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Source: The Journal of the Lepidopterists' Society, 66(2) : 61-75

Published By: The Lepidopterists' Society

URL: https://doi.org/10.18473/lepi.v66i2.a1

Journal of the Lepidopterists' Society
66(2), 2012, 61–75

THE NICARAGUAN HAIRSTREAK BUTTERFLY FAUNA (THECLINAE: EUMAEINI), ITS BIOGEOGRAPHY, AND THE HISTORY OF NICARAGUAN COLLECTORS

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ABSTRACT. The hairstreak butterfly fauna of Nicaragua has not been comprehensively updated since Godman and Salvin listed 71 species in the Biologia Centrali-Americana over a century ago. Based primarily on Eumaeini in the Anderson and Sullivan Collections (Smithsonian Institution), we treat 149 thecline species recorded from Nicaragua with their localities and months of capture. None are endemic to Nicaragua, but 15 species have the northern or southern limit of their known distribution in Nicaragua. We relate the distributions of these 15 species, many of which are figured, to the life zones and physical features of Nicaragua and adjoining countries. Those eumaeine names for which Nicaragua is a type locality are noted, and a few unresolved taxonomic problems among the Nicaraguan fauna are pointed out. We list another 73 hairstreak species that are recorded both to the northwest and southeast of Nicaragua, but not in Nicaragua. Finally, we present brief historical comments on the collectors of Nicaraguan hairstreaks.

Additional key words: Belt, Biogeography, Biologia Centrali Americana, Godman, Salvin.

Belt (1874) detailed the natural history of Nicaragua in his book 'The Naturalist in Nicaragua' and made extensive natural history collections, including butterflies. Using Belt's collection as the foundation for Nicaragua, Godman and Salvin (1887-1901) treated the Central American butterfly fauna. More recently, Maes et al. (1999) listed the butterflies recorded from Nicaragua as part of an impressive catalog of all Nicaraguan insects. Finally, Anderson (2007) detailed the Hesperiidae species that he collected during a three year residency in Nicaragua.

Godman and Salvin (1887-1901) published the only list of Nicaraguan Theclinae (Lycaenidae: Eumaeini) that was based on museum vouchers. They recorded 73 hairstreak species from Nicaragua, but in two instances, sexually dimorphic males and females were treated as different species (*Thecla coelicolor* [Butler & H. Druce]/*T. myrsina* Hewitson and *Thecla xeneta* Hewitson/*T. amplia* Hewitson, see Robbins 2004). Maes et al. (1999) added ten more species names from subsequent literature citations, but unfortunately the taxonomy was confused.

The purpose of this paper is to present an updated list of the hairstreak fauna of Nicaragua with the localities where each species has been found, including historical notes on the more significant collectors of Nicaraguan Theclinae. We discuss the biogeographical significance of the distributions and habitats of these species. Finally, we add a list of those species recorded both northwest and southeast of Nicaragua, which are likely to be found in Nicaragua in the future.

MATERIALS AND METHODS

The species list of Nicaraguan Theclinae follows the order and taxonomy in Robbins (2004) except for a few updates (Faynel 2007, 2008, Faynel & Moser 2008, Duarte & Robbins 2010, Robbins 2010b). Specific and generic synonymies are detailed in Robbins (2004). Voucher specimens for the Nicaraguan records from Belt, Janson, Richardson, and Hewitson, which were cited in Godman and Salvin (1887-1901), are deposited in the Natural History Museum (BMNH), London. The localities for these specimens are listed after "GS". More information on these localities is presented in Selander and Vaurie (1962). Some names used by Godman and Salvin are listed in this paper under their senior synonyms. For example, *Thecla nepia* and *Thecla volupia* are treated in this paper as *Theritas theocritus* and *Siderus leucophaeus*, respectively (cf. Robbins 2004). In a few cases, Godman and Salvin misidentified a species, such as *Thecla atena* Hewitson (Faynel 2007); we correct these names.

Records of Nicaraguan Theclinae from the Anderson Collection and from the Sullivan Collection are based on specimens deposited in the Smithsonian Institution (USNM), Washington, DC. The Nicaraguan localities where these specimens were collected were briefly described and mapped (Anderson 2007), and in this paper we add the coordinates and Holdrige (1962) life zone for each. These localities with the number of males and females are listed after "RAA/JBS" with the month of capture (first three letters of the month in English). A few additional records from the AMNH (American Museum of Natural History) and USNM are noted with the collector in parenthesis. We omitted Nicaraguan records from the Raymond Jae (= Jablonski) Collection, which is deposited in the Allyn Museum of Entomology, Florida Museum (FSMC), because data reliability is unfortunately an issue (Panamanian locality labels on specimens of *Arawacus sito*, for example, are incorrect because this common Nicaraguan species does not occur in Panama).

Geographical ranges for Central America hairstreak species are based upon published information, the USNM collection, and the collections of other museums from which data was recorded over the past three decades, usually for other purposes. We list and illustrate those species for which Nicaragua represents the northern or southern limit of its known range (in some cases, we refer to published figures). To determine those species that are unrecorded for Nicaragua—but that are likely to occur there—we list those 73 "unrecorded species" for which we have locality records both to the northwest and southeast of Nicaragua. Species names for which Nicaragua is a type locality are noted and were taken from Robbins (2004).

RESULTS

Anderson Collection and Sullivan Collection Localities. The information presented here is complementary to that in Anderson (2007), where collecting localities were mapped. For each locality we note province, coordinates (but in some cases, it is the center of an area), and Holdridge Life Zone. Specimens in the Anderson and Sullivan collections from Bluefields, Corn Island, Nueva Guinea, Rama, Yolaina, and Rio Chontaleña are labeled Department of Zelaya, but this department was subsequently divided. These localities now belong to the Región Autónoma Atlántico Sur.

Bluefields, Zelaya (12º00'41"N, 83º45'50"W), including El Bluff a few kilometers to the east. Very Humid Tropical Forest, with many disturbed areas, at elevations below 100 m.

Corinto, Chinandega (12º30'10"N, 87º10'51"W). Dry Tropical Forest under 50 m elevation.

Corn Island, Zelaya (12º10'30"N, 83º3'12"W). This Atlantic island is wet lowland forest (the highest point is 113 m elevation), but its life zone was not categorized by Holdridge (1962).

Ciudad Dario, Matagalpa (12º43'50"N, 86º07'25"W). Very Dry Tropical Forest at about 450 m elevation.

El Crucero/Las Nubes, Managua (11º55'16"N, 86º16'32"S). Subtropical Humid Forest at 700–900 m elevation from about 18 km SSW to 25 km S of Managua.

Granada, Granada (11º54'32"N, 85º57'30"W). Dry Tropical Forest under 300 m elevation both to the east and west of the city.

Jinotega, Jinotega (13º48'15"N, 85º32'42"W). Subtropical Humid Forest at 1000–1300 m elevation.

Managua, Managua (12º08'51"N, 8º16'24"W). Dry and Very Dry Tropical Forest within about 15 km of the city at elevations up to 550 m. As noted in Anderson (2007), it includes disturbed secondary growth and residential areas.

Matagalpa North, Matagalpa (13º02'29"N, 85º51'58"). An area 10–15 km north of Matagalpa of Subtropical Humid Forest at elevations from 1000–1400 m.

Matagalpa South, Matagalpa (12º56'25"N, 85º55'29"W). An area 4 km south of Matagalpa of Subtropical Humid Forest at 600–700 m.

Nueva Guinea, Zelaya (11º41'01"N, 84º27'01"W). Very Humid Subtropical Forest at about 200 m elevation.

Pochomil, Managua (11º46'31"N, 86º30'19"W). Dry Tropical Forest under 50 m elevation.

Puertas Viejas, Matagalpa (12º36'05"N, 86º02'51"W). Very Dry Tropical Forest at about 525 m elevation.

Puerto Somoza (now called Puerto Sandino), Leon (12º11'30"N, 86º45'41"W). Dry Tropical Forest under 50 m elevation.

Rama, Zelaya (12º09'46"N, 84º13'08"W). Very Humid Subtropical Forest at elevations below 100 m.

Rio Chontaleña, Zelaya. A tributary of the Rio Indio, this is a Scharf collecting locality in Very Humid Subtropical Forest at about 150 m elevation. It is north of San Juan Del Norte and SSE of Nueva Guinea, but we do not have coordinates where Scharf collected.

San Carlos, Rio San Juan (11º07'01"N, 86º46'44"W). Dry and Humid Tropical Forest under 100 m elevation.

San Fernando, Nueva Segovia (13º40'38"N, 86º18'54"W). Subtropical Humid Forest at about 700 to 750 m elevation. These specimens were collected by P. Scharf.

San Juan del Norte, Río San Juan (10º55'17"N, 83º43'17"W). Very Humid Tropical Forest under 50 m elevation.

Santo Tomás, Chontales (12º02'51"N, 84º59'47"W). Humid Tropical and Subtropical Forest at about 300 m elevation.

Yolaina, Zelaya (11º37'06"N, 84º19'55"W). Very Humid Subtropical Forest at 200–225 m elevation. This locality was treated as part of Nueva Guinea in Anderson (2007), but is about 15 km to the south-east.

149 Recorded Nicaraguan Eumaeini

Eumaeus godartii (Boisduval, 1870)
Localities. RAA/JBS: 1 ♂ Nueva Guinea Apr.
Remarks. Not recorded northwest of Nicaragua (illustrated in D'Abrera 1995: 1101).

Theorema eumenia Hewitson, 1865
Localities. GS: Chontales (Belt). RAA/JBS: 1 ♀ Nueva Guinea Aug.

Paiwarria antinous (C. Felder & R. Felder, 1865)
Localities. GS: Chontales (Belt).

Paiwarria umbratus (Geyer, 1837)
Localities. GS: Chontales (Belt).
Type Locality. The type locality of *Thecla parthenia* Hewitson, a synonym of *P. umbratus*, is Nicaragua.

Brangas neora (Hewitson, 1867)
Localities. RAA/JBS: 7 ♂ & 1 ♀ Managua, Feb, Aug, Sep. USNM: 1 ♂ Managua (Todd) Nov.

Brangas coccineifrons (Godman & Salvin, 1887)
Localities. GS: no further data.
Type Locality. The type locality of *Thecla coccineifrons* is Nicaragua and Colombia.

Evenus regalis (Cramer, 1775)
Localities. GS: Chontales (Belt), Matagalpa (Richardson). RAA/JBS: 4 ♂ & 2 ♀ El Crucero/Las Nubes, Jan, Feb, Mar. 2 ♀ Managua, Feb., Aug.

Evenus coronata (Hewitson, 1865)
Localities. GS: Chontales (Belt, Janson).

Evenus batesii (Hewitson, 1865)
Localities. GS: Chontales (Belt).

Lamasina draudti (Lathy, 1926)
Localities. GS: Chontales (Belt).
Nomenclature. The name *Lamasina* Robbins is part of an application to the International Commission on Zoological Nomenclature (Robbins & Lamas 2008b).
Taxonomy. Robbins and Lamas (2008a) showed that the traits used by Bálint (2005) to characterize species in this genus were inaccurate and proposed a provisional taxonomy based on the biological species concept. Unfortunately, the responses by Bálint (2009, 2010) were not based on a scientific species concept (cf. Bálint 2006).

Atlides gaumeri (Godman, 1901)
Localities. RAA/JBS: 1 ♂ & 3 ♀ Managua, Jan, Aug. 2 ♀ El Crucero/Las Nubes, Feb. 1 ♀ Granada, Jul. 1 ♂ no locality (Heller collection).

Atlides rustan (Stoll, 1790)
Localities. RAA/JBS: 10 ♂ & 5 ♀ Managua, Jan, Feb, Apr, Jul, Aug. 2 ♂ & 4 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Nov, Dec.

Arcas imperialis (Cramer, 1775)
Localities. GS: Chontales (Belt).

Arcas cypria (Geyer, 1837)
Localities. GS: Chontales (Belt).

Pseudolycaena damo (H. Druce, 1875)
Localities. GS: Chontales (Belt, Janson), Matagalpa (Richardson). RAA/JBS: 8 ♂ & 5 ♀ Managua, May, Aug, Nov, Dec. 1 ♀ Bluefields, Dec. 1 ♀ Nueva Guinea, Oct.

Pseudolycaena marsyas (Linnaeus, 1758)
Localities. RAA/JBS: 1 ♀ Bluefields, Dec (Fig. 1).
Taxonomy. Austin et al. (2007) admirably tried to resolve the species taxonomy of *Pseudolycaena*, but phylogenetic analysis of the character states that they presented does not fully support their taxonomic conclusions (Robbins & Nakamura, in prep.). The female from Bluefields (Fig. 1) has the "*marsyas* type of ventral maculation" that was noted in Austin et al. (2007), and if it is indeed *P. marsyas*, it is the northern known limit of this species. *Pseudolycaena marsyas* is listed provisionally, based on the assumption that *P. damo* and *P. marsyas* are distinct species.

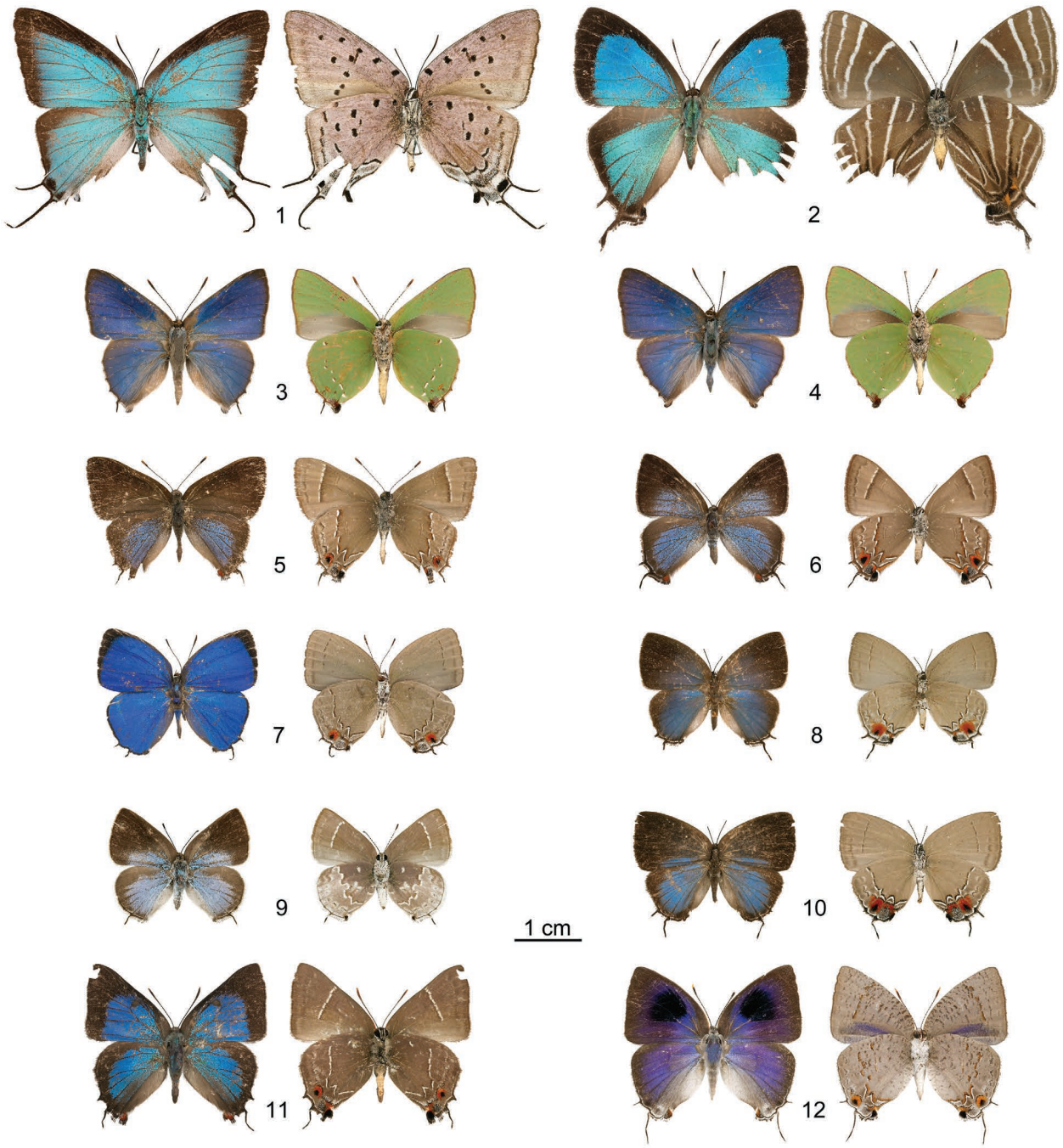
Theritas mavors Hübner, 1818
Localities. GS: Chontales (Belt). RAA/JBS: 2 ♀ Rama, Mar. 3 ♂ & 1 ♀ Bluefields, Dec, Jan. 2 ♂ San Fernando, Jul.

Theritas hemon (Cramer, 1775)
Localities. GS: Chontales (Belt). RAA/JBS: 3 ♂ Bluefields, Dec. 1 ♀ Nueva Guinea, Jul.

Theritas augustinula (Goodson, 1945)
Localities. GS: (Hewitson Collection?). RAA/JBS: 1 ♂ Matagalpa North, Aug. 1 ♀ El Crucero/Las Nubes, Feb.

Theritas theocritus (Fabricius, 1793)
Localities. GS: No further data (Hewitson Collection), Matagalpa (Richardson). RAA/JBS: 1 ♂ Nueva Guinea, Oct.
Type Locality. The type locality of *Thecla nepia* G&S, a synonym of *T. theocritus*, is Guatemala, Nicaragua, and Panama.

Brevianta busa (Godman & Salvin, 1887)
Localities. GS: Chontales (Belt).
Type Locality. The type locality of *Thecla busa* is Guatemala, Nicaragua, and Costa Rica.



FIGS. 1–12. Biogeographically or taxonomically significant Nicaraguan hairstreaks. **1.** ♀ *Pseudolycaena marsyas*, Bluefields (northern-most known specimen). **2.** ♂ *Laothus oceia*, Matagalpa North (phenotype intermediate between those from Guatemala and Costa Rica). **3.** ♂ *Cyanophrys herodotus*, Managua (tailed phenotype). **4.** ♂ *Cyanophrys herodotus*, Managua (tailless phenotype). **5.** ♂ *Kisutam micandriana*, Matagalpa North (southern-most known male). **6.** ♀ *Kisutam micandriana*, Matagalpa North (southern-most known female). **7.** ♂ *Theclopsis demea*, Bluefields (northern-most known male). **8.** ♀ *Theclopsis demea*, Bluefields (northern-most known female). **9.** ♀ *Nicolaea viceta*, El Crucero/Las Nubes (northern-most known specimen). **10.** ♀ *Symbiopsis rickmani*, Bluefields (northern-most known specimen). **11.** ♂ *Parrhasius moctezuma*, Matagalpa North (southern-most known specimen). **12.** ♂ *Hypostrymon critola*, Granada (southern-most known specimen).

Brevianta tolmides (C. Felder & R. Felder, 1865)
Localities. RAA/JBS: 2 ♂ Matagalpa North, Jul, Dec.

Temecla paron (Godman & Salvin, 1887)
Localities. RAA/JBS: 1 ♀ Matagalpa North, Sep.

Ipidecla schausi (Godman & Salvin, 1887)
Localities. GS: Matagalpa (Richardson).

Thereus cithonius (Godart, 1824)
Localities. RAA/JBS: 7 ♂ & 3 ♀ Managua, Aug, Sep. 1 ♂ El Crucero/Las Nubes, Jan. 1 ♂ Pochomil, Aug.

Thereus species
Localities. RAA/JBS: 1 ♀ Managua, Jan. 1 ♀ Granada, Jul.
Taxonomy. This species is morphologically similar to the Amazonian *T. enenia*, as noted by Robbins and Aiello (1982), but differs in possessing androconia on the dorsal surface of the forewing. Its specific distinctness and its placement in *Thereus* are yet in doubt.

Thereus oppia (Godman & Salvin, 1887)
Localities. RAA/JBS: 3 ♂ & 1 ♀ Managua, Jan, Sep, Nov. 1 ♀ Matagalpa, Dec.

Thereus lausus (Cramer, 1779)
Localities. GS: Chontales (Belt).

Rekoa meton (Cramer, 1779)
Localities. GS: Chontales (Belt). RAA/JBS: 1 ♀ Rama, Mar.

Rekoa palegon (Cramer, 1780)
Localities. GS: Chontales (Belt). RAA/JBS: 34 ♂ & 20 ♀ Managua, Jan, Feb, Mar, Apr, May Jun, Jul, Aug, Nov, Dec. 2 ♂ & 1 ♀ Pochomil, Jun, Jul, Aug. USNM: Managua (Todd), Nov.

Rekoa zebina (Hewitson, 1869)
Localities. RAA/JBS: 5 ♂ & 6 ♀ Managua, Jan, Feb, Mar, Apr, Jun, Jul, Aug, Nov. 1 ♂ & 1 ♀ Pochomil, Jan, Jul. 6 ♂ & 5 ♀ El Crucero/Las Nubes, Feb, Mar. 1 ♀ Ciudad Dario, Jul.
Type Locality. The type locality of *Thecla zebina* Hewitson is Nicaragua.

Rekoa marius (Lucas, 1857)
Localities. GS: Chontales (Hewitson), Matagalpa (Richardson). RAA/JBS: 52 ♂ & 37 ♀ Managua, Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. 2 ♂ & 2 ♀ El Crucero/Las Nubes, Feb, Aug, Dec. 5 ♂ & 7 ♀ Pochomil, Jan, Jun, Jul, Aug. 1 ♀ Granada, Jul. USNM: 1 ♂ Managua (Todd), Nov.
Remarks. A female from 7 miles SE Managua, July 21, 1976, has a second label "Ex larva on almond blossoms". Other larval food plant records for this polyphagous species are listed in Robbins (1991). Monteiro (1991) showed that the caterpillars turn the same color as the flowers on which they are feeding.

Rekoa stagira (Hewitson, 1867)
Localities. RAA/JBS: 22 ♂ & 13 ♀ Managua, Mar, Apr, May, Aug, Sep, Nov, Dec. 1 ♀ Matagalpa South, Aug. 1 ♀ El Crucero/Las Nubes, Mar.
Type Locality. The type locality of *Thecla thoana* Hewitson, a synonym of *R. stagira*, is Nicaragua.

Arawacus togarna (Hewitson, 1867)
Localities. GS: Chontales (Belt, Janson), Matagalpa (Richardson). RAA/JBS: 5 ♂ & 2 ♀ Managua, Apr, May, Aug. 9 ♂ Bluefields, Jan, Jun, Oct, Dec. 6 ♂ & 4 ♀ Nueva Guinea, Aug, Oct. 1 ♂ San Carlos, Sep. 2 ♂ Rama, Mar. 3 ♂ & 1 ♀ Yolaina, Aug.
Taxonomy. Wing pattern and genitalic variation was documented in Robbins (2010b), where the nomenclature was corrected
Remarks. Although the areas around Managua are classified as Dry and Very Dry Tropical Forest, the Managua specimens of *A. togarna* were found primarily in an area to the east of the city that is a mosaic of habitats. This species is unknown from dry forest in other parts of its range (Robbins 2010b).

Arawacus sito (Boisduval, 1836)
Localities. GS: Chontales (Belt, Janson), Matagalpa (Richardson). RAA/JBS: 46 ♂ & 18 ♀ Managua, Jan, Feb, Apr, May, Jun, Jul, Aug, Nov, Dec. 2 ♂ Granada, Jul. 2 ♂ Matagalpa South, Jul. 2 ♂ Yolaina, Aug. USNM: 1 ♂ San Marcos (Baker).
Type Locality. The type locality of *Thecla phaenna* G&S, a synonym of *A. sito*, is Nicaragua and Honduras.

Arawacus jada (Hewitson, 1867)
Localities. RAA/JBS: 1 ♂ Matagalpa North Aug. 1 ♂ Matagalpa South, Aug. 1 ♀ San Fernando, Jul.

Contrafacia imma (Prittwitz, 1865)
Localities. GS: Chontales (Belt).

Contrafacia bassania (Hewitson, 1868)
Localities. RAA/JBS: 2 ♀ Matagalpa North, Aug. 1 ♂ & 1 ♀ Jinotega, Jan, Jul.

Kolana ligurina (Hewitson, 1874)
Localities. GS: Chontales (Belt). RAA/JBS: 1 ♀ Bluefields, Dec.
Type Locality. The type locality of *Thecla ligurina* Hewitson is Nicaragua.

Ocaria petelina (Hewitson, 1877)
Localities. RAA/JBS: 1 ♀ Matagalpa North, Sep.

Ocaria thales (Fabricius, 1793)
Localities. GS: Chontales (Belt).

Ocaria ocrisia (Hewitson, 1868)
Localities. GS: Chontales (Belt), Matagalpa (Richardson). RAA/JBS: 2 ♂ & 3 ♀ Managua, Jan, Aug, Dec. 23 ♂ & 15 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Nov, Dec. 1 ♂ Granada Jul.

Chlorostrymon simaethis (Drury, 1773)

Localities. RAA/JBS: 3 ♂ & 6 ♀ Managua, Feb. 4 ♂ & 5 ♀ El Crucero/Las Nubes, Feb, Mar, May. 1 ♂ & 4 ♀ Matagalpa, Dec. 1 ♀ Puertas Viejas, Mar.

Chlorostrymon telea (Hewitson, 1868)

Localities. RAA/JBS: 10 ♂ &13 ♀ Managua, Jan, Feb, Mar, May, Jul, Aug, Nov. 9 ♂ & 8 ♀ El Crucero/Las Nubes, Feb, Mar, Nov. 1 ♀ 1 ♂ Bluefields, Jun. 1 ♂ & 2 ♀ Pochomil, Jun, Jul. 3 ♂ Granada, Jul.

Cyanophrys goodsoni (Clench, 1946)

Localities. RAA/JBS: 23 ♂ & 22 ♀ Managua, Jan, Feb, Mar, Apr, May, Aug, Sep, Dec. 1 ♂ & 2 ♀ El Crucero/Las Nubes, Feb, Mar.

Cyanophrys herodotus (Fabricius, 1793)

Localities. GS: Chontales (Belt), Matagalpa (Richardson). RAA/JBS: 81 ♂ & 29 ♀ Managua, Jan, Feb, Mar, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. 2 ♂ & 5 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Apr. 1 ♂ Pochomil, Aug. 2 ♀ Corinto, Jun.

Type Locality. The type locality of *Cyanophrys sullivani* Johnson & Kruse, a synonym of *C. herodotus*, is Nicaragua.

Taxonomy. Sympatric and synchronic individuals of *C. herodotus* from El Salvador may or may not have tails (Robbins & Duarte 2005), but there are no other evident morphological differences between the tailed and un-tailed forms. The same two forms occur in Nicaragua (Figs. 3, 4) and north-western Costa Rica, where preliminary DNA barcoding results (D. Janzen pers. comm.) also reveal no differences between the wing pattern forms. For these reasons we continue to treat these forms as one species.

Remarks. Without dissecting genitalia, it is very difficult to distinguish females of *C. herodotus* without tails from females of *C. goodsoni*, which never have tails, and some of the females listed under *C. goodsoni* may actually be *C. herodotus*.

Cyanophrys miserabilis (Clench, 1946)

Localities. RAA/JBS: 9 ♂ &12 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Apr. 3 ♂ & 3 ♀ Managua, Mar, Jul, Dec.

Cyanophrys agricolor (Butler & H. Druce, 1872)

Localities. RAA/JBS: 1 ♂ Matagalpa North, Jul

Cyanophrys longula (Hewitson, 1868)

Localities. RAA/JBS: 28 ♂ &7 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Apr, Jul, Oct. 1 ♂ & 7 ♀ Matagalpa North, May, Jul, Aug, Oct.

Megathecla cupentus (Stoll, 1781)

Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ Nueva Guinea, Aug.

Thestius epopea (Hewitson, 1870)

Localities. GS: Chontales (Belt).

Remarks. Not recorded northwest of Nicaragua (illustrated in D'Abrera 1995: 1208).

Lathecla species

Localities. RAA/JBS: 2 ♂ Matagalpa North, Sep, Oct.

Taxonomy. This widespread Central American species is being described as part of a generic revision (Robbins & Busby, in prep.).

Allosmaitia strophius (Godart, 1824)

Localities. RAA/JBS: 8 ♂ & 4♀ Managua, Jun, Jul, Aug, Dec. 2 ♂ & 4 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Jul. 1 ♀ Pochomil, Jul.

Laothus oceia (Godman & Salvin, 1887)

Localities. RAA/JBS: 1 ♂ Matagalpa North, Aug.

Taxonomy. Godman and Salvin (1887–1901) described *L. oceia* from Costa Rica and *L. laothoe* from Guatemala, but expressed hesitation at considering them distinct. They distinguished *L. oceia* by a narrower border on the dorsal wings of males and by less black edging along the white lines on the ventral surface of the hindwing near the anal margin. The single known Nicaraguan male (Fig. 2) has the narrow border of *L. oceia* and the black edging of *L. laothoe*, which is consistent with the hypothesis that these names represent geographical variants of one species.

Laothus barajo (Reakirt, 1867)

Localities. GS: Chontales (Belt, Janson). RAA/JBS: 1 ♂ Rama, Mar. 2 ♀ Nueva Guinea, Aug, Oct.

Janthecla janthina (Hewitson, 1867)

Localities. GS: Chontales (Belt, Janson). RAA/JBS: 1 ♂ San Carlos, May.

Lamprospilus collucia (Hewitson, 1877)

Localities. RAA/JBS: 6 ♂ & 8♀ El Crucero/Las Nubes, Feb, Mar. 1 ♀ Rama, Mar. 1 ♀ Matagalpa North, Aug.

Taxonomy. Variation and other aspects of the biology of this species were detailed in Robbins et al. (2010).

Lamprospilus coelicolor (Butler & H. Druce, 1872)

Localities. GS: Chontales (Belt).

Type Locality. The type localities of *Thecla myrsina* Hewitson and *Thecla hena* Hewitson, both synonyms of *L. coelicolor*, are Nicaragua.

Taxonomy. Godman and Salvin (1887–1901) treated the dimorphic sexes as distinct species. However, both males and females have identical distributions in the same habitats and were collected *in copula* by K. Brown in Colombia.

Remarks. Not recorded northwest of Nicaragua (D'Abrera 1995:1207, 1209 figured the female as *coelicolor* and the male as *myrsina*).

Arzecla arza (Hewitson, 1874)

Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ & 1 ♀ Managua, Mar. 7 ♂ & 10 ♀ El Crucero/Las Nubes, Feb, Mar, Nov, Dec. 1 ♂ & 2 ♀ Matagalpa North, Sep.

Type Locality. The type locality of *Thecla arza* is Nicaragua.

Taxonomy. The generic placement of this species was modified in Duarte and Robbins (2010).

Arzecla calatia (Hewitson, 1873)

Localities. GS: Chontales (Belt).

Type Locality. The type locality of *Thecla calatia* is Nicaragua.

Taxonomy. The generic placement of this species was modified in Duarte and Robbins (2010).

Arzecla sethon (Godman & Salvin, 1887)

Localities. RAA/JBS: 1 ♂ Matagalpa North, Jul. 1 ♂ Jinotega, Aug.

Taxonomy. The generic placement of this species was modified in Duarte and Robbins (2010).

Arumecla galliena (Hewitson, 1877)

Localities. GS: Chontales (Belt). RAA/JBS: 35 ♂ & 14 ♀ El Crucero/Las Nubes, Feb, Mar, Apr. 1 ♂ Managua, Nov. 1 ♀ Rio Chontaleña (Scharf), Mar.

Type Locality. The type localities of *Thecla galliena* and *Thecla isopas* G&S, a synonym of *A. galliena*, are Nicaragua.

Camissecla charichlorus (Butler & H. Druce, 1872)

Localities. GS: Chontales (Belt, Janson, Hewitson). RAA/JBS: 3 ♂ Nueva Guinea, Aug.

Type Locality. The type locality of *Thecla capeta* Hewitson, a synonym of *C. charichlorus*, is Nicaragua.

Ziegleria hesperitis (Butler & H. Druce, 1872)

Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ & 1 ♀ El Crucero/Las Nubes, Jul, Nov. 2 ♀ Nueva Guinea, Aug.

Ziegleria hoffmani K. Johnson, 1993

Localities. RAA/JBS: 85 ♂ & 54 ♀ Managua, Jan, Feb, Mar, Jul, Oct, Nov, Dec. 19 ♂ & 12 ♀ El Crucero/Las Nubes, Feb, Mar, Nov, Dec. 2 ♂ Granada, Jul. 2 ♀ Matagalpa South, Dec.

Nomenclature. The spelling of this name and its nomenclatural significance were discussed in Duarte and Robbins (2010).

Ziegleria ceromia (Hewitson, 1877)

Localities. RAA/JBS: 1 ♂ El Crucero/Las Nubes, Feb.

Kisutam micandriana (K. Johnson, 1992)

Localities. RAA/JBS: 1 ♂ & 1 ♀ Matagalpa North, Sep.

Taxonomy. The generic placement of this species was modified in Duarte and Robbins (2010).

Remarks. Not recorded southeast of Nicaragua (Figs. 5, 6).

Kisutam syllis (Godman & Salvin, 1887)

Localities. GS: Chontales (Belt). RAA/JBS: 3 ♂ & 33 ♀ Managua, Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. 1 ♂ & 3 ♀ El Crucero/Las Nubes, Feb, Jul, Aug, Oct, Nov, Dec. 1 ♂ Granada, Jul. 4 ♀ Pochomil, Jul, Aug. 2 ♀ Bluefields, Apr. USNM: 1 ♀ Managua, (Todd), Nov.

Taxonomy. The generic placement of this species was modified in Duarte and Robbins (2010).

Rubroserrata mathewi (Hewitson, 1874)

Localities. RAA/JBS: 28 ♂ & 33 ♀ Managua, Feb, Mar, Jul, Aug, Sep, Oct, Nov, Dec. 1 ♂ & 4 ♀ El Crucero/Las Nubes, Jan, Feb, Dec. 1 ♂ & 2 ♀ Pochomil, Jul, Aug. 1 ♂ Granada, Jul.

Taxonomy. The generic placement of this species was modified in Duarte and Robbins (2010).

Electrostrymon denarius (Butler & H. Druce, 1872)

Localities. GS: Chontales (Belt). RAA/JBS: 50 ♂ & 1 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Jun, Oct, Nov, Dec. 4 ♀ Matagalpa North, Jul, Aug, Sep. 5 ♀ Jinotega, Jul, Aug.

Type Locality. The type locality of *Thecla calena* Hewitson, a synonym of *Z. denarius*, is Nicaragua.

Taxonomy. The generic placement of this species was modified in Duarte and Robbins (2010).

Remarks. This species occurs consistently in lower montane forest and appears to be parapatric with the higher elevation '*E. guzanta* species complex', despite occasional records of both species the same general locality, such as Matagalpa North and Jinotega.

Electrostrymon guzanta (Schaus, 1902)

Localities. RAA/JBS: 4 ♂ & 6 ♀ Matagalpa North, Apr, May, Jul, Sep. 1 ♀ Jinotega, Aug.

Taxonomy. The generic placement of this species was modified in Duarte and Robbins (2010).

Remarks. The phenotypically variable '*E. guzanta* species complex' occurs in montane habitats from Mexico to the Andes, but geographical variation to the southeast of Nicaragua needs to be analyzed. According to current taxonomy, *E. guzanta* is not recorded southeast of Nicaragua.

Electrostrymon hugon (Godart, 1824)

Localities. GS: Chontales (Belt). RAA/JBS: 45 ♂ Managua, Jan, Feb, Mar, Apr, May, Jun, Jul, Sep, Oct, Nov, Dec. 2 ♂ El Crucero/Las Nubes, Mar. 1 ♂ Ciudad Dario, Jul. 2 ♂ Pochomil, Jul, Aug.

Type Locality. The type locality of *Thecla autoclea* Hewitson, a synonym of *E. hugon*, is Nicaragua.

Nomenclature. The recently discovered type of

Polyommatus hugon shows that this name applies to the species previously called *E. sangala* (Hewitson) (Faynel & Bálint 2004).

Taxonomy. The females of this and the following species cannot be distinguished with certainty. It is possible that some females that were listed in Godman and Salvin as *Thecla autoclea* are the next species. The Anderson and Sullivan Collections contain another 79 females that belong to these two species.

Electrostrymon joya (Dognin, 1895)

Localities. RAA/JBS: 46 ♂ Managua, Jan, Feb, Mar, Arp, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. 1 ♂ Granada, Nov. 1 ♂ El Crucero/Las Nubes, Mar. 3 ♂ Pochomil, Jun, Jul. 4 ♂ Matagalpa South, Dec.

Taxonomy. *Electrostrymon joya* is geographically variable and may consist of more than one species (Duarte & Robbins, in prep.). Female identification of *E. joya* in Nicaragua is discussed under *E. hugon*.

Calycopis clarina (Hewitson, 1874)

Localities. RAA/JBS: 1 ♂ Managua, Feb. 2 ♂ El Crucero/Las Nubes, May. 1 ♀ San Fernando (Scharf), Jul.

Calycopis atnius (Herrich-Schäffer, 1853)

Localities. RAA/JBS: 1 ♀ Bluefields, Dec.

Calycopis demonassa (Hewitson, 1868)

Localities. RAA/JBS: 22 ♂ & 18 ♀ Managua, Feb, Mar, Apr, May, Jun, Jul, Aug, Oct, Nov, Dec. 2 ♂ & 7 ♀ El Crucero/Las Nubes, Feb, Mar, Apr, May. 2 ♂ Pochomil, Jul.

Calycopis calus (Godart, 1824)

Localities. GS: Chontales (Belt).

Calycopis cerata (Hewitson, 1877)

Localities. GS: Chontales (Belt). RAA/JBS: 6 ♂ & 3 ♀ Bluefields, Jan, Jun, Dec. 1 Rama, Mar.

Remarks. Although the wing pattern and some genitalic structures of this species are typical of *Calycopis*, others character states are anomalous (Duarte & Robbins 2010). As noted in Duarte and Robbins (2010), it is possible that this species is congeneric with *Kisutam*. If so, it is a rather remarkable instance of evolutionary wing pattern convergence.

Calycopis isobeon (Butler & H. Druce, 1872)

Localities. RAA/JBS: 1 ♂ San Fernando, Jul. 1 ♂ Matagalpa North, Jul.

Identification. Both males were dissected. The convex posterior edge of the labides of the male genitalia apparently occurs only in *C. isobeon* and *C. cecrops* Fabricius (Field 1967).

Nomenclature. Field (1967) designated a male lectotype of *Tmolus isobeon* Butler & H. Druce, but this specimen unfortunately lacks an abdomen. Because definitive identification based on wing pattern is difficult (Field 1967), the identity of this name could possibly change as geographical variation of wing pattern is better documented.

Remarks: These males are the only specimens of *C. isobeon* that we have seen from Nicaragua. None were noted by Field (1967). *Calycopis isobeon* appears to be an uncommon montane species in the southern half of Central America.

Calycopis xeneta (Hewitson, 1877)

Localities. GS: Chontales (Belt, Janson). RAA/JBS: 17 ♂ Nueva Guinea, Jul, Aug, Oct. 4 ♂ Yolaina, Aug.

Type Locality. The type localities of *Thecla xeneta* Hewitson and *Thecla amplia* Hewitson, a synonym of *C. xeneta*, are Nicaragua.

Taxonomy. Godman and Salvin (1887–1901), Field (1967), and D'Abrera (1995) called males of this species *xeneta* and females *amplia*. The sexes were associated in Robbins (2004) because they have the same distribution from Guatemala to western Ecuador, occur in the same very wet lowland/lower montane forest habitats, and are commonly collected together. Schaus (1920) and Field (1967) treated *Calycopis devia* (Möschler) as a South American synonym or subspecies of *C. xeneta*, but both taxa occur in Panama without evident hybridization, for which reason Robbins (2004) listed them as distinct species. Although *C. xeneta* has been recorded widely in South America (e.g., Godman & Salvin 1887–1901, Weeks 1911, Draudt 1919–1920), we have not seen any authentic South American records from localities to the east of the Andes.

Calycopis origo (Godman & Salvin, 1887)/*Calycopis bactra* (Hewitson, 1877)

Localities. GS: Chontales (Belt), Matagalpa (Richardson). RAA/JBS: 52 ♂ & 44 ♀ Managua, Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. 15 ♂ & 10 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Jun, Jul, Nov. 3 ♂ Matagalpa South, Jul, Aug, Dec. 5 ♂ & 5 ♀ Matagalpa North, Dec. 3 ♂ & 2 ♀ Granada, Mar, Jul, Nov. 4 ♂ & 9 ♀ Bluefields, Dec, Jan, Apr, Oct. 4 ♂ & 1 ♀ Pochomil, Jul. 2 ♂ Nueva Guinea Oct. 1 ♀ Rama, Mar. 1 ♂ San Fernando, Jul. 4 ♂ & 1 ♀ Jinotega, Jan. 1 ♂ Yolaina, Aug. 1 ♀ Corn Island (Scharf), Jun. USNM: 2 ♀ Managua (Todd), Nov.

Type Locality. The type locality of *Thecla bactra* Hewitson is Nicaragua.

Identification. We dissected 15 males. Their genitalia are indistinguishable from those of *C. origo* (Hewitson) and *C. susanna*, which have South American male holotypes.

Nomenclature and Taxonomy. The type of *T. bactra*

is a female, which makes identification of this name difficult. For example, Field (1967) could not distinguish females of *C. isobeon* and *C. susanna* Field (a synonym of *C. origo* in Robbins 2004) by wing pattern or genitalia, even though males have distinctively different genitalia. To complicate matters, the type of *T. bactra* lacks an abdomen. As best we can determine, Field's (1967) concept of *C. bactra* included two species, but his characterization was primarily of a species that does not occur in Nicaragua. If the female type of *T. bactra* is really from Nicaragua, it is likely that it is the same species as that now called *C. origo*. If so, *C. bactra* would be the oldest name.

Remarks. This species may occur in more different habitats and localities than any other Nicaraguan hairstreak species. It has been recorded in every month of the year in Managua.

Calycopis drusilla Field, 1967

Localities. RAA/JBS: 16 ♂ & 9 ♀ Bluefields, Jan, Apr, Dec.

Identification and Taxonomy. Field (1967) distinguished *C. drusilla* from *C. origo/C. bactra* (under the name *C. susanna*) by wing pattern and genitalic characters. We distinguish this species by wing pattern alone because we could not distinguish it by the genitalic differences proposed by Field. *Calycopis drusilla* is known only from very wet lowland habitats and is sympatric with *C. origo/bactra* in Bluefields, suggesting that they are distinct species. However, it is possible that the '*drusilla*' wing pattern is a wet lowland phenotype of *C. origo/C. bactra.*

Calycopis trebula (Hewitson, 1868)

Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ Nueva Guinea, Oct.

Calycopis pisis (Godman & Salvin, 1887)

Localities. GS: Chontales (Belt). RAA/JBS: 4 ♀ Bluefields, Dec.

Calycopis orcillula (Strand, 1916)

Localities. RAA/JBS: 2 ♂ & 6 ♀ Bluefields, Jan, Apr, Jun, Dec. 1 ♂ Nueva Guinea

Remarks. Not recorded northwest of Nicaragua (female figured in D'Abrera 1995: 1236, but the figured 'male' is another female).

Strymon melinus (Hübner, 1818)

Localities. RAA/JBS: 4 ♂ & 2 ♀ Managua, Jan, Aug, Oct, Nov, Dec.

Strymon rufofusca (Hewitson, 1877)

Localities. RAA/JBS: 53 ♂ & 38 ♀ Managua, Feb, Mar, May, Jun, Jul, Sep, Aug, Nov, Dec. 1 ♀ El Crucero/Las Nubes, Aug. 1 ♂ Ciudad Dario, Jan, USNM: 2 ♂ & 1 ♀ Managua (Todd), Nov.

Strymon albata (C. Felder & R. Felder, 1865)

Localities. RAA/JBS: 33 ♂ & 8 ♀ Managua, Jan, Feb, Mar, Apr, Jul, Nov, Dec. 4 ♀ El Crucero/Las Nubes, Feb, Mar, Nov. 2 ♂ & 2 ♀ Pochomil, Jun, Jul. 1 ♀ Matagalpa South, Dec.

Strymon bebrycia (Hewitson, 1868)

Localities. RAA/JBS: 4 ♂ & 5 ♀ Managua, Jan, Feb, May, Jun, Aug, Dec. 2 ♂ & 2 ♀ Pochomil, Jul, Aug. 1 ♂ Granada, Jul. 1 ♀ Puerto Somoza, Aug. 7 ♀ Ciudad Dario, Jan. 1 ♂ El Crucero/Las Nubes, Feb.

Strymon yojoa (Reakirt, 1867)

Localities. GS: Chontales (Belt). RAA/JBS: 28 ♂ & 12 ♀ Managua, Jan, Feb, Mar, Apr, May, Jun, Jul, Nov, Dec. 2 ♀ El Crucero/Las Nubes, Feb, Apr. 1 ♂ Granada, Jul. 1 ♂ Pochomil, Jun.

Strymon mulucha (Hewitson, 1867)

Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ Managua, May. 1 ♀ Bluefields, Dec.

Strymon cestri (Reakirt, 1867)

Localities. RAA/JBS: 9 ♂ & 12 ♀ Managua, Jan, Feb, Jun, Apr, May, Dec. 2 ♂ & 16 ♀ El Crucero/ Las Nubes, Feb, Mar, Apr, May, Nov.

Strymon bazochii (Godart, 1824)

Localities. RAA/JBS: 32 ♂ & 33 ♀ Managua, Jan, Feb, Mar, Jul, Aug, Sep, Oct, Nov, Dec. 1 ♂ & 1 ♂ Bluefields (El Bluff), Jun, Oct.

Strymon istapa (Reakirt, 1867)

Localities. GS: Matagalpa (Richardson). RAA/JBS: 21 ♂ & 19 ♀ Managua, Jan, Feb, Mar, Apr, May, Jun, Aug, Nov, Dec. 7 ♀ El Crucero/Las Nubes, Feb, Mar, Apr, May, Aug, Nov. 4 ♀ Pochomil, Jan, Jul, Aug. USNM: 2 ♀ Managua (Todd), Nov.

Strymon gabatha (Hewitson, 1870)

Localities. RAA/JBS: 3 ♀ Bluefields, Apr, Dec.

Strymon megarus (Godart, 1824)

Localities. GS: Chontales (Belt). RAA/JBS: 2 ♂ Managua Feb, Dec.

Taxonomy. Robbins (2010a) discussed geographical variation of this species, which is a major pineapple pest, at least in South America.

Strymon ziba (Hewitson, 1868)

Localities. GS: Chontales (Belt). RAA/JBS: 28 ♂ & 5 ♀ Managua, Feb, Mar, Jul, Aug, Sep, Oct, Nov, Dec. Pochomil, Jun. USNM: 1 ♀ no further data

Remarks. The agricultural literature contains dozens of papers on the biology and control of this species and of *S. megarus*, each of which is a pest of cultivated pineapple (Robbins 2010a).

Tmolus echion (Linnaeus, 1767)

Localities. GS: Matagalpa (Richardson). RAA/JBS: 47 ♂ & 34 ♀ Managua, Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Nov, Dec. 9 ♂ Pochomil, Jul. 1 ♀ Matagalpa North, Aug. 1 ♂ & 3 ♀ El Crucero/Las Nubes, Jan, Mar, May, Nov.

Tmolus crolinus Butler & H. Druce, 1872
Localities. RAA/JBS: 3 ♂ & 2 ♀ San Fernando, Jul. 2 ♀ Matagalpa North, Jul, Aug.

Tmolus cydrara (Hewitson, 1868)
Localities. RAA/JBS: 1 ♂ & 2 ♀ El Crucero/Las Nubes, Feb, Mar, Dec.

Nicolaea viceta (Hewitson, 1868)
Localities. RAA/JBS: 1 ♀ El Crucero/Las Nubes, Feb.
Remarks. Not recorded northwest of Nicaragua (Fig. 9).

Nicolaea ophia (Hewitson, 1868)
Localities. RAA/JBS: 1 ♂ & 2 ♀ Bluefields, Dec.
Remarks. This uncommon, but widespread species occurs in a great diversity of habitats, ranging from very wet lowland forest, such as Bluefields, to very dry scrub at about 1,000 m elevation in Brazil's central plateau (cerrado) to mountain tops over 1,600 m elevation (in at least one case) in Rio de Janeiro state (vouchers in USNM). This diversity of habitats suggest that this name is being applied to a complex of more than one biological species, but so far, morphological evidence for more than one species is lacking.

Nicolaea heraldica (Dyar, 1914)
Localities. RAA/JBS: 1 ♀ Bluefields, Apr.

Ministrymon clytie (W.H. Edwards, 1877)
Localities. RAA/JBS: 24 ♂ & 11 ♀ Managua, Apr, May, Jun, Jul, Aug, Sep, Nov, Dec. 6 ♂ & 9 ♀ Granada, Jul. 5 ♂ & 2 ♀ Pochomil, Jul, Aug. 1 ♂ & 2 ♀ Matagalpa South, Dec. USNM: 1 ♂ Ducuali, Dept. Esteli (Flint & Ortiz), Jun.
Taxonomy. This species, *M. coronta*, *M. santans*, and *M. arola* form a complex that is taxonomically unresolved. The type localities for *Thecla arola* and *T. coronta* are "Brazil" and "French Guiana", respectively, but this complex is otherwise only recorded from Central American deciduous forest, where it may be common at times. At least four different wing pattern forms, spanning a wide range of adult sizes, occur sympatrically and synchronically in Guanacaste, Costa Rica (vouchers in USNM). However, there are no other structural differences among these forms. Three of these wing pattern forms occur sympatrically and synchronically in Pochomil. The identifications of *M. coronta* and *M. santans* are provisional.

Ministrymon coronta (Hewitson, 1874)
Localities. RAA/JBS: 8 ♂ & 2 ♀ Pochomil, Jun, Jul, Aug.
Taxonomy. As noted, this name is provisional.

Ministrymon santans (Dyar, 1926)
Localities. RAA/JBS: 17 ♂ & 12 ♀ Pochomil, Jun, Jul, Aug.
Taxonomy. As noted, this name is provisional.

Ministrymon zilda (Hewitson, 1873)
Localities. RAA/JBS: 1 ♂ Bluefields, Apr.

Ministrymon phrutus (Geyer, 1832)
Localities. RAA/JBS: 12 ♂ & 9 ♀ Managua, Jan, Feb, Apr, May, Jun, Aug, Sep, Dec. 1 ♂ Granada, Jul.

Ministrymon azia (Hewitson, 1873)
Localities. RAA/JBS: 7 ♂ & 8 ♀ Managua, Jan, Feb, May, Jun, Jul, Aug, Sep, Nov. 2 ♀ Granada, Jul. 1 ♀ Matagalpa South, Aug. 1 ♀ Corinto, Jun.

Ministrymon una (Hewitson, 1873)
Localities. GS: Chontales (Janson). RAA/JBS: 1 ♂ Matagalpa North, Sep. 5 ♂ & 6 ♀ Rama, Jan, Mar. 1 ♀ Jinotega, Jan. 1 ♀ San Carlos, Sep. 1 ♀ Bluefields, Dec. 1 ♂ Granada, Nov. USNM: 12 ♂ & 15 ♀ Managua (Todd), Nov.
Type Locality. The type locality of *Thecla scopas* G&S, a synonym of *M. una*, is Nicaragua and Mexico.

Gargina caninius (H.H. Druce, 1907)
Localities. RAA/JBS: 1 ♂ & 5 ♀ Managua, Jul, Aug, Dec.

Gargina gnosia (Hewitson, 1868)
Localities. RAA/JBS: 3 ♂ & 2 ♀ Managua, May, Sep, Dec.

Gargina emessa (Hewitson, 1867)
Localities. GS: Chontales (Belt). RAA/JBS: 9 ♂ & 1 ♀ Managua, Jan, Aug, Nov, Dec. 1 ♀ Pochomil, Jan.
Type Locality. The type locality of *Thecla legytha* Hewitson, a synonym of *G. emessa*, is Nicaragua.
Remarks. Not recorded northwest of Nicaragua (figured in D'Abrera 1995: 1175).

Gargina thoria (Hewitson, 1869)
Localities. RAA/JBS: 16 ♂ & 7 ♀ Managua, Jan, Mar, May, Jun, Aug, Dec.

Siderus leucophaeus (Hübner, 1818)
Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ Bluefields, Dec.
Type Locality. The type locality of *Thecla volupia* Hewitson, a synonym of *S. leucophaeus*, is Nicaragua.

Siderus philinna (Hewitson, 1868)
Localities. RAA/JBS: 1 ♀ Managua, Feb.

Ostrinotes halciones (Butler & H. Druce, 1872)
Localities. GS: Chontales (Belt).

Ostrinotes keila (Hewitson, 1869)
Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ & 1 ♀ Managua, Nov, Dec. 1 ♀ Matagalpa North, Aug.
Type Locality. The type locality of *Thecla parasia* Hewitson, a synonym of *O. keila*, is Nicaragua.

Theclopsis demea (Hewitson, 1874)
Localities. GS: Chontales (Belt). RAA/JBS: 2 ♂ & 1 ♀

Bluefields, Jan, Apr, Dec. 1 ♀ Nueva Guinea, Oct.

Type Locality. The type locality of *T. demea* is Nicaragua.

Remarks. Not recorded northwest of Nicaragua (Figs. 7, 8).

Theclopsis mycon (Godman & Salvin, 1887)

Localities. RAA/JBS: 3 ♂ & 6 ♀ El Crucero/Las Nubes, Jun, Nov, Dec. 1 ♀ Managua, Jan.

Strephonota tephraeus (Geyer, 1837)

Localities. GS: Chontales (Belt, Janson). RAA/JBS: 25 ♂ & 16 ♀ Managua, Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. 4 ♂ & 4 ♀ El Crucero/Las Nubes, Feb, Mar, Apr, Nov. 1 ♂ & 1 ♀ Pochomil, Jul. 1 ♀ Santo Tomás, Mar.

Strephonota species

Localities. RAA/JBS: 1 ♀ Nueva Guinea, Oct.

Taxonomy. A species level taxonomy of the lineage of *Strephonota* to which this species belongs is in preparation by Robbins, Busby, and Faynel.

Strephonota ambrax (Westwood, 1852)

Localities. GS: Chontales (Belt).

Panthiades bitias (Cramer, 1777)

Localities. GS: Chontales (Belt, Janson), Matagalpa (Richardson). RAA/JBS: 26 ♂ & 9 ♀ Managua, Jan, Feb, Mar, Apr, May, Jul, Aug, Sep, Nov, Dec. 1 ♂ & 1 ♀ El Crucero/Las Nubes, Feb. 3 ♂ & 4 ♀ Pochomil, Apr, Jun, Jul. 1 ♂ Granada, Jul. 1 ♂ & 4 ♀ Bluefields, Apr, Jun, Dec. 1 ♂ & 1 ♀ Matagalpa South, Dec.

Panthiades ochus (Godman & Salvin, 1887)

Localities. AMNH: 1 ♂ San Juan del Norte, Aug.

Remarks. Nicolay (1976) noted this specimen, which was part of the F.E. Church collection, but the collector's name on the handwritten locality label appears to be "Field".

Panthiades bathildis (C. Felder & R. Felder, 1865)

Localities. GS: Chontales (Belt, Janson), Matagalpa (Richardson). RAA/JBS: 34 ♂ & 22 ♀ Managua, Jan, Feb, Mar, Apr, May, Jun, Aug, Sep, Nov, Dec. 1 ♀ Pochomil, Aug. 2 ♂ & 3 ♀ El Crucero/Las Nubes Feb, May. 1 ♀ Granada, Jul. 1 ♂ Jinotega, Jan.

Type Locality. The type locality of *Thecla aufidena* Hewitson, a synonym of *P. bathildis*, is Nicaragua.

Panthiades phaleros (Linnaeus, 1767)

Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ & 1 ♀ Granada, Mar. 1 ♀ San Juan del Norte, Mar.

Thepytus arindela (Hewitson, 1874)

Localities. GS: Chontales (Belt).

Nomenclature. Belt's Chontales specimen is the holotype.

Remarks. Not recorded northwest of Nicaragua (Panamanian specimens figured in Robbins et al. 2010).

Porthecla/Oenomaus melleus (Druce, 1907)

Localities. GS: Chontales (Belt).

Taxonomy. Robbins (2004) placed this species in *Porthecla* and Faynel (2007) transferred it to *Oenomaus*. A phylogenetic analysis of *Porthecla* + *Oenomaus* (Faynel & Robbins, in prep.) should resolve the issue.

Remarks. Godman and Salvin (1887–1901) reported three females of *O. atena* from Nicaragua. According to Faynel (2007), one is a male of this species, one is a male lacking an abdomen (identification is thus tenuous), and one is an unidentifiable female of *Oenomaus. Oenomaus atena* occurs as far north as Costa Rica, but we are unaware of any definitive Nicaraguan records.

Oenomaus ortygnus (Cramer, 1779)

Localities. RAA/JBS: 11 ♂ & 9 ♀ Managua, May, Aug, Nov. 1 ♀ Bluefields, Apr. 1 ♂ & 1 ♀ Granada, Jul.

Oenomaus species

Localities. RAA/JBS: 2 ♀ Bluefields, Dec.

Taxonomy. We do not know if the 'unidentifiable female of *Oenomaus*' that Godman and Salvin misidentified as *Thecla atena* (see above) is the same species as these two females. Additionally, there are two problems with the identification of this species. First, Central American males with a ventral wing pattern very similar to these females represent a species that does not have a name (Faynel et al., in prep.). Second, despite superb work on taxonomic characters in males of *Oenomaus* (Faynel 2008, Faynel & Moser 2008), the identification of female *Oenomaus* using morphology is oftentimes not possible.

Remarks. Not recorded northwest of Nicaragua.

Parrhasius polibetes (Stoll, 1781)

Localities. RAA/JBS: 19 ♂ & 11 ♀ Managua, Jan, Feb, Mar, Jul, Aug, Sep, Nov. 7 ♂ & 9 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Nov.

Parrhasius moctezuma (Clench, 1971)

Localities. RAA/JBS: 1 ♂ Matagalpa North, Aug.

Remarks. Not recorded southeast of Nicaragua (Fig. 11). Maes et al. (1999) recorded the food plant as *Senecio* (Asteraceae).

Michaelus phoenissa (Hewitson, 1867)

Localities. GS: Chontales (Hewitson).

Michaelus jebus (Godart, 1824)

Localities. RAA/JBS: 3 ♂ & 2 ♀ Managua, Jan, Aug, Nov. 7 ♂ & 3 ♀ El Crucero/Las Nubes, Feb, Mar.

Michaelus hecate (Godman & Salvin, 1887)

Localities. GS: Matagalpa (Richardson). RAA/JBS: 2 ♂ & 3 ♀ Pochomil, Jul. 1 ♀ El Crucero/Las Nubes, Mar.

Michaelus ira (Hewitson, 1867)

Localities. RAA/JBS: 42 ♂ & 4 ♀ Managua, Jan,

May, Jun, Jul, Aug, Oct, Nov, Dec. 2 ♂ Pochomil, Jul, Aug. 1 ♂ & 1 ♀ El Crucero/Las Nubes, Feb, Nov.

Ignata gadira (Hewitson, 1867)

Localities. RAA/JBS: 3 ♂ & 3 ♀ El Crucero/Las Nubes, Feb, Mar.

Ignata caldas Robbins, 2010

Localities. RAA/JBS: 1 ♂ El Crucero/Las Nubes, Mar.

Hypostrymon critola (Hewitson, 1874)

Localities. RAA/JBS: 1 ♂ Granada, Jul.

Remarks. Not recorded southeast of Nicaragua (Fig. 12).

Nesiostrymon dodava (Hewitson, 1877)

Localities. RAA/JBS: 1 ♂ Matagalpa North, Jul.

Iaspis andersoni Robbins, 2010

Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ Managua, Feb.

Iaspis castimonia (H.H. Druce, 1907)

Localities. RAA/JBS: 1 ♀ Jinotega, Jan.

Celmia celmus (Cramer, 1775)

Localities. GS: Chontales (Belt).

Celmia conoveria (Schaus, 1902)

Localities. RAA/JBS: 5 ♂ & 3 ♀ Managua, Aug, Oct, Nov, Dec. 2 ♀ El Crucero/ Las Nubes, Feb, Mar.

Erora carla (Schaus, 1902)

Localities. RAA/JBS: 1 ♂ & 1 ♀ Managua, May, Oct. 2 ♂ & 11 ♀ El Crucero/Las Nubes, Jan, Feb, Mar, Nov.

Taxonomy. Female wing pattern is geographically variable, and it is unclear if more than one species is represented by this name in Central America.

Chalybs janias (Cramer, 1779)

Localities. GS: Chontales (Belt). RAA/JBS: 1 ♂ & 3 ♀ Bluefields, Dec.

Chalybs hassan (Stoll, 1790)

Localities. RAA/JBS: 5 ♂ & 3 ♀ Managua, Mar, Feb, Jun, Jul, Aug, Nov. 9 ♂ & 13 ♀ El Crucero/Las Nubes, Feb, Mar.

Symbiopsis rickmani (Schaus, 1902)

Localities. RAA/JBS: 3 ♀ Bluefields, Jan, Dec.

Taxonomy. Previously known as *S. smalli* Nicolay (Robbins 2004).

Remarks. Not recorded northwest of Nicaragua (Fig. 10).

73 Species Recorded both Northwest and Southeast of Nicaragua

Mithras colombiensis (K. Johnson & Constantino, 1997), *Brangas carthaea* (Hewitson, 1868), *Brangas* species, *Brangas getus* (Fabricius, 1787), *Thaeides theia* (Hewitson, 1870), *Enos falerina* (Hewitson, 1867), *Enos thara* (Hewitson, 1867), *Atlides halesus* (Cramer, 1777), *Atlides polybe* (Linnaeus, 1763), *Atlides inachus* (Cramer, 1775), *Atlides carpasia* (Hewitson, 1868), *Theritas lisus* (Stoll, 1790), *Micandra cyda* (Godman & Salvin, 1887), *Temecla heraclides* (Godman & Salvin, 1887), *Thereus orasus* (Godman & Salvin, 1887), *Thereus ortalus* (Godman & Salvin, 1887), *Arawacus hypocrita* (Schaus, 1913), *Contrafacia ahola* (Hewitson, 1867), *Kolana lyde* (Godman & Salvin, 1887), *Ocaria arpoxais* (Godman & Salvin, 1887), *Magnastigma elsa* (Hewitson, 1877), *Cyanophrys amyntor* (Cramer, 1775), *Cyanophrys fusius* (Godman & Salvin, 1887), *Bistonina erema* (Hewitson, 1867), *Lathecla latagus* (Godman & Salvin, 1887), *Janthecla rocena* (Hewitson, 1867), *Arzecla tarpa* (Godman & Salvin, 1887), *Arzecla paralus* (Godman & Salvin, 1887), *Camissecla vespasianus* (Butler & H. Druce, 1872), *Calycopis tamos* (Godman & Salvin, 1887), *Calycopis buphonia* (Hewitson, 1868), *Calycopis caesaries* (H.H. Druce, 1907), *Strymon alea* (Godman & Salvin, 1887), *Strymon astiocha* (Prittwitz, 1865), *Strymon serapio* (Godman & Salvin, 1887), *Tmolus mutina* (Hewitson, 1867), *Nicolaea dolium* (H.H. Druce, 1907), *Nicolaea* species, *Nicolaea velina* (Hewitson, 1868), *Ministrymon arola* (Hewitson, 1868), *Ministrymon inoa* (Godman & Salvin, 1887), *Ministrymon cleon* (Fabricius, 1775), *Gargina gargophia* (Hewitson, 1877), *Theclopsis leos* (Schaus, 1913), *Ostrinotes purpuriticus* (H.H. Druce, 1907), *Ostrinotes* species, *Strephonota syedra* (Hewitson, 1867), *Strephonota ericeta* (Hewitson, 1867), *Porthecla porthura* (H.H. Druce, 1907), *Thepytus echelta* (Hewitson, 1867), *Oenomaus atesa* (Hewitson, 1867), *Oenomaus taua* Faynel & Moser, 2008, *Parrhasius orgia* (Hewitson, 1867), *Michaelus thordesa* (Hewitson, 1867), *Michaelus joseph* Robbins, 2010, *Ignata norax* (Godman & Salvin, 1887), *Hypostrymon asa* (Hewitson, 1868), *Apuecla maeonis* (Godman & Salvin, 1887), *Apuecla upupa* (H.H. Druce, 1907), *Nesiostrymon calchinia* (Hewitson, 1868), *Nesiostrymon celona* (Hewitson, 1874), *Aubergina paetus* (Godman & Salvin, 1887), *Aubergina hicetas* (Godman & Salvin, 1887), *Aubergina* species, *Iaspis temesa* (Hewitson, 1868), *Dicya dicaea* (Hewitson, 1874), *Dicya carnica* (Hewitson, 1873), *Erora subflorens* (Schaus, 1913), *Erora nitetis* (Godman & Salvin, 1887), *Erora aura* (Godman & Salvin, 1887), *Erora gabina* (Godman & Salvin, 1887), *Erora opisena* (H.H. Druce, 1912), *Semonina ares* (Godman & Salvin, 1887).

DISCUSSION

History of Collectors. The Nicaraguan Eumaeini records in the Biologia Centrali Americana are based

upon specimens collected by Belt, Janson, and Richardson, and in a few cases, upon specimens in Hewitson's collection for which the collector was usually unstated. Belt (1874) lived in Nicaragua from 1868 to 1872 and worked as a mining engineer. His insect collecting was done during his "spare" time, which also included more general observations on Nicaraguan natural history, with an emphasis on birds and geology. Most insects that Belt collected in Chontales were apparently from the vicinity of Santo Domingo (~600 m elevation wet forest with some hills at slightly higher elevations) (Bates 1872, Belt 1874), but neither Santo Domingo nor the date of capture was noted on the locality labels. According to Belt (1874), Janson visited Nicaragua specifically to collect insects, but we do not otherwise know much about him. Richardson was hired to collect insects specifically for the Biologia project (Selander & Vaurie 1962). All Richardson records were published in the 1901 addendum of Godman and Salvin.

Richard A. Anderson resided in Nicaragua from 1973 to 1976 and collected butterflies as an avocation with special emphasis on Lycaenidae and Hesperiidae (Anderson 2007). J. Bolling Sullivan collected with Anderson for two weeks in 1975 and prepared many of the specimens collected by Anderson.

All other Nicaraguan specimens in museum collections, so far as we are aware, are from short trips, such as those of Todd in the USNM, for which butterfly collecting was not the primary objective. These records mostly represent common and widespread species.

Biogeography. Highlands of rugged ridges up to about 1800 m elevation in central Nicaragua support a mixed forest of oak, pine, and tree ferns that is classified as Dry and Wet Subtropical Forest (Holdrige 1962). To the north, these ridges are continuous with the mountains of Honduras. In southern Nicaragua, the ridges grade into low rolling hills so that there is a lowland gap between the central highlands of Nicaragua and the mountains of Costa Rica. Historically, this area was considered for a Nicaraguan canal before the Isthmus of Panama was chosen.

Most hairstreak species in the Nicaraguan highlands, such as *Laothus oceia* (Fig. 2), *Ocaria petelina*, *Brevianta tolmides*, and *Temecla paron*, occur widely from Mexico to Panama, and sometimes to South America. However, *Kisutam micandriana* (Figs. 5, 6), *Parrhasius moctezuma* (Fig. 11), and possibly *Electrostrymon guzanta* (a species complex in need of taxonomic revision) are recorded only from Mexico to Nicaragua. They reach the southern limit of their distribution in Nicaragua, which is consistent with the break in the mountains in the southern part of the country. Nicaragua is the northern distributional limit for two lower montane species, *Thepytus arindela* (figured in Robbins et al. 2010) and *Thestius epopea* (figured in D'Abrera 1995: 1208). Since *T. arindela* was described in 1874 from a Chontales male, only three other individuals have been documented (Robbins et al. 2010), so this distributional limit is likely to be an artifact of undersampling. *Thestius epopea*, on the other hand, is a reasonably common species in some parts of its range (Godman & Salvin 1887–1901), so this distributional limit may be correct. However, neither Anderson nor Sullivan found this species, which is usually most common in the morning in wet lower-montane forest (Robbins unpubl.).

The coastal Nicaraguan life zones are shared with Costa Rica to the southeast and with Honduras to the northwest. A broad hot, humid coastal plain comprised of Humid and Very Humid Lowland and Lower Montane Forest (Holdrige 1962) dominates the Caribbean coast in all three countries and extends to South America. Similarly, a narrower coastal plain comprised of Tropical Dry and Very Dry Forest (Holdrige 1962) extends along the Pacific coast in all three countries, sometimes interspersed with more humid forest at moderate elevations (El Crucero/Las Nubes is an example).

In Central America *Lamprospilus coelicolor* (D'Abrera 1995 figured the female as *coelicolor* on page 1207 and the male as *myrsina* on page 1209), *Calycopis orcillula* (D'Abrera 1995 figured the female on page 1236), *Theclopsis demea* (Figs. 7, 8), *Oenomaus* species, and *Symbiopsis rickmani* (Fig. 10) are primarily denizens of Caribbean-slope wet lowland forests (*L. coelicolor* may also be found at higher elevations) and occur from Nicaragua, where they reach their northern distributional limit, to South America. They may eventually be found further north. *Pseudolycaena marsyas* (Fig. 1) inhabits many kinds of habitats in South America; the difficulties with its taxonomy are noted in the species accounts.

Hypostrymon critola (Fig. 12) was found on the Pacific slope of Nicaragua. It occurs from southern Arizona (in the mountains) and Baja California (Clench 1975, Brown et al. 1992) to Nicaragua, where it reaches its southern known limit. Clench (1975) noted that this species seems to occur with halophilous shrubs, but this observation has not been investigated further.

Nicolaea viceta (Fig. 9) is a rare species in the Central American part of its range, where there are five records from Panama, Costa Rica, and Nicaragua. It occurs in wet and dry forest, and reaches its known northern limit in Nicaragua.

Gargina emessa (figured in D'Abrera 1995: 1175) is

a common species that occurs in a great variety of wet and dry lowland forests under 1,000 m elevation. It reaches the northern limit of its distribution in Nicaragua, but may well occur further north.

Eumaeus godartii (illustrated in D'Abrera 1995: 1101) occurs in a great variety of lowland and montane forest habitats from South America (west of the Andes) to Nicaragua, wherever its Cycadaceae larval food plants occur (DeVries 1977, reared vouchers from Puntarenas, Costa Rica and Valle, Colombia in USNM). This species is not sympatric with *Eumaeus toxea*, which occurs in a similar variety of habitats from Honduras to Mexico and uses the same larval food plants (Ross 1964, Kendall & McGuire 1984). Since the distribution of *E. godartii* does not seem to be limited by its habitat or the distribution of its larval food plants, perhaps food plant competition or mating interference with *E. toxea* prevents its occurrence further northwest.

In sum, no eumaeine species is known to be endemic to Nicaragua. Of the currently known fauna, about 10% has their distributional limit in Nicaragua. Four species (*K. micandriana, E. guzanta, P. moctezuma*, and *H. critola*) are unknown south of Nicaragua and eleven (*Eumaeus godartii, Pseudolycaena marsyas, Thestius epopea, Lamprospilus coelicolor, Calycopis orcillula, Nicolaea viceta, Gargina emessa, Theclopsis demea, Thepytus arindela, Oenomaus* species, and *Symbiopsis rickmani*) are unrecorded north of Nicaragua.

Eumaeine Fauna. The recorded eumaeine fauna of Nicaragua with 149 species is more than double the 71 species listed in Godman and Salvin (1887–1901). Another 73 species, which have not been found in Nicaragua, are recorded both to the northwest and to the southeast. Further, the highlands are likely to contain montane species currently known only to the northwest while the wet Caribbean coastal plain is likely to harbor species currently known only to the southeast. For these reasons, the Nicaraguan eumaeine fauna is likely to be greater than 200 species, perhaps substantially so.

ACKNOWLEDGEMENTS

Dan Janzen and Winnie Hallwachs shared information on reared and DNA barcoded Costa Rican lycaenids. Christophe Faynel and Bob Busby provided information on hairstreak taxonomy, which greatly improved this paper, and made suggestions that improved the accuracy of the manuscript. Paul Scharf accompanied Anderson on many collecting trips and provided him with collected material. John Brown made many helpful suggestions on the discussion of biogeography. John Shuey made available Belize specimens that have improved our taxonomic identifications. For help with recording data, we are grateful to Brian Harris. Karie Darrow made the photographic plate, which amply illustrates her talent. Finally, we thank Lourdes Chamorro for critically reading the manuscript and correcting a number of errors.

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Received for publication 18 February 2011; revised and accepted 5 October 2011