dark brown band along middle; patagia dark brown; tegula tinged brown. Fore legs, mid and hind tarsi brown. FW pale ochreous, bordered with narrow, brown band, double along termen and tornus; long, brown dash in the middle, just below cell. Abdomen rusty brown dorsally; pale yellow ventrally; distal margin of 8th sternite with a pair of flat protrusions, rounded apically (Fig. 9).

Male genitalia (Figs 7, 8): Uncus short, in the shape of pyramid, mid ridge triangular, short; valva a short triangle, costa with a blunt triangular expansion distal; juxta square; vinculum round. Aedeagus thin, as long as genitalia, sinuose, apex curved; inception of ductus seminalis at basal third; vesica with no spines.

Female genitalia (Fig. 13): Ostium bursae ring-shaped with square expansion distal; ductus bursae thick distad, basal 2/3 twisted, sclerotized; corpus bursae globose, signum absent.

Distribution: Brazil, from southern Bahia to Rio Grande do Sul, along the Atlantic Forest biome.

Remarks: Female genitalia bigger than those of *A. combusta*, and with ductus bursae much longer. *A. imitata* is similar to *A. imitans* (Fig. 6), described from Costa Rica, but slightly larger, on average, and with genitalia (Figs 10, 11), as well as distal margin of 8th sternite (Fig. 12) distinct. This has mid ridge of uncus longer, and aedeagus straight, not bent at apex, and vesica bearing an area with small spines. In VOB there are four males, three from Costa Rica, Cartago, Turrialba (Becker 23023, g. s. 5388, 5389), and one from Belize (Becker 23906, g. s. 4087).

Etymology: From the Latin *imitor* -atus = mimic, imitate, about its similarity with the other species in the genus; feminine.

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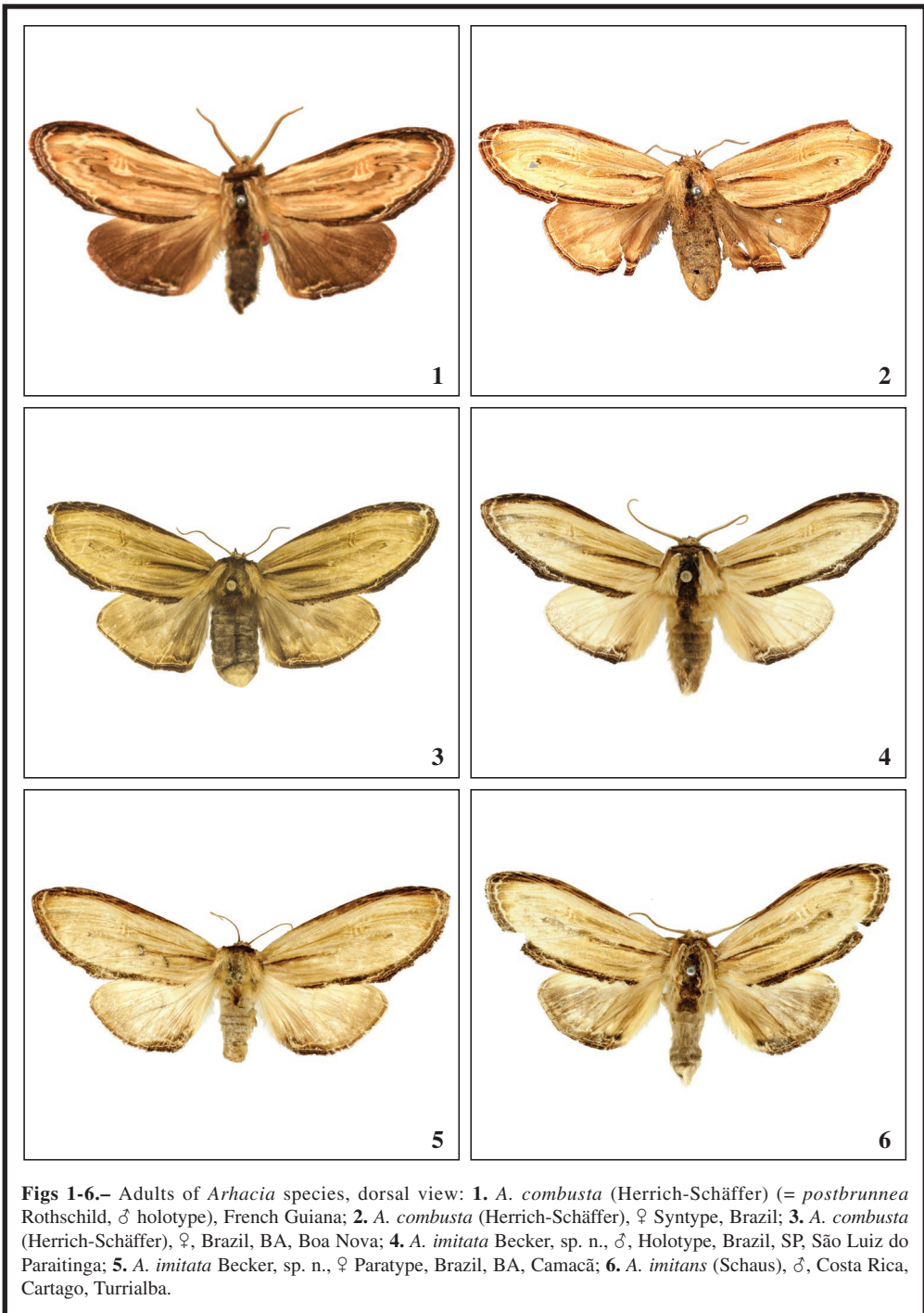
Robiara U. S. Becker, Serra Bonita Reserve, Camacan, Bahia, prepared the illustrations, Alfred Moser (AMC), supplied data from specimens in his collection, and Scot E. Miller (USNM) helped with information from material deposited in this institution. Alessandro Giusti (NHMUK) authorized the publication of the image of *A. postbrunnea*. Two anonymous reviewers made several correction and additions that contributed to the improvement of the article.

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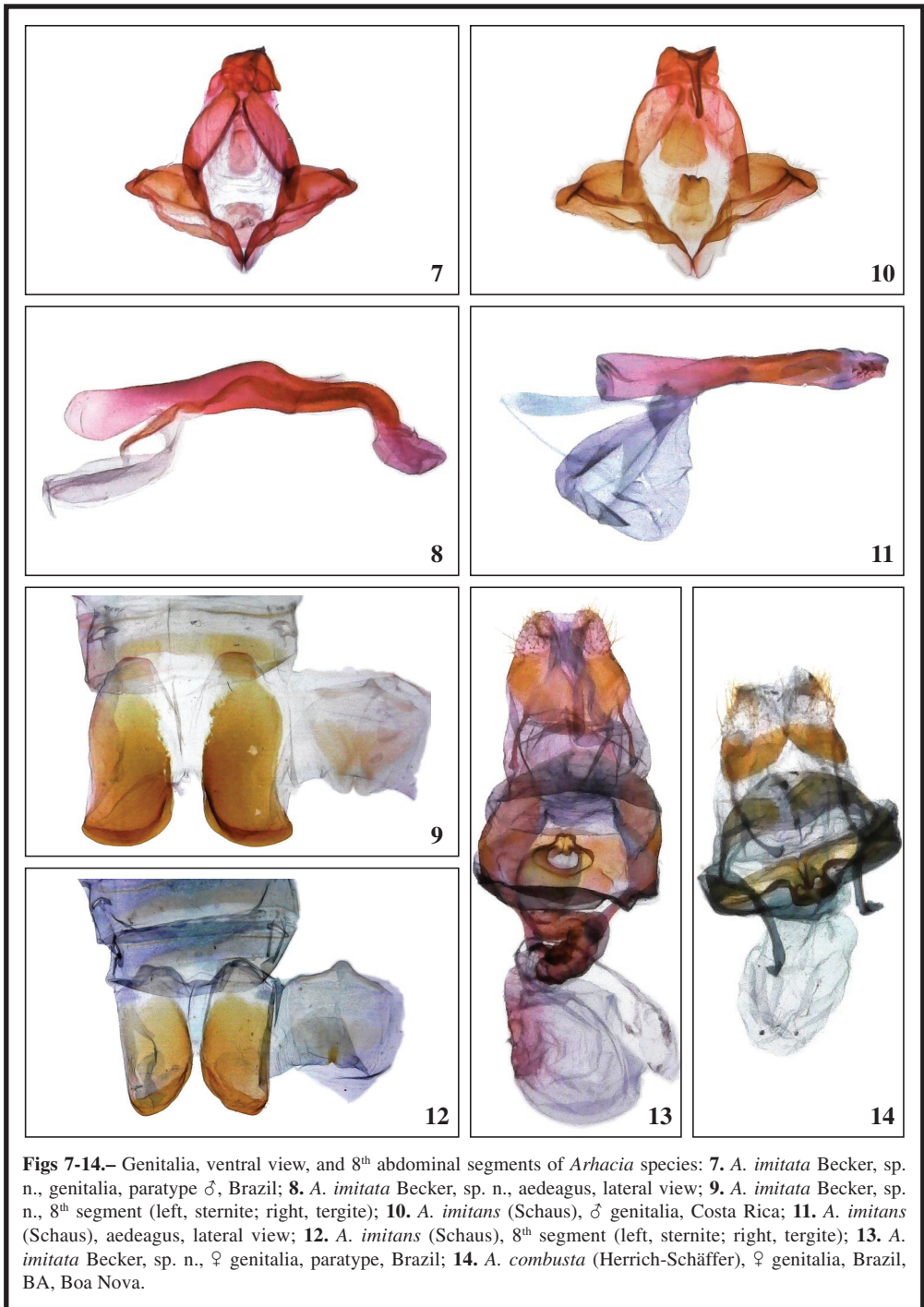
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Figs 1-6.– Adults of *Arhacia* species, dorsal view: **1.** *A. combusta* (Herrich-Schäffer) (= *postbrunnea* Rothschild, ♂ holotype), French Guiana; **2.** *A. combusta* (Herrich-Schäffer), ♀ Syntype, Brazil; **3.** *A. combusta* (Herrich-Schäffer), ♀, Brazil, BA, Boa Nova; **4.** *A. imitata* Becker, sp. n., ♂, Holotype, Brazil, SP, São Luiz do Paraitinga; **5.** *A. imitata* Becker, sp. n., ♀ Paratype, Brazil, BA, Camacã; **6.** *A. imitans* (Schaus), ♂, Costa Rica, Cartago, Turrialba.



Figs 7-14.— Genitalia, ventral view, and 8th abdominal segments of *Arhacia* species: **7.** *A. imitata* Becker, sp. n., genitalia, paratype ♂, Brazil; **8.** *A. imitata* Becker, sp. n., aedeagus, lateral view; **9.** *A. imitata* Becker, sp. n., 8th segment (left, sternite; right, tergite); **10.** *A. imitans* (Schaus), ♂ genitalia, Costa Rica; **11.** *A. imitans* (Schaus), aedeagus, lateral view; **12.** *A. imitans* (Schaus), 8th segment (left, sternite; right, tergite); **13.** *A. imitata* Becker, sp. n., ♀ genitalia, paratype, Brazil; **14.** *A. combusta* (Herrich-Schäffer), ♀ genitalia, Brazil, BA, Boa Nova.