

# The species of the genus *Azamora* Walker, 1858 whose larvae feed on *Passiflora* sp. (Passifloraceae) in Tropical America (Lepidoptera: Pyralidae, Chrysauginae)

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## Abstract

Three species of the genus *Azamora* Walker, 1858: *A. sororia* Druce, 1899, *A. penicillana* (Walker, 1863) and *A. flammeana* (Sepp, [1844]), have been found to feed on *Passiflora* species (Passifloraceae) in Tropical America. Adults and genitalia of the three species are illustrated.

**Keywords:** Lepidoptera, Pyralidae, Chrysauginae, *Azamora*, *Passiflora*, immature stage, Tropical America.

**Las especies del género *Azamora* Walker, 1858 cuyas orugas se alimentan de *Passiflora* sp. (Passifloraceae) en América Tropical (Lepidoptera: Pyralidae, Chrysauginae)**

## Resumen

Tres especies del género *Azamora* Walker, 1858: *A. sororia* Druce, 1899, *A. penicillana* (Walker, 1863) y *A. flammeana* (Sepp, [1844]), fueron encontradas alimentándose en especies de *Passiflora* (Passifloraceae) en América Tropical. Se ilustran los adultos y la genitalia de las tres especies.

**Palabras clave:** Lepidoptera, Pyralidae, Chrysauginae, *Azamora*, *Passiflora*, estados inmaduros, América Tropical.

## Introduction

Larvae of *Azamora* Walker, 1858 species have been found damaging fruits and stems of wild and cultivated *Passiflora* (Passifloraceae) species in tropical America and reared to adult stages by the author. Adults, obtained from larvae damaging the same plants were also sent for identification by agronomists working with *Passiflora* crops in South America. A literature search revealed no report of such damage this century. However, records on these insects feeding on *Passiflora* are not new as reports have been included in early books on South American insects (Merian, 1705; Sepp, [1844]-[1848]).

*Azamora* includes 13 species (Solis et al. 1995), several of them, like the three species treated here, have been described several times. The immatures as well as the adults and feeding damages are described, and illustrations are provided to enable their identification. Distribution records are based on adults found in major collections.

## Material and methods

This review is based on more than 100 specimens (AMC, CNC, INBio, NHMUK, USNM, UFPR,

VOB) and on the pertinent literature. 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  
 CNC = Canadian National Collection, Ottawa, Canada  
 FW = forewing  
 g. s. = genitalia slide  
 HW = hind wing  
 INBio = Instituto Nacional de Biodiversidad, Costa Rica  
 misspl. = misspelling  
 UFPR = Universidade Federal do Paraná, Curitiba  
 USNM = Smithsonian National Museum of Natural History, Washington DC, USA  
 VOB = Vitor O. Becker Collection, Serra Bonita Reserve, Camacan, Bahia, Brazil

## Results

The adults obtained from material bred from larvae feeding on *Passiflora* (Passifloraceae) species belong to three species. Diagnoses, adults, and genitalia of these species are described and illustrated in order to allow their identification.

*Azamora sororia* Druce, 1899 (Figures 1-3, 7-10)

*Azamora sororia* Druce, 1899. *Biol. cent.-amer.*, 2, 545

Holotype (&), MEXICO: [Veracruz], Jalapa (NHMUK) [examined]

= *Catadupa viridiplaga* Schaus, 1904. *Trans. Am. ent. Soc.*, 30, 177

Holotype (&), BRAZIL: Paraná, Castro (USNM) [examined]. Synonymized by Solis et al. (1995).

= *Azamora olivescens* Hampson, 1916. *Ann. Mag. Nat. Hist.*, (8) 18, 158

Holotype (&&), VENEZUELA: [Carabobo], [Sán] Esteban Valley, Las Quiguas (NHMUK) [examined]. Synonymized by Solis et al. (1995).

Diagnosis: Sexually dimorphic. Males (Figures 7, 9), FW 12-14 mm (27-32 mm wingspan), olivaceous. HW with a broad dark fuscous patch covering almost the whole wing. Females (Figures 8, 10), 13-16 mm (30-36 mm wingspan), reddish brown with an olive, curved band near base. Male genitalia (Figures 1, 2): Uncus broad, spatulate, spined dorsally; valva longer than uncus, straight, narrowing gradually distad; juxta a round plate, with pair of digital processes distally; vinculum round; phallus (Figure 2) nearly straight; vesica with no spines. Female genitalia (Figure 3): ostium broad; ductus bursa narrow; corpus bursae and elongate sac, twice as long as ductus bursae.

Distribution: Over 70 specimens, adults, and immature, were examined (AMC, CNC, INBio, USNM, VOB), from Mexico, Guatemala, Costa Rica, Colombia, Venezuela, Peru, Brazil, and Argentina. Collected localities indicates that this species is better adapted to cooler areas. Except for the specimens collected at Lima, Peru all the others came from higher elevations, between 600 m at Turrialba, Costa Rica, and 2000 m at Volcán Turrialba, also in Costa Rica. None has been recorded from the lowlands of the Amazon region or other lowland tropical areas. However, Lima, despite its low elevation is relatively cool, with 18.75° C of annual average temperature.

Host plants and immature behavior: *Passiflora* spp.: *P. quadrangularis* L., *P. edulis* Sims, *P. caerulea* L., *P. violacea* Vell., fruit and stem borer. Mature larvae reach 30 mm long, dark olive dorsally, cream ventrally, slightly compressed dorso-ventrally (larvae fixed with Kahle solution and preserved into 70% alcohol become beige with an orange head). It was illustrated by Munroe & Solis (1999, p. 241), from material provided by the author.

Remarks: Adults are morphological and chromatic dimorphic, with variable pattern; the major

reasons why the species has been described more than one time. Similarly, to other Pyraloidea the adults, when resting, bend the abdomen upwards (Figures 9, 10).

*Azamora penicillana* Walker, 1863 (Figures 4-6, 11-12)

*Torda penicillana* Walker, 1863. *List Specimens lepid. Insects in the Colln Br. Mus.*, 28, 437

Holotype (&&), [BRAZIL: PA, Belém] "Pará" (Bates) (NHMUK) [examined]

= *Thylacophora tortricoidalis* Ragonot, 1891. *Ann. Soc. ent. Fr.*, 1891, 491

Holotype (&&), FRENCH GUIANA: Cayenne [no further data] (MNHN) [not examined].  
Synonymized by Ragonot (1892, p. 225).

= *Idnea felicella* Dyar, 1913. *Insec. Insc. Menstr.*, 1, 99

Cotypes 2 (&) (&), GUYANA: Kitty Plantation, ex *Passiflora* sp. (USNM) (Moore) [examined].  
Synonymized by Solis et al. (1995).

Diagnosis: Sexes similar; reddish brown, basal third and margins dark brown. Male (Figure 11) FW 9-12 mm (21-27 mm wingspan); female (Figure 12) FW 11-14 mm (25-32 mm wingspan). Male genitalia (Figures 4, 5): Uncus very short, reduced to a shallow, concave distal projection; valva shorter than uncus, covered internally with long setae; juxta a broad shield, spined distally; sacculus long, broad, round apically; phallus (Figure 5) long, broad, slightly curved; vesica with a pair of nipple-shaped short spines. Female genitalia (Figure 6): Antrum a sclerotized triangle; ductus bursae very short, narrow; corpus bursae an elongate sac, constricted at middle.

Biology: Adults and larvae specimens, obtained from cultivated *Passiflora* species, were submitted for identification, but no indication of which parts of the plant were infested was given.

Distribution: Twenty-seven specimens were examined (INBio, USNM, VOB), from Costa Rica, Guyana, French Guiana, Peru, and Brazil.

Remarks: According to the collecting localities this species seems to be better adapted to the lower and warmer areas. The highest altitude record is 600 m, at Turrialba, Costa Rica, where it is sympatric with *A. sororia*. All the remaining records, including those of the type-localities, come from the lowland tropics, especially the Amazon region.

*Azamora flammeana* (Sepp) (Figures 13-19)

*Phalaena flammeana* Sepp, [1840]. *Surinaamsche Vlinders*, 2, [179]-180, pl. 78

Type(s), SURINAM: ex "Maracusa", *Citharexylon quadrangulare* (= *P. quadrangulare*) [presumably lost].

= *Idnea ochribasalis* Hampson, 1906. *Ann. Mag. Nat. Hist.*, (7) 17, 192

Holotype (&), FRENCH GUIANA: St. Jean du Maroni (NHMUK) [examined]. Synonymized by Solis et al. (1995).

Diagnosis: Sexes similar; olivaceous, basal third and margins dark reddish olive. Male (Figures 7, 18, 19) FW 10-11 mm (23-25 mm wingspan); female (Figure 14) FW 12-13 mm (27-30 mm wingspan). Male genitalia (Figures 15, 16): Uncus almost absent; tegumen broadly triangular; valva broad, twice as long as broad, covered with long setae internally; juxta a ring around phallus; sacculus long, round apically; phallus (Figure 16) long, slightly curved; tapering gradually distad; vesica with no spines. Female genitalia (Figure 17): Antrum an elongate triangle; ductus bursae narrow; corpus bursae an elongate sac, as long as ductus bursae.

Biology: The few specimens available for study were, apparently, all collected at light. According to SEPP (Figure 18), the larvae feed on the leaves.

Distribution: Twelve specimens were examined (NHMUK, INBio, USNM, VOB). All were collected in the lowlands of the Amazonian-Guyanese region, south to Bahia, Brazil.

Remarks: Although SEPP's type material does not exist anymore, the illustrations, descriptions, and host plant, leave no doubt that *Phalaena Tortrix flammeana* Seep, 1852 belongs to *Azamora*. The ochreous antemedial band on forewings matches that of *A. ochribasalis* (Hampson, 1906), leaving little doubt that both names belong to a single species. Merian (1705), in her marvelous book on the insects of Suriname, was the first author to give an illustration of one *Azamora* species. On Plate XXI (Figure

19) she depicts a branch, showing the leaves, flowers, and fruits of a *Passiflora* species that she identified as the “Maracujá Guaçu” of MARCGRAF (Pisonis, 1648). “Maracujá” is the word used in Brazil even today to designate all the members of the passion-flower family. And “Guaçu”, in Brazil means big, large (both words originated from the Tupy language). Consequently “Maracujá-Guaçu” is nothing else than *P. quadrangulare*. On the same plate Merian (1705) illustrates several insects that she found feeding on the plant, including one adult moth that, with no doubt, is one *Azamora* species. On the lower left she depicted a ripe, open fruit, with a black caterpillar, with red head. These colors are similar to those of the *A. sororia* Druce, 1899, which are dark olive, with brown head. The painting is not accurate enough to establish its identity to species level. However, it is not *A. nobilis* (Druce, 1903), as suggested by Becker & Stearn (1982). *A. nobilis* is dark reddish-brown, not olivaceous as shown in the illustration. Both the colour and the pattern approaches those of *A. sororia* and *A. flammeana*. Also, as Merian (1705) observations were presumably based on specimens from around Paramaribo, near the coast, an altitude not recorded for *A. sororia*, what is confirmed by specimens of *A. sororia* examined, none from Suriname, it is very likely that the illustration represents *A. flammeana* which was also described from Surinam. This species had been overlooked and/or unidentified since its description, at least had not been included in the major works covering Pyraloidea (Lederer, 1863; Hampson, 1897). It was recognized the first time by this author and included in Solis et al. (1995, p. 81).

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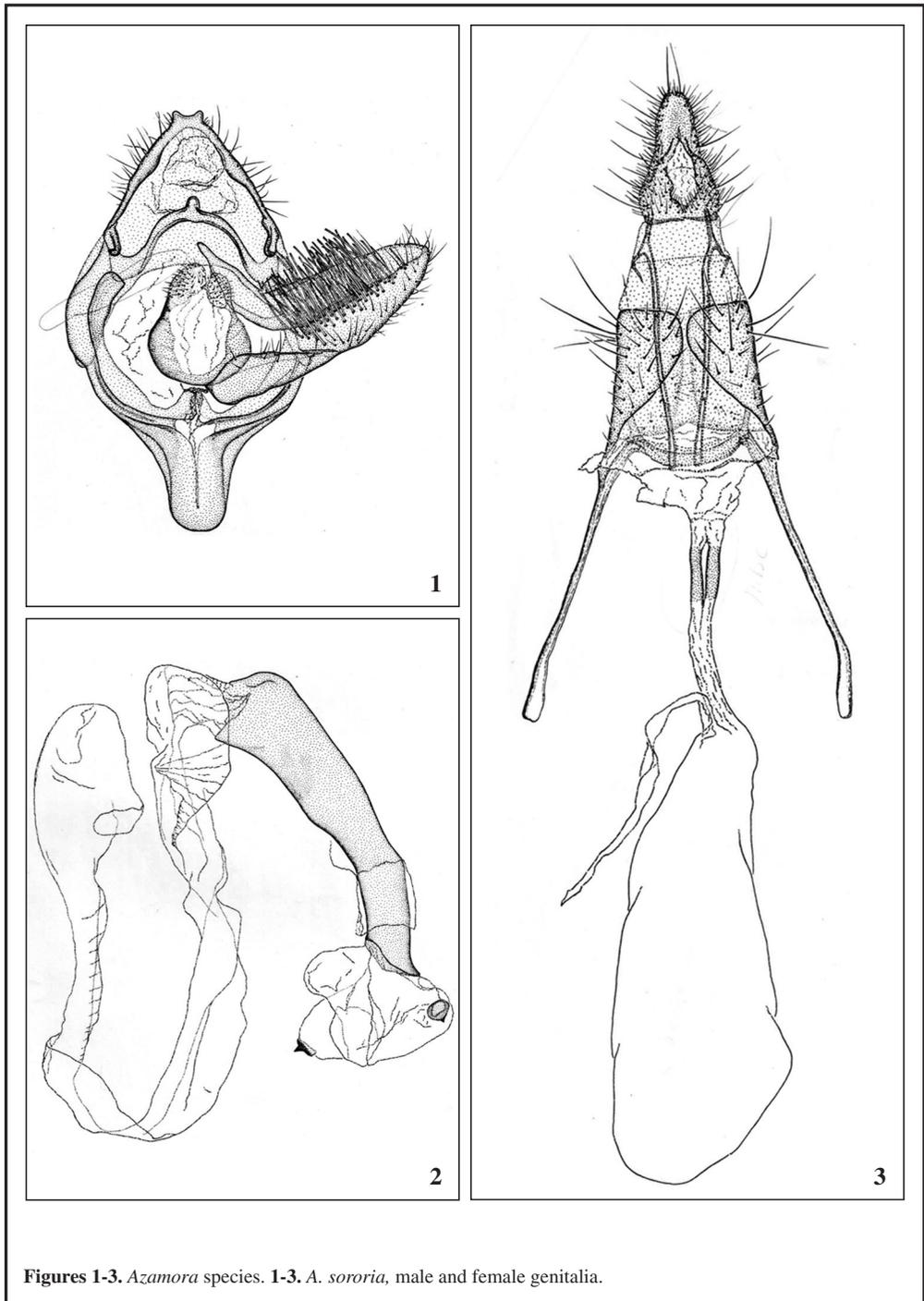
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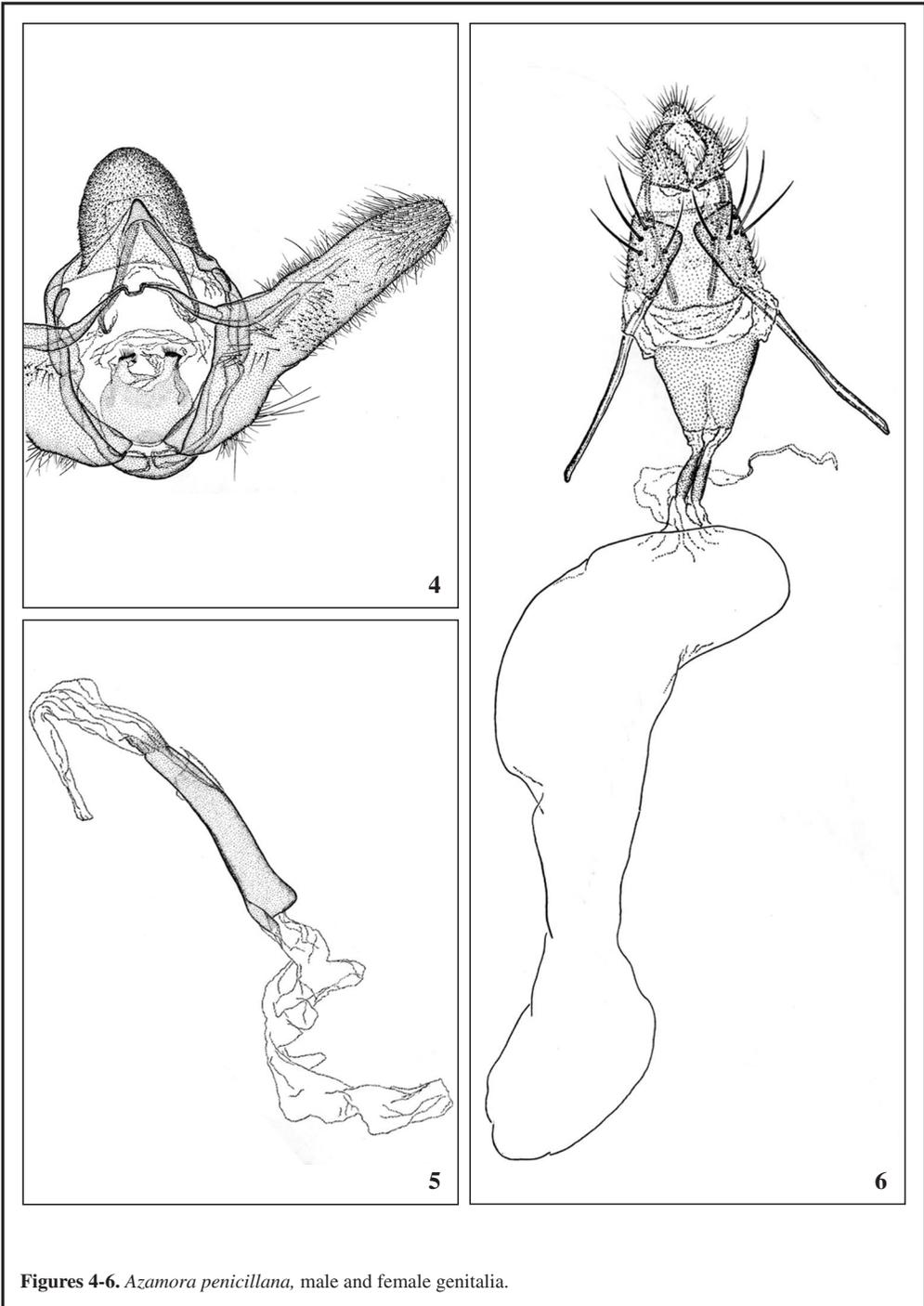
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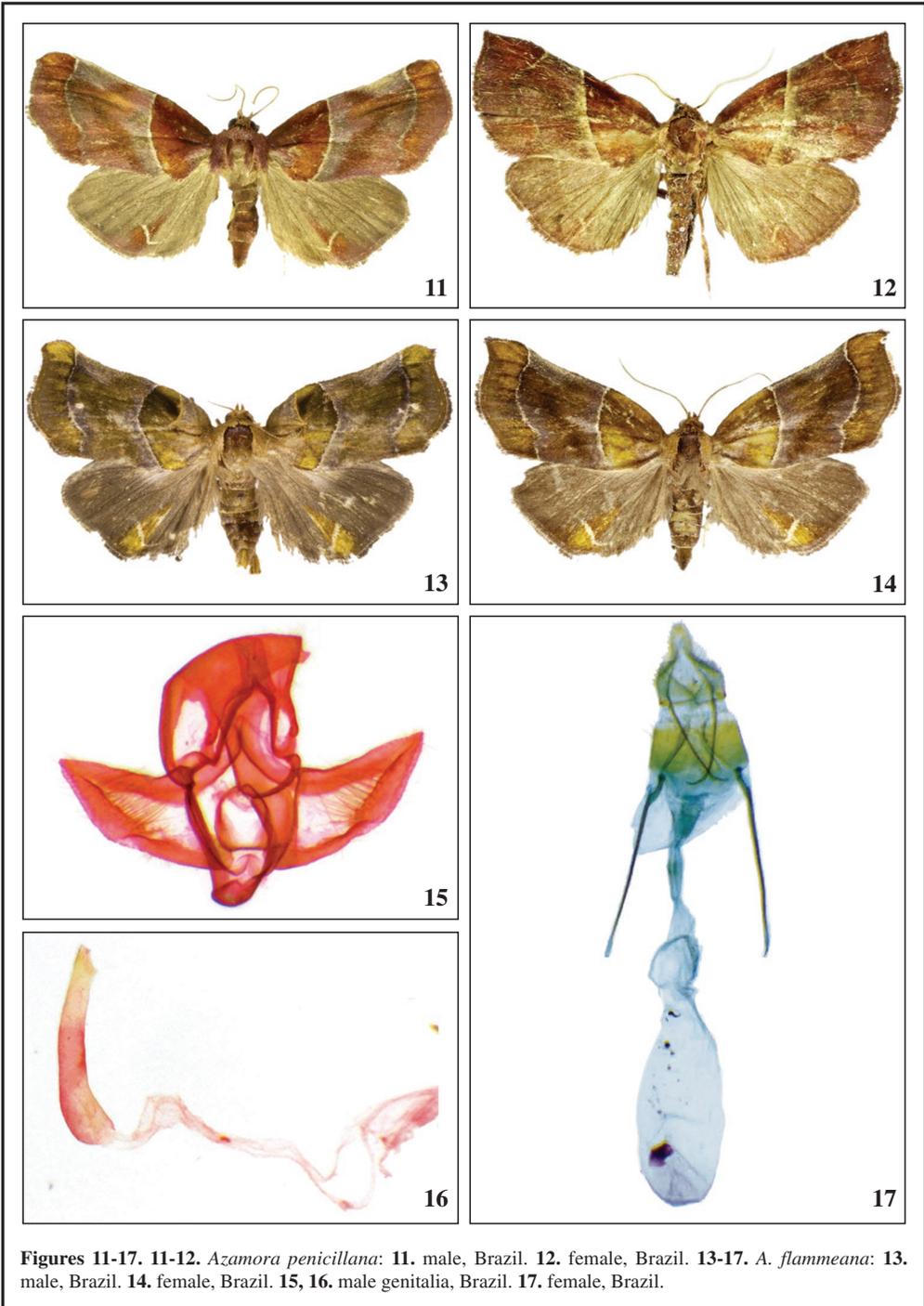
Figures 1-3. *Azamora* species. 1-3. *A. sororia*, male and female genitalia.



Figures 4-6. *Azamora penicillana*, male and female genitalia.



Figures 7-10. *Azamora sororia*, adults: 7, 9, males, Brazil. 8, 10, females, Brazil.



**Figures 11-17.** 11-12. *Azamora penicillana*: 11. male, Brazil. 12. female, Brazil. 13-17. *A. flammeana*: 13. male, Brazil. 14. female, Brazil. 15, 16. male genitalia, Brazil. 17. female, Brazil.



Figure 18. Sepp's, pl. 78.

