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Redescription of the genus *Allocryptobia* Viette, 1951 (Lepidoptera: Cossidae)

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Abstract

Based on the study of male and female genitalia and the external features of *Cryptobia musae* Herrich-Schäffer, [1854], the type species of the genus *Allocryptobia* Viette, 1951, this genus is redescribed. Images of the type specimens, male and female genitalia, a new generic diagnosis, and a distribution map are given. Lectotypes of *Cryptobia musae* Herrich-Schäffer, [1854] and *Cossus mucoreus* Herrich-Schäffer, [1853] are designated. *Allocryptobia musae* is recorded for the fauna of Honduras, Panama and Colombia for the first time.
KEY WORDS: Lepidoptera, Cossidae, *Allocryptobia*, lectotype designation, Neotropic.

Redescripción del género *Allocryptobia* Viette, 1951 (Lepidoptera: Cossidae)

Resumen

Basándose en el estudio de la genitalia del macho y de la hembra y de las características externas de *Cryptobia* Herrich-Schäffer, [1854], especie tipo del género *Allocryptobia* Viette 1951, 1951, se redescribe este género. Se dan las especies tipo, genitalia del macho y de la hembra, una diagnosis genérica y un mapa de distribución. Se designan el Lectotipo de *Cryptobia musae* Herrich-Schäffer, [1854] y *Cossus mucoreus* Herrich-Schäffer, [1853]. Se registra por primera vez a *Allocryptobia musae* para la fauna de Honduras, Panamá y Colombia.
PALABRAS CLAVE: Lepidoptera, Cossidae, *Allocryptobia*, designación de lectotipo, Neotropical.

Introduction

The Cossid fauna of Neotropics is poorly known. Only the subfamily Cossulinae (DAVIS *et al*., 2008) has been relatively well treated. We have initiated a systematic revision of the South American carpenter-moths with redescribing of poorly known genera (YAKOVLEV, 2014; PENCO *et al*., 2016; YAKOVLEV *et al*., 2016). Additionally, we have recently published a preliminary list of the Cossidae (PENCO & YAKOVLEV, 2015) of Argentina, and descriptions of several new species (PENCO & YAKOVLEV, 2017; YAKOVLEV *et al*., 2017).

The genus *Allocryptobia* Viette, 1951 belongs to the large but, well defined subfamily Zeuzerinae. Originally, the genus *Cryptobia* has been established for *Cryptobia musae* Herrich-Schäffer, [1854] (type locality: Brazil) (Fig. 1) with the second species *Cossus mucoreus* Herrich-Schäffer, [1853] (type locality: Rio Grande) (Fig. 2) added later. However, the name *Cryptobia* Herrich-Schäffer, [1854] appears to be a junior homonym of *Cryptobia* Leidy, 1846 (Kinetoplastida, Cryptobiidae) (LEIDY, 1846), and *Allocryptobia* was proposed as an objective replacement name (VIETTE, 1951: 38). SCHOORL (1990) synonymised *Cossus mucoreus* and *Cryptobia phobifera* Dyar, 1940 (Fig. 8)

described from Paraguay, Villa Rica (DYAR, 1940). He also examined material from The Natural History Museum (London) and Muséum National d'Histoire Naturelle (Paris) and determined specimens of *A. musae* from Venezuela (Merida) and Guatemala (Guatemala City).

It is known that the type material and other collections of Herrich-Schäffer have been deposited in various European museums (HÄUSER *et al*., 2003). A part of this material from the collection of Kaden, which served as a basis for iconography by HERRICH-SCHÄFFER (1850-1858), was recently found in the entomological collection of ZISP; it includes several types of Cossidae from South America.

Material and methods

Male and female genitalia were mounted in micro tubes (under specimens on a pin) and examined with a Nikon SMZ 800 n microscope. Images of genitalia were taken with the Olympus XC 50 camera. Images of imago were taken by the digital camera of Apple iPhone 7, illuminated in Lightbox. The images were processed using CorelDraw software.

Abbreviations used in the text:

BMNH	British Museum of Natural History (London, Great Britain)
MNHN	Muséum National d'Histoire Naturelle (Paris, France)
MWM	Museum of Thomas Witt (Munich, Germany)
USNM	United States National Museum of Natural History (Smithsonian Institution) (Washington, USA)
ZISP	Zoological Institute, Russian Academy of Sciences (St. Petersburg, Russia)

Results

We examined syntypes of *Cryptobia musae* (male and female) and *Cossus mucoreus* (female) kept in the collection of ZISP, as well as some new material of the first species, collected in Panama and Colombia. Because Figure 165 in HERRICH-SCHÄFFER (1850-1858) depicts the female of *C. musae*, we designate the female specimen as a lectotype and the male one as the paralectotype (article 74B of ICZN, 1999). Figure 39 in HERRICH-SCHÄFFER (1850-1858) for *C. mucoreus* also illustrates a female, and as there is no evidence that it is a unique specimen, we designate it as a lectotype.

Allocryptobia Viette, 1951
Lambillonea, **51**: 38

Type species *Cryptobia musae* Herrich-Schäffer, [1854], by monotypy for *Cryptobia* Herrich-Schäffer, [1854].

Redescription of the genus is given below based on its type species.

Male: Antenna short, bipectinate in proximal half, filiform in distal half. Fore wing relatively narrow, apically rounded, with specific black pattern. Hind wing short, relatively wide, almost completely black basally, with dense reticulated black pattern distally.

Female: Antenna short, filiform. Wings significantly wider than those of male.

Male genitalia (Fig. 9): Uncus long, triangle, with beak-shaped point on top; gnathos arm short, thick, fused with vinculum by membrane; valve relatively narrow, costal edge slightly curved in medium third, abdominal edge strongly curved in proximal third, small lanceolate harpe in medium third of abdominal edge, apex semicircular; juxta small, with long leaf-like lateral processes, strongly fused with phallus; saccus tiny, semicircular; phallus thick, shorter than valve, slightly curved in medium third, robust cornutus in lateral surface of vesica.

Female genitalia (Fig. 10): Ovipositor very long. Ostium poorly immersed, cup-like; ductus thick, of medium length, with sack-shaped bulla extending from it on a long membrane duct; bursa big, oval, with small stellate signum on lateral surface, ductus seminalis thin, extending from top of bursa; anterior apophyses much longer than posterior ones; transverse oblique incisions on lateral surface of ovipositor; papillae anales semicircular.

Allocryptobia musae (Herrich-Schäffer, [1854]) (Figs 3-6, 9-11)
Cryptobia musae Herrich-Schäffer, [1854], *Sammlung neuer oder wenig bekannter Aussereuropäischer Schmetterlinge*: Fig. 165.

Material examined: 1 ♀ (lectotype, here designated), [Brazil], (ZISP); 1 ♂ (paralectotype), [Brazil], (ZISP); 1 ♂ (paralectotype), Rio Grande [Brazil], (ex musaeo Boisduval) (MNHN); 1 ♂, Colombia, Quindío, Valle del Cocora, E of Salento, 2300 m, 4º 38' 32"N / 75º 30' 47"W, 11- III-2017, V. Sinyaev (MWM); 1 ♂, Colombia, Santander, NE of Bucaramanga, near Morro Ventanas, 7º 08' 43"N / 73º 01' 52"W, 13-15- IV-2017, 2250 m, leg. V. Sinyaev & Pinilla (MWM); 1 ♂, 1 ♀, Colombia, Boyacá Municipio Togui Vereda Jupa, 2080 m, 5º 53' 04''N / 73º 29' 27''W, 19-21-IV-2014, leg. V. Sinyaev & M. Márquez (MWM); 1 ♂, Colombia, Santander, road Duitama-Charala, 5º 58' 13''N / 73º 10' 07''W, 24-27-II-2016, 2925 m, leg. V. Sinyaev & J. Machado (MWM); 1 ♀, Colombia, Boyacá, Arcabuco, road Arcabuco-Togui, 5º 49' 15''N / 73º 30' 14''W, 7-8-XII-2015, 2350 m, leg. Sinyaev & Machado (MWM); 1 ♀, Colombia, Huila Municipio Palestina PN Guacharos-Purace 1º 40' 25"N / 76º 13' 29"W 10-12-II-2018, 2177 m, leg. V. Sinjaev & J. Machado (MWM); 1 ♂, NW Honduras, Cortés dept., Cusuco National Park, 15º 29' 47''N / 88º 12' 43''W, 1610 m, 22-28-V-2014, leg. V. Sinjaev & Marquez, coll. Dr. R. Brechlin (MWM); 1 ♂, C. America, Panama, Churiqui prov., Boquete distr., 8.81511 N, 82.48294 W, h=1720 m, 24-VI-2017, A. Kozlov & Yu. Kovaleva leg. (coll. R. Yakovlev, Barnaul).

Male (Figs 4-5): Wingspan 53-72 mm. Thorax and abdomen densely covered with brown scales. Tegulae brown. Fore wing brown, with specific black pattern. Fine black strokes along costal edge; longitudinal strokes between radial and medial veins in postdiscal and submarginal areas, reticulated pattern between cubital veins; discal area without pattern. Fringe brown unicolorous. Hind wing brown but almost completely black basally, with dense reticulated black pattern distally.

Female (Figs 3-6): Wingspan 90-113 mm. Wing pattern almost the same as of male, but more mottled with broad patches of coffee-with-milk color in discal and submarginal areas on fore wing and only distally on hind wing.

Male and female genitalia: See generic description.

Distribution (Fig. 11). Brazil, Colombia, Guatemala, Panama and Venezuela.

Allocryptobia mucoreus (Herrich-Schäffer, [1853]) (Figs 2, 7)
Cossus mucoreus Herrich-Schäffer, [1853], *Sammlung neuer oder wenig bekannter Aussereuropäischer Schmetterlinge*: Fig. 39.

Material examined: 1 ♀ (lectotype, here designated), [Rio Grande, Brazil], (ZISP); 1 ♀, Porto Cabello [Puerto Cabello, Carabobo State, Venezuela] (MNHN).

Distribution. Brazil and Venezuela.

Discussion

Basing on the male genital characters of the type species, the genus *Allocryptobia* belongs to the group of genera of the subfamily Zeuzerinae having one harpe on the lower edge of valve. Now this group includes the South American genera *Brypoctia* Schoorl, 1990 (type species *Xyleutes strigifer* Dyar, 1910), *Morpheis* Hübner, [1820] (type species *Phalaena pyracmon* Cramer, 1782) and some Australian genera combined by the KALLIES & HILTON (2012) into the *"Sympycnodes digitata* group". We are stated that apomorphies for the genus *Allocryptobia* include the specific habitus and the tiny sacculus, the short robust phallus and the gnathos arms fused with vinculum in the male genitalia.

A number of questions on the taxonomy of the genus *Allocryptobia* remain controversial. The most important is the synonymy of *C. mucoreus* with *C. phobifera* established by SCHOORL (1990: 164) with the following argument: "The holotype of *phobifera* is similar to a male specimen from Venezuela in the BMNH, which has been identified together with a female from the same locality as belonging to *mucorea*. Dyar notes that the hind wings are partly without scales due to damage. It appears to be a characteristic that a moderately broad band along the hind wing dorsum is unsealed, since the male in the BMNH has this too. There are apparently no good differences between the two species. Therefore, *phobifera* is synonymized with *mucorea*." However, the conspecificity of the male and female of *C. mucoreus* from Venezuela (BMNH) and the male from Paraguay (holotype *Cryptobia phobifera*) is doubtful (Figures 7 and 8, respectively).

Additionally, SCHOORL (1990) mentioned the pronounced sexual dimorphism as the most important characteristic of the genus *Allocryptobia*. This statement is based on comparing the external features of both sexes of *Cryptobia mucoreus*, however, in the females and males of the type species sexual dimorphism is only slightly expressed. We provisionally leave *C. mucoreus* in the genus *Allocryptobia* but its taxonomic position, as well as conspecifity with *C. phobifera*, needs further study.

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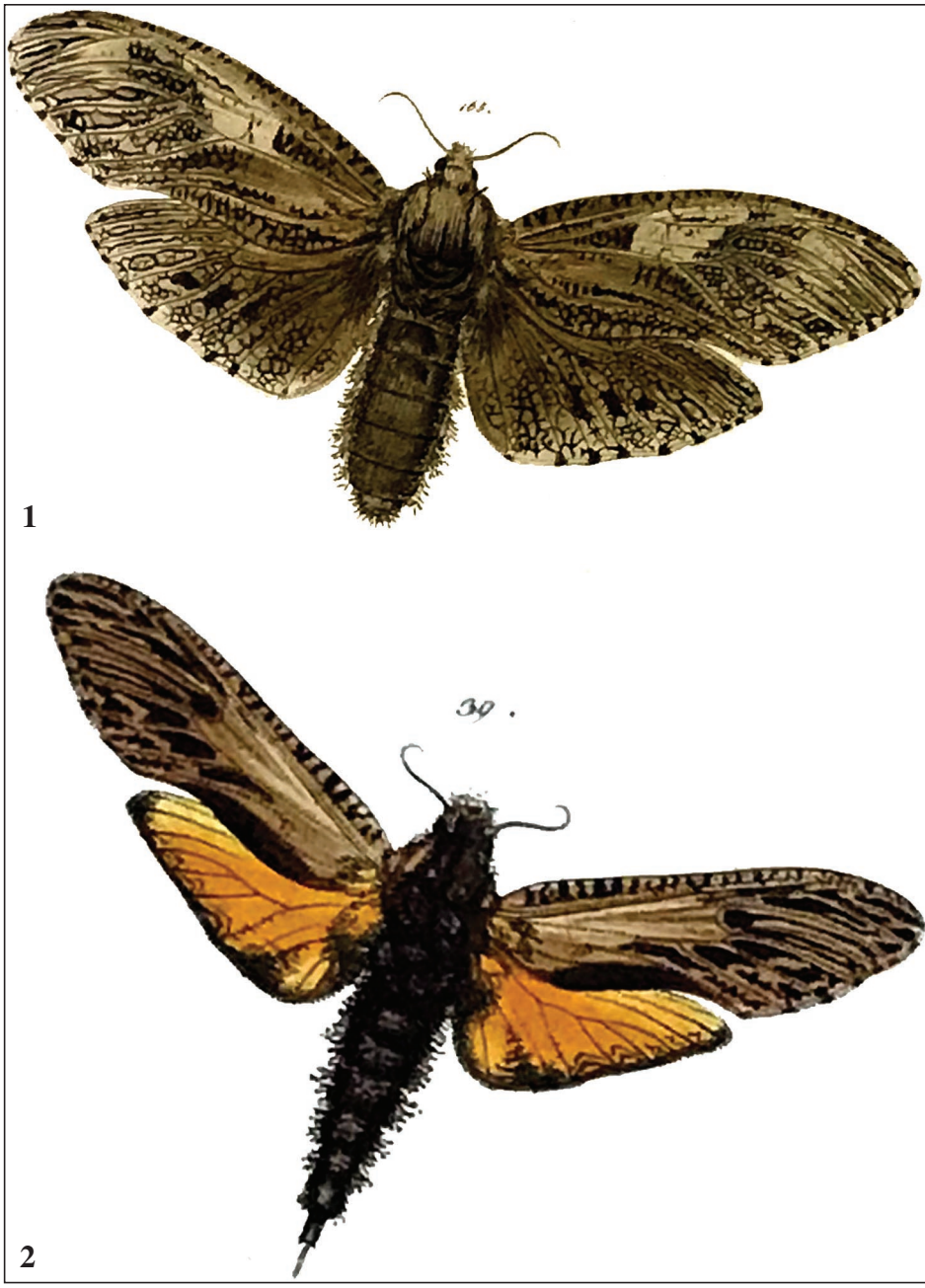
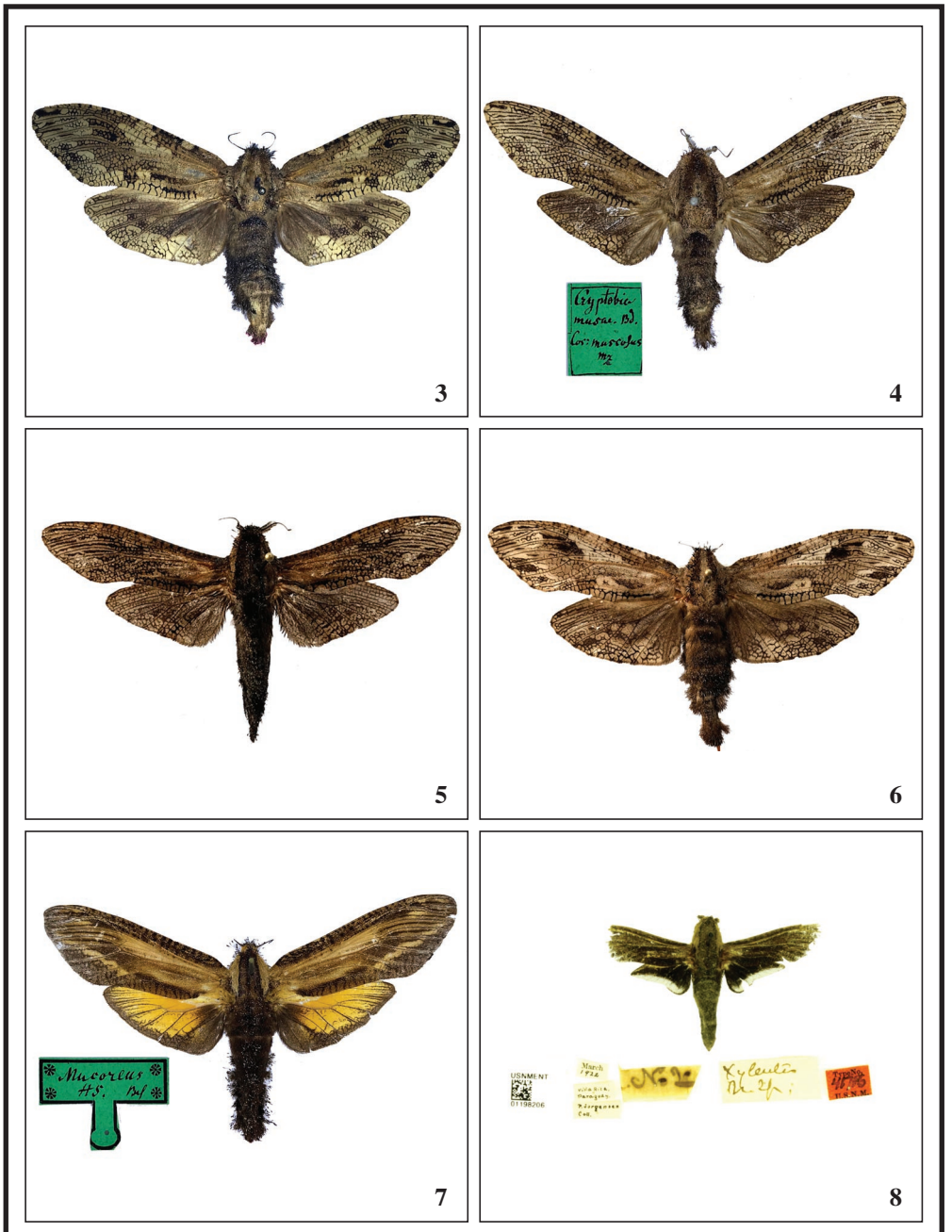
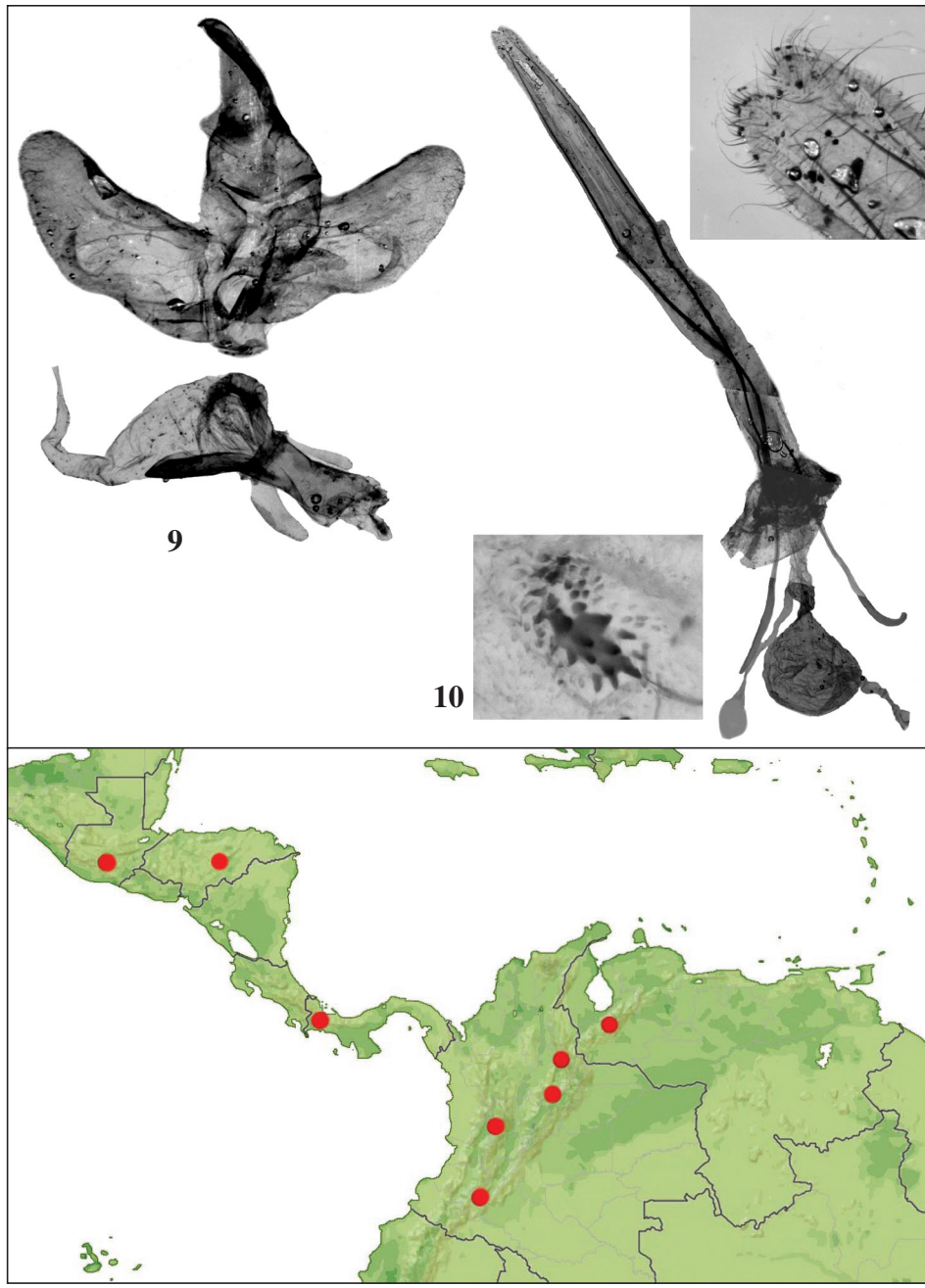


Figs 1-2.– Cossidae (Zeuzerinae), adults. **1.** *Cryptobia musae* (after Herrich-Schäffer, [1854], Fig. 165); **2.** *Cossus mucoreus* (after Herrich-Schäffer, [1853], Fig. 39).



Figs 3-8.– Cossidae (Zeuzerinae), adults. **3.** *Cryptobia musae*, lectotype, ♀ (ZISP); **4.** *Cryptobia musae*, paralectotype, ♂ (ZISP); **5.** *Allocryptobia musae*, ♂, Panama (coll. R. Yakovlev, Barnaul); **6.** *A. musae*, ♀, Colombia (MWM); **7.** *Cossus mucoreus*, lectotype, ♀ (ZISP); **8.** *Cryptobia phobifera*, holotype, ♂ (USNM).



Figs 9-11.– *Allocryptobia musae*, genitalia. **9.** Male (Panama); **10.** Female (Colombia); **11.** Distributional map of *Allocryptobia musae*.