Re-evaluation of the identities of *Eucereon punctatum* (Guérin-Méneville, [1844]) and *E. archias* (Stoll, 1790), with a discussion on *E. mitigatum* Walker, 1857, rev. stat. (Lepidoptera, Erebidae, Arctiinae, Arctiini, Ctenuchina)

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ABSTRACT
A preliminary investigation of the genus *Eucereon* Hübner, [1819] has revealed that two of its species have been historically misidentified, one of them being its type species, *E. archias* (Stoll, 1790). The neotype designated by Travassos (1959) for this species is invalidated, and its original concept is reestablished based on the original description and illustrations. The original concept of *Eucereon punctatum* (Guérin-Méneville, [1844]) is also found to be different than that established in the literature. This discovery is based on a type specimen found at the Natural History Museum, London. *Eucereon punctatum* is the valid name of *Theages quadricolor* Walker, 1855, n. syn., *E. quadricolor boreale* Rothschild, 1912 n. syn., and *E. quadricolor meridionale* Rothschild, 1912 n. syn. The authors' concept of *E. punctatum* is henceforth to be referred to by its oldest incorrect synonym, *Eucereon mitigatum* Walker rev. stat. Following the synonymic history for this species, this name here is considered to be the valid name for *E. reticulatum* Butler, 1877 n. syn., *E. cribrum* Möschler, 1877 n. syn., and *E. ruficollis* Lathy, 1899 n. syn. The true concepts of *E. archias, E. punctatum*, and *E. mitigatum* are redescribed, discussed and illustrated.

KEY WORDS
Ctenuchine moths,
lectotypification,
neotropical,
new synonyms,
revised status.

RÉSUMÉ
Re-évaluation de l'identité de Eucereon punctatum *(Guérin-Méneville, [1844]) et* E. archias *(Stoll, 1790), avec une discussion sur* E. mitigatum *Walker, 1855, rev. stat. (Lepidoptera, Erebidae, Arctiinae, Arctiini, Ctenuchina).*
Une recherche préliminaire sur le genre *Eucereon* Hübner, [1819] a révélé que deux de ses espèces ont été de longue date mal identifiées, l'une d'entre-elles étant l'espèce type *E. archias* (Stoll, 1790). Le néotype désigné par Travassos (1959) pour cette espèce est invalidé, et son concept original est rétabli sur la base de la description et des illustrations originales. Le concept original d'*Eucereon punctatum* (Guérin-Méneville, [1844]) est également différent de celui établi dans la littérature. Cette découverte s'appuie sur un spécimen type trouvé au Natural History Museum, Londres. *Eucereon punctatum* est le nom valide de *Theages quadricolor* Walker, 1855 n. syn., *E. quadricolor boreale* Rothschild, 1912 n. syn., et *E. quadricolor meridionale* Rothschild, 1912 n. syn. Il convient donc de désigner l'*E. punctatum* des auteurs par son synonyme invalide le plus ancien *Eucereon mitigatum* Walker rev. stat.. D'après l'histoire synonymique de cette espèce, ce nom est considéré comme le nom valide d'*E. reticulatum* Butler, 1877 n. syn., *E. cribrum* Möschler, 1877 n. syn., et *E. ruficollis* Lathy, 1899 n. syn. *E. archias, E. punctatum*, et *E. mitigatum* sont redécrites, discutées et illustrées.

MOTS CLÉS
Papillons de nuit Ctenuchina,
lectotypification,
néotropical,
synonymes nouveaux,
statut révisé.

INTRODUCTION

Eucereon Hübner, [1819] is one of the most intractable genera within *Ctenuchina*, both because of its size – it currently comprises almost two hundred valid specific and subspecific names, with more than one hundred valid species and subspecies – and because of its polyphyly (Donahue 1993). In fact, it is likely that not even its subtribal assigment is correct, as it has been previously pointed out (Travassos 1959).

During a preliminary investigation of the genus, it was discovered that one of its species, *E. punctatum* (Guérin-Méneville, [1844]), has been misidentified since its description, and also that the type species of *Eucereon*, *E. archias* (Stoll, 1790), was incorrectly identified by Travassos (1959), who proposed a neotype based on his erroneous identification.

This paper discusses this history of misidentifications for these two species and elucidates their identities based on careful reevaluation of the available evidence. The true concepts of these two species are redescribed and illustrated to ensure their correct identification. *Eucereon mitigatum* Walker, 1857 rev. stat., *mitigatum* previously considered a synonym of *E. punctatum,* is revalidated and illustrated to emphasize its differences to the true identity of the latter.

MATERIAL AND METHODS

Abbreviations

Institutions

AMNH	American Museum of Natural History, New York;
BMNH	Natural History Museum, London (currently NHM);
LACM	Los Angeles County Museum of Natural History;
MNHN	Muséum national d'Histoire naturelle, Paris;
MZSP	Museu de Zoologia da Universidade de São Paulo, São Paulo;
OUMNH	Oxford University Museu of Natural History, Oxford;
RMNH	Naturalis Biodiversity Center, Leiden;
USNM	National Museum of Natural History, Washington DC;
ZMHB	Museum für Naturkunde an der Humboldt-Universität, Berlin;
ZSM	Zoologische Staatsammlung München.

The dates of old literature follow Heppner (1982).

Teminology

Terminology follows Klots (1970), except for the the following terms, denoted by the abbreviations in parentheses:

L	lectotype;
FW	forewing;
HW	hindwing;
T	abdominal tergite;
S	abdominal sternite.

The lectotype designations here made are intended to aid in stability of nomenclature, and are in accordance with recommendation 73F of the International Code of Zoological Nomenclature (ICZN 1999).

RESULTS AND DISCUSSION

Eucereon punctatum (Guérin-Méneville, [1844])

Félix Édouard Guérin-Méneville (1799-1874) was a French naturalist who worked mainly on descriptive taxonomy of many zoological groups, especially beetles (Anonymous 1874a, b). His collection was spread after his death (Horn & Kahle 1935-1937), and although most of it is known to be currently held by a few European collections (e.g., BMNH, MNHN, ZSM), the fate of his lepidopteran specimens apparently went undocumented in the literature. Horn & Kahle (1935-1937) did not mention the fate of his butterflies and moths. However, it is known that some of his types are housed at the BMNH and at the MNHN (Gerardo Lamas pers. comm.).

Eucereon punctatum was described from an unspecified number of specimens from Campeche bay, Mexico. The author mentioned among the diagnostic characters: antennae brown with white tips, specially ventrally; wings with a large number of brown spots of various sizes in a more pale background; forecoxae reddish with a brown spot near the base; tarsi annelated with brown and whitish scales; abdomen reddish, with last tergite brown with white posterior margin, and a series of brown spots laterally.

All characters given in the original description but the one about the antennae correspond very well both to the recently found type, and to the concept of this name that has been used since the 19th century, even though they are quite distinct species (Fig. 1A, F). Combined, they also apply to several other species placed in *Eucereon,* such as *E. capsicum* (Schaus, 1896) and *E. atriguttum* Druce, 1905. Interestingly, the antennae character is problematic to all of them, because in none of these species the white scales on the antennae are on the tip, but on the proximal end. Moreover, they are always located mainly dorsally, and not ventrally.

The history of the misidentification of *Eucereon punctatum* may have started with Kirby (1892: 200), who was the first subsequent author to mention this name, transferring it to *Eucereon*. However, because of the nature of Kirby's work, a non-illustrated synonymic catalogue, it is not possible to know whether he was the responsible for the first misidentification.

The other possibility is that the mistake began with Hampson (1898). In this work the author provided a redescription of *Eucereon punctatum,* and synonymized four names and one misidentification under it: *Eucereon mitigatum* rev. stat.; *E. cribrum* Möschler, 1877; *E. zamorae* Dognin, 1894; *E. reticulatum* Butler, 1877; and *E. arenosum* Druce, 1884, *nec* Butler, 1877 (misidentification). No figure is provided for the species, likely because *E. reticulatum* had already been illustrated by Butler (1877). As additional diagnostic characters, Hampson (1898) mentioned the coloration of head, palpi, patagia and tegulae, and details on the forewing pattern and venation (he also provided an illustration of wing venation). He omitted the antennae in his redescription of this species. The combination of the characters listed by Hampson only occurs in the widespread concept of *E. punctatum;* they are not consistent with the recently discovered original concept of this name.

The last updates in the taxonomic history of *Chelonia punctata* (Guérin-Méneville, [1844]) were the addition of *Eucereon ruficollis* Lathy, 1899 to its synonymic list, by Hampson (1914), and the treatment, by this same author, of *E. zamorae* as a valid species. Later, Draudt (1915) provided a redescription based on Hampson's (1898), and illustrated a specimen that corresponds to Hampson's concept of *E. punctatum.*

The true identity of *Eucereon punctatum*

The discovery of a type specimen of *Eucereon punctatum* challenges the current concept of this species and, by consequence, of all of its synonyms. The determination of the specimen at the BMNH as a type was made according to the usual methods of determining the type status of an old specimen: checking if data from the original description with the specimen match (locality, collector, peculiar characters exhibited by the specimen); analysis of the handwriting on the labels to compare with the known handwriting of Guérin-Méneville (Horn & Kahle 1935-1937: pl. 27); verification of the type of paper used on the labels and if the type of pin conforms to what is expected from material of the given age of the name. All of these characteristics proved to be consistent to its status as a type specimen of *E. punctatum*.

The original concept of *E. punctatum* does not correspond to its synonyms. Therefore, the widespread usage of this name should be referred to by the oldest name previously synonymized under *E. punctatum*, which is *E. mitigatum*. This had already been suggested by Zerny (1931), but based on different grounds: he assumed that *E. punctatum* was a synonym of *E. zamorae* Dognin, and that *E. mitigatum* was a different species. However, he did not justify this claim, or made it formally. Zerny's comments on these species went unnoticed in the literature.

Another problem concerning *E. punctatum* is its type locality. The lectotype's label mentions "Campeche", a locality in Mexico. However, I have not seen a single specimen from Central or North America in any of the collections that I have visited – including Instituto Nacional de Biodiversidad, INBio, which is quite representative of the Costa Rican fauna. Furthermore, this species is unknown to occur outside of South America (Fernando Hernández-Baz, personal communication). The lectotype of *E. punctatum* came to Guérin-Méneville from a Mr. M. Perbosc, who was a medical doctor working for the Royal French Navy. He was an amateur zoologist who described a few species of arthropods (Heteroptera, Coleoptera and Myriapoda) from Campeche Bay (Perbosc 1839), apparently collected by himself while the ship in which he was on duty was moored in the area. However, being a doctor in the service of the Navy, he probably traveled to many other places as well. In fact, he died of yellow fever in French Guiana in 1851 (Ginouvés *et al.* 1851). Given all this, it seems quite reasonable to assume that the lectotype was incorrectly labeled.

Still, this species has a considerably wide distribution, from Venezuela to Paraguay, what raises doubt about the correctness of it being considered a single species. However, only very subtle morphological differences were observed between specimens from the Amazonian and Atlantic forests. These are restricted to male genitalia: the saccus is slightly more pointed in southeast Brazil specimens, and the tegumen in lateral view is somewhat longer in Amazonian specimens. Also, the ventral margin of the juxta is straight in Atlantic forest specimens, and curved in Amazonian specimens (see Fig. 3A-J). It is not clear whether these small differences correspond to intraspecific variation, differences between populations, or incipient distinct morphologies of two cryptic taxa. Until further evidence appears, it seems more reasonable to regard *E. punctatum* a single species.

At last, it was found out that *E. punctatum* is the senior synonym of *Theages quadricolor* Walker, 1855. The new classification for the names involved in the problem created by this misidentification is as follows.

Eucereon punctatum (Guérin-Méneville, [1844]) (Figs 1A-E; 2A; 3A-J)

Chelonia punctata Guérin-Méneville, [1844]: 515. Lectotype hereby designated ♀: [Mexico], Campeche bay [error] (M. Perbosc), with six labels: "Syntype"; "punctata Guer. c.R.a. (type) Campeche"; "Felder colln."; "Rothschild bequest B.M. 1939-1"; "Kb-Dia-Nr. 1213 B. Kreusel dok."; and "BMNH(E) 1475589" (BMNH) [examined].

Theages quadricolor Walker, 1855: 722. Lectotype hereby designated ♀: Brazil, presented by H. H. Low, jun., with four labels: "Syntype"; "Brazil 44-45"; "2. Theages quadricolor"; and "BMNH(E) 1475564". Two ♀ paralectotypes, ♀, each with a single label, respectively: "Brazil 44-45", and "Rio 50-5" (BMNH) [examined]. — Kirby 1892: 202, n. syn.

Eucereon punctatum – Kirby 1892: 200. — Hampson 1898: 494; 1914: 319. — Zerny 1912: 142; 1931: 259 (misidentifications). — Draudt 1915: 173; pl. 24 row k; 1917: 213.

Eucereon quadricolor – Hampson 1898: 495, pl. 16, fig. 10; 1914: 322. — Draudt 1915: 174, pl. 20 row k.

Eucereon quadricolor boreale Rothschild, 1912: 173. Lectotype ♀, by subsequent designation (Hampson 1898): Venezuela, San Esteban, June 1909 (S. M. Klages), with five labels: "Lectotype"; "Eucereon quadricolor boreale Type Rothsch"; "San Esteban, Venezuela, June 1909, (S. M. Klages)."; "Rothschild bequest B.M. 1939-1"; and "BMNH(E) 1475563". Two paralectotypes, one ♀ and one ♂ with the exact same locality and collection labels (BMNH) [examined], n. syn.

Eucereon quadricolor meridionale Rothschild, 1912: 173. Lectotype ♀, by subsequent designation (Hampson, 1898): Paraguay, Sapucay, 7.I.1905 (W. Foster), with five labels: "Lectotype"; "Eucereon quadricolor meridionalis Type Rothsch."; "Sapucay, Paraguay, 7.I.05 (W. Foster"; "Rothschild bequest B.M. 1939-1"; and "BMNH(E) 1475565". One ♂ paralectotype, Paraguay, Dr Bohls, with two labels: "Paraguay, Dr Bohls", and "Rothschild Bequest B. M. 1939-1." (BMNH) [examined], n. syn.

Additional material examined (64 ♂ and 6 ♀). — **Brazil**. *Espírito Santo*, Parque Sooretama (Cupido), L. Travassos, Freitas & H. Travassos, II-III.1948, 1 ♀ (MZSP); Santa Teresa, Rebio Augusto Ruschi, Alojamento, 19°54'19.22"S, 40°34'07.5"W, 13.XI.2012, 840 m, Expedição Laboratório de Lepidoptera, 1 ♀ (MZSP); *idem*, Estrada/Fundão, 15.XI.2012, 1 ♀ (MZSP); *Minas Gerais,* Uberaba, V-VI.1924, bought from Le Moult, Rothschild bequest B. M.

1939-1, 7 ♀ and 3 ♂ (BMNH); *Paraná*, Ponta Grossa, 1.I.[19]39, Camargo col., 1 ♀ (MZSP); Castro, Dukinfield Jones, 3 ♀ (BMNH); *Rio de Janeiro,* no specific locality, 1 ♀ (BMNH); Angra dos Reis, Fazenda Japuíba, Travassos Filho, 6.VII.1945, 1 ♀ (MZSP); *idem*, 29.VIII.1945, 1 ♀ (MZSP); *idem*, 2.IX.1945, 1 ♀ (MZSP); *idem*, 8.XI.1945, 1 ♀ (MZSP); *idem*, 6.X.1945, 1 ♀ (MZSP); Teresópolis, Soberbo, 1000 m, Travassos, Oiticica & Costa, 16.IX.1939, 1 ♀ (MZSP); Petrópolis, II.1917, coll. A. R. Miranda, 1 ♀ (MZSP); Laguna de Saquerema, P. Germain, VIII-IX.1884, 1 ♀ (BMNH); Guapi-mirim, Caneca Fina, Rio Sucavão, Magé, 160 m, 22-23. VIII.1960, Pearson, 1 ♀ (BMNH); Parque Nacional do Itatiaia, 2410 m, 22°22'46"S, 44°41'25"W, 16-17.III.2013, R. O. Silva, L. R. Pinheiro & A. Muñoz leg., 1 ♀ (MZSP); *Rondônia*, 62 km S Ariquemes, 300 m, Fazenda Rancho Grande, 10°18.109'S, 62°52.703'W, April 9-18. 1997, UV/MV, Eric L. Quinter, 1 ♀ (AMNH); *Santa Catarina*, Nova Teutônia, June 26-29, 1951, Plauman, 1 ♀ (AMNH); *idem*, 27°11'S, 52°23'W, 300-500 m, V.1953, Fritz Plaumann, 1 ♀ (MZSP); *idem*, IX.1954, 1 ♀ (MZSP); *idem*, 4.VII.1937, 1 ♀ (MZSP); Timbó, V.1957, Dirings, 1 ♀ (MZSP); *idem*, IX.1957, 1 ♀ (MZSP); Caviuna, XI.1920, Dirings, 1 ♂ (MZSP); Rio Vermelho, XII.1961, Dirings, 1 ♂ (MZSP); Hansa Humboldt, 60 m, VI.1985, A. Maller, 4 ♀ and 2 ♂ (BMNH); Jaraguá, VIII.1935, A. Maller, 1 ♀ (BMNH); same, VI.1935, A. Maller, 1 ♀ (BMNH); Jaraguá do Sul, X.1932, F. Hoffmann, Rothschild bequest B. M. 1939-1, 1 ♀ (BMNH); *São Paulo*, Alto da Serra, VII.[19]26, R. Spitz, 1 ♀ (MZP); *idem*, 6.IX.1929, R. Spitz, 1 ♀ (MZSP); *idem*, VI.1926, R. Spitz, Rothschild bequest B. M. 1939-1, 1 ♀ (BMNH); Juquiá, Fazenda Poço Grande, 1-5.X.1940, C.D.Z., 9 ♀ (MZSP); Juquiá, Fonte Tapir, 400 m, 3.XI.1940, Travassos & Travassos Filho, 1 ♀ (MZSP); São Paulo, Santo Amaro, Cocaia, H. Urban, 5 ♀ with their respective pupal cases (MZSP); Porto Cabral, Rio Paraná, 15-30.X.1941, Travassos Filho, 1 ♀ (MZSP); Ipiranga, XI.[19]23, R. Spitz, 2 ♀ (MZSP); *idem*, Dirings, 1 ♀ (MZSP); Salesópolis, Boracéia, 850 m, 6-9.IX.1950, Peña *et al.* leg., 1 ♀ (MZSP).
Venezuela. Caracas, Rothschild bequest B. M. 1939-1, 1 ♀ (BMNH).

Diagnosis ♂ and ♀. — Labial palpi brown and whitish-grey. Subproximal flagellomeres white dorsally, the medial and subterminal flagellomeres brown dorsally. Frontoclypeous brown dorsally and whitish-grey ventrally. Vertex and post-occiput whitish-grey. Dorsal surface of thorax, patagia and tegulae whitish-grey with dark brown spots. Anterior surface of forecoxae predominantly light red, the proximal margin brown. Forewings whitish-grey with various dark brown spots. Hindwings uniformly dark brown. T1-6 almost entirely light red, T8 brown. S2-7 light red, almost whitish. S8 brown.

Distribution. — This species is known from humid semidecidual forests of South America, from Venezuela to Argentina. The locality data of the lectotype (Mexico) is wrong (see discussion above). However, the wide distribution of *E. punctatum* in the concept here advocated suggests the possibility that there may be two cryptical species, instead of one – an Amazonian species, and another species from the Cerrado and Atlantic Forest. This hypothesis requires further investigation.

Redescription ♂ and ♀

Head

Proboscis light brown. Labial palpi three-segmented, exceeding vertex in length. First palpi segment brown with whitish-grey ventral surface. Second palpi segment brown, distal margin whitish-grey. Third palpi segment approximately three times longer than wide, whitish-grey dorsally and brown ventrally. Scape and pedicel predominantly whitish-grey, dark brown posteriorly. Flagellomeres with dark brown dorsal surface, except for the subproximal flagellomeres, whitish-grey. Rami on the medial portion of the antennae in males with approximately four times the length of the flagellomere's shaft. Frontoclypeous longer than wide, covered by smooth dark brown scales ventrally, and rough whitish-grey scales dorsally, the latter occupying two thirds of the length of the frontoclypeous. Vertex and post-occiput whitish-grey. Ocular ring dark brown. Cervical scales light-red.

Thorax

In dorsal view, thorax whitish-grey, metascutum light red dorso-laterally. Patagia whitish-grey with two dark brown markings, one external, on the anterior margin, and the other near the center of the posterior margin. Tegulae whitish-grey, also with two dark brown spots, one next to the beginning of the stalk of the vein R of the forewing, the other near the center of the inner margin. Forecoxae dark brown laterally, anterior surface light red with brown proximal margin. Forefemora brown dorsally and whitish ventrally. Foretibiae brown. Foretarsi predominantly brown, second segment, and proximal and distal margins of first segment white. Midcoxae brown laterally and light red anteriorly. Midfemora predominantly white, distal margin brown. Midtibiae predominantly white, with two brown areas, one proximal, and another medial; spurs white. Midtarsi as foretarsi. Hindcoxae as midcoxae. Hindfemora brown on the outer surface, and white on the inner surface. Hindtibiae predominantly brown, distal margin and a small stripe near the proximal margin white; spurs also white. Hindtarsi as the others.

FW

Entirely scaled. Dorsal surface with a complex pattern consisting of a whitish-grey background with various dark brown spots. Ventral surface with various hues of brown scales, with two areas with whitish scales: inside discal cell, and proximally between veins R_5-M_1. Venation as in figure 2A: R_1 arising near the transversal vein, inside the discal cell. R_2 arising much closer to R_3 than to R_1. M_2 and M_3 lacking a common stalk.

HW

Entirely scaled. Dorsal surface dark brown, with the proximal portion of the costal margin grey. Ventral surface predominantly dark brown, the proximal portion of the posterior half with light brown scales. Females with two frenular bristles. Venation as in Figure 2A: Sc absent. M_3 and CuA_1 lacking a common stalk.

Abdomen

T1 and T4-7 light red with a small dark brown dorsal spot. T2-3 light red. T8 brown. S2-7 light red, almost whitish. S8 brown.

Male genitalia

Coecun rounded. Aedeagus approximately straight, smooth. Vesica short, membranous, with a group of very small cornuti. Saccus developed, symmetrical, anterior end pointed. Tegumen fully covered by thick, short and deciduous scales, except for the dorsal portion of the posterior margin, with long and thin non-deciduous setae. Tegumen considerably wider than

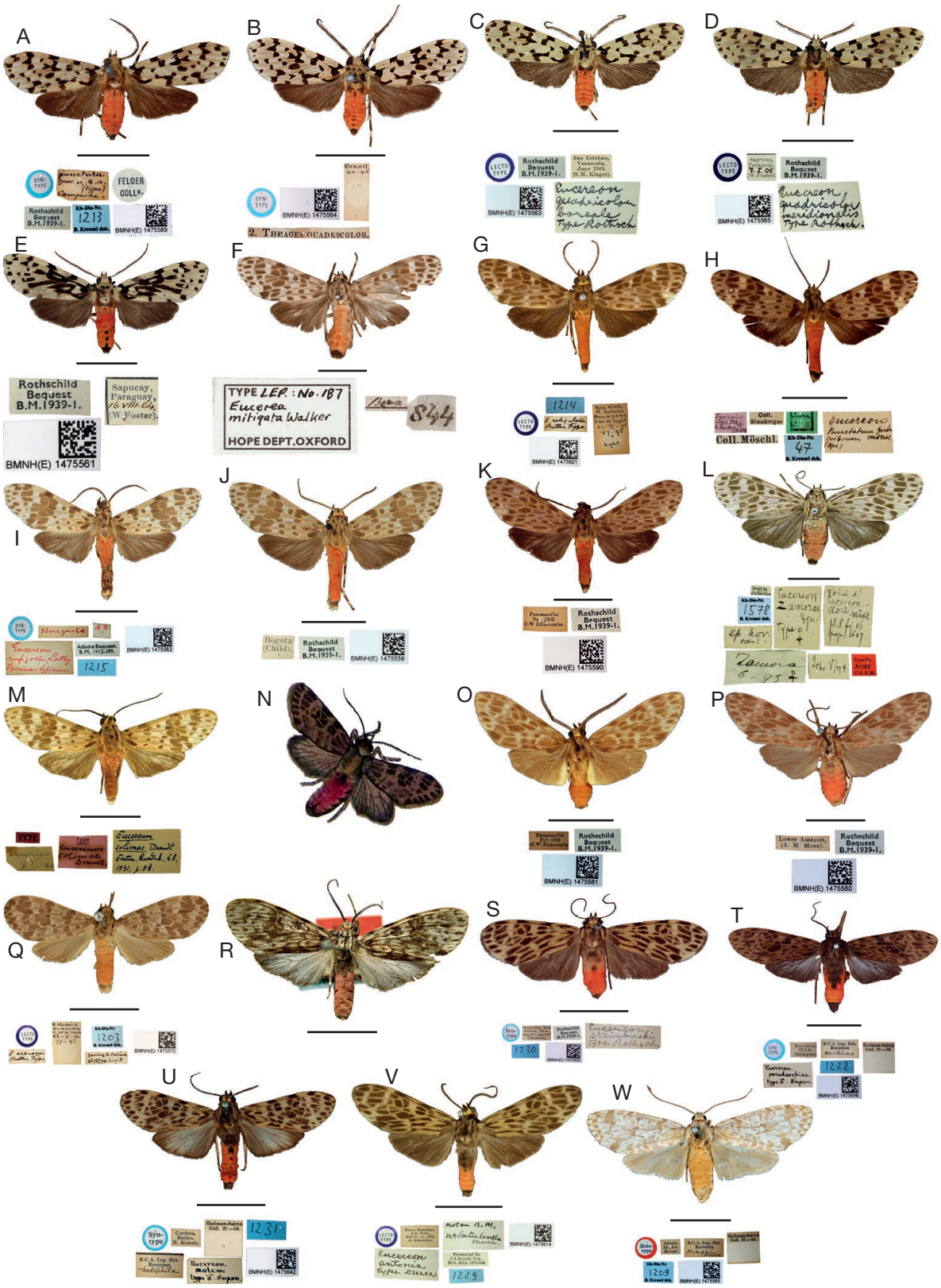

FIG. 1. — Habitus of the species: **A**, *Chelonia punctata* (Guérin-Méneville, [1844]) (L); **B**, *Theages quadricolor* Walker, 1855 (L); **C**, *Eucereon quadricolor boreale* Rothschild, 1912 (L); **D**, *Eucereon quadricolor meridionalis* Rothschild, 1912 (L); **E**, Aberrant female specimen of *E. punctatum* (Guérin-Méneville, [1844]) from Paraguay; **F**, *Eucerea mitigata* Walker, 1857 (L); **G**, *E. reticulatum* Butler, 1877 (L); **H**, *E. cribrum* Möschler, 1877 (L); **I**, *E. ruficollis* Lathy, 1899 (L); **J**, *E. mitigatum* from Colombia; **K**, *E. mitigatum* from Suriname; **L**, *E. zamorae* Dognin, 1894 (L); **M**, *E. colimae* Draudt, 1931 (L); **N**, Original illustration of *Sphinx archias* Stoll, 1790; **O**, Male specimen of *E. archias* (Stoll, 1790) from Suriname; **P**, Female specimen of *E. archias* from Suriname; **Q**, *E. arenosum* Druce, 1884 (L); **R**, *E. dentatum* Schaus, 1894 (L); **S**, *E. steinbachi* Rothschild, 1912 (L); **T**, *E. pseudarchias* Hampson, 1898 (L); **U**, *E. aeolum* Hampson, 1898 (L); **V**, *E. antonia* Druce, 1906 (L); **W**, *E. hoegei* Druce, 1884 (L). Scale bars: 1 cm.

the vinculum, ventral margin covering the proximal portion of the valvae. In dorsal view, anterior margin of the tegumen with a "V"-shaped indentation. Uncus unilobed, symmetrical, uncompressed, predominantly covered by small setae. Apex sharp. Base of uncus with approximately the same width of its lobe. Transtilla membranous. Juxta sclerotized, glabrous, with a shape similar to S2. Valvae symmetrical, uniformly sclerotized, turned posteriorly, almost reaching the apex of uncus. Medial portion of valvae with a small medial projection.

Female genitalia
Pheromone glands undeveloped. Ostium centralized. Antevaginal lamella sclerotized, posterior margin straight. Ductus bursae sclerotized with a membranous area. Two bursae, one round and full of signa; the other completely membranous, from which the ductus seminalis arises.

Remarks
Eucereon punctatum was described from an unspecified number of specimens, and only one specimen with labels matching the original description was found. It has the left antenna, and the right mid and both hindlegs missing. Hindwings and right forewing slightly damaged.

Theages quadricolor was described from three males, two from "Brazil" collected by Low (discriminated as specimens "a" and "b") and another one from Rio de Janeiro, collected by Steven (discriminated as specimen "c"). The lectotype here designated has the left midleg and hindleg missing, and the right foreleg broken, with the tarsus missing. The paralectotype from "Brazil" has the forewings worn, and the left mid and hindlegs missing. The remaining paralectotype, from Rio, has the left forewing missing, both antennae broken, the left midleg missing, and both hindlegs partially broken. During the investigation conducted to search the type series of this name, it was found out that the OUMNH holds a specimen which has been mistakenly considered a type. Given that the three specimens in the BMNH have accession numbers and labels compatible with those of the original description, and in the absence of evidence that the OUMNH specimen came from either Low or Stevens, the latter should not be considered part of the type series.

Both *E. quadricolor boreale* and *E. quadricolor meridionale* were described from an unspecified number of males and females. Only those mentioned above have labels matching the original description.

Rothschild (1912) mentioned that *E. quadricolor boreale* is "smaller and brighter than *E. quadricolor* [which is now known to correspond to *E. punctatum*], black spots larger; forewing ground greyer, hindwing darker blackish grey". The specimens of *E. quadricolor boreale* were relatively new at the time of their description (they had been collected three years before), and it is likely that their coloration looked brighter because of this factor. However, the statement about the black spots is incorrect: they have the same size, the only difference being the spot at the proximal portion of cell CuA1-CuA2, which is actually smaller in two of the three type specimens *E. quadricolor boreale*. No other external differences were found between the type series of *E. quadricolor boreale* and *E. punctatum*, hence the subspecific status of *E. quadricolor boreale* is here revoked.

The small paragraph in the description of *E. quadricolor meridionale* is even less informative: "still smaller, male almost uniform grey on fore and hindwing; female has forewing very white, hindwing yellowish brown-grey." The forewings are definitely not almost uniform grey, and although the forewings of the female are indeed whiter than on the other specimens Rothschild had examined, there are no yellowish brown-grey scales on the hindwing, just the regular grey found on the other specimens. The subspecific status of *E. quadricolor meridionale* is also not supported by morphological evidence.

Eucereon punctatum is very similar in habitus and genitalia to others currently placed in *Eucereon*: *E. formosum* Dognin, 1905, *E. atriguttum* Druce, 1905, *E. capsicum* Schaus, 1906, *E. ochrotum* Hampson, 1905, and *E. guacolda* (Poey, 1832). The latter is the type species of *Erithales* Poey, 1832, currently a junior synonym of *Eucereon.* The considerably distinct morphologies of *E. guacolda* and *E. archias* (see above) should be further investigated to determine whether *Erithales* is correctly synonymized under *Eucereon.*

Eucereon mitigatum Walker, 1857 rev. stat.
The discovery of the true identity of *Eucereon punctatum* demands that the oldest of its former synonyms become the valid name for this taxon. This is *E. mitigatum* Walker, 1857 treated in detail below.

Eucereon mitigatum Walker, 1857, rev. stat.
(Figs 1F-K; 2B; 4A-F)

Eucerea mitigata Walker, 1857: 1639. Brazil (Saunders) Lectotype ♂, by subsequent designation (Hampson 1898), Brazil, Mr. Saunders' collection, with three labels: "Braz."; "844"; and "Type Lep.: No. 187 Eucerea mitigata Walker Hope Dept. Oxford" (OUMNH) [photograph examined].

Eucereon reticulatum Butler, 1877: 50, pl. 17, fig. 9. Lectotype ♀, by subsequent designation (Hampson 1898), [Brazil], Boa Vista, Rio Jutahy, February 1, 1875 (Trail), with five labels: "Lectotype"; "Boa Vista, R. Jutahi, Amazons, J.W.H. Trail, 1-II-75, 77-93, light"; "E. reticulata Butler Type"; "1214"; and "BMNH(E) 1475621" (BMNH) [examined]. — Kirby 1892: 200, **n. syn**.

Eucereon cribrum Möschler, 1877: 648. Syntype ♀. Suriname, with six labels: "Type [incomprehensible handwriting] Vhz. Z. b. Ges. 1877 p. 698"; "Suriname L. 76"; "Coll. Möschl."; "coll. Staudinger"; "Eucereon punctatum Guér cribrum Möschl. (Hps.)"; and "Kb-Dia-Nr. 47 B. Kreusel dok." (ZMHB) [examined]. — Kirby 1892: 200, **n. syn**.

Eucereon mitigatum – Kirby 1892: 200.

Eucereon ruficollis Lathy, 1899: 120, n. syn. Lectotype hereby designated ♀: Venezuela, with seven labels: "Syntype"; "Eucereon ruficollis Lathy specimen typicum"; "Venezuela"; "42"; "Adams bequest"; "1215"; and "BMNH(E) 1475562" (BMNH) [examined]. — Draudt 1915: 173, **n. syn**.

Eucereon ruficolle – Zerny 1912: 143.

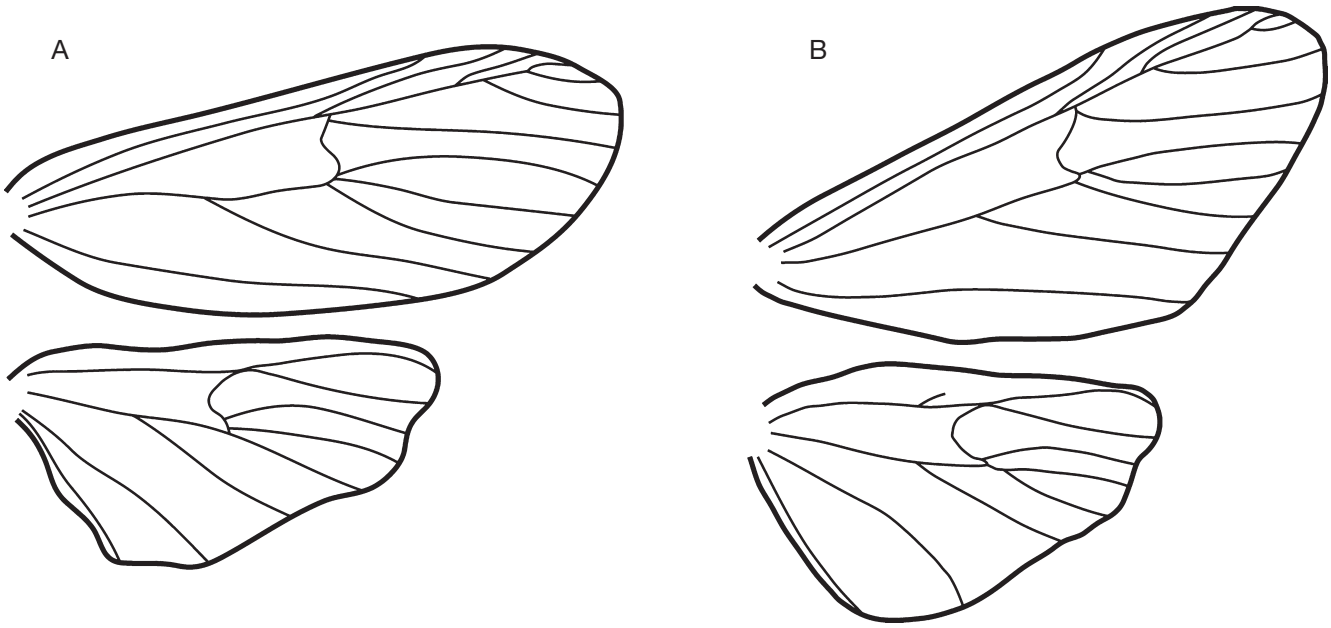

FIG. 2. — Wing venation: **A**, *Eucereon punctatum* (Guérin-Méneville, [1844]); **B**, *E. mitigatum* Walker, 1857, rev. stat.

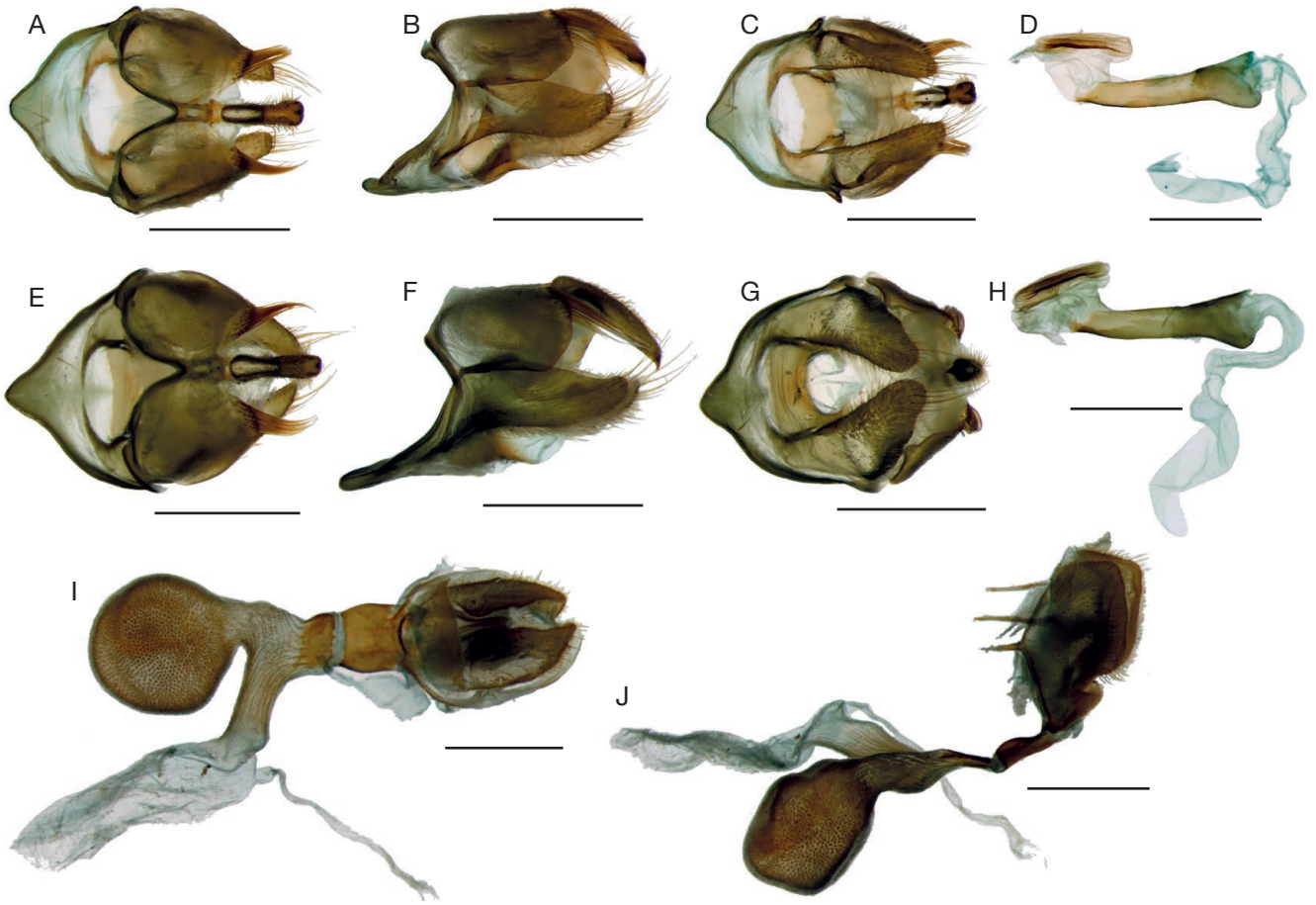

FIG. 3. — Male and female genitalia of *Eucereon punctatum* (Guérin-Méneville, [1844]); male specimens from Rondônia, Brazil (dissection LRP553) (top) and São Paulo, Brazil (dissection LRP140) (bottom); female specimen from Rio de Janeiro, Brazil: **A**-**C**, male genitalia, dorsal view (**A**), lateral view (**B**), posterior view (**C**); **D**, aedeagus, lateral view; **E**-**G**, male genitalia, dorsal view (**E**), lateral view (**F**), posterior view (**G**); **H**, aedeagus, lateral view; **I**, **J**, female genitalia, ventral view (**I**), lateral view (**J**). Scale bars: 1 mm.

Additional material examined (61 ♂ and 8 ♀). — **Belize**. Toledo District, Big Falls, 15 mi NW Punta Gorda, 16-21.VIII.2004, 100 ft., Ron Leuschner, 1 ♀ (LACM).
Bolivia. Buenavista, east Bolivia, 750 m, VIII.06-IV.07, Steinbach, Rothschild bequest, B. M. 1939-1, 3 ♀ (BMNH).
Brazil. *Amazonas,* Igarapé Preto, upper Amazons, VIII.1935, S. Waehner, Rothschild bequest B.M. 1939-1, 5 ♀ (BMNH); São Paulo de Olivença, VII.1935, S. Waehner, 3 ♀ (BMNH); Fonte Boa, VIII.1906, S. M. Klages, 1 ♀ (BMNH); Benjamin Constant, rio Javary, alto Amazonas, VII.1960, Dirings, 1 ♀ (MZSP); *idem*, IV.1942, Dirings, 1 ♂ (MZSP); Tefé, III.1931, Dirings, 1 ♀ (MZSP); *Pará*, A. Miles Moss coll., B.M. 1947-453, 1 ♀ (BMNH); Ara, A. M. Moss, V.[19]38, fed[egoso], A. Miles Moss coll., B.M. 1947-453, 1 ♀ (BMNH); Santarém, Fazenda Taperinha, X-XI.1970, Exp. Perm. Amazonas, 1 ♀ (MZSP); *Rio de Janeiro*, Angra dos Reis, Fazenda Japuhyba, 5-10.VI.1945, Lauro Travassos Filho, 1 ♀ (MZSP); *idem*, 27.VI.1945, Lauro Travassos Filho, 1 ♀ (MZSP); *idem*, 8.IX.1945, Lauro Travassos Filho, 1 ♀ (MZSP); *idem*, 20-25.X.1951, Lauro Travassos Filho, 1 ♂ (MZSP); *Rondônia*, 62 km S Ariquemes, 165 m, Fazenda Rancho Grande, 10°32'S, 62°48'W, 27.VIII-8.IX.1994, Ron Leuschner, 1 ♂ (LACM); *idem*, 29.X-10.XI.1991, Ron Leuschner, 1 ♀ (LACM); *idem*, 29.IX-10.X.1992, Brian Harris, 1 ♀ (LACM); *Santa Catarina*, Blumenau, Dirings, XI.1932, 1 ♀ (MZSP); *idem*, X.1929, Dirings, 1 ♂ (MZSP); *São Paulo*, Juquiá, Fazenda Poço Grande, 1-5.X.1940, C.D.Z., 2 ♀ (MZSP).
Colombia. Magdalena, Don Amo, 4000 ft., H. H. Smith, Joicey bequest, Brit. Mus. 1934-120, 1 ♀ (BMNH); Juntas, Rio Tamaua, Rio San Juan, Choco, 400 ft., G. M. Palmer, II.[19]09, 1 ♀ (BMNH); Makasaka, Sta. Marta, V. de Andreis, Rothschild bequest B.M. 1939-1, 2 ♀ (BMNH).
El Salvador. Apaneca-Ahuachapan, 4500 ft., 7-12.IX.2002, Ron Leuschner, 1 ♀ and 2 ♂ (LACM).
French Guiana. Cayenne, Felder collection, Rothschild bequest B.M. 1939-1, 2 ♀ (BMNH); St. Jean du Maroni, received from Le Moult, Rothschild bequest B.M. 1939-1, 1 ♀ (BMNH).
Guatemala. Cayuga, Schaus and Barnes coll., October, 1 ♀ (BMNH); *Zacapa*, La Unión, 850 m, 31.X.1972, E. C. Welling M., 1 ♀ (LACM); *idem*, 10.X.1972, E. C. Welling M., 1 ♂ (LACM).
Guyana. Rio Demerara, 3 ♀ (BMNH); New River, 750 ft., 1.II-15.III.1938, C. A. Hudson, 1 ♀ (BMNH); Upper Courantyne River, IX.1935, G. A. Hudson, B.M. 1936-360, 1 ♀ (BMNH); Bartica, H. S. Parish, 1 ♀ (BMNH).
Mexico. *Veracruz*, Catemaco, 15.X.1973, Peter Hubbell, 1 ♂ (LACM).
Peru. Chanchamayo, 1000 to 1500 m, Watkins, Joicey bequest Brit. Mus. 1934-120, 1 ♀ (BMNH); Loreto, Marañon River, VIII.1975, S. Waehner, 2 ♀ (BMNH); Iquitos, V.1912, 3 ♀ and 1 ♂ (BMNH).
Trinidad. Balandra, 21.VIII.1969, at light, 2 ♀ (BMNH).
Suriname. Aroewarwa Creek, Maroewym valley, II.[19]05, S. M. Klages, Rothschild bequest B.M. 1939-1, 2 ♀ (BMNH); same, III.[19]05, S. M. Klages, 1 ♀ (BMNH); same, IV.[19]05, S. M. Klages, 1 ♀ (BMNH); Paramaribo, 1 ♀ (BMNH).
Venezuela. Caura valley, Klages, 1907, 1 ♀ (BMNH); same, vicinity of La Vuelta and Corosito, V-VII, Klages, ex-Oberthür coll., Brit. Mus. 1927-3, 1 ♀ (BMNH); Maripa, Caura valley, S. M. Klages, Rothschild bequest B.M. 1939-1, 1 ♀ (BMNH); Guayapa, Caura River, 24.XI-10.XII.[19]02, S. M. Klages, Rothschild bequest B.M. 1939-1, 1 ♀ (BMNH); Palma Sola, Rothschild bequest B.M. 1939-1, 1 ♀ (BMNH); Mérida, el. Ca. 4500 ft., 8.5942°N, 71.1429°W, 22-23.II.1994, Julian P. Donahue, 1 ♀ (LACM).

Diagnosis ♂ and ♀. — Labial palpi brown, the first segment with a lighter hue compared to the others. Flagellomeres, frontoclypeous and vertex brown. Post-occiput brown with posterior margin orange. Cervical scales light red. Dorsal surface of thorax, patagia and tegulae whitish two different hues of brown. Anterior surface of forecoxae predominantly light red, the proximal margin brown. Anterior surface of the other coxae light red. Forewings with a complex pattern made of brown scales of different hues, plus a few areas with whitish scales. Hindwings almost uniformly dark brown. T1-7 light red. T8 brown with the posterior margin whitish. S2-6 light red, of a lighter hue than the abdominal tergites. S7-8 brown with whitish anterior and posterior margins.

Distribution. — Judging from the abundance of material found in collections (of which only a small portion was actually examined), this species is abundant and easily collected. However, given the wide distribution and the morphological differences observed (see below), the current concept of *E. mitigatum* could correspond to more than one species.

Redescription ♂ and ♀
Head
Proboscis light brown. Labial palpi three-segmented, exceeding vertex in length. First palpi segment light brown, the second and third palpi segments darker, the third slightly longer than wide. Scape, pedicel, and all flagellomeres brown. Medial rami with approximately twice the length of the flagellomre's shaft in males. Frontoclypeous slightly longer than wide, covered by brown scales, smooth ventrally, and rough dorsally. Vertex brown. Post-occiput brown with orange posterior margin. Ocular ring orange and brown. Cervical scales light red.

Thorax
In dorsal view, thorax, patagia and tegulae with different hues of brown scales. Posterior margin of mesoscutellum orange. Forecoxae brown laterally, anterior surface brown proximally and light red distally. Forefemora brown dorsally whitish ventrally. Foretibiae brown. Foretarsi predominantly brown, the second tarsi segment, and the proximal and distal margins of the first tarsi segment whitish. Midcoxae light red anteriorly and brown laterally. Midfemora as forefemora. Midtibiae predominantly brown, distal margin and spurs whitish. Midtarsi as foretarsi. Hindlegs as midlegs.

FW
Entirely scaled. Dorsal surface with a complex pattern, consisting of brown scales of various hues, with whitish areas inside the discal cell, at the subproximal portion of cells R_5-M_1 and M_1-M_2, and at the external margin in cell CuA_2-CuP. Ventral surface mainly covered by dark brown scales with the areas specified above also with whitish scales. Venation as in figure 2B: R_1 arising near the transversal vein, inside the discal cell. R_2 arising much closer to R_3 than to R_1. M_2 and M_3 with a short common stalk.

HW
Almost uniformly dark brown scaled. Proximal portion of cell CuA_1-CuA_2 with scales slightly lighter than those covering the rest of the wing, in both surfaces. Females with two frenular bristles. Venation as in figure 2B: Sc present. M_3 and CuA_1 with a short common stalk.

Abdomen
T1-7 light red. T8 predominantly brown, the posterior margin whitish. S2-6 light red, of a lighter hue of that in the abdominal tergites. S7-8 brown with the posterior margin whitish. Ventral intersegmental membrane between seventh

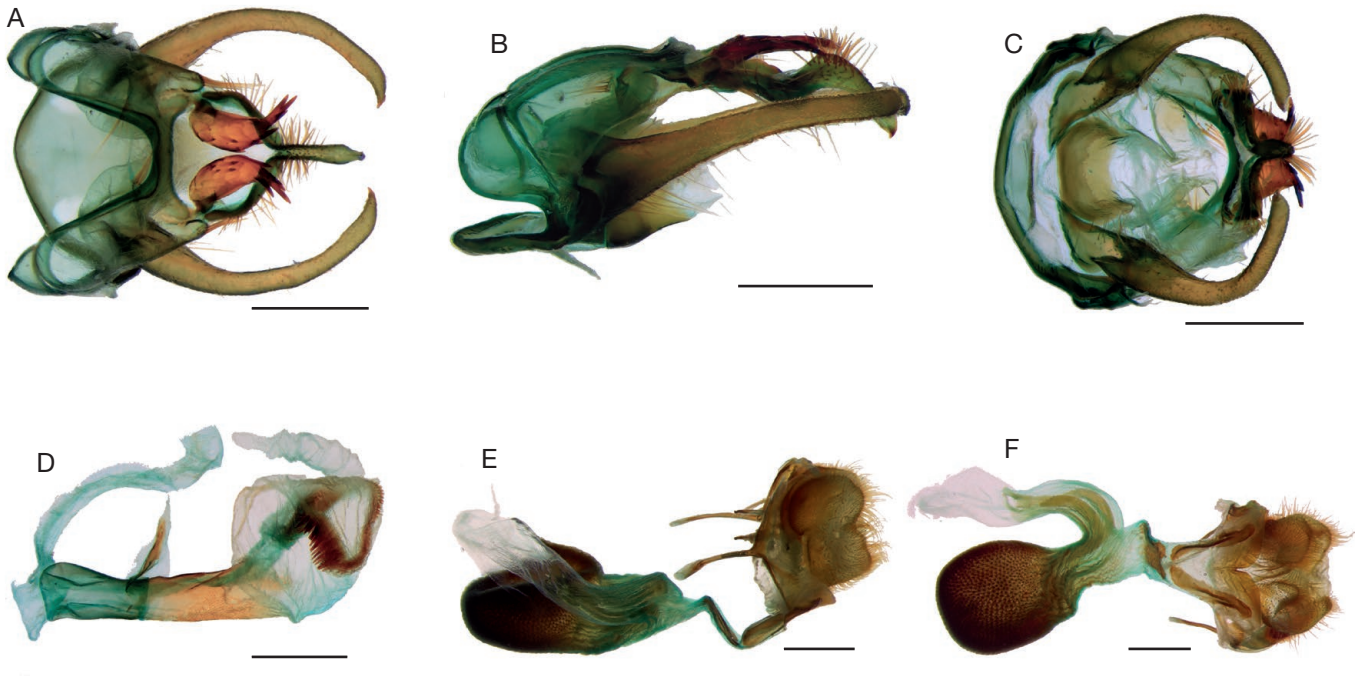

Fig. 4. — Male and female genitalia of *Eucereon mitigatum* Walker, 1857, rev. stat.; male from Santa Catarina, Brazil (dissection LRP616), female from Rio de Janeiro, Brazil (dissection LRP615): **A**-**C**, male genitalia, dorsal view (**A**), lateral view (**B**), posterior view (**C**); **D**, aedeagus, lateral view; **E**, **F**, female genitalia, lateral view (**E**), ventral view (**F**). Scale bars: 1 mm.

and eighth abdominal segments of males with a highly developed coremata, bearing a few short, club-like scales, in addition to the very long and thin scales characteristic of this organ. In males, T8 highly reduced, S8 small.

Male genitalia

Ejaculatory duct inserted on the left side. Coecun rounded. Aedeagus approximately straight, smooth, longer than the genital capsule with the vesica fully everted. Vesica with almost the same length of the aedeagus, membranous, with a set of small cornuti dorsally. Saccus developed, slightly asymmetrical. Tegumen glabrous, except for two dorso-lateral protuberances at the posterior margin, with a few setae. Tegumen considerably wider than the vinculum, reaching or almost reaching the anterior margin of saccus. Ventral margin of the tegumen not covering the proximal portion of the valvae. In dorsal view, anterior margin of the tegumen with a deep indentation, approximately "U"-shaped. Uncus unilobed, symmetrical, not compressed, apex sharp. Base of uncus sclerotized laterally and membranous dorsally, much wider than its lobe, the sclerotized area bearing thick setae, as well as the anterior portion of the lobe of the uncus. Two spiny dorsal projections arising from the membranous part of the base of the uncus, directed posteriorly, with variable number of spines. Transtilla slightly sclerotized. Juxta sclerotized, shield-like. Valvae symmetrical, turned posteriorly, reaching or slightly exceeding the apex of uncus. Apical portion sharp. Ventral and dorsal surfaces covered by sparse setae, external surface with scales.

Female genitalia

Pheromone glands undeveloped. Papilae anales with the dorsal portion prominent laterally. Ostium slightly turned to the left. Antevaginal lamella membranous. Ductus bursae with sclerotized corrugations anteriorly, and a sclerotized plate posteriorly. Two bursae, the first approximately rounded, entirely covered by large signa. A wide ductus leading to second bursa, membranous, from which the ductus seminalis arises.

Remarks

Eucereon mitigatum was described from female(s) from Saunders' collection; the original description includes "variety β" from Veracruz (Mexico), which validity could not be verified: the specimen is not among *E. mitigatum* at the BMNH, nor could be found in any other drawer of *Eucereon* in that collection.

Eucereon reticulatum was also described from an unknown number of specimens, and only one was found at the BMNH with labels matching data from the original description. *Eucereon cribrum* was described from two males from Suriname. *Eucereon ruficollis* was described from unspecified number of males from Venezuela.

The validity of these synonyms is not obvious, given that the forewing pattern is highly variable (see Fig. 1F-I). However, they are here treated as such to maintain the already established idea that these names correspond to the same species, as proposed by Hampson (1898, 1914) when he synonymized them all under the erroneous concept of *E. punctatum*. Variable forewing pattern has already been observed and documented by other authors, including for Ctenuchina (Travassos 1952).

Therefore, there is no strong evidence for determining the identity of an individual. But they may be indicative, and for this reason I examined the genitalia of males from different localities. Specimens from Colombia, Venezuela, Suriname, and Brazil (from the states of Amazonas, Pará, Rio de Janeiro, Santa Catarina and São Paulo) were dissected. Their genitalia are very similar, though not identical. However, from single specimens from each locality is difficult to know if the differences are caused by individual variation, variation between populations, or even different species incipiently diverse morphologically. For instance, the specimen from Bogota has shorter dorsal projections on the base of uncus, and with fewer spines than the specimens from Venezuela and Suriname (and the Venezuelan specimen has more spines than that from Suriname). The shape of the projections is also somewhat different, more round than long in the Colombian specimen. The tegumen of the specimen from Suriname does not reach the length of the saccus, while it does on the other specimens. The *cornuti* distribution is also slightly different in the Colombian specimen. Interestingly, the specimens from the Atlantic forest displayed less difference when compared to Brazilian Amazonian specimens than those from Colombia and Suriname. Further studies should be made, with a larger number of individuals from as many localities as possible, to determine which the case is for what is here called *E. mitigatum*, and address the taxonomical changes that the discoveries may support. In any case, the redescription here provided fits all of the specimens examined, and it should guide the search for putative unobserved morphological differences that could reveal the existence of more than one species in what is for now called *E. mitigatum*. Figure 4A-F illustrate the characters discussed above based on specimens from the Atlantic Forest in Brazil.

There are at least two other species very closely related to *E. mitigatum*: *E. zamorae*, from Ecuador (Fig. 1L), and *E. colimae* Draudt, 1931, from Mexico (Fig. 1M). The types of both were consulted, at the USNM and MNHN, respectively, and they seem to be valid species, though their genitalia should also be examined to confirm this claim.

Eucereon archias (Stoll, 1790)

The original description of *E. archias* is another typical description from its time, brief and too general. However, its author provided four illustrations: from the larva, pupa, cocoon, and a female adult. The figures are not very accurate, and are somewhat stylized, as already noted by Vane Wright (1975) and Chainey (2005). However, they are good enough to give an idea of the species' habitus.

Sepp (1848-1852) created the combination *Bombyx archias*, treating this species in his concept of Bombycidae. His drawings are also stylized, even more than Stoll's, and differ considerably in some details: the dorsal surface of the forewings have spots of different dimensions in both illustrations, and those near the costal margin are much more concentrated *in* Stoll's (1790) figure. The pattern shown on the ventral surface of the forewings is also very different, as well as the coloration on the thorax and abdomen, respectively red and whitish *in* Stoll (1790) and whitish and red *in* Sepp (1848-1852). Also, the last abdominal sternite is brown in the original description, and white *in* Sepp (1848-1852). In spite of this, both figures depict at the very least closely related species, but most likely the same species, given that they were both from the same locality, Suriname, and were illustrated feeding on the same plant (more comments on the foodplant are given below).

A few years later, Walker (1854: 267) gave a description of what he thought could be a variety of *E. archias*. This description is of a male from Pará, collected by Bates. It was made with a question mark, probably because he was not sure of the male-female association. In fact, his description includes many characters not observed in Stoll's species (e.g., hindwings hyaline towards the base, abdomen with a broad bright red band *beyond the middle* [emphasis mine], underside pale red), and it is again too general to allow the identification of the species.

Möschler (1877) mentioned *E. archias* briefly, noticing that Stoll (1790) and Sepp (1848-1852) illustrated different instars of its larvae. Druce (1884) gave a large geographical range for *E. archias*, going from Mexico to Southeast Brazil. However, he did not provide any illustration or redescription for the species. Later, Hampson (1898) found Druce's specimens to belong to another species, which he called *E. pseudarchias* Hampson, 1898. Moreover, he illustrated a male specimen of *E. archias* in black and white, a drawing that clearly shows a peculiar abdominal hairbrush at each side of the first abdominal segment.

The redescription of *E. archias* in Draudt (1915) derives from that provided by Hampson (1898). His illustration is again not very accurate (it is of a male, but does not show the abdominal androconia, and the dark brown markings on the forewings are carelessly drawn), but because of the yellow internal margin of the hindwings, it seems to correspond to the same species represented in Hampson (1898).

The last detailed mention of *E. archias* in the taxonomic literature was by Travassos (1959), who briefly discussed taxonomic problems about *Eucereon* and *E. archias.* Travassos (1959) asserted that both the type material of Stoll and Hampson's specimens were lost, and provided a neotype from Rio de Janeiro, Brazil, for *E. archias*, with a redescription and figures of its habitus and genitalia.

The true identity of *Eucereon archias*

The identity of *E. archias* is here determined as coincident with that of most authors' concept (Fig. 1O-P), and not Travassos' (1959), which corresponds to *E. mitigatum* (Fig. 1F-K). Two male specimens with pins and labels compatible to those of Cramer & Stoll's (Rob de Vos, personal communication) were found at the RMNH. However, the specimen depicted *in* Stoll (1790) is a female, and in the absence of evidence of these males as part of the type series, they are here considered non-type specimens, perhaps acquired posteriorly.

Fortunately, a careful examination has shown that the original description plus illustrations are enough to ensure the identity of *Eucereon archias*, even though it shares many external similarities with other species of *Eucereon*, especially on the forewing and abdominal coloration patterns. The original il-

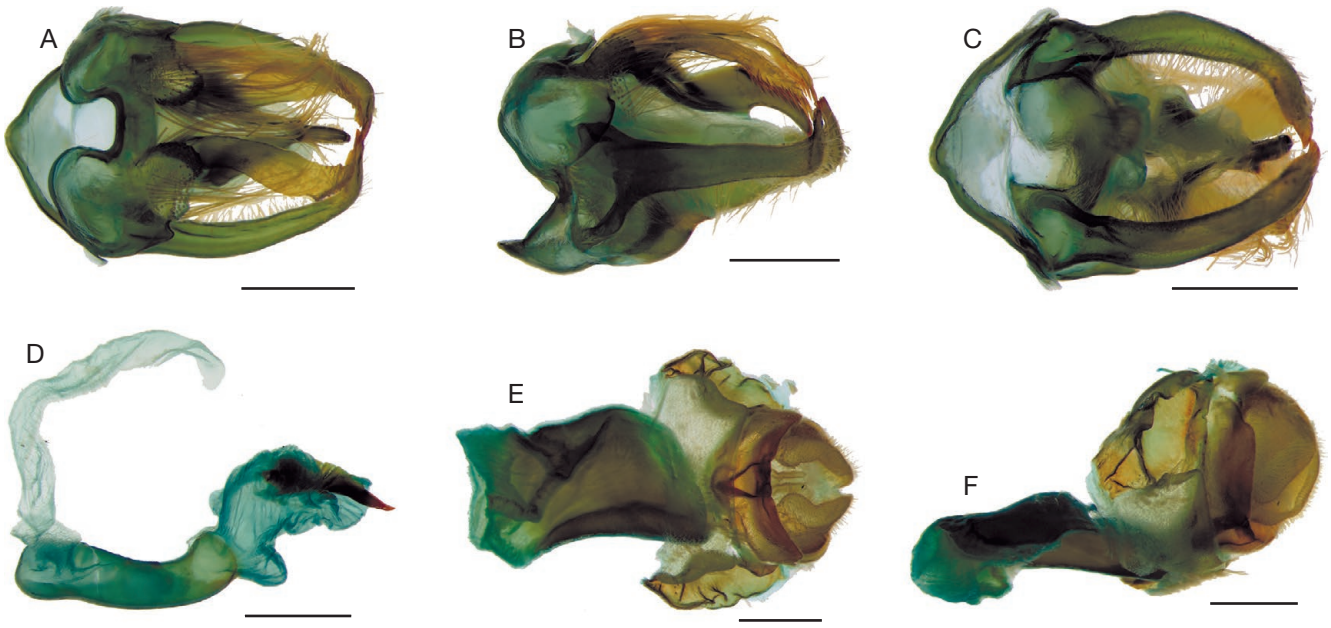

FIG. 5. — Male and female genitalia of *Eucereon archias* (Stoll, 1790), male from Guyana, female from Suriname: **A**-**C**, male genitalia, dorsal view (**A**), lateral view (**B**), posterior view (**C**); **D**, aedeagus, lateral view; **E**, **F**, female genitalia, ventral view (**E**), lateral view (**F**). Scale bars: 1 mm.

lustration (Fig. 1N) is clear in that there are no whitish areas on the forewings, as it happens in *E. mitigatum* (Fig. 1F-K). Also, the latter has a round spot approximately at the center of the discal cell that is not shown in the original illustration of *E. archias* (it is rather more or less rectangular). Moreover, the shape and size of the dark brown spot at the proximal portion of the cubital cell (between vein 1A and the Cu main branch) in the original illustration is not compatible with this spot in *E. mitigatum*, in which it is much shorter, or even absent.

The hindwing description can be deceiving, because neither the hindwings of true *E. archias*, nor of *E. mitigatum* (or most of the other species that resemble these two) have darker margins when compared to the more proximal portions of the wing, except for few females of true *E. archias* (but the specimen in the original description is a female).

The abdomen also provides important evidence of the true identity of *E. archias*: T1 of the depicted specimen is brown, as well as the dorsal surface of T7. Even though the last character is not always found in females of true *E. archias*, none of the many specimens of *E. mitigatum* examined have such a coloration pattern – the T7 is always light red in the latter. Besides, T1 is also always light red in *E. mitigatum*, and always brown in *E. archias*. The abdominal sternites are less helpful, as they are of a very light hue of red in *E. mitigatum*, easily mistaken by white coloration in old specimens.

There are also other species similar to *E. archias*, but all of them can be distinguished from the latter based on the combination of characters given above. For instance, *E. arenosum* Butler, 1877 (Fig. 1Q), also from the Amazonian Forest, has abdominal T1 light red (as opposed to brown) and much more marked (and rounded) forewing spots. *Eucereon dentatum* Schaus, 1894 (Fig. 1R), has proximal forewing spots incompatible with those of true *E. archias*, with much thinner spots. Its abdominal T8 is light red, not brown, and its hindwings show a much more marked contrast between the dark coloration of the margins and the light coloration of the proximal surface. Moreover, *E. dentatum* was described from Mexico. At last, *Eucereon steinbachi* Rothschild, 1912 (Fig. 1S), from Bolivia, differs from true *E. archias* by the higher contrast between dark and light scales on forewings, the much longer proximal-posterior forewing markings, the rounded spot inside the discal cell, and T1-3 with dorsal brown scales.

Many other species of *Eucereon* are somewhat similar to true *E. archias* (e.g., *E. pseudarchias* Hampson, 1898 (Fig. 1T), *E. aeolum* Hampson, 1898 (Fig. 1U), *E. antonia* Druce, 1906 (Fig. 1V), but they are easily distinguishable by the abdominal coloration, with the abdominal T2, and many times also the T3 and T4, brown dorsally, instead of red. Another species that could be misidentified as *E. archias* is *E. hoegei* Druce, 1884 from Mexico (Fig. 1W), which shares with *E. archias* the entirely red abdominal tergites. Both species can be distinguished by the absence of the androconia, and the much paler coloration of the wings in *E. hoegei*.

Given that it is possible to ensure the identity of *E. archias* from the original description and illustration alone, what made Travassos (1959) designate a neotype from another species? Actually, *E. archias* has a history of misidentifications that began with Walker (1854). He described a "variety" of *E. archias* with "hindwings dark brown, whitish and semihyaline towards the base. Abdomen with a broad bright red band beyond the middle, under side pale red, brown at the tip." None of the above mentioned characters matches *E. archias*. On the contrary, they occur in a large group of species of *Eucereon* that have the forewing pattern similar to that of *E. archias,* but not the abdominal pattern (see above).

Butler (1878) mentioned a specimen from "Jamiry, Rio Madeira, 1.XII.1874" as *E. archias*. However, no specimen with such a label could be found at the BMNH. It is certainly not among true *E. archias* specimens housed by that collection, what makes it a likely candidate for having been misidentified as well. However, Butler's specimen was not mentioned by Hampson (1898), who did mention a few specimens of *E. archias.* So it was either lost, or is still misidentified among specimens of a resembling species.

Druce (1884), maybe influenced by Walker (1854), included specimens from Suriname, Guyana, Mexico, Guatemala, and Southeast Brazil in *E. archias*. He provided no illustrations, but Hampson (1898) examined his specimens, and concluded that they belonged to another species, which he called *E. pseudarchias* Hampson, 1898. This author was responsible for the concept or *E. archias* used afterwards (Zerny 1912; Draudt 1915), until Travassos (1959) proposed a new concept for that species, corresponding to *E. mitigatum*. Hence, once again the doubt of what is the original concept of *E. archias* had arisen.

The erroneous identification by Travassos (1959) derives from inaccuracy in the examination of Stoll's illustration, and because of his unawareness of the existence of true *E. archias*. Even though he looked for Amazonian species of *Eucereon* to determine the identity of *E. archias*, very few specimens of this species are known from the Brazilian Amazons (see below), and the specimens that Travassos had available for study were almost exclusively Brazilian.

The neotype of *E. archias* designated by Travassos (1959) corresponds to a specimen of *E. mitigatum*, as his habitus and genitalia illustrations show. His neotype designation is, therefore, invalid, for it fails to meet the conditions required by the ICZN (1999) on neotype designations (articles 75.3 and 75.3.5).

Even though *E. archias* has a somewhat rich history of misidentifications, the possibility of determining confidently the identity of *E. archias* from the original description plus the original illustration, as shown above, means that no neotype designation is required (ICZN 1999: article 75.3). A redescription and record of the treatment of this species in the literature is provided below.

Eucereon archias (Stoll, 1790)
(Figs 1N-P; 5A-F)

Sphinx archias Stoll, 1790: 66, pl. 14, figs. 6, 7A, 8B, 9C, 10D. Syntype ♂, Suriname, Paramaribo [not traced, most likely lost].

Eucereon archias – Hübner 1818: 123. — Butler 1878: 48. — Druce 1884: 85. — Kirby 1892: 200. — Hampson 1898: 485. — Zerny 1912: 138. — Draudt 1915: 170, pl. 24 row g.

Bombyx archias – Sepp [1848-1852]: 271, pl. 124.

Euchromia (*Eucerea*) *archias* – Walker 1854: 267.

Charidea archias – Herrich-Schäffer 1854: 23.

ADDITIONAL MATERIAL EXAMINED (23 ♂ AND 9 ♀). — "**South America**". Amazons, Rothschild bequest B.M. 1939-1, 2 ♂ (BMNH); Amazons, Felder collection, Rothschild bequest B.M. 1939-1, 1 ♀ (BMNH); [Brazil]. Rio Madeira, A. M. Moss, Rothschild bequest B.M. 1939-1, 2 ♀ (BMNH); Alemquer, Amazons, A. M. Moss, 1 ♀ (BMNH); *Amazonas*, Rio Japura, XI.1912, Dr A. Ducke, Rothschild bequest B.M. 1939-1, 1 ♂ (BMNH); Tefé, X.1912, Dr A. Ducke, 1 ♀ (BMNH); Lower Amazon, A. M. Moss, Rothschild bequest B.M. 1939-1, 1 ♂ (BMNH).
French Guiana. St. Jean du Maroni, Le Moult, 4 ♀ (BMNH).
Guyana. Kuruhung (?), II.[19]38, coll. A. S. Pinkus (?), 1 ♀ (AMNH); Pomeroon R., Charity Est. House, 12.III.[19]23, W. H. Matthews, Pres. By Imp. Bur. Ent. Brit. Mus. 1924-52, 1 ♀ (BMNH).
Peru. Middle Rio Marañon, 11.XII.[19]24, F6200, H. Bassler collection, 1 ♀ (AMNH).
Suriname. No further data, Tengb., 2 ♀ (RMNH); Paramaribo, XII.1892, C. W. Ellacombe (genitalia slide 2416), 1 ♀ (BMNH); same, XII.1892, Joicey bequest, Brit. Mus., 1934-120, 1 ♀ (BMNH); same, XII.1892, ex-col. Ed. Brabant, 1 ♀ (BMNH); same, I.1892, C. W. Ellacombe, Rothschild bequest B.M. 1939-1, 4 ♂; same, II.1892, C. W. Ellacombe, Rothschild bequest B.M. 1939-1, 3 ♀ and 1 ♂ (BMNH); same, III.1892, C. W. Ellacombe, Rothschild bequest B.M. 1939-1, 1 ♀ (BMNH).
Trinidad. 1 ♀ (AMNH).
Venezuela. Caripito, 1.V.1942, 1 ♀ (AMNH).

DIAGNOSIS ♂ AND ♀. — Head and cephalic appendages brown, except for the post-occiput, with two orange spots. Thorax, patagia, tegulae and forewings with two different brown hues. Hindwings uniformly dark brown, except for the internal margin in ♀, yellowish. T1 and T8 brown, the first with long hair brushes laterally. T2-3 brown with light red laterals, T4-7 light red. Abdominal sternites whitish.

DISTRIBUTION. — This species seems to be restricted to the Guyana Shield and surrounding areas, its northern limit being Trinidad. To the west, it is known to occur in Rio Marañon in Iquitos, Peru. Its southern limit is, to the present knowledge, Rio Madeira in Rondônia state, Brazil. The localities given by Druce (1884) and repeated by Kirby (1892), plus those given by Travassos (1959) should be disregarded, as they are of specimens of other species.

BIOLOGY. — There has been some dispute on what plant the larvae of *E. archias* feed upon. The original illustration and Sepp (1848-1852) show the larvae on what is stated to be *Ficus* L. leaves (Izabella Martins and Fernando Farache, personal information). Möschler (1877) thought that they looked like orange leaves, in which was repeated by Travassos (1959). However, even though the plant drawings of both Cramer and Sepp are also somewhat stylized, the specialists consulted have ruled out the possibility of them being of orange leaves, and have confirmed that the caterpillars of *E. archias* were illustrated in both Stoll and Sepp's works feeding on an unidentified species of the genus *Ficus*. Other aspects of the biology remain unknown, except for the few details described by Sepp (1848-1852), such as 15 days as the time of pupation.

REDESCRIPTION ♂ AND ♀
Head
Proboscis light brown. Labial palpi three-segmented, brown. Third palpi segment approximately twice as long as wide. Scape predominantly brown, the posterior surface grey. Pedicelum and flagellomeres entirely brown, medial rami of males with approximately four times the length

of the shaft of the correspondent flagellomere. Frontoclypeous as long as wide, brown. Vertex brown, ocular ring brown and yellowish. Dorsal surface of paraocular area and scales immediately posterior to the antennal sockets yellowish. Post-occiput with two orange spots. Cervical scales light red.

Thorax
Mesoscutum light brown with a thin darker longitudinal line medially. Mesoscutelum whitish. Metascutellum light brown. Patagia brown, with scales slightly darker anteriorly and lighter posteriorly. Tegulae with a similar pattern, but with the lighter scales occurring next to the external margin. Anterior surface of the forecoxae predominantly brown, distal margin light red. Lateral surface brown. Other segments brown. Mid and hindcoxae light red anteriorly and brown laterally. Other segments brown. *FW*. Entirely scaled. Dorsal surface: veins covered by light brown scales. Cells covered by light and dark brown scales, forming a complex pattern. Ventral surface: brown with two whitish areas, one inside the discal cell, the other at the subproximal portion of cells M_1-M_2 and M_2-M_3. Venation illustrated by Hampson (1898: 485, fig. 269). *HW*. Entirely scaled. Slight sexual dimorphism in shape, the internal margin being more developed in males. Dorsal surface predominantly dark brown in males, with the costal margin light brown, and the internal margin yellowish. Ventral surface in males brown. In females, dorsal and ventral surfaces brown. Venation illustrated by Hampson (see above).

Abdomen
T1 brown, with one hairbrush at each lateral. T2 entirely light red, or with a few brown scales dorsally. T3-7 light red. T8 brown. S2-8 whitish, S8 sometimes brown. In males, posterior margin of T7 with two minute membranous projections, and posterior margin of S7 protruded anteriorly. In females, S7 as sclerotized as the other sternites. Pleural region of the seventh segment heavily sclerotized, forming a glabrous pouch.

Male genitalia
Aedeagus with ejaculatory duct inserted dorsally. Coecun rounded. Aedeagus with approximately the same width along its whole length, smooth. In lateral view, distal end turned upwards; in dorsal view, distal half turned to the right. Vesica predominantly membranous, posterior portion somewhat sclerotized and with one large cornutus at the tip. Saccus developed, wide and symmetrical, or slightly asymmetrical. Tegumen wide, center of the anterior margin with an "U"-shaped indentation. Posterior margin with very long setae dorsally. Dorsal intersegmental membrane between ninth and tenth abdominal segments with two long dorsal projections, smooth anteriorly and with spines at their external margin posteriorly. Uncus unilobed, uncompressed laterally or dorso-ventrally. Proximal portion of the lobe of uncus with two small dorsal pilose projections. Base of uncus much wider than its lobe, without setae and membranous dorsally. Transtilla membranous. Juxta broad, as sclerotized as valvae, without spines or setae. Valvae symmetrical, exceeding uncus, with setae ventrally at most of its length, and laterally at the tips. Scales present laterally at their proximal portion.

Female genitalia
T8 heavily sclerotized laterally, and membranous dorsally. Pheromone glands undeveloped. Ostium centralized. Anterior and posterior lamellae densely covered by minute setae. Anterior apophyses slightly shorter than the posterior apophyses. Ductus bursae very short, membranous. Corpus bursae single, longer than wide, sclerotized posteriorly and membranous anteriorly. Signa absent. Ductus seminalis arising from the dorsal posterior margin of ductus bursae.

Remarks
Eucereon archias was described from an undetermined number of specimens. The only certain thing is that the specimen illustrated *in* Stoll (1790) is a female, but it is likely that he had other specimens, as the whole life cycle was represented in the original description. The RMNH, one of the known repository of some types of Cramer & Stoll (the other being the BMNH), has two males with labels and pins compatible to Cramer's collection. However, in the absence of positive evidence of their type status, and because of the difficulty of determination of types in the case of the Cramer collection (Chainey 2005), they are here considered as non-type specimens (event though one of the specimens had a modern type label). No potential type of *E. archias* could be found at the BMNH, although this species is perfectly well defined in this institution.

Genitalic and external characters of specimens from Suriname and Guyana were examined, and no differences were found among them.

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