A TAXONOMIC REVISION OF THE ARCHIPINI OF THE CARIBBEAN (LEPIDOPTERA, TORTRICIDAE, TORTRICINAE)

A Thesis

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of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Master of Science

by

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ABSTRACT

The Archipini fauna of the Caribbean is revised to include 33 species. Most previously described species occurring in the region are redescribed and figured. Fourteen new species are described, three new combinations are presented, and six new synonymies are proposed. In addition, previously unplaced Neotropical species (i.e. “Archipini unplaced”) are assigned to genera. This results in one new genus, seven new combinations, and two additional new synonymies. Males of three species and females of two species are described for the first time. The concept of *Claduncaria* Razowski is expanded and given a new diagnosis. A unique external sexual coupling mechanism in *Claduncaria* is proposed and discussed. Genus and species keys, distribution maps, a regional checklist, Neighbor-joining and Maximum Likelihood trees based on COI barcode sequence data are provided. Phylogenetic relationships among Caribbean Archipini are briefly discussed.

BIOGRAPHICAL SKETCH

Kyhl Alexander Austin was born on March 16, 1996 in East Ridge, Tennessee to Deron Nyhl Austin and Lesley Ann Austin. He graduated high school from Chattanooga Christian School in Chattanooga, Tennessee in May 2014. He attended Davidson College in Davidson, North Carolina and earned a B.S. in Biology in May 2018. In June 2018, he began his studies at Cornell University, where he worked towards an M.S. in Entomology.

To my family and friends, without whom none of this would have been possible.

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My academic committee gave me helpful feedback throughout my time at Cornell. Dr. Jason J. Dombroskie, Dr. James K. Liebherr and Dr. Robert A. Raguso gave thoughtful advice and critical comments as I planned and wrote this thesis. Special thanks go to Dr. Jason Dombroskie for recruiting me to Cornell, encouraging my current and future scientific pursuits, and securing funding for my work at Cornell.

I thank my family and friends for their support and encouragement during my time at Cornell. Special thanks go to my loving parents, Deron and Lesley.

As each chapter is an independent publication, each chapter has an individual acknowledgments section.

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PREFACE

I began this thesis in June 2018 at the suggestion of Dr. Jason J. Dombroskie, my academic advisor, who thought it would be a manageable group to work on for a master's thesis. I was broadly interested in moth taxonomy and systematics before arriving at Cornell, but did not have a particular group that I had a strong preference for. With Jason's help, I quickly became enamored with tortricids and took the Caribbean Archipini and made them my own.

Overall, the Archipini of the Caribbean were poorly understood taxonomically prior to my work, with only recent and hasty treatments. Several synonymies quickly became apparent, and for a time I thought it possible to end up with fewer species in the region than when I began. As it turned out, there were many undescribed species, primarily from Hispaniola, and we now know that regional diversity is in fact much higher than previously estimated.

In addition to taxonomic work, I also discovered a novel sexual coupling mechanism in the endemic Caribbean genus *Claduncaria*, which may prove to be a highly-derived lineage of *Argyrotaenia*. Regardless of its taxonomic status, *Claduncaria* represents a promising avenue for future studies in sexual conflict, morphology, and biogeography.

Several genera provisionally placed in Archipini (*Mictopsichia*, *Mictocommosis*, *Rubropsichia*, and others) belong elsewhere and may represent distantly related lineages of diurnal moths that have converged on similar wing patterns. Some of these genera may be paraphyletic as they are currently circumscribed.

The Caribbean Archipini are now in much better shape than they were two years ago. My work has laid the groundwork for a better understanding of tortricid diversity in the Caribbean and the Western Hemisphere.

CHAPTER 1

A REVIEW OF THE ARCHIPINI OF THE BAHAMAS WITH THE DESCRIPTION OF A NEW SPECIES OF *ARGYROTAENIA* STEPHENS (TORTRICIDAE)

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Abstract

Recent surveys in The Bahamas recorded four species of Archipini. Of these, *Argyrotaenia flavoreticulana* Austin & Dombroskie, **sp. n.** is described and illustrated, while *A. amatana* (Dyar), *A. kimballi* Obraztsov, and *Clepsis peritana* (Clemens) are reported from The Bahamas for the first time. Because of the difficulty of identifying the latter three species, they are redescribed and figured. A key to the Archipini of The Bahamas is included.

Introduction

The tribe Archipini has a worldwide distribution but is sparsely represented in the Neotropics (Razowski 1997, Razowski & Becker 2010). The Caribbean fauna in particular is poorly studied and many new species await description (KAA & JJD pers. obs.). At present, there are no published records of Archipini in The Bahamas. Historical surveys have focused primarily on macrolepidoptera (Hampson 1901, 1904). Ongoing surveys led by JYM have begun to shed light on the diversity of Bahamian Tortricidae (Brown et al. 2018, Gilligan et al. 2018). The present work reports three previously-described species of Archipini from The Bahamas and describes a new species. The latter is distinctive among *Argyrotaenia* based on forewing pattern and is compared to *Epichoristodes acerbella* (Walker), a superficially similar African species with which it might be confused. Whereas the Caribbean

Archipini fauna is usually endemic to a single island (KAA & JJD pers. obs.), the Archipini fauna of The Bahamas is unique in that three of its four species are shared with Florida. At present, there are no known species shared between The Bahamas and any other Caribbean island.

Materials and methods

Material from the following collections was examined:

CUIC Cornell University Insect Collection, Ithaca, New York, USA

MEM Mississippi Entomological Museum, Starkville, Mississippi, USA

MGCL McGuire Center for Lepidoptera and Biodiversity, Gainesville, Florida, USA

TM Research collection of Tim L. McCabe, Albany, New York, USA

USNM U.S. National Museum of Natural History, Washington D.C., USA

Host records were gathered from the following additional collections:

FSCA Florida State Collection of Arthropods, Gainesville, Florida, USA

We examined five pinned adult specimens and five genitalia preparations (three males, two females) of the new species, and these were compared to adults and genitalia of all other described *Argyrotaenia* species for which we could find images and/or descriptions. Additionally, we reviewed monographic treatments of the genus (Freeman 1944, Clarke 1958, Obraztsov 1961, Powell 1960, 1964, 1965, Razowski 1964, 1988, 1991, 1999, Heppner 1989, Brown & Cramer 2000, Razowski & Becker 2000, 2010, Razowski & Pelz 2004, Razowski & Wojtusiak 2006ab, 2008, 2009, 2010, Trematerra & Brown 2004) to confirm its novelty. Records of larval hosts summarized in Tables 1 and 2 were found in literature cited as well as material examined. Presence of these hosts in The Bahamas is based on Coker & Shattuck (1905) and Correll & Correll (1982).

Dissection methods follow Landry (2007) except 10% KOH solution was used instead of 20%, and abdomens were allowed to soak or gently heated until tissue was sufficiently

dissolved; however not all dissections were slide-mounted to allow lateral imaging of the male genitalia. Genitalia and abdomens, when not slide mounted, are preserved in glycerol-filled microvials pinned beneath the specimen. Genitalia were stained with a combination of Orange-G or Eosin Y and chlorazol black. Forewing (FW) length was measured on a straight line from the base of the costa to the apex including the fringe. The majority of color terminology follows Ridgway (1912).

Images of adults and genitalia were captured using a Macroscopic Solutions Macropod Pro and Canon EOS 6D DSLR camera body using the Macro Photo MP-E 65mm f/2.8 1–5× manual focus lens for EOS or EF 70–200mm zoom lens with 10× or 20× Mitutoyo objective lenses for male genitalia. Additional adult images were produced with a Canon 70D and Canon 100mm IS macro lens and genitalia images with a Leica DFC425 camera, DM2500 microscope, LAS core software, and external LED epi-illumination. Images were stacked as needed using Zerene Stacking Software Version 1.04 (Zerene Systems, LLC 2014). Figures were manipulated with Adobe Photoshop CC (2015). Maps were created with SimpleMappr (Shorthouse, 2010).

Morphological terms, including those for genitalia, follow Razowski (2008) with the exception of the “phallus”, which we use instead of “aedeagus”.

Results

Key to the known species of Archipini of The Bahamas.

1. Forewing predominantly yellow, banding obsolete (Fig. 2a–c)…….
……...*Argyrotaenia flavoreticulana*, **sp. n.**

1'. Forewing with banding apparent….....……2

2. Forewing with brown median fascia and subapical blotch, never with red or orange shades (Fig. 2e) ..…….....……..*Clepsis peritana*

2'. Forewing with median fascia and subapical blotch usually red or orange..….....3

3. Forewing with median fascia bicolored, subbasal and submedian interfascia wide, distinct in entirety; hindwing variable, but never orange (Fig. 2d)…….....
…...…….....*Argyrotaenia kimballi*

3'. Forewing highly variable, but not as above; hindwing usually orange (Fig. 1a-f)……
...…….....…….....….*Argyrotaenia amatana*

Argyrotaenia amatana (Dyar, 1901)

(Figs. 1a–f; 3a; 4a,f; 5a)

Lophoderus amatana Dyar, 1901: 24.

Eulia amatana (Dyar, 1901): Fernald, [1903]: 485.

Tortrix chioccana Kearfott, 1907: 72.

Argyrotoxa chiococcana Meyrick, 1912: 52; unjustified emendation

Type material.

Syntypes, 3♀♀: USA: Florida, Palm Beach Co., Palm Beach, r.f. *Nectandra* [=*Ocotea*] [photos examined, USNM].

Additional specimens examined. (13♂♂, 15♀♀)

THE BAHAMAS: Cat Island: 1♂, vic. Ocean Dream Resort, E of Smith Town; 24.232273°, –75.454536°, 23 vi 2014, J. Miller, M. Simon, D. Matthews, G. Goss, Bahamas Survey MGCL Accession No. 2014-15, MGCL 238585 (MGCL); 1♀, same as previous but MGCL 238590 (MGCL); 1♂, same as previous but MGCL 238601 (MGCL). **Crooked Island:** 1♂, 1.5 mi. E of Landrail Pt., 22.813263°, –74.321186°, 10 vi 2013, M. Simon, G. Goss, M. Simon MGCL Accession No. 2013-21, MGCL 233031 [KAA dissection #0001] (MGCL); 1♀, same as previous but 6 vi 2013, M. Simon & G. Goss, MGCL 234816 (MGCL); 1♀, same as previous but MGCL 232998 (MGCL); 1♀, Pittstown Point, 22.831211°, –74.438717°, 9 vi 2013, M. Simon, G. Goss, M. Simon MGCL Accession No. 2013-21, MGCL 232999 (MGCL); 1♀, N side of Horseshoe Beach nr. Gun Bluff, 22.835432°, –74.323017°, 6 vi 2013, M. Simon, G. Goss, M. Simon MGCL Accession No.

2013-21, MGCL 232997 (MGCL); 1♂, 0.5 mi. E of Ferry at Church Grove Settlement, 22.758933°, –74.242501°, 6 vi 2014, M. Simon & M. Simon, Bahamas Survey MGCL Accession No. 2014-13, MGCL 236778 (MGCL). **Eleuthera:** 1♂, N of Queen's Hwy, 2.4 mi. SE Governor's Harbour, 25.174333°, –76.2105°, 26 vi 2014, J. Miller, M. Simon, D. Matthews, G. Goss, Bahamas Survey MGCL Accession No. 2014-15, MATTHEWS GENITALIA PREP. #1800, MGCL 239708 (MGCL). **Grand Bahama:** 1♂, vic. Owl's Hole, 26.587496°, –78.469854°, 27 × 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-31, MGCL 241372 (MGCL). **Great Exuma:** 1m, SW of Hoopers Bay, 23.518167°, –75.823667°, 26 v 2014, J. Miller, M. Simon, D. Matthews, G. Goss, Bahamas Survey MGCL Accession No. 2014-14, MGCL 235147 [KAA dissection #0002] (MGCL); 1♂, same as previous but MGCL 234182 (MGCL); 1♀, same as previous but KAA dissection #0003, MGCL 235148 (MGCL); 1♀, Simons Pt., 23.31.50, 75.47.30 [23.53238°, –75.79478°], 18 iv 1986, T. L. McCabe (MEM); 1♀, same as previous but 17 i 1980 (MEM). **Great Inagua:** 1♀, 3 mi. SW of Morton dock, 21.022222°, –73.685556°, 27 vii 2014, M. J. Simon, G. Goss, Bahamas Survey MGCL Accession No. 2014-21, MGCL 237690 (MGCL); 1♀, 1.3 mi. NNE of Morton dock, 21.066111°, –73.638056°, 27 vii 2014, M. J. Simon, G. Goss, Bahamas Survey MGCL Accession No. 2014-21, MGCL 238059 [KAA dissection #0004] (MGCL). Long Island: 1♂, NE of Whitehouse, 23.407167°, –75.160500°, 1 vi 2014, J. Miller, G. Goss, M. Simon, D. Matthews, Bahamas Survey MGCL Accession No. 2014-14, MGCL 235953 (MGCL); 1♀, Deadman's Cay, vic. Airport, 23.1755°, –75.096333°, 29 v 2014, J. Miller, G. Goss, M. Simon, D. Matthews, Bahamas Survey MGCL Accession No. 2014-14, MGCL 235817 (MGCL). **Mayaguana:** 1♂, Pirates Well, Baycaner Beach, 22.435833°, –73.102222°, 31 vii–

1 viii 2014, M. J. Simon, G. Goss, Bahamas Survey MGCL Accession No. 2014-21, MGCL 237511 [KAA dissection #0005] (MGCL). **New Providence:** 1♂, Adventure Learning Zoo off Marshall Rd., 25.004472°, –77.353807°, 10 iv 2014, J. Miller, M. Mundle, D. Matthews & Entomology Class, Bahamas Survey MGCL Accession No. 2014-10, MGCL 235078 (MGCL). **North Abaco:** 1♀, 1 mi. S of Blackwood Village, 26.785115°, –77.431319°, 6 vi 2016, J. Miller, M. Simon, G. Goss, D. Matthews, Bahamas Survey MGCL Accession No. 2016-09, MGCL 246725 (MGCL). **North Andros:** 1♂, Stanyard Creek Road, 24.730556°, –77.886111°, 6-7 vi 2013, J. Miller, M. Simon, G. Goss, A. Shahan, J. Y. Miller colln., MGCL Accession #2010-45, MGCL 233013 (MGCL). **San Salvador:** 1♂, beach NE of Gerace Research Centre, 24.120114°, –74.461898°, 24 vii 2015, D. Matthews, T. A. Lott, R. W. Portell, SAN SALVADOR ISLAND SURVEY ID, D. Matthews et al., MGCL Acc. #2015-57, MGCL 243204 [KAA dissection #0006] (MGCL). **South Andros:** 1♀, farm road north of The Bluff, 24.130088°, –77.59068°, 30 iii 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-9, MGCL 233852 (MGCL). **USA: Florida:** 1♂, Miami-Dade Co., 17-18 iii 1939, J. C. Bradley, J. G. FRANCLEMONT DISSECTION #C569 (CUIC); 1♀, Monroe County, Boot Key, 16 vi 1987, T. L. Schiefer [KAA dissection #0007] (CUIC).

Diagnosis.

This is an exceedingly variable species. Externally, it most resembles *Argyrotaenia neibana* Razowski, 1999, at present known only from the female holotype, described from the Dominican Republic. It is best separated by examination of the female genitalia. The apophyses anteriores are shorter and the capitulum of the signum is larger in *A. amatana*

compared to *A. neibana*. However, *A. neibana* may prove to be a synonym of *A. amatana* (KAA & JJD, in prep.). In North America, females are not likely to be confused with any described species. However, males may be confused with smaller specimens of *Argyrotaenia ivana* (Fernald, 1901). *Argyrotaenia amatana* can usually be separated from this species by its orange hindwing and the lack of a reticulated pattern thereon. Male genitalia are distinct, the uncus is spatulate in *A. amatana* (Fig. 3a) and as broad as long in *A. ivana*.

Redescription. Male (n=10)

Head. Scales on vertex maize yellow to mahogany. Frons concolorous with vertex, sometimes with area around antennal bases lighter in those with darker vertex scaling. Labial palpus approximately 1.5× as long as width of compound eye; uniformly mahogany, except in some specimens with maize yellow distal scales of second segment; second segment expanding distally, extending just beyond basal scales of terminal segment. Medial surface of palpus maize yellow. Scape maize yellow to mahogany; sensilla variable in width and shape, short (0.5× width of flagellomere) and relatively straight in some individuals, as wide as flagellomere and hooked in others; dorsal scales of flagellum alternating between a mahogany row and a similarly-sized buff-yellow row, giving the antennae a banded appearance. Ocellus small, separated from compound eye by approximately 0.5× width of ocellus. Bristles of chaetosemata approximately 0.25× length of scales on frons. **Thorax.** Dorsum of pro- and mesothorax concolorous with vertex, sometimes with scattered darker scales; tegulae usually also concolorous, but occasionally with dark brown scales; dorsal scaling on metathorax maize yellow to buff-yellow, concolorous with hindwing. Foreleg predominantly brown to black with medial surface of femur maize yellow. Midleg

mahogany, outer surface of femur and tibia maize yellow, shorter of two spurs black, tarsi black. Hindleg maize yellow to white, tarsi and spurs occasionally tinged with darker scales. Forewing markings (Figs. 1a,c,e) highly variable, length 4.5–6.0mm (mean = 5.2; n = 10), costal fold absent, dorsal surface varying chiefly in shade of submedian interfascia. In some individuals (Figs. 1a,c), forewing almost uniformly maize yellow, giving a much more contrasting overall appearance. In others, it is much more mottled (Fig. 1e). Median fascia and subapical blotch varying from mahogany (Fig. 1c) to dark brown (Figs. 1a,e). Fringe varying from dark brown (Figs. 1a,e) to maize yellow (Fig. 1c). Ventral surface maize yellow to mahogany. Dorsal surface of the hindwing equally variable; usually orange (Fig. 1e), but occasionally maize yellow (Fig. 1c) or brown (Fig. 1a), slightly produced at the apical tip. Fringe concolorous with hindwing. Ventral surface varies from white to pale orange.

Abdomen. Posterior segments of abdomen concolorous with hindwing. Genitalia (Fig. 3a) (n = 6) with uncus spatulate, bulb approximately 1.25× wider than neck; socius obsolete; arms of gnathos broad and of uniform width; tegumen somewhat narrow; transtilla complete, uniform in width, unadorned; valva broadly rounded, almost circular, sacculus well-developed, with slight angle at middle, reaching apex of valva; juxta hexagonal with V-shaped notch; phallus (Fig. 4f) pistol-shaped, with sockets for cornuti in a dense patch at proximal tip. Redescription.

Redescription. Female (n=12)

Head. Similar to male except antenna with sensilla minute, barely noticeable in most individuals, appressed. Dorsal scales of flagellum slightly darker than in males. **Thorax.** Thorax, legs as in males. Forewing (Figs. 1b,d,f) length 5–7 mm (mean = 6.3; n = 12). Dorsal

surface of forewing with similar range of variation as in male. Median fascia and subapical blotch varying from mahogany (Fig. 1b) to dark brown (Fig. 1d,f); usually a patch of maize yellow scales just basad of median fascia on inner margin, never reaching costa as in some males. Patch more developed in some individuals (Fig. 1d) than in others (Fig. 1f); ventral surface as in male. Hindwing as in male. Frenulum with 2–4 bristles, often asymmetrical in number. **Abdomen.** Vestiture of abdomen as in male. Genitalia (Fig. 4a) with papillae anales broadly triangular, widening distally, slightly curved laterally, evenly roughened on ventral surface; apophyses posteriores 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII; sterigma semicircular, smoothly rounded; ductus bursae longer than corpus bursae, widening gradually; proximal sclerite of the ductus bursae present; ductus seminalis arising at 0.25× length of ductus bursae; corpus bursae round; signum slender, J-shaped; capitulum of signum large, rounded, and curved anteriorly.

Distribution.

Prior to this study, *A. amatana* was known exclusively from Florida. Barrows (1991) included records from as far north as St. Johns County, but most records are from southern Florida. In The Bahamas, *A. amatana* is known from Cat Island, Crooked Island, Eleuthera, Grand Bahama, Great Exuma, Great Inagua, Long Island, Mayaguana, New Providence, North Abaco, North Andros, San Salvador, and South Andros (Fig. 5a).

Biology.

Argyrotaenia amatana is a generalist, feeding on many different plant families (Table 1). It can be an occasional greenhouse pest (JJD pers. obs.).

Argyrotaenia flavoreticulana Austin & Dombroskie, **new species**

(Figs. 2a–c, 3b, 4b, 5b)

Diagnosis.

Externally, *A. flavoreticulana* is superficially similar to *Epichoristodes acerbella* (Walker, 1864), an African species, but it is readily separated by the genitalia. In males, *A. flavoreticulana* has distinctly rectangular valvae and a dense patch of long setae near the costal base of the valvae, whereas males of *E. acerbella* have broadly rounded valvae and lack the patch of long setae near the costal base of the valvae. Females of *E. acerbella* are readily separated by their much longer apophyses and ductus bursae as well as the shape of the corpus bursae and signum. The corpus bursae in *E. acerbella* is bean-shaped with a rounded horn-like signum; whereas that of *A. flavoreticulana* is round with a J-shaped pointed signum. Among *Argyrotaenia*, it can be distinguished by FW pattern and color alone. The male genitalia of *A. flavoreticulana* most closely resemble those of *A. bisignata* Razowski, 1999 from the Dominican Republic, but *A. flavoreticulana* possesses a wider uncus which is deflexed abruptly from the tegumen at nearly a 90º angle.

Description. Male.

Head. Scales on vertex maize yellow, slightly darker towards frons. Frons with smooth, appressed scaling; yellow scaling continuing down middle from vertex; scaling black laterally. Labial palpus approximately 1.5× as long as width of compound eye; tricolored; basal segment primarily white with occasional mahogany scales; second segment primarily

mahogany on lateral surface, expanding distally, where intermixed with long white and black scales; terminal segment black, extending just beyond terminal scales of second segment. Medial face of palpus maize yellow. Scape mahogany, sensilla approximately as long as flagellomere width, strongly hooked distally; dorsal scales of flagellum alternating between mahogany row and slightly wider, maize yellow row. Ocellus small, separated from compound eye by approximately 1× width of ocellus. Bristles of chaetosemata approximately 0.33× length of scales on frons. **Thorax.** Dorsum of pro- and mesothorax buff-yellow, slightly darker than vertex of head; tegulae buff-yellow; dorsal scaling on metathorax white, concolorous with hindwings. Foreleg usually black, occasionally maize yellow. Midleg buff-yellow intermixed with black scales, tarsi black. Hindleg maize yellow to white, tarsi mostly black. Forewing (Fig. 2a,c) length 6–7 mm (mean = 6.3; n = 3), costal fold absent, dorsal surface with indistinct maize yellow to buff-yellow reticulation with intermittent dark scales; fringe maize yellow; ventral surface maize yellow, unmarked. Dorsal surface of hindwing divided into two color regions demarcated by CuA2: white on costal side, pale gray on anal side. Fringe usually maize yellow to white, sometimes with a row of dark basal scales on anal half, cubital pecten present; ventral surface white, unmarked. **Abdomen.** Posterior segments of abdomen concolorous with paler portion of hindwing, anterior segments concolorous with darker portion of hindwing. Genitalia (Fig. 3c,d) (n = 3) with uncus broad, elongate, evenly rounded, slightly expanded distally, abruptly deflexed from tegumen at base and dorsally nearly straight in lateral view; socius obsolete; arms of gnathos moderate, uniform in width throughout, joined in a sharp terminal point; tegumen broader than that of *A. amatana*; transtilla slender, thread-like, complete; valva rectangular with apex slightly produced (variable in extent), with a patch of long, dense setae arising near base, scattered setae near

apex and along fold in disc of valva; sacculus broad to 0.67× its length, then narrowing slightly; juxta hexagonal with V-shaped notch; phallus (Fig. 3h) pistol-shaped, even throughout except for at proximal tip, where it widens ventrally; approximately 15 spindle-shaped, deciduous cornuti.

Description. Female.

Head. Similar to male except antenna with sensilla less than 0.5× length of flagellomere, appressed, not hooked as in male. Ocellus slightly smaller than in male, separated from compound eye by approximately 0.5× the width of ocellus. Thorax. Thorax as in male. Legs with similar variation to male, but with slightly less prominent dark scaling on mid- and hindleg tarsi. **Forewing** (Fig. 2b) length 7.5–8.5 mm (mean=8.0; n=2). Dorsal surface of forewing with similar pattern of reticulated maize yellow to buff-yellow as in male, but with two distinct black smudges along inner margin, first at approximately 1/4 and second at approximately 2/3 from wing base, second slightly larger than first, neither reaching more than halfway to costa. Dorsal surface of hindwing, ventral surfaces of both wings as in male. Frenulum with two or three bristles, asymmetrical in number on one specimen examined. **Abdomen.** Vestiture of abdomen as in male. Genitalia (Fig. 4b) (n=2) with papillae anales elongate and triangular, widening slightly distally, evenly roughened on ventral surface; apophyses posteriores 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII; sterigma broadly U-shaped, slightly angled laterally; ductus bursae longer than corpus bursae, widening gradually distally; proximal sclerite of the ductus bursae present; ductus seminalis arising at 0.25× length of ductus bursae; corpus bursae round; signum thick, J-shaped with capitulum of signum large, rounded, opposite-facing.

Holotype.

♂, **THE BAHAMAS: Great Exuma:** Simons Pt., 23.31.50–75.47.30 [23.53238°, –75.79478°], 10 April 1986, Tim L. McCabe, T. McCabe collection, HOLOTYPE ♂ *Argyrotaenia flavoreticulana* Austin & Dombroskie, 2019 handwritten red label (deposited in CUIC).

Paratypes. 2♂♂, 2♀♀:

THE BAHAMAS: Long Island: 1♂, blue hole E of Anderson, 23.533233°, –75.237334°, 31.v.2014, J. Miller, G. Goss, M. Simon, D. Matthews, Bahamas Survey MGCL Accession No. 2014-14, MGCL 236227 [KAA dissection #0008] (MGCL); 1♀, same as previous but Bahamas Survey MGCL Accession No. 2014-14, MATTHEWS GENITALIA PREP. #1843, MGCL 236228 (MGCL). **South Andros:** 1♂, W of The Bluff Settlement, 24.106939°, –77.557659°, 29 iii 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-9, MATTHEWS GENITALIA PREP. #1825, MGCL 233628 (MGCL). **Great Exuma:** 1♀, Simons Pt, 23.31.50, 75.47.30 [23.53238°, –75.79478°], 17 January 1980, Tim L. McCabe, T. McCabe Collection (TM). All paratypes with the following handwritten yellow label: PARATYPE ♂/f *Argyrotaenia flavoreticulana* Austin & Dombroskie, 2019.

Distribution. At present, this species is known exclusively from The Bahamas, where it has been collected on Great Exuma, Long Island, and South Andros (Fig. 5b). Biology. Nothing is known of its biology. Specimens range in capture date from January to May.

Etymology. The specific epithet is a reference to the reticulated (*reticulatus* Latin) forewing pattern of this new species combined with the yellow (*flavo*- Latin) ground color.

***Argyrotaenia kimballi* Obraztsov, 1961**

(Figs. 2d, 3c, 4c, 5c)

Argyrotaenia kimballi Obraztsov, 1961: 13.

Type material.

Holotype, ♂ USA: Florida, Highlands Co., Archbold Biological Station, 10 ii 1958, R. W. Pease, Jr., genitalia on slide, no. 509-Obr. (photo examined, AMNH). Paratypes (5♂♂, 1♀): 2♂♂, same as holotype but 25 xii 1957 and 5 i 1958; 3♂♂, same as holotype but 31 xii 1959, 5 i 1960, and 14 i 1960, S. W. Frost (Collection of C. P. Kimball), ♀, same as holotype but 22 ii 1958 (genitalia on slide, no. 510-Obr.) (photo examined, AMNH).

Additional specimens examined. (30♂♂, 13♀♀)

THE BAHAMAS: North Andros: 1♂, Captain Bill's Blue Hole, 24.742046°, -77.862031°, 13 vi 2012, Mark Simon, Gary Goss, Rick Rozycki & Michael Simon, M. Simon MGCL Accession No. 2012-28, MGCL 233014 (MGCL); 1♂, 2.4 mi. S of Staniard Creek, dirt road W of Queen's Hwy., 24.797594°, –77.888264°, 27 x 2011, J.Y. Miller, M. Simon, G. Goss, D. Matthews, MGCL Accession No. 2011-32, MGCL 233015 (MGCL). **South Abaco:** 1♂, Schooner Bay, coppice trail, 26.167000°, –77.181167°, 30 x 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-31, MATTHEWS GENITALIA PREP. #1795, MGCL 238664 (MGCL); 1♂, Schooner Bay Institute,

26.161333°, –77.187667°, 31 x 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-31, MGCL 241639 (MGCL); 1♂, vicinity of Sawmill Sink, 26.218346°, –77.210170°, 31 x 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, N. & M. Albury, Bahamas Survey MGCL Accession No. 2014-31, MGCL 241702 (MGCL). **USA: Alabama:** 2♂♂, Cleburne Co., Talladega N.F., Skyway Mtwy, 33.702, –85.596, 28 vi 2008, J. J. Dombroskie, D. Lawrie (CUIC); 1♂, Baldwin Co., Bon Secour N.W. Refuge, 30°13’50”N, 87°49'58"W, 15 v 1994, Ronald W. Hodges (USNM). **Florida:** 4♂♂, 1♀, Baker Co., Osceola National Forest, 30°23'01"N, 82°19'51"W, 19 vi 2006, J. J. Dombroskie et al. (CUIC); 1♀, Marion Co., Ocala National Forest, Delancey Lake [Lake Delancy], 29°25'37"N, 81°47'22"W, 22 vi 2006, J. J. Dombroskie et al. (CUIC); 1♂, Manatee Co., Oneco, 1 April 1954, J. G. Franclemont, R. Lambert genitalia slide #902 (CUIC); 1♀ same as previous but 30 March 1954 (CUIC). **Louisiana:** 1♂, St. John Parish, Edgard, 4 March 1982, V. A. Brou (USNM). **Maryland:** 1♂, Dorchester Co., 3 mi. E. Hurlock, 26 iv 1990, J. Glaser (USNM); 1♂, 2♀♀, same as previous but 2 v 1992 (USNM); 1♂, same as previous but 10 v 2001 (USNM); 1♂, Dorchester Co., 9 mi. SE Cambridge, 11 v 1995, J. Glaser (USNM); 1♀, Taylors Island, salt marsh, 1 v 2001, J. Glaser (USNM); 1♂, Somerset Co., Deal Island WMA, 29 viii 1996, J. Glaser (USNM); 1♂, Wicomico Co., 3 m. W Mardela Springs, 20 May 1995, J. Glaser (USNM); 1♂, Worcester Co., Vaughn WMA, 15 ix 1998, J. Glaser (USNM); 1♂ same as previous but 14 iv 1994; J. Glaser (USNM). **Mississippi:** 1♂, George Co., 3 mi. N Lucedale, 16 ii – 7 iii 1997, R. Kergosien (CUIC); 1♀, Tishomingo Co., Woodall Mountain, 22 vii 2004, Ricky Patterson (CUIC); 1♀, Jackson Co., Shepard State Park, 19 ix – 2 x 1995, R. Kergosien (CUIC). **North Carolina:** 1♀, Moore Co., Niagara, 8 iv 1964 (USNM); 1♀, Richmond Co., Hoffman, 21 April 2001, J. Glasser

(USNM). **South Carolina:** 4♂♂, 2♀♀, Charleston Co., McClellanville, Wedge Plantation, 24 iii 1969, Ronald W. Hodges (USNM); 1♀ same as previous but 21 iii 1968 (CUIC); 1♂ same as previous but 7 iv 1970 (CUIC); 1♂ same as previous but 13 iv 1970 (CUIC).

Diagnosis.

A. kimballi can usually be separated from other species of *Argyrotaenia* by the distinctly bicolored median fascia, the wide pale gray or sometimes pink-washed submedian interfascia, and the absence of a clublike projection into the median fascia, which is present in some other members of the *velutinana* group (e.g., *A. floridana* Obraztsov, *A. hodgesi* Heppner, *A. tabulana* Freeman). We were unable to find any consistent characters in the male or female genitalia to separate *kimballi* from other members of the difficult *velutinana* group.

Redescription. Male.

Head. Scales on vertex variable in color, ranging from buff-yellow in specimens from Florida and The Bahamas to nearly black in more northern populations; frons mahogany. Labial palpus about 1.25× width of compound eye, basal segment variable, white to buff-yellow to mahogany; second segment buff-yellow to mahogany, occasionally intermixed with black scales; terminal segment buff-yellow to orange, occasionally all black. Medial surface of palpus maize yellow. Scape mahogany, sensilla no longer than width of flagellomere, straight or nearly so; dorsal scales of flagellum alternating between maize yellow and dark brown to black, variable in width of the black bands: black dominates in northern populations, but is noticeably reduced in populations from Florida and The

Bahamas. Ocellus small, separated from compound eye by width of ocellus. Bristles of chaetosemata approximately 0.25× length of scales on vertex. **Thorax.** Dorsum of pro- and mesothorax variable in color of scales, ranging from maize yellow to dark brown. Specimens from Florida and The Bahamas tend to have a distinctive mahogany band just behind head, whereas this area is dark brown in most other northern populations. Tegula equally variable, ranging from buff-yellow to mahogany to dark brown. Dorsal scaling on metathorax white. Foreleg and midleg predominantly black. Hindleg maize yellow to white, tarsi with scattered black scales. Forewing (Fig. 2d) 5.0–9.5 mm (mean = 7.1; n = 25), costal fold absent, dorsal surface usually with distinctly bicolored median fascia demarcated by costal edge of cell: mahogany on costal side, orange on inner margin side. The submedial and subbasal interfascia are wide and distinct, usually white with blue-gray or occasionally pink shading. Basal blotch mahogany with two less distinct fascia overlaying it, fringe maize yellow to orange to pale brown; ventral surface maize yellow, banding pattern of dorsal surface usually visible on costal margin. Dorsal surface of hindwing unicolorous, varying from maize yellow to pale brown, fringe light gray to buff-yellow; ventral surface concolorous. **Abdomen.** Vestiture of abdomen concolorous with hindwing, terminal segment white. Genitalia (Fig. 3c) with uncus narrow, uniform in width, rounded at apex; socius obsolete; arms of gnathos moderate, uniform in width throughout, joined in a sharp terminal point; tegumen typical for genus; transtilla broad at edges, narrowing slightly medially, complete; valva somewhat rectangular with rounded corners with sparsely scattered setae throughout, more dense below fold in valva; sacculus narrow, almost reaching apex of valva, juxta nearly diamond-shaped with Y-shaped slit; phallus sickle-shaped, narrowing gradually to proximal tip, where sockets for cornuti are present.

Redescription. Female.

Head. Similar to male except antenna with sensilla minute, barely noticeable, no more than 0.5× width of flagellomere, scape color variable. **Thorax.** Thorax as in male. Legs similar to male, but some with slightly less prominent black scaling. Forewing length 6.5–11.0 mm (mean = 8.6; n = 13). Dorsal surface of forewing similar pattern as in male, but some with less contrasting median fascia. Submedial and subbbasal interfascia slightly more washed out in some specimens. Hindwing as in male. **Abdomen.** Vestiture of abdomen as in male. Genitalia (Fig. 4c) with papillae anales broad and loosely triangular, broadly rounded, evenly roughened on ventral surface; apophyses posteriores short, approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII; sterigma broadly U-shaped, slightly angled laterally; ductus bursae not much longer than corpus bursae, barely extending past sternum VII, widening gradually; proximal sclerite of the ductus bursae present; ductus seminalis arising at 0.25× length of ductus bursae; corpus bursae round; signum thick, J-shaped with capitulum of signum small, barely noticeable.

Distribution.

In The Bahamas, *A. kimballi* is known only from North Andros and South Abaco. In the United States, it ranges from eastern Texas east to Florida and north to Tennessee and Maryland (Fig. 5c).

Biology.

Bullock et al. 1997 reported this species as being a minor pest on *Citrus* (Rutaceae) in Florida. Its host preferences in the rest of its range is unknown.

Remarks.

Further work needs to be done to elucidate useful genitalia characters in the *A. velutinana* group. We suspect minor differences in the juxta and transtilla of the males may exist. At present, most identifications must be based on wing pattern, size, and distribution.

Clepsis peritana (Clemens, 1860)

(Figs. 2e, 3d, 4d)

Smicrotes peritana Clemens, 1860: 356.

Tortrix peritana (Clemens, 1860); Fernald, 1882: 18.

Ptycholoma peritana (Clemens, 1860); Freeman, 1958: 58.

Dichelia inconclusana Walker, 1863: 318.

Type material.

Lectotype, ♂ "Canada and USA" (ANSP) (not examined).

Specimens examined. (2♂♂, 6♀♀)

THE BAHAMAS: Central Abaco: 1♂, E side of S.C. Bolle Hwy., 3 mi. S of Treasure Cay Rd., 26.656294°, –77.306661°, 2 xi 2014, MGCL 239361 (MGCL); 1♀, same as previous but MGCL 239362 (MGCL). **USA: Alabama:** 1♀, Cleburne Co., Talladega N.F., Skyway Mtwy, 33.702, –85.596, 28 vi 2008, J. J. Dombroskie, D. Lawrie (CUIC). **Arizona:** 1♀,

Cochise Co., Southwest Research Sta., 31.883, –109.206, 19 viii 2012, J. J. Dombroskie et al. (CUIC). **Florida:** 1♀, Alachua Co., Gainesville, 29°40'09"N, 82°20'04"W, 10 vi 2006, J. J. Dombroskie et al. (CUIC). **Mississippi:** 1♀, Lafayette Co., Franklin Lake Rec. Area, 34.532, –89.458, 22 vi 2008, J. J. Dombroskie, D. Lawrie (CUIC). **New York:** 1♀, Tompkins Co., Ithaca, 42.451, –76.465, 17 vi 2012, J. J. Dombroskie (CUIC). **Virginia:** 1♂, Fairfax Co., 1km E Fairfax City, 31 v 2006, J. Brown, DNA voucher 2906 (CUIC).

Diagnosis.

Males of *Clepsis peritana* are most likely to be confused with *Clepsis penetralis* Razowski, 1979 and positive identification of males may be problematic. Kruse & Powell (2014) mentioned that *C. peritana* possessed a distally-bent phallus, which *C. penetralis* lacks, but we found this to be highly variable and unreliable for separating the two species. At present, we believe the best way to diagnose males is through association with known females. Females are among the few *Clepsis* which lack a signum and possess a tightly coiled ductus bursa (Fig. 4d). In this regard, it is most similar to *C. pinaria* Razowski & Becker, 2010, described from Cuba. However, *C. peritana* possesses a small sclerotized projection adjacent to the ostium, which *C. pinaria* lacks.

Redescription. Male.

Head. Scales on vertex and frons buff-yellow. Labial palpus about 1.5× width of compound eye, all three segments orange-yellow. Medial face of palpus maize yellow. Scape buff-yellow, sensilla no longer than width of flagellomere, straight or nearly so; dorsal scales of flagellum alternating between buff-yellow and dark brown. Ocellus small, separated from

compound eye by less than 0.5× width of ocellus. Bristles of chaetosemata approximately 0.33× length of scales on vertex. **Thorax.** Scales on dorsum of pro- and mesothorax buff-yellow to brown. Tegulae buff-yellow. Dorsal scaling on metathorax white. Foreleg coxa and femur mixed pale drab ventrolaterally, coxa pale buff dorsolaterally, tarsomeres banded brown and pale buff; midleg mixed pale drab and buff, tarsomeres banded drab to brown and pale buff, spurs pale drab, unequal, lateral spur shortest and drab laterally; hindleg pale buff. Forewing (Fig. 2e) 4.6–5.5 mm (mean = 5.1; n = 2) costal fold absent, wing pattern with brown median fascia and subapical blotch overlaying a buff-yellow base sometimes with a small dark spot near end of cell and/or a small dark streak in basal area; ventral surface brown, banding pattern of dorsal surface visible. Dorsal and ventral surface of hindwing pale brown, fringe concolorous. **Abdomen.** Genitalia (Fig. 3d) with uncus spatulate; socius absent; arms of gnathos moderate, uniform in width throughout, joined in a sharp terminal point; tegumen slender; transtilla incomplete mesally, armed with several sharp spines; valva somewhat triangular, membranous on the distal half; sacculus broad, tapering to a sharp point halfway to apex; juxta close to circular, truncated posteriorly; phallus unevenly bent distally with sharp apex and a single short, thin cornutus.

Redescription. Female.

Head. Similar to male except antennae with sensilla shorter. **Thorax.** Legs as in male. Forewing length 4.5–6.5 mm (mean = 5.3; n = 6), similar to male. Frenulum with 3–4 bristles. **Abdomen.** Genitalia (Fig. 4d) with papillae anales somewhat trapezoidal with extension on proximal side, with large tubercles on distal side; apophyses posteriores 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII;

sterigma broadly U-shaped, with small protrusions just lateral of ostium bursae; ductus bursae much longer than corpus bursa, tightly coiled throughout its entire length; proximal sclerite of ductus bursae present; ductus seminalis near base of ductus bursae; bulla seminalis large, oval; corpus bursae round; signum absent.

Distribution.

This is one of the most widespread tortricids in the Western Hemisphere. Its range extends from Alaska east to Newfoundland and south to Costa Rica. However, because of the difficulty in separating it from *C. penetralis*, the range should be considered tentative at best. Biology. *Clepsis peritana* is a generalist known to feed on both dead and live plant tissue, as well as an unconfirmed record from fungus (Table 2).

Acknowledgments

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FIGURES

Figure 1.
Argyrotaenia amatana adults. **1a:** ♂, Bahamas, Crooked Island, MGCL 236778 (MCGL). **1b:** ♀, Bahamas, Cat Island, MGCL 238590 (MGCL). **1c:** ♂, Bahamas, Cat Island, MGCL 238585 (MGCL). **1d:** ♀, Bahamas, Crooked Island, MGCL 232998 (MGCL). **1e:** ♂, Bahamas, Great Exuma, MGCL 234182 (MGCL). **1f:** ♀, Bahamas, Crooked Island, MGCL 234816 (MGCL). Figures not to scale.

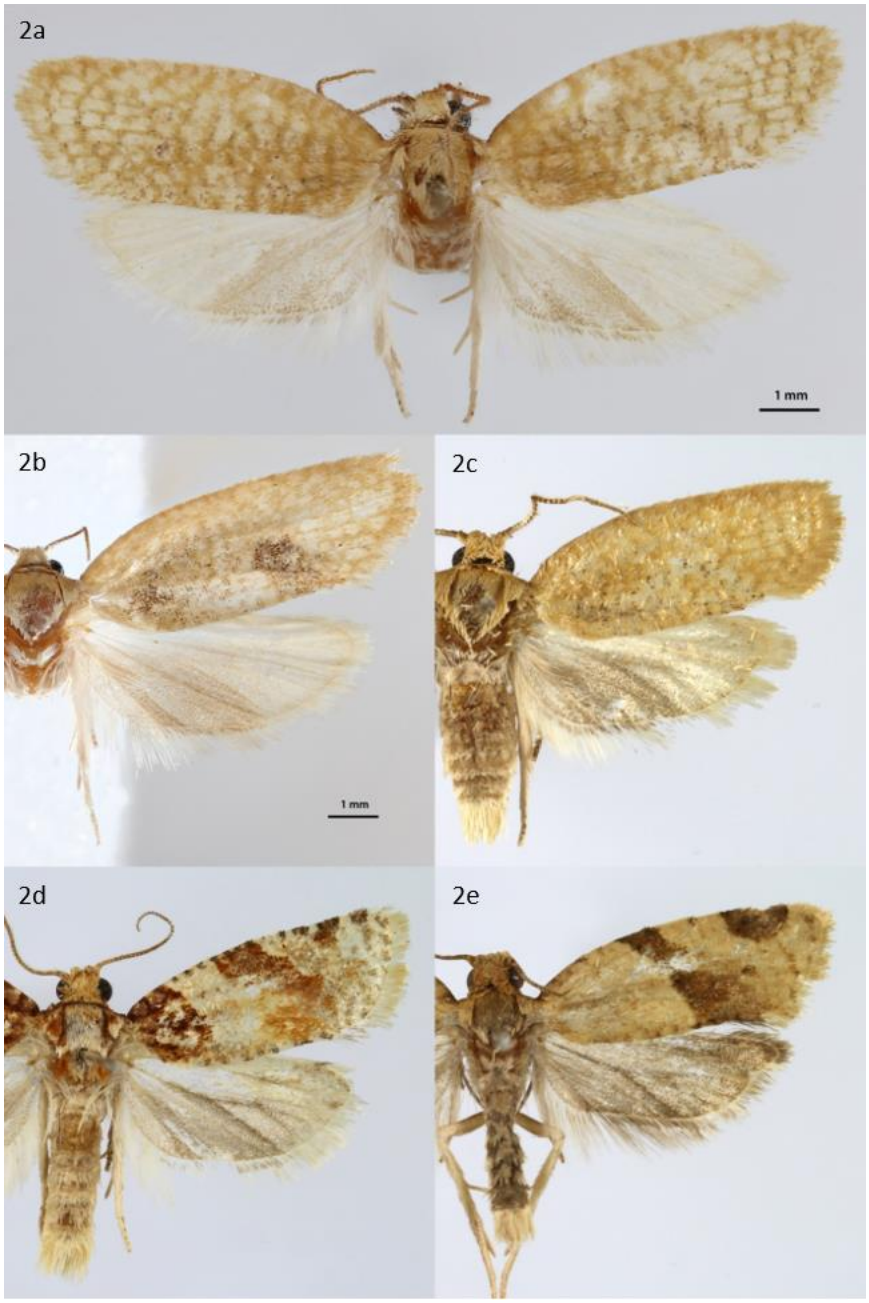

Figure 2.
Archipini adults. **2a:** *Argyrotaenia flavoreticulana*, **sp. n.** holotype ♂, Bahamas, Great Exuma (CUIC). **2b:** *Argyrotaenia flavoreticulana*, **sp. n.** paratype ♀, Bahamas, Long Island, MGCL 236228 (MGCL). **2c:** *Argyrotaenia flavoreticulana*, **sp. n.** paratype ♂, Bahamas, Long Island, MGCL 236227 (MGCL). **2d:** *Argyrotaenia kimballi* ♂, Bahamas, South Abaco, MGCL 241639 (MGCL). **2e:** *Clepsis peritana* ♂, Bahamas, Central Abaco, MGCL 239361 (MGCL). Figures not to scale except where noted.

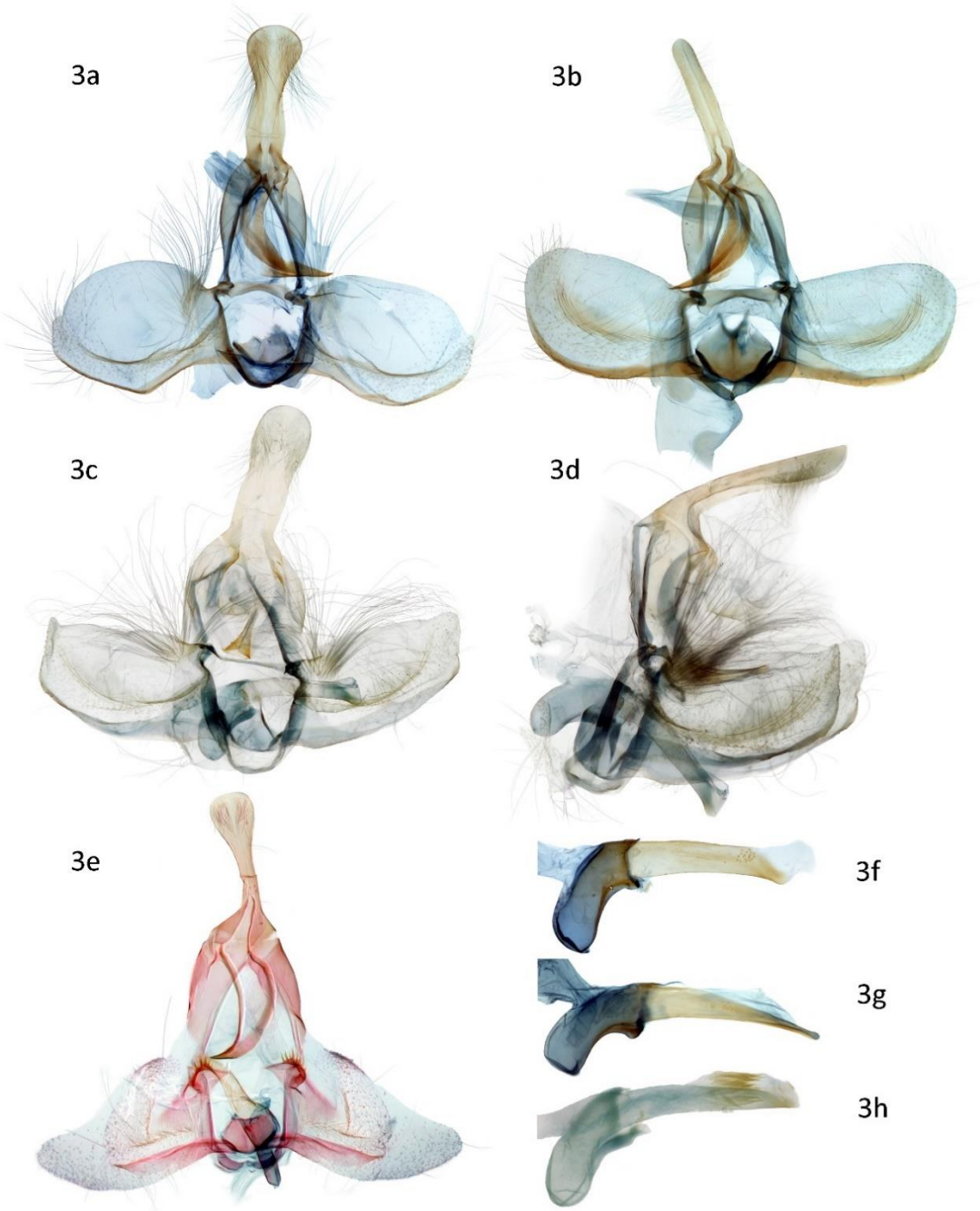

Figure 3.
Archipini male genitalia. **3a:** *Argyrotaenia amatana*, Bahamas, Great Exuma, MGCL 234179 (MGCL). **3b:** *Argyrotaenia kimballi*, Bahamas, South Abaco, MGCL 238664 (MGCL). **3c:** *Argyrotaenia flavoreticulana*, holotype, dorsal view, Bahamas, South Abaco (CUIC). **3d:** *Argyrotaenia flavoreticulana* **sp. n.**, holotype, lateral view, Bahamas, South Abaco (CUIC). **3e:** *Clepsis peritana*, Bahamas, Central Abaco, MGCL 239361 (MGCL). **3f:** *Argyrotaenia amatana* phallus, same specimen as 3a. **3g:** *Argyrotaenia kimballi* phallus, same specimen as 3b. **3h:** *Argyrotaenia flavoreticulana* **sp. n.** phallus, paratype, Long Island, MGCL 236227 (MGCL). Figures not to scale.

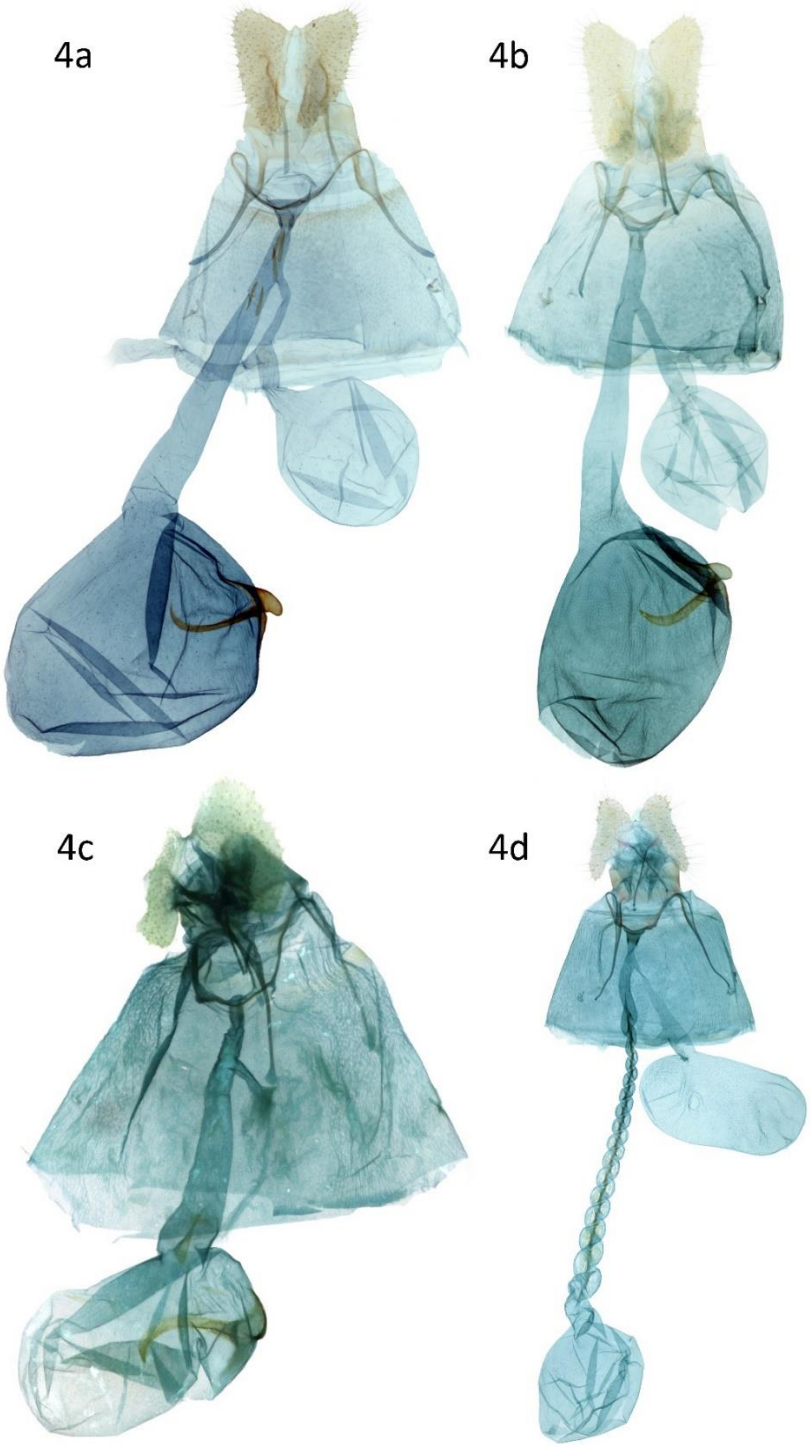

Figure 4.
Archipini female genitalia. **4a:** *Argyrotaenia amatana*, Bahamas, Great Exuma, MGCL 235672 (MGCL). **4b:** *Argyrotaenia flavoreticulana*, **sp. n.** paratype, Bahamas, Long Island (CUIC). **4c:** *Argyrotaenia kimballi*, USA, Florida, Manatee County (CUIC). **4d:** *Clepsis peritana*, Bahamas, Central Abaco, MGCL 239362 (MGCL).

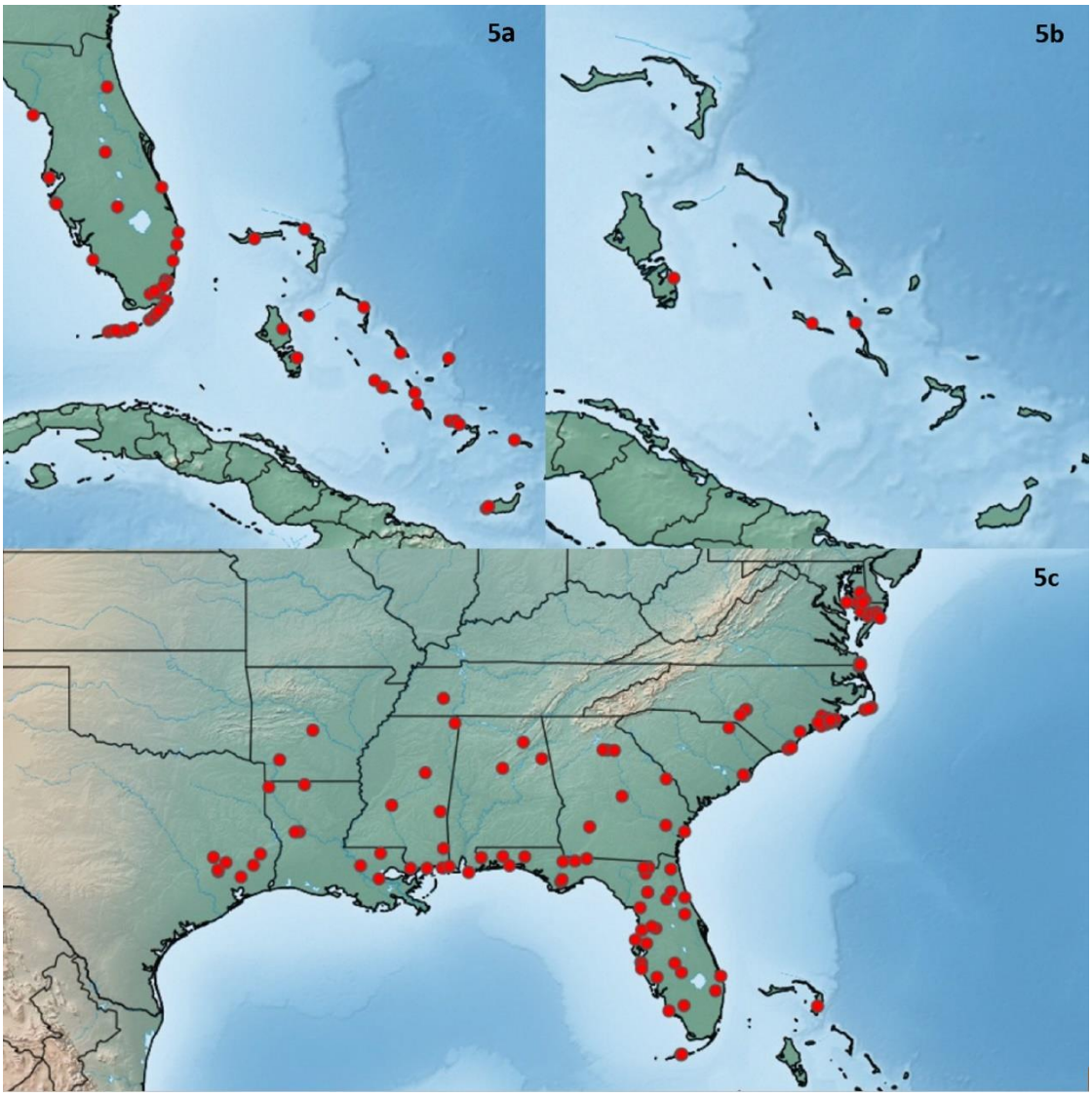

Figure 5.
Argyrotaenia distribution. **5a:** *Argyrotaenia amatana*. **5b:** *Argyrotaenia flavoreticulana*, **sp. n. 5c:** *Argyrotaenia kimballi*. All geographic coordinates are approximate and based on the localities provided on data labels. Some data points are based on photographs and these identifications should be considered tentative.

TABLES

TABLE 1. Known host records for *Argyrotaenia amatana*.

Species	Family	Reference	Present in Bahamas?
Acer rubrum	Aceraeceae	Barrows, 1991	
Sagittaria lancifolia	Alismataceae	Barrows, 1991	×
Annona diversifolia	Annonaceae	Heppner, 2003	
Annona glabra	Annonaceae	Dyar, 1901	×
Fleischmannia incarnata	Asteraceae	Barrows, 1991	
***Solidago* sp.**	Asteraceae	Heppner, 2003	×
Laguncularia racemosa	Combretaceae	Barrows, 1991	×
Taxodium distichum	Cupressaceae	Barrows, 1991	
Lysiloma latisiliquum	Fabaceae	Barrows, 1991	×
Nectandra coriacea	Lauraceae	Kearfott, 1907	×
Persea americana	Lauraceae	Freeman, 1958	×
Persea borbonia	Lauraceae	Barrows, 1991	×
Swietenia mahagoni	Meliaceae	FSCA	×
***Eugenia* sp.**	Myrtaceae	Kimball, 1965	×
Ligustrum japonicum	Oleaceae	FSCA	
***Podocarpus* sp**.	Podocarpaceae	CUIC	
***Rosa* sp.**	Rosaceae	Heppner, 2003	
Chiococca alba	Rubiaceae	Kearfott, 1907	×
Erithalis fruticosa	Rubiaceae	FSCA	×
Gardenia jasminoides	Rubiaceae	Heppner, 2003	×
Calodendrum capense	Rutaceae	FSCA	
***Citrofortunella* sp.**	Rutaceae	FSCA	
Citrus hystrix	Rutaceae	FSCA	
Citrus sinensis	Rutaceae	Bullock *et al*., 1997	×
Salix caroliniana	Salicaceae	Barrows, 1991	
Pouteria sapota	Sapotaceae	FSCA	×

TABLE 2. Known host records for *Clepsis peritana*.

Species	Family	Reference	Present in Bahamas?
Dead leaves		Powell, 1964	×
Jacobaea vulgaris	Asteraceae	Frick & Hawkes, 1970	
***Chrysanthemum* sp.**	Asteraceae	Powell, 1964	
Cynara cardunculus	Asteraceae	Powell, 1964	
***Stachys* sp.**	Lamiaceae	Powell, 1964	
***Fragaria* sp.**	Rosaceae	Powell, 1964	
***Citrus* sp.**	Rutaceae	Powell, 1964	×
Scrophularia californica	Scrophulariaceae	Powell, 1964	

CHAPTER 2

NEW COMBINATIONS IN NEOTROPICAL ARCHIPINI AND ATTERIINI (LEPIDOPTERA: TORTRICIDAE: TORTRICINAE), WITH THE DESCRIPTION OF A NEW GENUS

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Abstract

Five Neotropical tortricine species which currently lack meaningful generic assignment (i.e., "Archipini unplaced") are assigned to genera. The following new combinations and synonymies are proposed: *Argyrotaenia telemacana* Razowski and Becker, 2010, **new synonymy**, as a junior synonym of *Argyrotaenia tristriata* (Meyrick, 1931); *Teras jamaicana* Walker, 1863, **new synonymy**, as a junior synonym of *Pandemis heparana* ([Denis and Schiffermüller], 1775); *Raisapoana parana* (Busck, 1911), **new combination**; *Archipimima mansueta* (Meyrick, 1924), new combination; *Sisurcana biforata* (Meyrick, 1930) **new combination**, including *Sisurcana valida* Razowski and Becker, 2011, **new synonymy**; *Sisurcana recurvana* (Zeller, 1866), **new combination**; and *Sisurcana clivigera* (Meyrick, 1932), *new combination*. In addition, *Farragona* Austin and Dombroskie, **new genus** is proposed to accommodate two species: *Tortrix cratista* Walsingham, 1914 and *Tortrix cremnobates* Walsingham, 1914 (the latter currently placed in *Clepsis* Guenée); the former of which has a lectotype and paralectotype designated. This results in *F. cratista* (Walsingham, 1914), **new combination** and *F. cremnobates* (Walsingham, 1914), **new combination.**

Introduction

In the process of revising the Caribbean Archipini, it became evident that *Teras jamaicana* Walker, 1863, currently unassigned to genus, was in fact a synonym of *Pandemis heparana* ([Denis and Schiffermüller], 1775). *Teras jamaicana* is known only from the holotype, which is missing both the head and the abdomen, and most likely is either mislabeled or represents a brief and accidental introduction to Jamaica. Treating it in a monograph of Caribbean Archipini would not be appropriate. Rather, we thought it would be better suited for a separate work which included more unplaced and misplaced species. Brown (2005) lists nine Neotropical tortricid species as "Archipini unplaced." Of these species, three are excluded from this present paper for the following reasons: *velitans* Meyrick, 1923 was overlooked by Brown (2005) and was assigned to *Saetotaenia* Razowski and Becker, 2000 (Razowski and Becker, 2000); *thiodyta* Meyrick, 1931 was recently transferred to *Sparganothina* Powell, 1986 (Brown 2019); and *biscutata* Meyrick, 1931 has an erroneously listed type locality of "Massadou, French Guiana", when in fact it was described from Massadou, Guinea (Africa). This paper treats the six remaining Neotropical species of "Archipini unplaced," as well as two other misplaced Archipini species and an unrecognized synonymy.

Archipini is the most diverse tribe in the Tortricidae with 2003 species in 230 genera worldwide (Gilligan et al. 2018). It is most diverse in the Australasian region, but less so in the Neotropical. Ongoing taxonomic work by the authors has continued to shed light on this group in the Neotropics, but much is still left to be done. Several species examined in this study previously thought to belong to Archipini actually belong to Atteriini, a relatively small New World tribe. At present, Atteriini is composed of 110 species in eight genera (Brown 2005, Brown 2019), although true diversity is difficult to gauge owing to remarkable sexual

dimorphism in the tribe and the fact that most described species are known from a single sex. No genus typifies this more than *Sisurcana* Powell, a genus with 52 described species and no published synonymies, despite the fact that only seven of the 52 species are known from both sexes (at least one of these associations is doubtful; KAA pers. obs.).

Materials and Methods

Specimens or photographs of specimens from the following collections were examined: The Natural History Museum, London, UK (BMNH); Cornell University Insect Collection, Ithaca, New York, USA (CUIC); Museum National d'Histoire Naturelle, Paris, France (MNHN); Naturhistorische Museum, Wien, Austria (NHMV); National Museum of Natural History, Washington, DC, USA (USNM); and Vitor Becker Collection, Camacan, Brazil (VBC).

The genitalia of type specimens had been dissected by other researchers beforehand. Additional genitalia dissections, when necessary, were performed following the methods outlined in Landry (2007). Genitalia were stained with a combination of Eosin Y and chlorazol black. Images of adults and genitalia were captured using a Macroscopic Solutions Macropod Pro and Canon EOS 6D DSLR camera body using the Macro Photo MP-E 65mm f/2.8 1–53 manual focus lens for EOS or EF 70–200 mm zoom lens with 103 or 203 Mitutoyo objective lenses for male genitalia. Forty-six photographs were taken of adult specimens and 401 photographs were taken of genitalia in ethanol under glass and stacked using Zerene Stacking Software Version 1.04 (Zerene Systems, LLC, 2014). Figures were manipulated with Adobe Photoshop CC (2018). Morphological terminology, including that of the genitalia, follows Razowski (2008) with the exception of the phallus, which Razowski refers to as the aedeagus.

Results

ARCHIPINI

***Argyrotaenia tristriata* (Meyrick)**

Eulia tristriata Meyrick, 1931: 151.

Argyrotaenia tristriata: Powell et. al 1995: 147 (new combination).

Argyrotaenia telemacana Razowski and Becker, 2010: 16. **New synonymy.**

Type material.—*Eulia tristriata* Meyrick, 1931: Holotype, ♂: **BRAZIL:** Sao Paulo, Alto da Serra, 29–30 x [19]27, Zerny [photograph examined; Razowski 2010: fig. 48]. Genitalia slide #4307 [illustration examined; Razowski, 1964: figs. 41, 42] (NHMV).

Argyrotaenia telemacana Razowski and Becker, 2010: Holotype, ♂: **BRAZIL:** P[a]r[aná], Telêmaco Borba, 7550 m, 13–19 x 1995, V.O. Becker, Col. 97766 [photograph examined; Razowski and Becker, 2010: fig. 69]. Genitalia slide #81 [photograph examined; Razowski and Becker, 2010: figs. 17, 18] (VBC).

Discussion.—In their original description of the species, Razowski and Becker (2010) compared *Argyrotaenia telemacana* to *A. octavana* Brown and Cramer, 2000 and *A. glabra* Razowski and Becker, 2000, neither of which are similar to *A. telemacana* in either forewing maculation or genitalia. In contrast, we were unable to find any difference between the genitalia of *Argyrotaenia tristriata* and *Argyrotaenia telemacana* and their forewing patterns are identical as well. Based upon these two observations we place *Argyrotaenia telemacana* as a junior synonym of *Argyrotaenia tristriata*.

***Farragona* Austin and Dombroskie, new genus**

http://zoobank.org/85BF98A6-B078- 4DE4-A5AA-8C697EC8826D

Type species: *Tortrix cratista* Walsingham, 1914.

Diagnosis

Farragona can be distinguished from all other Neotropical Archipini by the following combination of features: male genitalia with uncus bifid; tegumen robust; gnathos difficult to interpret, but appears to have arms widely separate, rounded apically, with round, plate-like structure mesally; valvae simple, rounded, with narrow sclerotization on dorsal and ventral edges; phallus sickle-shaped, apically pointed, with caulis long, arising at base; female genitalia with papillae anales conspicuously narrowed latero-mesally with large, well-sclerotized dorsal hood; and signum long, sickle-shaped with capitulum small and opposing. Adults have a strongly concave forewing costa with the apex pronounced and the forewing pattern similar to that of *Argyrotaenia* Stephens and *Clepsis* Guenée.

Etymology

The genus name is from farrago (Latin) for ‘mixture,’ referring to the odd combination of features in the male genitalia, almost as if the parts had been borrowed from different archipine genera and stuck together. It is interpreted as feminine in gender.

Remarks

We were unable to physically examine *Tortrix cratista* or *Tortrix cremnobates* to provide a description for this new genus. Our diagnosis is based solely on the photographs of Tortrix

cratista adults and genitalia slides present in the BMNH. The lectotype of T. cratista is missing its head, so any description would be limited in scope regardless. The ICZN does not require a description for a new genus, only a diagnosis and type species designation (ICZN Articles 13.1.1, 13.3.1).

***Farragona cratista* (Walsingham), new combination**

(Figs. 1, 2, 9, 10, 14, 16)

Tortrix cratista Walsingham, 1914: 292.

"*Archips*" *cratista*: Powell et. al 1995: 148 (new combination).

[Archipini unplaced] *cratista*: Brown 2005: 123.

Type material

Tortrix cratista Walsingham, 1914: Syntype, ♀: **GUATEMALA:** Totonicapam: 8,500-10,500 ft., viii 1880, G. C. Champion [photograph examined]. Razowski genitalia slide #5366. B[ritish] M[useum] genitalia slide #7856 [photograph examined] (BMNH). Syntype, ♂: **GUATEMALA:** same data as female [photograph examined]. Razowski genitalia slide #5365. B.M. genitalia slide #7855 [photograph examined] (BMNH).

Discussion

Tortrix cratista was described by Walsingham (1914) from male and female cotypes without holotype designation. Walsingham noted that the female has the "central portion of the hindwings . . . bright ochreous" whereas the male has this portion white. Therefore, we interpret the specimen figured on Table IX to be the female and the male to be unfigured. The female syntype in the BMNH has a red holotype label affixed to it, but does not appear to have this

designation published. For these two reasons, we choose to designate the female as the lectotype and the male as a paralectotype.

***Farragona cremnobates* (Walsingham), new combination**

Tortrix cremnobates Walsingham, 1914: 293.

Clepsis cremnobates: Razowski 1979: 132 (new combination).

Type material

Tortrix cremnobates Walsingham, 1914: Holotype, ♀: **GUATEMALA:** Totonicapam: 8,500-10,500 ft., viii 1880, G. C. Champion [not examined] (BMNH).

Discussion

Razowski (1979) transferred *Tortrix cremnobates* to *Clepsis* without explanation. He noted that the holotype was missing its abdomen, so the new combination was presumably based on forewing pattern alone. However, the forewing length of 12 mm raises suspicions about its placement. We are unaware of any Neotropical *Clepsis* that large (i.e., the largest Neotropical species is *Clepsis ecclisis* (Walsingham, 1914), with a forewing length of 9 mm). In the absence of genitalia to examine, we transfer this species to *Farragona* based on its similarity in forewing pattern and shape (see Walsingham, 1914, Table IX), size, and identical type locality to those of *Farragona cratista*.

***Pandemis heparana* ([Denis and Schiffermüller])**

(Figs. 3, 4, 11)

Tortrix heparana Denis and Schiffermüller, 1775: 128.

Pandemis heparana: [unknown author, date] (new combination).

Teras jamaicana Walker, 1863: 291. **New synonymy.**

"*Archips*" *jamaicana*: Powell et al. 1995: 148 (new combination).

[Archipini unplaced] *jamaicana*: Brown 2005: 124.

Type material

Tortrix heparana [Denis and Schiffermüller], 1775: Syntype, [unknown sex]: **AUSTRIA:** [unknown, presumed lost or destroyed].

Teras jamaicana Walker, 1863: Holotype, ♀: **JAMAICA** [examined; head, abdomen missing]**:** (BMNH).

Discussion

Unfortunately, the head and abdomen of the holotype (Fig. 3) are missing, so our conclusions are based entirely on wing pattern, coloration, and size. No species of *Pandemis* are described from the Neotropics (Brown 2005), so it is unlikely that *Teras jamaicana* represents a good species (assuming that the "Jamaica" label is not a mistake). We believe it is more likely that *T. jamaicana* represents a brief and accidental introduction to Jamaica of a described European or North American species. Of these, *P. heparana* is the closest match, based on comparisons to 11 female specimens in the CUIC identified by JJD (Fig. 4). *Tortrix jamaicana* agrees well with the wing characters described in Mutuura (1980) and Dombroskie and Sperling (2012) for *P.*

heparana, especially in the possession of an entirely dark brown hindwing and only faint forewing banding. The vast majority of described *Pandemis* species are from Madagascar and East Asia. We have not compared these species to *T. jamaicana*, as it is unlikely that they could have made it to Jamaica. The larvae of *Pandemis heparana* have been recorded from an immense variety of important agricultural and ornamental plants in its native range (Brown et al. 2008), so it is not unreasonable to assume it was introduced from Europe on imported plants, especially considering it has been introduced multiple times into North America (Mutuura 1980; JJD pers. obs.).

***Raisapoana parana* (Busck), new combination**

(Figs. 5, 6, 15, 17)

Tortrix parana Busck, 1911: 228.

"*Archips*" *parana*: Powell et al. 1995: 148 (new combination).

[Archipini unplaced] *parana* Brown 2005: 124.

Type material

Tortrix parana Busck, 1911: Holotype, ♀: **BRAZIL:** Castro, Parana, Collection [of] W[ilia]m Schaus [not examined] (USNM). Paratype, ♂: **BRAZIL:** same data as holotype [everything missing except thorax; examined]. British Museum GS #16737 [examined] (BMNH).

Additional material examined (2♂♂, 4♀♀)

BRAZIL: 1♂, 1♀, Castro, Parana, E.D. Jones, 1892-5, 1912-534 (♂ with abdomen missing) (BMNH). 1♂, Castro, Parana, Jones, 1898, 67377. KAA dissection #0155 (BMNH). 1♀, Castro, Parana, Jones, 1898, 67376. British Museum GS #23477 [examined]. Wing venation slide

#23477 [examined] (BMNH). 1♀, Castro, Parana, Jones, 1896, 67524. KAA dissection #0156 (BMNH). 1♀, same data as previous but 67535 (BMNH).

Discussion

Tortrix parana Busck, 1911 is identical in forewing pattern (Figs. 5, 6) to *Raisapoana paraisoana* Razowski and Becker, 2010. However, slight differences in the male genitalia suggest they are distinct species. Specifically, *T. parana* has an elongated crease-like structure extending from the ventroposterior corner of the valvae (Fig. 15) that is absent in *R. paraisoana*. The phalli are similar, but *T. parana* possesses a well-developed caulis (Fig. 15), while *R. paraisoana* does not. In addition, the type localities of these two species are 1200 km apart. The female of *R. paraisoana* is unknown.

ATTERIINI

***Archipimima mansueta* (Meyrick), new combination**

(Figs. 7, 12, 18)

Cacoecia mansueta Meyrick, 1924: 54.

"*Archips*" *mansueta*: Powell et al. 1995: 148 (new combination).

[Archipini unplaced] *mansueta*: Brown 2005: 124.

Type material

Cacoecia mansueta Meyrick, 1924: Holotype, ♀: **BRAZIL:** Rio [de Janeiro]. 992, W[a]ls[ingha]m. 1894. 1920 - 1932, coll. L and J. de Joannis, Museum Paris [photograph examined]. Razowski genitalia slide #10395 [photograph examined] (MNHN).

Discussion

Cacoecia mansueta Meyrick, 1924 is remarkably similar in forewing pattern (Fig. 7) to *Archipimima labyrinthopa* (Meyrick, 1932), which was discussed in Razowski (1964) and the type of which was figured in Razowski (2010). It differs, however, in lacking a signum (Fig. 18). The remaining characters of the female genitalia, however, are consistent with those mentioned in the original description of *Archipimima* by Powell (1986) and it is upon this basis that we transfer it to *Archipimima*.

***Sisurcana biforata* (Meyrick), new combination**

Cacoecia biforata Meyrick, 1930: 224.

"*Archips*" *biforata*: Powell et al. 1995: 148 (new combination).

[Archipini unplaced] *biforata*: Brown 2005: 125.

Sisurcana valida Razowski and Becker, 2011: 166. **New synonymy.**

Type material

Cacoecia biforata Meyrick, 1930: Holotype, ♀: **BRAZIL:** Serra do Itatiaya, Südabhg., Waldreg., 16– 26 x [19]27, Zerny [photograph examined; Razowski 2010: fig. 43]. GS #4353 [figure examined; Razowski 1964: fig. 11] (NHMV).

Sisurcana valida Razowski and Becker, 2011: Holotype, ♂: **BRAZIL:** R[io de] J[aneiro], Itatiaia, 2100 m, 25 i 1993, V.O. Becker [photograph examined; Razowski and Becker, 2011: fig. 49], GS #288 [photograph examined; Razowski and Becker, 2011: figs. 13, 14] (VBC). Paratype, ♂: **BRAZIL:** same data as holotype (VBC) [not examined].

Discussion

Cacoecia biforata Meyrick, 1930 was treated as unplaced Archipini ("*Archips*") by Powell et al. (1995), and that treatment was followed by Brown (2005) ("Archipini unplaced"). Razowski (2010) treated it as "Sparganothini unplaced" without explanation. It belongs to neither of these tribes, but rather to Atteriini. The VBC has males and females identified by Becker as *biforata*, but we were unable to obtain a pair for dissection. Nevertheless, it appears that *Sisurcana valida* Razowski and Becker, 2011 is the male of *Cacoecia biforata* Meyrick, 1930 based on similarities in forewing pattern and proximity of type localities. Generic assignment is tentative because of

strong sexual dimorphism in some atteriine genera and a lack of published genitalic synapomorphies. We transfer *C. biforata* to *Sisurcana* based on its synonymy with *S. valida*.

***Sisurcana recurvana* (Zeller), new combination**

(Figs. 8, 13, 19)

Tortrix recurvana Zeller, 1866: 143.

Cacoecia recurvana: [unknown author, date] (new combination).

"*Archips*" *recurvana*: Powell et al. 1995: 148 (new combination).

[Archipini unplaced] *recurvana*: Brown 2005: 124.

Type material

Tortrix recurvana Zeller, 1866: Lectotype, ♀: COLOMBIA: EX. 66,173 f.5., Zeller Coll., Walsingham Collection, 1910-427, 102210 [examined]. B[ritish] M[useum] Genitalia slide #7851, Razowski genitalia slide #5361 [examined] (BMNH).

Discussion

Zeller described *Tortrix recurvana* from two females, but it is unclear who designated the female that we figure (Fig. 8) as the lectotype. Powell (1986) commented on this species in his description of *Sisurcana*, but refrained from transferring it to that genus. *Tortrix recurvana* is extremely similar in forewing pattern (Fig. 8) and in genitalia to *Sisurcana sanguinoventer* Razowski and Wojtusiak, 2010. However, the cestum in *T. recurvana* terminates before the corpus bursae (Fig. 19), but not in *S. sanguinoventer*. We examined a third female specimen from the BMNH collected in Peru (KAA diss. #0135), which looks like a smaller version of *T. recurvana*, but the apophyses are noticeably longer. It may represent an undescribed species.

Based on similarities between *T. recurvana* and *S. sanguinoventer*, we transfer *T. recurvana* to *Sisurcana*. Males of both of these species are unknown, but may be described and simply unassociated because of the extreme sexual dimorphism in Atteriini.

***Sisurcana clivigera* (Meyrick), new combination**

Cacoecia clivigera Meyrick, 1932: 253.

"*Archips*" *clivigera*: Powell et al. 1995: 148 (new combination).

[Archipini unplaced] *clivigera*: Brown 2005: 123.

Type material

Cacoecia clivigera Meyrick, 1932: Holotype, ♀: **PERU:** S. Peru ob., Madre de Dios, 1000 m [photograph examined; Razowski 2010: fig. 53]. Genitalia slide #4354 [figured examined; Razowski 1964: fig. 12] (NHMV).

Discussion

The holotype of *Cacoecia clivigera* Meyrick, 1932 is identical in wing pattern and female genitalia to what Razowski and Wojtusiak (2010a, 2010b) identified as the female of *Sisurcana topina* Razowski and Pelz, 2004. *Sisurcana topina* was described from a single male, with the female unknown. In two subsequent publications, Razowski and Wojtusiak (2010a, 2010b) described a female atteriine which they claim is the female of *S. topina*. However, sufficient justification was not given to support this association. Razowski and Wojtusiak (2010a) mention twelve specimens of *S. topina* from four different localities in Peru, including at least one female which they describe and figure, but they do not mention the sexes of any other specimens examined or how the sexually dimorphic sexes were associated. Razowski and Wojtusiak

(2010b) mention a series of four females and one male of *S. topina* reared from larvae in Ecuador, but did not mention that they were all found at separate localities and were found feeding on different hostplants (see Brown et al. 2019). They claim they were "from the same place," but only include the coordinates of the biological research station where they were brought back to be reared once found in the field. Several other species in the same paper are described as new and their type localities are given as the research station where they were reared, not where they were originally collected (a disparity of 65 km in one case). A DNA barcode was taken from a single female specimen, but no males were barcoded, so association of the sexes is not possible. For these reasons, we believe *Cacoecia clivigera* Meyrick, 1932 is conspecific with the females examined by Razowski and Wojtusiak (2010a, 2010b) but do not find sufficient evidence to associate it with the male of *Sisurcana topina* Razowski and Pelz, 2004, as claimed by Razowski and Wojtusiak (2010a, 2010b). Thus, we provisionally transfer *C. clivigera* to *Sisurcana* until additional material is available for examination.

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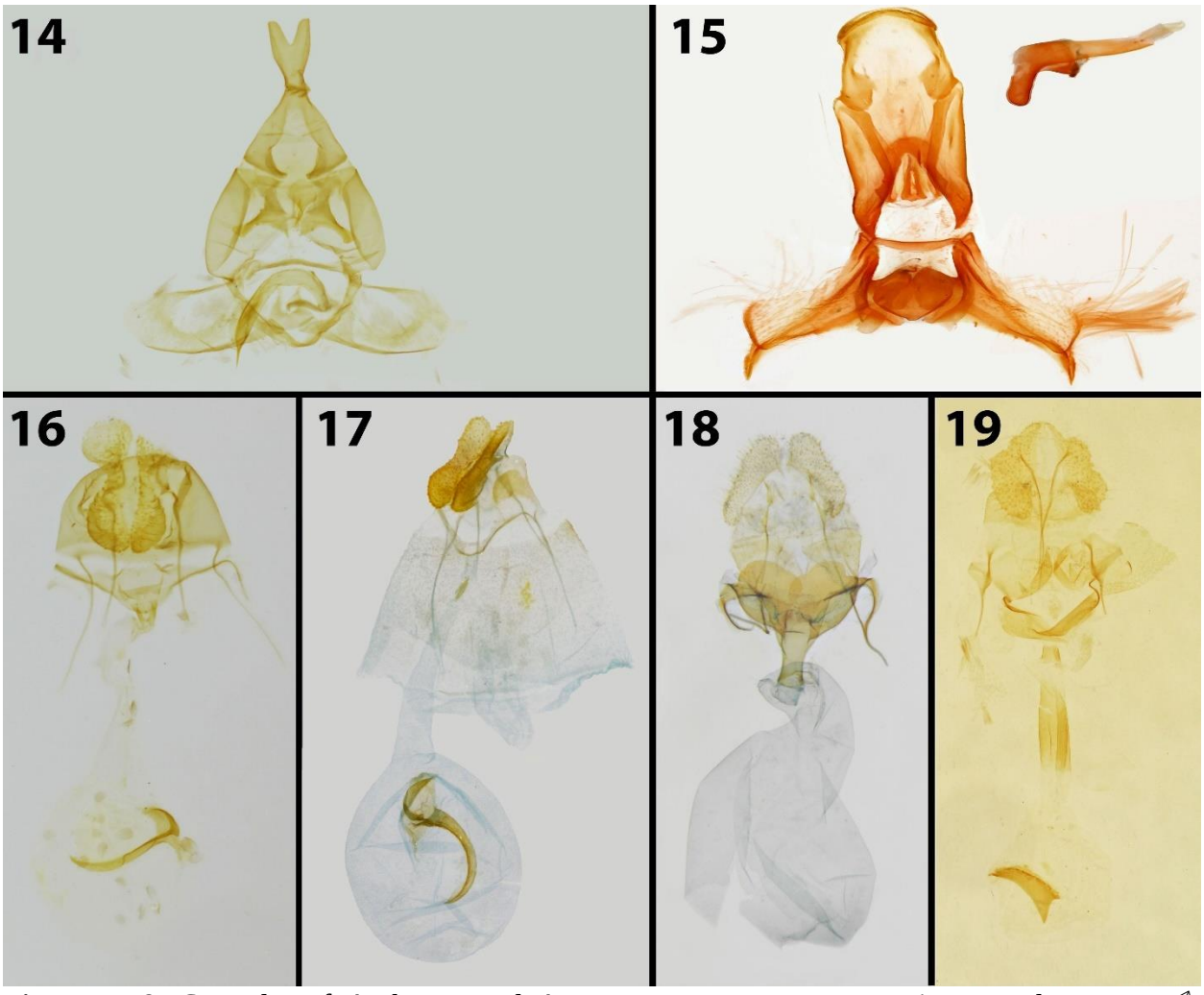
FIGURES

Figs. 1–8. Adults of Archipini and Atteriini. **1.** *Farragona cratista*, lectotype, ♀ (BMNH). **2.** *Farragona cratista*, paralectotype, ♂ (BMNH). **3.** *Pandemis heparana* [= *Teras jamaicana*, holotype], ♀ (BMNH). **4.** *Pandemis heparana*, ♀, România, Gorj, Cheile Sohodolului, 45.139, 23.139, 01 vi 2009, J. J. Dombroskie, D. Lawrie (CUIC). **5.** *Raisapoana parana*, ♀, Brazil, Paraná, Castro, E. D. Jones, 1912 – 534 (BMNH). **6.** *Raisapoana parana*, ♂, Brazil, Paraná, Castro, E. D. Jones, 1892-5 – 534 (BMNH). **7.** *Archipimima mansueta*, holotype, ♀ (MNHN). **8.** *Sisurcana recurvana*, lectotype, ♀ (BMNH).

Figs. 9–13. Labels of Archipini and Atteriini types. **9.** *Farragona cratista*, lectotype, ♀ (BMNH). **10.** *Farragona cratista*, paralectotype, ♂ (BMNH). **11.** *Teras jamaicana*, holotype, ♀ (BMNH). **12.** *Archipimima mansueta*, holotype, ♀ (MNHN). **13.** *Sisurcana recurvana*, lectotype, ♀ (BMNH).



Figs. 14–19. Genitalia of Archipini and Atteriini. **14.** *Farragona cratista*, paralectotype, ♂, Razowski genitalia slide #5365, British Museum genitalia slide #7855 (BMNH). **15.** *Raisapoana parana*, paratype, ♂ (phallus inset, not to scale), British Museum genitalia slide #16737 (BMNH). **16.** *Farragona cratista*, lectotype, ♀, Razowski genitalia slide #5366, British Museum genitalia slide #7856 (BMNH). **17.** *Raisapoana parana*, KAA dissection #0156 (BMNH). **18.** *Archipimima mansueta*, holotype, ♀, Razowski genitalia slide #10395 (MNHN). **19.** *Sisurcana recurvana*, lectotype, ♀, British Museum genitalia slide #7851, Razowski genitalia slide #5361 (BMNH).

CHAPTER 3

A TAXONOMIC REVISION OF THE ARCHIPINI OF THE CARIBBEAN (LEPIDOPTERA, TORTRICIDAE, TORTRICINAE)

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LIST OF FIGURES

Abstract

The Archipini fauna of the Caribbean is revised to include 33 species. Most previously described species occurring in the region are redescribed and figured. Thirteen new species are described and figured: *Argyrotaenia browni* **sp. nov.**, *A. cryptica* **sp. nov.** (including *A. c. cryptica* **ssp. nov.** and *A. c. praeteritana* **ssp. nov.**), *A. paradisei* **sp. nov.**, *A. razowskiana* **sp. nov.**, *Claduncaria rawlinsana* **sp. nov.**, *Cla. praedictana* **sp. nov.**, *Cla. taino* **sp. nov.**, *Clepsis davisi* **sp. nov.**, *Cle. deroni* **sp. nov.**, *Cle. jamesstewarti* **sp. nov.**, *Cle. peroniae* **sp. nov.**, *Mictocommosis lesleyae* **sp. nov.**, and *Mictopsichia nyhllinda* **sp. nov.** Three new combinations are proposed: *Claduncaria mesosignaria* (Razowski, 1999) **comb. nov.** (including *Argyrotaenia thamaluncus* Razowski, 1999 **syn. nov.**), *Claduncaria minisignaria* (Razowski, 1999) **comb. nov.**, and *Claduncaria chalarostium* (Razowski & Becker, 2000b) **comb. nov.**, **stat. nov.** *Argyrotaenia granpiedrae* Razowski & Becker, 2010 is reduced to subspecies rank under *Argyrotaenia ceramica* Razowski, 1999, resulting in *Argyrotaenia ceramica granpiedrae* Razowski & Becker, 2010 **stat. nov.** Four additional new synonymies are proposed: *Clepsis labisclera* Razowski & Becker, 2010 **syn. nov.** as junior synonym of *Claduncaria maestrana* Razowski & Becker, 2010; *Clepsis pinaria* Razowski & Becker, 2010 **syn. nov.** as junior synonym of *Clepsis peritana* (Clemens, 1860); and *Argyrotaenia neibana* Razowski, 1999 **syn. nov.** and *A. ochrochroa* Razowski, 1999 **syn. nov.** as junior synonyms of *Argyrotaenia amatana* (Dyar, 1901). Males of *Argyrotaenia felisana* Razowski, 1999, *A. nuezana* Razowski, 1999, and *Claduncaria minisignaria* (Razowski, 1999) **comb. nov.** are described for the first time; females of *Argyrotaenia jamaicana* (Razowski & Becker, 2000a) and *Claduncaria ochrochlaena* (Razowski, 1999) are described for the first time. The concept of *Claduncaria* is expanded and provided with a new diagnosis. A unique external sexual coupling mechanism in *Claduncaria* is

proposed and discussed. Identification keys to genera and species, distributional maps, and a regional checklist are provided. Neighbor-joining and Maximum Likelihood trees based on COI barcode sequence data are provided. Putative phylogenetic relationships among Caribbean Archipini are briefly discussed.

Introduction

Archipini are the most diverse tribe in the family Tortricidae. Brown (2005) reported the tribe to contain 2003 species placed in 230 genera worldwide. Subsequent papers have only further added to these numbers. The tribe is most diverse in the Australasian region, but less so in the Neotropical. The tribe contains some of the most economically important tortricid pest species (e.g. *Epiphyas postvittana*, the light brown apple moth; *Choristoneura* spp., spruce budworms; *Archips argyrospila*, the fruit-tree leafroller) (Dombroskie & Sperling 2013). The Archipini fauna of the Caribbean as a whole is poorly known, with the only taxonomic treatments being restricted to single islands or archipelagos (Razowski 1999; Austin et al. 2019) or as part of a broader treatment of orphan taxa (Austin & Dombroskie 2020). The purposes of this revision are to describe new species in the Caribbean, propose new synonymies, redescribe and illustrate the previously described species, describe the opposite sex of multiple species, and note new distributional records.

Even at present, the lack of useful genitalic characters impedes the study of Archipini . For example, males of many *Clepsis* species and females of many *Argyrotaenia* species are virtually indistinguishable from their congeners. Compounding this is the presence of marked sexual dimorphism in species of some genera, making reliable association between sexes difficult. Historically, diagnoses have emphasized forewing pattern and geographic distribution. However, we have found that, though often subtle, several characters in the genitalia of both sexes can be used to reliably identify species. In females, the shape of the papillae anales is often discounted as too variable to be useful; however, we have found the opposite. In some species of *Argyrotaenia*, the shape of the papillae anales is one of the most useful features for identification. In addition, the configuration of the capitulum and signum are very informative

and usually consistent within a species. For males, shape of the valvae, phallus, and uncus are usually consistent within a species and have been extensively used in tortricid species delimitation. In addition to these structures, we have also found that the terminal plate of the gnathos and presaccular gap (defined below) are particularly informative.

A putative synapomorphy for the tribe is the presence of a well-developed uncus with apicoventral setae in the males. Most, but not all, females possess a prominent blade- or sickle-shaped signum. It is the presence of such a signum in the *Mictopsichia* generic group (*Chamaepsichia*, *Compsocommosis*, *Mictocommosis*, *Mictopsichia*, *Nexosa*, *Rubropsichia*), has led to their inclusion in Archipini (Razowski 2009; Heppner & Bae 2015a,b). Prior to this, they had been included in Glyphipterigidae (Meyrick 1912, 1920, 1921, 1932) or Hilarographini (Tortricidae, Chlidanotinae) (Diakonoff 1977). We find their present placement in Archipini to be questionable, as not all of these genera possess such a signum. Although superficially similar in wing pattern, the development, shape, and presence or absence of significant male genitalic structures vary significantly between these genera. This leads us to conclude that this group is nothing more than an artificial assemblage of several unrelated diurnal lineages with a convergent wing pattern. For the present work, we choose to include this group in Archipini for the sake of continuity, recognizing that they likely belong elsewhere and may represent several different unrelated taxa. Before correct tribal association(s) for the *Mictopsichia* generic group can be given, however, generic composition within several of these genera will need to be resolved. That said, we treat species of this group below according to current generic concepts, as describing new genera for mostly non-Caribbean species is beyond the scope of this paper.

With few exceptions, almost all Caribbean Archipini are restricted to mid- to high elevation habitats (excluding the *Mictopsichia* generic group). This habitat preference, combined

with the topographic complexity of the Caribbean islands, has driven high levels of endemism and high levels of species richness for such a small geographic area. On Hispaniola, for example, there are four disjunct mountain ranges, with peaks often around 2000 meters. The intervening valleys provide extreme topographic relief (the Hoya de Enriquillo Valley between the Sierra de Bahoruco and the Sierra de Neiba has several points below sea level). This serves to create several smaller "islands" on Hispaniola itself, with the intervening "seas" (i.e. the valleys) inhospitable to montane archipine species. The majority of Caribbean archipine species are restricted to a single mountain range, and in some cases, to a single peak or series of closely-situated peaks, raising questions about their conservation prospects. Of the non-Mictopsichia group of archipines, only five have been recorded from coastal elevations, and five are known from more than one island or archipelago.

The geologic history of the Caribbean is complex and its interpretation has proved highly contentious. A combination of plate tectonic movements, periods of island submergence and emergence, and volcanism have contributed to present biogeographic patterns (Iturralde-Vincent & MacPhee 1999). For a detailed review of the literature pertaining to and modern understanding of the palaeogeology of the Caribbean region, see Donnelly (1988), Iturralde-Vincent & MacPhee (1999), and Graham (2003) and references therein. To summarize, the Greater and Lesser Antilles are of independent origin and their dissimilar fauna and flora are reflective of this. For most taxa, Greater Antillean species are more closely allied with those in Central America, whereas most taxa on the Lesser Antilles are more closely allied with those in South America.

Most relevant to this present paper is the fact that Jamaica and Southern Hispaniola (Sierra de Bahoruco/Chaîne de la Selle) have undergone at least one period of prolonged

complete marine submergence ending approximately 20 mya subsequent to initial formation (Buskirk 1985). In addition, Southern Hispaniola is a relatively recent addition to Northern Hispaniola, having collided approximately 5 mya as it moved eastward with Jamaica (Buskirk 1985). Periodic emergence/submergence of the Hoya de Enriquillo valley has further limited dispersal for terrestrial taxa after initial collision. As such, the insect fauna of Southern Hispaniola is quite distinct from that of Northern Hispaniola and usually more closely allied with Jamaican taxa (Liebherr 1988).

The Caribbean region provides an excellent realm in which to study insect biogeography, as demonstrated by the attention entomologists have given the region historically (see Liebherr 1988). Unfortunately, few lepidopterists have focused have worked extensively in the Caribbean. When they have, it has often been restricted to a single island (Grote 1865a,b; Forbes 1930, 1931; Busck 1934; Schaus 1940; Duckworth 1969; Razowski 1999; Becker & Miller 2002; Austin et al. 2019), to large, showy taxa (Grote 1865a,b; Forbes 1917; Comstock 1942; Comstock & Huntington 1943; Cary 1951; Todd 1981, 1982; McCabe 1992), or as part of a broader Neotropical revision without much attention to the Caribbean specifically (Capps 1948; Rindge 1961; Scoble 1994; Cook & Scoble 1995; Davis & Stonis 2007). Only rarely have groups of microlepidoptera been treated with the Caribbean solely in mind (Davis 1975; Heppner 1985; St. Laurent & McCabe 2016).

There exist no comprehensive Caribbean-centric revisions for any tortricid groups. Recent papers have begun to shed light on Caribbean tortricid diversity, but these have all been part of broader, neotropical generic revisions (Razowski & Becker 2000b; Adamski & Brown 2001; Brown & Brown 2004; Phillips-Rodriguez & Powell 2007; Brown 2008; Razowski &

Brown 2008; Brown 2009; Razowski & Becker 2010; Brown et al. 2018). The present paper represents the first comprehensive taxonomic revision of a Caribbean tortricid tribe.

Materials and Methods

Dissection methods follow Landry (2007); however not all dissections were immediately slide-mounted to allow lateral imaging of the male genitalia. Genitalia and abdomens, when not permanently slide mounted, are preserved in glycerol-filled microvials pinned beneath the specimen. Genitalia were stained with a combination of Eosin Y and chlorazol black. Forewing length (FWL) was measured by hand in a straight line from the base of the costa to the apex including the fringe to the nearest half-millimeter.

Images of adults and genitalia were captured using a Macroscopic Solutions Macropod Pro and Canon EOS 6D DSLR camera body using the Macro Photo MP-E 65 mm f/2.8 1–5× manual focus lens for EOS or EF 70-200 mm zoom lens with 10× or 20× Mitutoyo objective lenses for genitalia. Images were stacked as needed using Zerene Stacking Software Version 1.04 (Zerene Systems, LLC 2014). Figures were manipulated with Adobe Photoshop CC (2018). Maps were created with SimpleMappr (Shorthouse 2010) and further manipulated with Adobe Photoshop CC (2018). Coordinates, when not included on data labels, were estimated based on locality information available to create maps. Specimens that were not examined in person by KAA but are still based on reliable identifications by JJD or others are excluded from material examined but included in maps and listed in Tab 1 of Supplementary File 1.

Morphological terms, including those for genitalia, follow Razowski (2008) with the exception of the “phallus”, for which we instead use “aedeagus” as per Kristensen (2003); and “labis” (plural “labides”) which we use instead of “transtilla” in *Clepsis* as per Razowski (1979).

Wing pattern terminology is illustrated in Fig. 1. In addition, we propose the term "presaccular gap", defined as the region between the saccular margin and the longitudinal fold of the valve (Fig. 2), which is taxonomically useful in many *Argyrotaenia*. Some additional terms used in the treatment of *Mictocommosis*, *Mictopsichia*, and *Rubropsichia* come from Razowski (2009).

In a few instances, data labels were discovered to be incorrect. In these cases, corrected province names or coordinates have been placed in brackets immediately following the verbatim label data. In both the taxonomic treatment and checklist, genera and species are listed alphabetically for ease of navigation. Figures are arranged by similarity for the sake of comparisons.

Keys to all genera and species known from the Caribbean are provided and based primarily on genitalia. All described Caribbean species of Archipini have adults and genitalia figured with the exceptions of *Argyrotaenia flavoreticulana* Austin & Dombroskie, 2019; *Argyrotaenia kimballi* Obraztsov, 1961; *Mictopsichia jamaicana* Razowski, 2009; and genitalia of *Clepsis peritana* (Clemens, 1860). We were unable to locate the holotype of *Mictopsichia jamaicana* Razowski, 2009. Type specimens of *A. flavoreticulana* and non-type Bahamian specimens of *A. kimballi* and *Cle. peritana* were figured in Austin et al. (2019).

DNA extraction, PCR amplification, and sequencing of the COI barcode region were performed at the Canadian Centre for DNA Barcoding (CCDB) and follow NGSFT protocols (Prosser et al. 2016). Despite the age of some specimens, complete COI barcodes (658 bps) were recovered for many species and partial barcodes (>500 bps) were recovered for most others. These were used to associated sexes and help delimit ambiguous species complexes. COI-5P sequences and voucher specimen information, along with complete data records for all specimens examined are available in Tab 1 of Supplementary File 1.

Barcoded specimens for which a unique specimen identification number was not already present (i.e. an accession number) as a label or part of a label were affixed with an additional label with a unique identification number beginning with “KAA_DNA_” and ending in a four-digit number, as well as explicitly stating that a leg was removed for DNA barcoding. These “KAA_DNA_” numbers are synonymous with BOLD sample IDs. USNM specimens each have accession numbers listed in Supplementary File 1; only barcoded USNM specimens have their accession numbers listed in the material examined sections, as they are the same as the BOLD sample IDs in these instances.

Drawn-to-scale Neighbor-joining (NJ, Fig. 3) and Maximum Likelihood (ML, Fig. 4) trees of Caribbean Archipini were generated using MEGA X (Kumar et al. 2018). The ML tree was inferred using a Kimura 2-parameter model (Kimura 1980). Initial trees for the heuristic search were obtained automatically by applying Neighbor-Join and BioNJ algorithms to a matrix of pairwise distances estimated using the Maximum Composite Likelihood (MCL) approach, and then selecting the topology with superior log likelihood value. The NJ tree was generated using the Neighbor-Joining method (Saitou & Nei 1987). Distances were computed using the Maximum Composite Likelihood (MCL) method (Tamura et al. 2004) and are in the units of the number of base substitutions per site. Both analyses were run with 1000 bootstrap replicates for sequences for which >500 bp were recovered (84 sequences, representing 27 different species). Further, a pairwise distance matrix of all sequenced specimens is available in Tab 2 of Supplementary File 1 and was also computed using MEGA X (Kumar et al. 2018).

We exclude Trinidad & Tobago and the Leeward Antilles (Aruba, Curaçao, Bonaire, the Federal Dependencies of Venezuela, and Nueva Esparta) from this paper as these islands lie on the South American continental shelf.

Specimens from the following collections were examined:

AMNH American Museum of Natural History, New York, NY, USA

BMNH British Museum of Natural History, London, UK

CMNH Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA

CUIC Cornell University Insect Collection, Ithaca, New York, USA

FSCA Florida State Collection of Arthropods, Gainesville, Florida, USA

ISEZ Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków, Poland

MGCL McGuire Center for Lepidoptera & Biodiversity, Gainesville, Florida, USA

MEM Mississippi Entomological Museum, Starkville, Mississippi, USA

TM Research collection of Tim L. McCabe, Albany, New York, USA

USNM National Museum of Natural History, Washington D.C., USA

VBC Vitor O. Becker Collection, Camacan, Bahia, Brazil

Abbreviations

diss. dissection

FW forewing

FWL forewing length

HW hindwing

Results

Key to genera of Caribbean Archipini based on known species*

1. Wing pattern telechromatic (Fig. 13)…..……..……..……...2

1.’ Wing pattern not telechromatic (Figs 5–12)….……..……...4

2. Antennae thickened, single row of scales per segment; male with uncus well-developed (Fig. 20E); female with ductus bursae coiled (Fig. 21E)….……..*Mictocommosis* Diakonoff

2.’ Antennae thin, two rows of scales per segment; male with uncus obsolete (Fig. 20D, F, G); female with ductus bursae not coiled (Fig. 21F, G)…….…….…….....3

3. Male genitalia with socii fused (Fig. 20D)…...…….*Rubropsichia* Razowski

3’. Male genitalia with socii free (Fig. 20F, G)……...……....*Mictopsichia* Hübner

4. Male genitalia with transtilla incomplete, spinulate labides present instead (Fig. 20A–C); female genitalia with ductus bursa coiled (Fig. 21A, B, D), sometimes only loosely so (Fig. 21C)……..….*Clepsis* Guenée

4.’ Transtilla complete (Figs 14, 15, 18); female genitalia with ductus bursae not coiled (Figs 16, 17, 19)…….……...……..5

5. Male genitalia with uncus divergently bifurcate (Fig. 18A–D) or dramatically expanded apically (Fig. 18E–G); terminal plate of gnathos vertically bifurcate (Fig. 18A–C) or apically rounded (Fig. 18D–G); female genitalia with capitulum absent, signum reduced or absent (Fig. 19).....….

……...*Claduncaria* Razowski

5.’ Male genitalia with uncus variable, but never divergently bifurcate; terminal plate of gnathos acute, without modification (Figs 14, 15); female genitalia with signum, capitulum present (Figs 16, 17)……...……...……....….*Argyrotaenia* Stephens

*male of Mictopsichia jamaicana and females of Rubropsichia spp. unknown.

Argyrotaenia Stephens, 1852

Type species: *Tortrix politana* Haworth, [1811]

Argyrothaenia Diakonoff, 1939 [misspelling of *Argyrotaenia*]

Subargyrotaenia Obraztsov, 1961

The following diagnosis is specific to Caribbean *Argyrotaenia*. However, most characters mentioned also apply to extralimital species.

Diagnosis. Labial palpus 1.5–2× width of compound eye, second segment expanded apically; ocellus small, separated from compound eye by approximately width of ocellus; chaetosemata 0.25–1× length of scales on frons; metathorax without dorsal scaling , patch of pale yellow setae present; costal fold absent; FWL 4.5–10.5 mm. Male genitalia with uncus variable, usually spatulate or subquadrate, occasionally narrow and acute; socii obsolete; tegumen moderate; arms of gnathos fused; transtilla without modifications; valvae circular to subcircular, occasionally triagonal or trapezoidal, longitudinal fold of valvae well-developed (except in *A. ceramica*). Female genitalia with papillae anales triangular or nearly so (occasionally narrowly rectangular), flattened and evenly roughened on ventral surface; colliculum present; signum present, usually long and J-shaped; capitulum present, with variable basal plate.

Key to the species of *Argyrotaenia* known from the Caribbean

1. FW elongate, distinctly acute at apex, red-orange (Fig. 5A–E); male genitalia with plications obsolete, phallus sickle-shaped; cornuti long, thin; caulis large (Fig. 14A); female genitalia with capitulum large, roughened; signum not curved (Fig. 16A)……....2

1.' FW variable, but not as above; male genitalia with plications present, phallus pistol-shaped, cornuti variable, caulis minute; female genitalia with capitulum smooth, signum curved……3

2. Hispaniola…….……....*A. ceramica ceramica* Razowski

2.' Cuba……..……..*A. ceramica granpiedrae* Razowski & Becker

3. FW with banding obsolete, straw yellow, with fine network of reticulations (Austin et al. 2019: fig. 2a–c); male genitalia with uncus broad, valvae rectangular (Austin et al. 2019: fig. 3c, d, h); The Bahamas…….....*A. flavoreticulana* Austin & Dombroskie

3.' FW variable, but not as above; male genitalia with uncus variable, valvae circular or semicircular..……..……...….4

4. FW with a distinct, dark L-shaped mark present along the medial half of the inner margin of the median fascia (Fig. 8A, B), often bordered with a white patch in females (Fig. 8A); male genitalia with presaccular gap occupying 0.5× area of disc of valva (Fig. 14D); Hispaniola.....……*A. nuezana* Razowski

4.' FWL without such a mark; presaccular gap variable, but never occupying 0.5× width of disc of valva……..……..……...…...5

5. FW chocolate brown AND male genitalia with uncus without bulb, setae projecting laterally from neck (Fig. 14B, C)……..……6

5.' FW and uncus variable, but never with both of the preceding combination of characters..…7

6. Male genitalia with presaccular gap wide, occupying 0.33× width of disc of valva, valva forming right angle at apex (Fig. 14C); female genitalia with capitulum rounded (Fig. 16C); Cuba, Hispaniola……...…...*A. cubae* Razowski & Becker

6.' Male genitalia with presaccular gap narrow, occupying no more than 0.15× width of disc of valva; valva circular (Fig. 14B); female genitalia with capitulum truncate (Fig. 16B); Hispaniola…...……*A. browni* **sp. nov.**

7. FWL large (8.5–9.5 mm), broad, pale brown, banding faint to obsolete (Fig. 8G, H); Hispaniola..……...….*A. razowskiana* **sp. nov.**

7.' FWL variable, but not as above…….8

8. Dorsal surface of hindwing without strigulae (Figs 5F–H; 6)……...……....9

8.' Dorsal surface of hindwing with strigulae (Figs 7, 9)…….…….12

9. FW costa with distinct concavity at distal third (Fig. 5G, H); Jamaica…….. ……*A. jamaicana* Razowski & Becker

9.' FW costa without such a distinct concavity at distal third.....10

10. FW with median fascia distinctly bicolored (Austin et al. 2019: fig. 2d); male genitalia with uncus narrow, without developed bulb, setae projecting laterally from neck (Austin et al. 2019: fig. 3b); The Bahamas……...*A. kimballi* Obraztsov

10.' FW variable, but not as above; male genitalia with developed bulb of uncus, never with setae laterally projecting from neck……..11

11. FW small (4.5–5.0 mm), entirely red-orange, banding faint to obsolete (Fig. 5F); Cuba…... ……*A. vinalesiae* Razowski & Becker

11.' FW size variable, pattern hypervariable, but never entirely red-orange, banding usually distinct (Fig. 6); widespread in northern Caribbean……...….*A. amatana* (Dyar)

12. Male genitalia with neck of uncus extremely narrow, no more than 0.25× width of bulb (Fig. 14E); Hispaniola…..……...….*A. felisana* Razowski

12.' Male genitalia with neck of uncus moderate, 0.5–1x width of bulb……...13

13. FW variable, but males usually with a distinct dark dot at the end of the discal cell in the postmedian interfascia (Fig. 7A, B); Hispaniola……...……*A. bisignata* Razowski

13.' FW without such a dot, usually strongly mottled throughout (Fig. 9)...…….14

14. FW quadrate, male FW with fasciae chocolate brown, interfasciae strongly contrasting silver-gray to white (Fig. 9E, F); Hispaniola……..…….*A. paradisei* **sp. nov.**

14.' FW elongate with apex acute, fasciae brick red (Fig. 9A–D); Hispaniola……..15

15. Cordillera Central (Fig. 24D)…….….*A. cryptica cryptica* **ssp. nov.**

15.' Sierra de Bahoruco (Fig. 24D)...……...….*A. cryptica praeteritana* **ssp. nov.**

Argyrotaenia amatana (Dyar, 1901)

(Figs 6, 23; Austin et al. 2019: figs 1; 3a, f; 4a)

Lophoderus amatana Dyar, 1901

Eulia amatana (Dyar, 1901)

Tortrix chioccana Kearfott, 1907

Argyrotoxa chiococcana Meyrick, 1912; unjustified emendation

Argyrotaenia neibana, **syn. nov.** Razowski, 1999

Argyrotaenia ochrochroa, **syn. nov.** Razowski, 1999

Argyrotaenia ochrotona, misspelling in Razowski & Becker, 2000

Type material.

Lophoderus amatana Dyar, 1901: **Syntypes,** 3♀♀: **USA:** Florida**:** Palm Beach Co., Palm Beach, r.f. *Nectandra* [=*Ocotea*] [photos examined] (USNM).

Argyrotaenia neibana Razowski, 1999: **Holotype,** ♀: **DOMINICAN REPUBLIC: Baoruco**: Sierra de Neiba, Los Guineos on upper Rio Colorado, 18°35'N, 71°11'W, 630m, 11–12 viii 1990, mesic riparian woodland, J. Rawlins, S. Thompson [examined]. Razowski genitalia slide #1698 [examined] (CMNH).

Argyrotaenia ochrochroa Razowski, 1999: **Holotype,** ♀: **TURKS & CAICOS: Providenciales**: Erebus Hotel area, ca. 21º48'N, 72º15'W, 28–30 i 1978, at hotel lights, H. Clench, M. Clench [examined]. Razowski genitalia slide #10695 [examined] (CMNH).

Additional material examined (60♂♂, 33♀♀ total).

THE BAHAMAS: Cat Island: 1♂, vic. Ocean Dream Resort, E of Smith Town, 24.232273°, -75.454536°, 23 vi 2014, J. Miller, M. Simon, D. Matthews, G. Goss, Bahamas Survey MGCL Accession No. 2014-15, MGCL 238585 (MGCL). 1♀, same as previous but MGCL 238590 (MGCL). 1♂, same as previous but MGCL 238601 (MGCL). **Crooked Island**: 1♂, 1.5 mi. E of Landrail Pt., 22.813263°, -74.321186°, 10 vi 2013, M. Simon, G. Goss, M. Simon MGCL Accession No. 2013-21, MGCL 233031, KAA diss. #0001 (MGCL). 1♀, same as previous but 6 vi 2013, M. Simon & G. Goss, MGCL 234816 (MGCL). 1♀, same as previous but MGCL 232998 (MGCL). 1♀, Pittstown Point, 22.831211°, -74.438717°, 9 vi 2013, M. Simon, G. Goss, M. Simon MGCL Accession No. 2013-21, MGCL 232999 (MGCL). 1♀, N side of Horseshoe Beach nr. Gun Bluff, 22.835432°, -74.323017°, 6 vi 2013, M. Simon, G. Goss, M. Simon MGCL Accession No. 2013-21, MGCL 232997 (MGCL). 1♂, 0.5 mi. E of Ferry at Church Grove Settlement, 22.758933°, -74.242501°, 6 vi 2014, M. Simon & M. Simon, Bahamas Survey MGCL Accession No. 2014-13, MGCL 236778 (MGCL). **Eleuthera:** 1♂, N of Queen's Hwy, 2.4 mi. SE Governor's Harbour, 25.174333°, -76.2105°, 26 vi 2014, J. Miller, M. Simon, D. Matthews, G. Goss, Bahamas Survey MGCL Accession No. 2014-15, D. Matthews Genitalia Prep. #1800, MGCL 239708 (MGCL). **Grand Bahama:** 1♂, vic. Owl's Hole, 26.587496°, -78.469854°, 27 x 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-31, MGCL 241372 (MGCL). **Great Exuma:** 1♂, SW of Hoopers Bay, 23.518167°, -75.823667°, 26 v 2014, J. Miller, M. Simon, D. Matthews, G. Goss, Bahamas Survey MGCL Accession No. 2014-14, MGCL 235147, KAA diss. #0002 (MGCL). 1♂, same as previous but MGCL 234182 (MGCL). 1♀, same as previous but MGCL 235148, KAA diss. #0003

(MGCL). 1♀, Simons Pt., 23.31.50, 75.47.30 [23.53238°, -75.79478°], 18 iv 1986, T. L. McCabe (MEM). 1♀, same as previous but 17 i 1980 (MEM). **Great Inagua:** 1♀, 3 mi. SW of Morton dock, 21.022222°, -73.685556°, 27 vii 2014, M. J. Simon, G. Goss, Bahamas Survey MGCL Accession No. 2014-21, MGCL 237690 (MGCL). 1♀, 1.3 mi. NNE of Morton dock, 21.066111°, -73.638056°, 27 vii 2014, M. J. Simon, G. Goss, Bahamas Survey MGCL Accession No. 2014-21, MGCL 238059, KAA diss. #0004 (MGCL). **Long Island:** 1♂, NE of Whitehouse, 23.407167°, -75.160500°, 1 vi 2014, J. Miller, G. Goss, M. Simon, D. Matthews, Bahamas Survey MGCL Accession No. 2014-14, MGCL 235953 (MGCL). 1♀, Deadman's Cay, vic. Airport, 23.1755°, -75.096333°, 29 v 2014, J. Miller, G. Goss, M. Simon, D. Matthews, Bahamas Survey MGCL Accession No. 2014-14, MGCL 235817 (MGCL). **Mayaguana:** 1♂, Pirates Well, Baycaner Beach, 22.435833°, -73.102222°, 31 vii-1 viii 2014, M. J. Simon, G. Goss, Bahamas Survey MGCL Accession No. 2014-21, MGCL 237511, KAA diss. #0005 (MGCL). **New Providence**: 1♂, Adventure Learning Zoo off Marshall Rd., 25.004472°, -77.353807°, 10 iv 2014, J. Miller, M. Mundle, D. Matthews & Entomology Class, Bahamas Survey MGCL Accession No. 2014-10, MGCL 235078 (MGCL). **North Abaco:** 1♀, 1 mi. S of Blackwood Village, 26.785115°, -77.431319°, 6 vi 2016, J. Miller, M. Simon, G. Goss, D. Matthews, Bahamas Survey MGCL Accession No. 2016-09, MGCL 246725 (MGCL). **North Andros:** 1♂, Stanyard Creek Road, 24.730556°, -77.886111°, 6-7 vi 2013, J. Miller, M. Simon, G. Goss, A. Shahan, J. Y. Miller colln., MGCL Accession #2010-45, MGCL 233013 (MGCL). **San Salvador:** 1♂, beach NE of Gerace Research Centre, 24.120114°, -74.461898°, 24 vii 2015, D. Matthews, T. A. Lott, R. W. Portell, San Salvador Island Survey ID, D. Matthews et al., MGCL Acc. #2015-57,

MGCL 243204, KAA diss. #0006 (MGCL). **South Andros:** 1♀, farm road north of The Bluff, 24.130088°, -77.59068°, 30 iii 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-9, MGCL 233852 (MGCL). **CAYMAN ISLANDS**: **Grand Cayman:** 2♂♂, N coast of North Side, 9 vii 1938, C.B. Lewis, G.H. Thompson, Light Trap B, 17 iv–26 viii 1938, Oxf. Un. Cayman Is. Biol. Exped. (BMNH). 1♂, same as previous but 5 vii 1938 (BMNH). 1♂, N coast of Rum Point, 4 v 1938, C.B. Lewis, G.H. Thompson, Light Trap, 17 iv–26 viii 1938, Oxf. Un. Cayman Is. Biol. Exped., KAA diss. #0038 (BMNH). 1♂, East end of East End, 16 v 1938, C.B. Lewis, G.H. Thompson, Light Trap B, 17 iv–26 viii 1938. Oxf. Un. Cayman Is. Biol. Exped., KAA diss. #0039 (BMNH). **Cayman Brac:** 2♀♀, West end of Cotton-tree Land, 22 v 1938, C.B. Lewis, G.H. Thompson, Light Trap B, 17 iv–26 viii 1938. Oxf. Un. Cayman Is. Biol. Exped, KAA diss. #0040 (BMNH). **CUBA**: **Havana:** 1♂, District of Habana [Havana], 1934, Father Roberto, Rothschild Bequest (BMNH). **Guantánamo:** 2♂♂, Baracoa, ix–[19]02, W. Schaus, 1905–244, one with KAA diss. #0037 (BMNH). 2♀♀, B[ara]coa, collection Wm. Schaus. KAA diss. #0197 (USNM). 1♂, Imías, La Farola, 700m, vii 1990, V. O. Becker (VBC). **Holguín**: 3♂♂, Mayari, Loma de la Bandera, 12 vii 1990, V. O. Becker (VBC). 17♂♂, 8♀♀, Pinares de Mayari, 640m, vii 1990, V. O. Becker (VBC). **Cienfuegos:** 1♂, nr. Pasa Caballos, 6 km S Cienfuegos, 13–14 ii 1981, 10 m, D.R. Davis (CUIC). **Pinar del Río:** 1♂, Mogote dos Hermanos, 3 km W Viñales, 7–8 ii 1981, ca. 150 m, D.R. Davis. USNM genitalia slide #142190 (USNM). 1♂, Las Animas, Sierra Rangel, 1500ft., 28 iv [19]33, S.C. Bruner & A.R. Otero. E.E.A. Cuba, Ento. No. 10156. USNM diss. #68330 [examined] (USNM). 10♂♂, 1♀, Sierra del Rosario, 400m, 5-15 vi 1990, V. O. Becker (VBC). **Sancti**

Spíritus: 2♂♂, Topes de Collantes, Canchánchara Repressa, 21º54.4'N, 80º1.4'W, 9 xii 1994, D.R. Davis; KAA diss. #0036; USNMENT01480181 (USNM). **Santiago de Cuba:** 1♂, Loma del Gato, Sierra del Cobre, Oriente, 24–30 ix 1935, 2600 ft., J. Acuña, S.C. Bruner, L.C. Scaramuzza. E.E.A. Cuba Ento. No. 10584. USNM diss. #68331 [examined] (USNM). 1♂, La Gran Piedra, 1100m, 18–21 vii 1990, O. Becker (VBC). 1♂, 1♀, Sierra Maestra, Pico Cuba, 1500m, 31 vii 1990, V. O. Becker (VBC). 1♂, Turquino, 470m, 27–29 vii 1990, V. O. Becker (VBC). **DOMINICAN REPUBLIC**: **Azua:** 2♂♂, East side of crest, Sierra Martin Garcia, 7km WNW Barrero, 18°21'N, 70°58'W, 860m, 25–26 vii 1992, cloud forest adjacent to disturbed forest, C. Young, R. Davidson, S. Thompson, J. Rawlins, KAA diss. #0095, #0096 (CMNH). **Dajabon:** 1♀, 13km S Loma de Cabrera, ca. 400m, 20–22 v 1973, Don & Mignon Davis; KAA diss. #0094; USNMENT01480185 (USNM). **La Estrelleta:** 1♀, 4km SE Rio Limpio, ca. 760m, 24–25 v 1973, Don & Mignon Davis (USNM). **Pedernales:** 1♀, 26km N Cabo Rojo, 18°06'N, 71°38'W, 730m, 16 vii 1992, mesic deciduous forest with scattered pines, C. Young, R. Davidson, S. Thompson, J. Rawlins, KAA_DNA_0001, KAA diss. #0093 (CMNH). **JAMAICA: Clarendon:** 2♀♀, nr. Jackson Bay Cave, 1.5 mi SE Jack. Beach, 50ft., 4 v 1973, Don Davis, Mignon Davis; USNMENT01480187 (USNM).

Etymology. Not mentioned by Dyar, but specific epithet possibly from Latin 'amatus' meaning "loved".

Diagnosis. *Argyrotaenia amatana* is an extremely variable species, making it difficult to diagnose externally. Specimens from the same populations can vary dramatically in coloration, size, and maculation. It is most likely to be confused with *A. jamaicana* and *A. vinalesiae*, with which it is most closely related according to COI sequence data (Figs 3,

4). *Argyrotaenia amatana* (Fig. 6) differs from *A. vinalesiae* (Fig. 5F) in having a distinctly banded and slightly larger forewing, and in possessing a thinner, more curved signum in the female genitalia (Austin et al. 2019: fig. 4a) compared to *A. vinalesiae* (Fig. 17B); male genitalia are indistinguishable. It differs from *A. jamaicana* (Fig. 5G, H) in lacking a distinct concavity along the distal third of the forewing costa (Fig. 6) and a wider presaccular gap in the male genitalia (Austin et al. 2019: fig. 3a) compared to *A. jamaicana* (Fig. 15B); female genitalia are indistinguishable.

Redescription. A full redescription was given in Austin et al. (2019). However, having now seen specimens from the Cayman Islands, Cuba, Hispaniola, Jamaica, and the Turks & Caicos, we can say a little more about the range of forewing pattern variation in *A. amatana*. Surprisingly, forewing pattern (Fig. 6) is most variable among populations on small islands such as those of the Florida Keys, The Bahamas, Turks & Caicos, and the Cayman Islands. Both the "clean" (Fig. 6E, G) and "messy" (Fig. 6F, H) forms of the males exist together on these islands. Peninsular Florida, Cuba, and Hispaniola predominantly possess the "messy" form of *A. amatana* males. 12 deciduous cornuti present in one specimen examined.

Distribution. *Argyrotaenia amatana* is one of only four Caribbean *Argyrotaenia* species known from coastal elevations (*A. flavoreticulana*, The Bahamas; *A. kimballi*, The Bahamas; *A. vinalesiae*, Cuba) and is by far the most common in collections. It is widespread in the northern Caribbean, with records from Florida, The Bahamas, Turks & Caicos, Cuba, the Dominican Republic, and Jamaica, and the Cayman Islands (Fig. 23). Most specimens were collected along the coast at elevations under 100 meters. However,

both Cuba and Hispaniola possess populations at much higher elevations (400–1500 meters). On Jamaica, it appears to be replaced by *A. jamaicana* at mid- to high elevations.

Ecology. The known hostplants for *A. amatana* are listed in Austin *et al.*, 2019. This species can be found year-round at coastal elevations, but may have a more restricted flight period at higher elevations on Cuba and Hispaniola.

Discussion. We synonymize two Razowski names under *A. amatana* because the genitalia of the holotypes of these species are indistinguishable from those of *A. amatana*. The forewings of these species, though highly divergent, are within the expected variation of *A. amatana*, whose extreme variability was documented in Austin et al. (2019). Razowski never compared these species to *A. amatana* in his diagnoses, and likely overlooked it entirely. This was likely a result of *A. amatana* having not been recorded in the Caribbean at the time Razowski worked.

Argyrotaenia ochrochroa Razowski, 1999 (Fig. 6B) is known from a single female collected in Providenciales, Turks & Caicos. Razowski mistakenly listed it as being from the Dominican Republic and it was not given a detailed diagnosis. This error was repeated in subsequent publications. Razowski & Becker, 2000 compared the genitalia to those of *Argyrotaenia nuezana*, from which it can be easily separated from forewing pattern alone. *A. ochrochroa* looks like *A. amatana* with unusually distinct gray suffusions on the wings. The genitalia are indistinguishable from those of *A. amatana* from neighboring islands in The Bahamas.

The case of *A. neibana* (Fig. 6A) is more noteworthy because of the higher elevation from which the female holotype was collected (630m). Similar non-type specimens from Hispaniola and Cuba range in elevation from 400–1500m. On

Hispaniola, none are known from the coast, but this may be an artifact of sampling bias more than a distributional anomaly. We could not find any significant difference between the holotype genitalia and those of *A. amatana*, confirming Austin et al. (2019). Mid-elevation males from Hispaniola had genitalia indistinguishable from *A. amatana*. Forewing patterns of the examined Hispaniolan and Cuban specimens match closely with the "typical" form of *A. amatana* from Florida. Unfortunately, we were only able to examine photographs of mid- and high-elevation Cuban specimens in ISEZ and VBC and unable to dissect males for comparison.

COI sequence data strongly support a clade composed of *A. amatana*, *A. vinalesiae*, and *A. jamaicana* (Figs 3, 4). Maximum COI sequence divergence was 0.5% for barcoded specimens of *A. amatana* used in this study. Minimum COI sequence divergence between *A. amatana* and *A. vinalesiae* was 1.6%; and for *A. amatana* and *A. jamaicana* 2.8%.

Argyrotaenia bisignata Razowski, 1999

(Figs 7A–D, 15A, 16F, 24B)

Type material.

Argyrotaenia bisignata Razowski, 1999: **Holotype**, ♂: **DOMINICAN REPUBLIC: Pedernales:** 5km NE Los Arroyos, 18°15'N, 71°45'W, 1680m, 17–18 vii 1990, C. Young, J.E. Rawlins, S. Thompson [examined], Razowski genitalia slide #10711 [examined] (CMNH). **Paratypes**, 16♂♂, 2♀♀: same as holotype or with dates 15–16 vii 1990 (1♂) or 28 vii 1990 (3♂♂, 1♀). Razowski genitalia slides #10712(♀) [slide examined]; #10713(♀), KAA_DNA_0004 [slide not examined]; 10714(♂) [slide not

examined]; KAA diss. #0041 (♂, see discussion), KAA_DNA_0002; KAA diss. #0044(♂), KAA_DNA_0003 [9♂♂, 2♀♀ adults examined] (CMNH).

Additional material examined (5♂♂, 2♀♀ total).

DOMINICAN REPUBLIC: **Pedernales:** 5♂♂, 5km NE Los Arroyos, 1680m, 18°15'N, 71°45'W, 30 ix 1991, R. Davidson, C. Young, S. Thompson, J. Rawlins, cloud forest (4 CMNH, 1 CUIC). KAA diss. #0055 (CMNH). 1♀, La Abeja, 38km NNW Cabo Rojo, 18°09'N, 71°38'W, 1250m, 15 vii 1987, J.E. Rawlins, R.L. Davidson, green paratype label, not a paratype label (see discussion). 1♀, 5km NE Los Arroyos, 18°15'N, 71°45'W, 1680m, 17–18 vii 1990, C. Young, J.E. Rawlins, S. Thompson, green paratype label, not a paratype label (see discussion), Razowski genitalia slide #10715 [slide not examined].

Diagnosis. *Argyrotaenia bisignata* (Fig. 7A–D) is most similar to *A. felisana* (Fig. 7E–H). It is best separated by male genitalia. Adults cannot be separated reliably by forewing pattern. Male genitalia differ in possessing a significantly wider neck of the uncus (Fig. 15A) compared to *A. felisana* (Fig. 14E). In most specimens, dissection is not necessary. Scales can be gently brushed from the tip for examination. Female genitalia are typical for the genus. Razowski (1999) mentioned the presence of a "minute basal sclerite at base of [corpus] bursae" and the absence of the basal sclerite of the ductus bursae. There indeed is a sclerite near the base of the corpus bursae in the examined type material and one KAA dissection, but this character is present in other species of *Argyrotaenia* and may be variable within a single species. Females are best identified through association with males or by distribution.

Redescription. Male. (n=15)

Head. Scales on vertex pale yellow. Frons predominantly dark brown, with intermixed pale yellow and mahogany red scales. Labial palpus with scales on lateral face of all three segments dark brown, occasionally with mahogany red scales toward apex of second segment; second segment expanding apically. Medial face of palpus pale yellow. Scape dark brown basally, pale yellow apically; sensilla approximately 0.75–1× width of flagellomere, recurved; dorsal scales of flagellum alternating between a dark brown and pale yellow row. **Thorax.** Dorsum of pro- and meso-thorax concolorous with vertex; tegulae similar, but with intermixed dark brown and mahogany red scales. Forelegs and midlegs with lateral face dark brown. Hindlegs entirely pale yellow to white. Medial surface of legs pale yellow to white. FWL 7.0–8.5 mm (mean = 7.2 mm; n = 15); basal quarter of costa gently curved, straight beyond except for minute concavity along subapical blotch at apical third. Dorsal surface of forewing (Fig. 7A, B) distinctly bicolored, with antemedian and postmedian interfascia nearly white, with faint strigulae throughout, but most noticeably in the subterminal area. Basal fascia, median fascia, and subapical blotch brick red to brown. Tornal blotch faint. This combination gives most males of this species a very "clean" appearance. There is a small, but usually distinctive dark brown dot at the end of the discal cell. Fringe with apical half brick red, tornal half off-white. Dorsal surface of hindwing pale yellow to white, becoming pale brown towards apex, with faint strigulae throughout, most noticeably at apex. Fringe with short pale brown scales along entire outer margin and longer off-white scales also present along posterior half. Ventral surface of forewing dark brown, pale yellow along costa from 0.5× length to apex with dark brown dots. Ventral surface of hindwing white to pale yellow with dark brown dots, larger than on dorsal surface, concentrated along costal

edge. **Abdomen.** Vestiture of abdomen with basal segments pale yellow, apical segments dark brown. Genitalia (Fig. 15A) with uncus widening gradually, bulb approximately 2× width of neck, unmodified, rounded at apex; arms of gnathos broad, unmodified, abruptly deflexed near terminal plate, which is notched at base; tegumen unmodified; transtilla complete, unmodified; valvae rounded; sacculus to 0.33×; dense cluster of similar setae present at base of valvae; juxta diamond-shaped with shallow notch; phallus pistol-shaped, slightly bent at apex; caulis reduced; approximately 14–16 cornuti present in two specimens examined (including holotype), 0.33× length of phallus, moderate in width, slightly waved, deciduous.

Redescription. Female. (n=4)

Head. Similar to male except lateral face of palpus sometimes with more prominent mahogany red scaling, antennae with sensilla minute, approximately 0.25× width of flagellomere. **Thorax.** Similar to male in coloring on legs, thorax occasionally dark brown. Forewing (Fig. 7C, D) larger, with FWL 7.5–8.5 mm (mean = 8.1 mm; n = 4); concavity at distal third slightly more apparent in most specimens. Dorsal surface of forewing similar in pattern (Fig. 7C), but often less contrasting in color: some specimens with antemedian and postmedian interfasciae heavily suffused with red-orange (Fig. 7D). Fringe with short dark gray scales present basally on apical half; long pale red to off-white scales present on tornal half. Frenulum with 3 bristles. **Abdomen.** Vestiture similar to male. Genitalia (Fig. 16F) with papillae anales triangular; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII; sterigma lightly sclerotized, quadrate; ductus bursa narrow at base, gradually widening to corpus bursae; ductus seminalis arising at approximately 0.15×

length of ductus bursae; corpus bursa large, oval, with a small basal sclerite; signum long, thin, J-shaped; capitulum of signum globose, smooth.

Etymology. Unknown, but possibly refers to the distinct discal dot present in most specimens.

Distribution. *Argyrotaenia bisignata* is restricted to the Sierra de Bahoruco in the Dominican Republic (Fig. 24B). It should also be expected in the Chaîne de la Selle of neighboring Haiti. Records are from 1250–2070 meters.

Ecology. Nothing is known of its biology. Specimens range in capture date from May to November, with most specimens examined taken in July.

Discussion. Razowski only included two female paratypes in his original description. We have examined four females with a paratype label and have seen a fifth in ISEZ. According to ICZN Article 72.4.5, only the two listed in Razowski, 1999 are to be considered paratypes (ICZN, 1999). Because two female specimens with paratype labels share the same data labels, we have selected one to remain a paratype. We have affixed an additional label beneath the two specimens examined which were not included in Razowski, 1999 explaining this. The same should be done with the specimen in ISEZ and any other such female specimens found.

One male paratype (KAA diss. #0041, KAA_DNA_0002) was found to differ from the rest of the type series in both forewing pattern and genitalia. COI barcoding suggests it is a close relative of *A. cryptica* **sp. nov.**, but differences in both forewing pattern and genitalia make us hesitate to consider them conspecific.

COI barcoding revealed 0% sequence divergence between two specimens of *A. bisignata* sampled.

Argyrotaenia browni Austin & Dombroskie, 2020, **sp. nov.**

(Figs 8E, F; 14B; 16B; 24C)

Type material.

Argyrotaenia browni Austin & Dombroskie, 2020: **Holotype,** ♂: **DOMINICAN REPUBLIC: Independencia:** Sierra de Neiba, south slope near summit, 4.0km N Angel Feliz, 18°40'21"N, 71°46'05"W, 1825m, 1–2 iv 2004, J. Rawlins, C. Young, R. Davidson, broadleaf cloud forest without pine (CMNH). HOLOTYPE *Argyrotaenia browni* Austin & Dombroskie [typed red label]. KAA diss. #0097 (CMNH). **Paratypes**, 1♂, 2♀♀: **DOMINICAN REPUBLIC**: **Elias Piña [Independencia]:** 1♀, Sierra de Neiba, 9.3km SW Hondo Valle, 18°41'31"N, 71°47'03"W, 1901m, 30 iv 2006, J. Rawlins, J. Hyland, R. Davidson, C. Young, D. Koenig, J. Fetzner, montane forest, *Podocarpus*, KAA diss. #0101 (CMNH). **Independencia:** 1♀, Sierra de Neiba near crest, 5.5km NNW Angel Feliz, 18°41'N, 71°47'W, 1750m, 21–22 vii 1992, J. Rawlins, S. Thompson, C. Young, R. Davidson, dense cloud forest. KAA diss. #0099, KAA_DNA_0021 (CUIC). **La Estrelleta [Independencia]:** 1♂, Sierra de Neiba at crest, 5.5km WNW N Angel Feliz, 1800m, 18°41'N, 71°47'W, 15 x 1991, R. Davidson, C. Young, S. Thompson, J. Rawlins, cloud forest, KAA diss. #0098, KAA_DNA_0020 (CMNH). All paratypes affixed with the following blue typed label: PARATYPE ♂/♀ *Argyrotaenia browni* Austin & Dombroskie, 2020.

Additional material examined (2♂♂, 2♀♀ total).

DOMINICAN REPUBLIC: La Vega [Monseñor Nouel]: 1♂, Loma del Casabito, 19°03'N, 70°31'W, 1390m, wet cloud forest, 3 xi 2002, W.A. Zanol, C.W. Young, C.

Staresinic, J. Rawlins, KAA diss. #0114, KAA_DNA_0032 (CMNH). 1♂ (abdomen missing), Cordillera Central, Loma Casabito, 15.8km NW Bonao, 19°02'12"N, 70°31'08"W, 1455m, evergreen cloud forest, east slope, 28 v 2003, J. Rawlins, C. Young, R. Davidson, C. Nunez, P. Acevedo, KAA_DNA_0033 (CMNH). **La Vega:** 1♀, Cordillera Central, Reserva Valle Nuevo, La Nevera, 15.6 km SE Valle Nuevo, 18°41'30"N, 70°35'24"W, dense cloud forest with pine, 2193 m, 25 iv 2006, J. Rawlins, C. Young, J. Fetzner, C. Nunez, KAA diss. #0125 (CMNH). **Peravia [San José de Ocoa]**: 1♀, 3 km SW La Nuez, upper Rio Las Cuevas, 18°39'N, 70°36'W, 1880 m, cloud forest on river, 5–6 x 1991, J. Rawlins, R. Davidson, C. Young, S. Thompson; KAA diss. #0134; KAA_DNA_0061 (CMNH).

Diagnosis. *Argyrotaenia browni* **sp. nov.** most closely resembles *A. cubae* in both forewing pattern and genitalia. *Argyrotaenia browni* **sp. nov.** has a darker and redder overall hue to the forewing (Fig. 8E, F) compared to *A. cubae* (Fig. 8C, D). In addition, wings of fresh specimens of *A. browni* **sp. nov.** are slightly more mottled and possess a distinct thin, black streak running parallel to the costa interrupting the median fascia. Male genitalia of *A. browni* **sp. nov.** (Fig. 14B) possess a broader uncus, more rounded valvae, and much narrower presaccular gap than *A. cubae* (Fig. 14C). Female genitalia of *A. browni* **sp. nov.** (Fig. 16B) possess a shorter, thicker signum, truncate capitulum, lateral edges of sterigma without significant sclerotization, and narrower papillae anales compared to *A. cubae* (Fig. 16C). Worn specimens could be confused with *A. paradisei* **sp. nov.** (Fig. 9E, F), with which it is sympatric on Sierra de Neiba. See the diagnosis for that species.

Description. Male. (n=2)

Head. Scales on vertex caramel brown. Scales on frons mahogany red with intermixed dark brown scales. Labial palpus with scales on lateral face of all first and second segments predominantly dark brown, with intermixed pale yellow and mahogany red scales; third segment mostly pale yellow. Medial face of palpus similar to lateral face but with more pale yellow. Scape red-brown basally, pale yellow apically; sensilla approximately width of flagellomere, strongly curved; dorsal scales of flagellum alternating between a mahogany red and pale yellow row. **Thorax.** Dorsum of pro- and meso-thorax dark brown; tegulae variable, ranging from mahogany red to dark brown to nearly white. Forelegs and midlegs dark brown with occasional pale yellow or mahogany red scales. Hindlegs variable, with some combination of dark brown, pale yellow, or mahogany scaling; tibial spurs of paratype bright orange. Medial surface of legs pale yellow to white. FWL 8.0–8.5 mm (mean = 8.3; n = 2); costa with basal third smoothly curved, straight beyond. Ground color of forewing (Fig. 8E) chocolate brown, with antemedian and postmedian interfasciae warm brown with a slightly gray wash. Much more intricately colored under magnification, with submedian and postmedian fascia washed with salmon pink scales and bordered with light red-orange. Basal fascia, median fascia, subapical blotch, and tornal blotch intermixed with mahogany red scales. A diffuse black streak runs in the median area of the forewing to near the fringe. Fringe multicolored: short dark gray scales and longer salmon pink and brick red scales at apex, gradually replaced with short brick red scales and long salmon pink and light red-orange towards termen. Dorsal surface of hindwing light brown, becoming darker towards apex, strigulae faint, becoming more apparent at apex. Fringe with pale brown scales present along entire margin, with a few intermixed brick red and gray scales at apex, longer off-

white scales present along posterior half. Ventral surface of forewing warm brown, light red-orange along costa. Ventral surface of hindwing white to light brown with dark brown and salmon pink strigulae along costa to apex. **Abdomen.** Vestiture concolorous with dorsal surface of hindwing. Genitalia (Fig. 14B) with uncus moderate in width, uniform throughout, neck as wide as bulb, unmodified, rounded at apex, apicoventral setae long, projecting laterally; arms of gnathos moderate, unmodified, smoothly curved throughout; tegumen unmodified; transtilla complete, unmodified; valvae broadly rounded; sacculus to one-third; dense cluster similar setae present at costal half of base of valvae; juxta broadly rounded with shallow notch; phallus pistol-shaped, shallowly curved, caulis reduced; a single cornutus observed in one specimen, approximately 0.5× length of phallus, moderate in width, straight, deciduous.

Description. Female. (n=2)

Head. Similar to male except lateral scales on palpus predominantly pale yellow. Sensilla minute, no more than 0.5× width of flagellomere, porrect. **Thorax.** Similar to male but forewing (Fig. 8F) slightly larger: FWL 10.0–10.5 mm (mean = 10.3 mm; n = 2) and with black medial streak on dorsal surface of forewing more apparent. Fewer light red-orange scales on forewing, giving the impression of a slightly cleaner overall appearance. Hindwing fringe with more extensive red and gray scaling at apex. Frenulum with three bristles. **Abdomen.** Vestiture similar to male. Genitalia (Fig. 16B) with papillae anales narrow, slightly curved laterally; apophyses posteriores and anteriores both approximately 0.67× length of sternum VII; sterigma lightly sclerotized, quadrate; ductus bursa 1.75× length of corpus bursae, broad for almost entire length; ductus seminalis

arising at approximately 0.2× length of ductus bursae; corpus bursa small for genus, oval; signum moderate, curved; capitulum of signum truncate.

Etymology. We take great pleasure in naming this species after Dr. Richard L. Brown, W.L. Giles Distinguished Professor at Mississippi State University and Director of the Mississippi Entomological Museum, in honor of his unparalleled career in Lepidoptera morphology and systematics and for his role as a mentor to both authors.

Distribution. *Argyrotaenia browni* **sp. nov.** is known from the Cordillera Central and the Sierra de Neiba in the Dominican Republic (Fig. 24C) and could be expected in neighboring regions of Haiti as well. Elevation of examined specimens range from 1390–2193 meters.

Ecology. Nothing is known of its biology. Specimens range in capture date from April to November.

Discussion. We examined four specimens of *Argyrotaenia browni* **sp. nov.** from the Cordillera Central which resemble the type series, but differ slightly in forewing pattern and uncus shape. Both males and females have a more subdued, less contrasting forewing pattern. The dissected male possesses a blunter uncus, but otherwise agree well.

A male and female paratype were barcoded but only a >500 bp sequence was recovered for the female. Maximum sequence divergence between the Cordillera Central specimens barcoded was 0.3%. Sequence divergence for the paratype female and Cordillera Central specimens was 3.6–4.0%. For these morphological and molecular reasons, we exclude these specimens from the type series. We do not have enough evidence at present to describe these Cordillera Central populations as a separate species, although future studies are warranted.

Argyrotaenia ceramica Razowski, 1999

(Figs 5A–E, 14A, 16A, 24A)

Diagnosis. *Argyrotaenia ceramica* (Fig. 5A–E) closely resembles the members of the *A. ponera* group (Brown & Cramer 1999) in having both an unusually elongate wing shape in comparison to its congeners and the male genitalia possessing a strongly curved phallus with a well-developed caulis. It can be separated by its deeply-notched juxta and relatively broader phallus (Fig. 14A). The female genitalia (Fig. 16A) are not likely to be confused with any known Caribbean *Argyrotaenia*. The signum is short (approximately 0.33× width of corpus bursae) and straight with a roughened, irregular capitulum. Small males could be confused with males of *Clepsis jamesstewarti* **sp. nov.** (Fig. 12D), but the genitalia are distinct.

Discussion. We could find no morphological differences between the types of *A. ceramica* Razowski, 1999 and *A. granpiedrae* Razowski & Becker, 2010. However, an incomplete COI barcode (408 bp) was recovered for *A. granpiedrae* showed significant sequence divergence between specimens from Cuba and Hispaniola (7.0–7.3%). For these reasons, we choose to sink *A. granpiedrae* to a subspecies of *A. ceramica*. Based on forewing pattern and male genitalia, *Argyrotaenia ceramica* appears to belong to the *ponera* group of species (Brown & Cramer 1999) from central Mexico and the southwestern United States. Individual subspecies accounts follow.

Argyrotaenia ceramica ceramica Razowski, 1999

(Figs 5A–D, 14A, 16A, 24A)

Type material.

Argyrotaenia ceramica Razowski, 1999**: Holotype** ♂: **DOMINICAN REPUBLIC: Pedernales:** 8km NE Los Arroyos, 1940m, 18°16'N, 71°44'W, 14 vii 1990, J. Rawlins, C.W. Young, S.A. Thompson [examined]. Razowski genitalia slide #10705 [examined] (CMNH). **Paratypes** 4♂♂, 2♀♀: **DOMINICAN REPUBLIC: Pedernales:** 1♂, La Abeja, 38km NNW Cabo Rojo, 18°09'N, 71°38'W, 1160m, 14 vii 1987, J.E. Rawlins, R.L. Davidson [examined]. Razowski genitalia slide #10706 [not examined] (CMNH). 1♂, 5km NE Los Arroyos, 18°15'N, 71°45'W, 1680m, 15–16 vii 1990, C. Young, J.E. Rawlins, S. Thompson [photo examined] (ISEZ). **Peravia [San José de Ocoa]:** 1♂, 3km SW La Nuez, tributary to Rio Las Cuevas, 18°40'N, 70°36'W, 1870m, 5–6 viii 1990. J. Rawlins, S. Thomson [examined]. Razowski genitalia slide #10707 [examined] (CMNH). **HAITI: Ouest:** 1♂, 2♀♀, Kenskoff [Kenscoff], 3 v 1937, Roys, 4300' [examined]. Razowski genitalia slide #10708 (♀) [examined], #10709 (♂/♀) [not examined], #10710 (♂/♀) [not examined] (CMNH).

Additional material examined (30♂♂, 24♀♀ total).

DOMINICAN REPUBLIC: Independencia: 1♀, Sierra de Bahoruco, north slope, 2116 m, broadleaf forest with pine, 18°41'31"N, 71°35'35"W [18°17'30"N, 71°43'08"W], 8 xi 2002, W.A. Zanol, C.W. Young, C. Staresinic, J. Rawlins (CMNH). 2♂♂, 5♀♀, 3 km ESE El Aguacate, north slope Sierra de Baoruco, 1980 m, pine woodland, 18°18'N, 71°42'W, 28–29 ix 1991, J. Rawlins, R. Davidson, C. Young, S. Thompson (1♂ CUIC, remainder CMNH). KAA diss. #0085(♀); #0087(♂), KAA_DNA_0009 (CMNH). 1♂, Sierra de Neiba, near crest, 5.5 km NNW Angel Feliz, 1750 m, dense cloud forest, 18°41'N, 71°47'W, 21–22 vii 1992, J. Rawlins, S. Thompson, C. Young, R. Davidson, KAA diss. #0088 (CMNH). 1♂, Sierra de Bahoruco, north slope, 13.3 km SE Puerto

Escondido, 1812 m, 18°12’33”N, 71°30’47”W, 24–26 iii 2004, *Pinus*, *Rubus*, *Garrya*, open, R. Davidson, J. Rawlins, C. Young, C. Nunez, M. Rial (CMNH). 1♂, Sierra de Bahoruco, north slope, 13.5 km SE Puerto Escondido, 1807 m, broadleaf *Pinus* dense woodland, 18°12’24”N, 71°30’54”W, 24–26 iii 2004, R. Davidson, J. Rawlins, C. Young, C. Nunez, M. Rial (CMNH). 3♂♂, 2♀♀, Sierra de Bahoruco, north slope, 13.5 km SE Puerto Escondido, 1789 m, ecotonal *Pinus* grassland 18°12’18”N, 71°31’08”W, 24–25 xi 2004, J.E. Rawlins, C. Young, C. Nunez, V. Verdecia, W.A. Zanol, KAA diss. #0089 (CMNH). 1♂, 3♀♀, Sierra de Neiba, just south of crest, 5 km WNW Angel Feliz, 1780 m, cloud forest 18°41’N, 71°47’W, 13–15 x 1991, J. Rawlins, R. Davidson, C. Young, S. Thompson (CMNH), Razowski genitalia slide #10734 (♀) [examined], #10735 (♀) [examined], #10736(♀) [examined] (CMNH). 1♀, Sierra de Neiba, south slope near summit, 4.0 km N Angel Feliz, broadleaf cloud forest without pine, 1825 m 18°40’21”N, 71°46’05”W, 1–2 iv 2004, J. Rawlins, C. Young, R. Davidson, KAA_DNA_0013 (CMNH). **La Estrelleta [Elías Piña]:** 1♀, 4 km SE Rio Limpio, c. 760 m, 24–25 v 1973, Don Davis, Mignon Davis (USNM). 1♂, 1♀, Sierra de Neiba at crest, 5.5 km WNW N Angel Feliz, 1800 m, cloud forest, 18°41’N, 71°47’W, 15 x 1991, R. Davidson, C. Young, S. Thompson, J. Rawlins (♂ CMNH, ♀ CUIC). **La Vega:** 2♂♂, 2.5 km SW Pinar Bonito, 1430 m, riparian vegetation near stream in pine woodland 18°51’N, 70°43’W, 26 xi 1992, J. Rawlins, R. Davidson, M. Klingler, S. Thompson (CMNH). 2♂♂, 4.1 km SW El Convento, 1710 m, secondary broadleaf forest, 18°50’37”N, 70°42’48”W, 14 xi 2002, W.A. Zanol, C.W. Young, C. Staresinic, J. Rawlins, KAA diss. #0092 (CMNH). 1♀, Constanza, 2–6 vi 1969, Flint & Gomez, KAA diss. #0084 (USNM). 1♂, 5♀♀, Convento, 12km S of Constanza, 6–13 vi, 1969, Flint & Gomez

(USNM). **Pedernales:** 11♂♂, 1 km S Los Arroyos, 1125 m, second growth forest, 18°14'N, 71°45'W, 18 x 1991, R. Davidson, C. Young, S. Thompson, J. Rawlins, KAA diss. #0090 (CMNH). 1♀, 26 km N Cabo Rojo, 730 m, mesic deciduous forest with scattered pines, 18°06'N, 71°38'W, 16 vii 1992, C. Young, R. Davidson, S. Thompson, J. Rawlins, KAA diss. #0086 (CMNH). 1♂, 5 km NE Los Arroyos, 1680 m, cloud forest, 18°15'N, 71°45'W, 30 ix 1991, R. Davidson, C. Young, S. Thompson, J. Rawlins (CMNH). **Peravia [San José de Ocoa]:** 2♂♂, 3♀♀, 3 km SW La Nuez, upper Rio Las Cuevas, 1880 m, cloud forest on river, 18°39'N, 70°36'W, 5–6 x 1991, J. Rawlins, R. Davidson, C. Young, S. Thompson (1♂, 1♀ CUIC; remainder CMNH). KAA diss. #0083(♀), KAA_DNA_0012 (CMNH). **HAITI: Sud:** 1♂, Ville Formon, 31 km NW Les Cayes, S slope Morne Formon, Massif de La Hotte, 1405m, disturbed forest and fields, 18°20'N, 74°01'W, 7–8 ix 1995, R. Davidson, G. Onore, J. Rawlins, KAA diss. #0091, KAA_DNA_0010 (CMNH).

Diagnosis. *A. c. ceramica* (Fig. 5A–D; Hispaniola) is morphologically indistinguishable from *A. c. granpiedrae* (Fig. 5E; Cuba), but differs in COI barcode (see discussion under species account).

Redescription. Male. (n=34)

Head. Scales on vertex ochraceous-orange to maize yellow. Frons similarly colored. Labial palpus with scales on lateral face of first and second segment bicolored, with basal half pale yellow and apical half ochraceous-orange, occasionally a few scales entirely black. Terminal segment similar in coloration, but with more prominent black scaling. Medial face of palpus pale yellow. Scape concolorous with vertex; sensilla approximately 0.75× width of flagellomere; dorsal scales of flagellum dark brown, occasionally pale

yellow; second row of scales on each flagellomere expanding noticeably, giving the appearance of very thick antennae. **Thorax.** Dorsum of pro- and meso-thorax concolorous with vertex; tegulae also concolorous. Forelegs predominantly dark brown with intermixed pale yellow scales; femur with ochraceous-orange scales as well. Midlegs similar to forelegs but without ochraceous-orange scaling on femur, tarsi pale yellow to dark brown. Hindlegs pale yellow to white. Medial surface of legs pale yellow to white. Forewing pattern with two distinct forms, FWL 5.0–8.5 mm (mean = 6.3; n = 34); costa with basal quarter smoothly curved, straight beyond. The first form (Fig. 5B) appears to be more common and is significantly smaller (mean = 6.2 mm; n = 31, includes three paratypes). This form has the dorsal surface of forewing with ground color pale yellow; basal fascia, median facia, and subapical blotch amber brown with intermixed dark brown scales; amber brown dots along inner margin. This form has the tornal blotch obsolete. The second form (Fig. 5A) is much less common and significantly larger (n = 3, includes holotype; mean FWL = 8.0 mm). In this form, there is a crimson red streak through the wing from base to near the apex. Black scales are sometimes present in portions of this streak. Fringe pale orange-yellow, brick red and dark gray scales present at apex in most specimens. Tornal blotch present. Dorsal surface of hindwing white to pale yellow, with light brown mottling throughout, becoming more densely mottled apically in some individuals. Fringe composed of long pale red-orange scales, becoming off-white along posterior third; shorter pale brown scales present along margin in some specimens (Fig. 5B) Ventral surface of forewing light brown basally, pale yellow near apex. Ventral surface of hindwing similar to dorsal surface. **Abdomen.** Vestiture of abdomen warm brown, terminal segment pale yellow. Genitalia (Fig. 14A)

with uncus uniform in width, unmodified, tapered at apex; arms of gnathos unmodified, evenly curved; tegumen unmodified; transtilla thin, complete, unmodified; valvae nearly triangular with long setae scattered at margins; presaccular gap and longitudinal fold obsolete; sacculus apparent at base to 0.5× length of valvae, marginal beyond; plications obsolete; dense cluster of apically-widened, brush-like setae present at base of valvae; juxta deeply notched; phallus strongly curved, caulis prominent, well-developed; 2–4 cornuti present, approximately 0.8× length of phallus, thin, nearly straight, deciduous. A cluster of five cornuti was observed in the corpus bursae of one female (Fig. 16A).

Redescription. Female. (n=26)

Head. Similar to male except antennae with sensilla minute, approximately 0.25× width of flagellomere, second row of scales on each flagellomere not expanding as in male. **Thorax.** Similar to male in coloring on legs and thorax. Forewing (Fig. 5C, D) with FWL 6.0–8.5 mm (mean = 7.3; n = 26). Dorsal surface of forewing ochraceous-orange to chocolate brown; markings similar to male but smoother and much less contrasting, except for a distinct patch of white scales halfway along inner margin. Frenulum with 2–3 bristles, asymmetrical in number in several specimens examined. **Abdomen.** Vestiture of abdomen similar to male. Genitalia (Fig. 16A) with papillae anales elongate, narrow, slightly curved laterally; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII, moderately kinked laterally in some specimens; sterigma broad, evenly curved; ductus bursa approximately 2× length of sternum VII, broadening anteriorly; ductus seminalis arising at approximately 0.25× length of ductus bursae; corpus bursa round; signum thin, straight,

0.25–0.5× length of corpus bursae; capitulum of signum rounded to irregular, strongly roughened.

Etymology. Unknown, but possibly from *keramikos* (Greek: 'pottery').

Distribution. *Argyrotaenia ceramica ceramica* is widespread at mid- and high elevations (700–2200 m) on Hispaniola (Fig. 24A).

Ecology. Nothing is known of its biology. However, due to its highly variable size in males, we hypothesize it may be an internal feeder. Records range in capture date from April to November.

Discussion. There is a discrepancy in the label of one female specimen from Independencia. The label reads "Sierra de Bahoruco" but the coordinates are for the Sierra de Neiba. After comparing coordinates from specimens collected the previous night and talking with Dr. John Rawlins, we interpret the coordinates to be incorrect. Dr. Rawlins kindly supplied us with the correct coordinates. COI sequence divergence between barcoded specimens of *A. c. ceramica* was between 0.1% and 1.7%.

Argyrotaenia ceramica granpiedrae Razowski & Becker, 2010 **stat. nov.**

(Fig. 5E, 24A; Razowski & Becker, 2010: figs 19, 20, 46, 71)

Type material.

Argyrotaenia granpiedrae Razowski & Becker, 2010: **Holotype** ♂: **CUBA: S[an]t[ia]go [de Cuba]:** Gran Piedra, 20 vi[i] 1990, V.O. Becker; Col. Becker 72991 [photograph examined]. Genitalia slide #409 [figure examined] (VBC, see discussion below).

Paratypes: 3♂♂, 1♀: same data as holotype [female genitalia figure examined] (VBC, see discussion below).

Additional material examined.

CUBA: **S[an]t[ia]go [de Cuba]:** 1♂, Gran Piedra, same data as holotype (VBC). KAA diss. #0161, KAA_DNA_0011 (VBC). 2♀♀, Sierra Maestra, Pico Cuba, 31 vii 1990, V. O. Becker [photographs examined] (ISEZ).

Diagnosis. See the diagnosis under *A. c. ceramica*.

Redescription. Male. (n=1)

Head. Identical to *A. c. ceramica*. **Thorax.** Wing pattern identical to the more common form of *A. c. ceramica*. FWL 5.0mm. Though smaller than the two specimens pictured in Fig. 5C, D, the specimen pictured in Fig. 5E is well within the size range observed in other *A. c. ceramica*. **Abdomen.** Identical to *A. c. ceramica*, including genitalia (see Razowski & Becker, 2010: figs 19, 20).

Redescription. Female. (n=0)

Only photographs examined, but see Razowski & Becker, 2010: fig. 46.

Etymology. Refers to the type locality, Gran Piedra, Cuba.

Distribution. Known from two high-elevation localities in southern Cuba (Fig. 24A).

Ecology. Nothing is known for the biology of this subspecies. All known specimens were collected in July.

Discussion. See the discussion under the species account for why we sunk *A. granpiedrae* to a subspecies of *A. ceramica*. The holotype of *A. granpiedrae* and the female paratype were found in the ISEZ, not the VBC as listed in Razowski & Becker (2010). The remaining male paratypes are likely in the ISEZ as well. Two non-type females were also found in the ISEZ and had been identified by Razowski as *A. ceramica*. It is unclear whether these were identified before or after *A. granpiedrae* was

described. Razowski listed the holotype as being collected in June, but we suspect the label was erroneously transcribed, as we examined a specimen with otherwise identical labels and accession numbers with the month being “vii” instead of “vi”.

Argyrotaenia cryptica Austin & Dombroskie, 2020, **sp. nov.**

(Figs 9A–D; 15D, E; 17E, F; 24D)

Diagnosis. *Argyrotaenia cryptica* **sp. nov.** (Fig. 9A–D) is unlikely to be confused with any other described Caribbean *Argyrotaenia*. Its narrow, elongate forewing with a distinctly acute apex, combined with its brick red fasciae should serve to separate it from all other Caribbean Archipini. Genitalia are most similar to *A. paradisei* **sp. nov.** (Fig. 15F), which possesses a shorter terminal plate of the gnathos and longer, more numerous cornuti than in *A. cryptica* **sp. nov.** (Fig. 15D, E).

Discussion. *A. cryptica* **sp. nov.** may represent a cryptic species complex and/or two or more lineages with high levels of incomplete lineage sorting. Several barcoded specimens with wildly different forewing patterns and genitalia clustered as *A. cryptica* **sp. nov.** Unsurprisingly, barcoding may be of limited value in separating its two subspecies, which we describe based on subtle differences in wing pattern and genitalia, as well as distribution. We exclude the most extreme phenotypic examples from the type series of the two subspecies and restrict type series to a single locality or a set of closely-situated localities. A Maximum Likelihood tree (Fig. 4) based on COI barcode sequence data strongly support that *A. cryptica* **sp. nov.** is sister to *A. paradisei* **sp. nov.**, a relationship supported by shared morphological traits. COI sequence divergence within barcoded

specimens of *A. cryptica* **sp. nov.** was between 0.7% and 1.4%, without respect to subspecies. Individual subspecies accounts follow.

Argyrotaenia cryptica cryptica Austin & Dombroskie, 2020, **ssp. nov.**

(Figs 9A, B; 15E; 17E; 24D)

Type material.

Argyrotaenia cryptica cryptica Austin & Dombroskie, 2020: **Holotype** ♂:

DOMINICAN REPUBLIC: La Vega: 23km SE Costanza, 18°45'N, 70°37'W, 2225m, 24–25 xi 1992, grassland with pines and scattered marshes, R. Davidson, M. Klinger, S. Thompson, J. Rawlins (CMNH). HOLOTYPE *Argyrotaenia cryptica cryptica* Austin & Dombroskie [typed red label]. **Paratypes:** 6♂♂, 2♀♀: **DOMINICAN REPUBLIC**: **La Vega:** 2♂♂, 18km SE Costanza, 18°46'N, 70°39'W, 2310m, 25 xi 1992, pine woodland near head of small canyon, M. Klinger, J. Rawlins, R. Davidson, S. Thomas (1♂ CMNH, KAA_DNA_0030; 1♂ CUIC). 1♂, 5.2km ESE Valle Nuevo, Valle Nuevo Field Station, 18°46'40"N, 70°38'22"W, 2120m, 12–13 xi 2002, pine forest and grassland, W. A. Zanol, C. W. Young, C. Staresinic, J. Rawlins (CMNH). 1♂, 1♀, Cordillera Central Valle Nuevo Station, 5.2 km ESE Valle Nuevo, 18°46'42"N, 70°38'22"W, 2277m, 23 v 2003, open pine-shrub woodland, C. Young, J. Rawlins, C. Nunez, R. Davidson, P. Acevedo (♂ CUIC, ♀ CMNH). KAA diss. #0171(♀) (CMNH). 1♂, Cordillera Central Valle Nuevo Station, 5.4 km ESE Valle Nuevo, 18°46'35"N, 70°38'20"W, 2260m, 23 v 2003, open riparian grass-pine forest, C. Young, J. Rawlins, C. Nunez, R. Davidson, P. Acevedo. KAA diss. #0115 (CMNH). 1♂, Cordillera Central, 4.1 km SW El Convento, 18°50'38"N, 70°42'51"W, 1733m, 31 v 2003, montane forest with pines near pasture, J.

Rawlins, R. Davidson, C. Young, C. Nunez, P. Acevedo (CMNH). 1♀, Reserva Científica Valle Nuevo, Sector La Nevera, 3 km WNW La Nuez, 2200m, 18°42'N, 70°36'W, 7 x 1991, mesic pine woodland, C. Young, S. Thompson, R. Davidson, J. Rawlins, KAA diss. #0118, KAA_DNA_0031 (CMNH). All paratypes affixed with the following typed blue label: PARATYPE ♂/♀ *Argyrotaenia cryptica cryptica* Austin & Dombroskie, 2020.

Diagnosis. *Argyrotaenia cryptica cryptica* **ssp. nov.** can be separated from *A. c. praeteritana* **ssp. nov.** by wing pattern and genitalia of both sexes. Forewing pattern tends to be a little more washed out and the hindwing tends to be darker in *A. c. cryptica* **ssp. nov.** (Fig. 9A, B) compared to *A. c. praeteritana* **ssp. nov.** (Fig. 9C, D). In the male genitalia (Fig. 15E), the terminal plate of the gnathos is slightly shorter and less ventrally curved than in *A. c. praeteritana* **ssp. nov.** (Fig. 15D). The bulb of the uncus is also slightly narrower. Female genitalia differ chiefly in the shape of the capitulum and size of basal sclerite in corpus bursae: capitulum acutely pointed and basal sclerite small in *A. c. cryptica* **ssp. nov.** (Fig. 17E), while capitulum hooked and basal sclerite large in *A. c. praeteritana* **ssp. nov.** (Fig. 17F), but with so few specimens examined it is unclear how variable these characters are.

Description. Male. (n=7)

Head. Scales on vertex white to maize yellow, a thin row of light orange scales sometimes present anteriorly. Scales on frons light red-orange. Labial palpus with scales all three segments tricolored on lateral face, intermixed with dark brown, mahogany red, and white scales; terminal segment occasionally entirely dark brown. Medial face of palpus white with a few dark brown scales present anteriorly. Scape variable, with white,

warm red-orange, or mahogany red scales, or some combination thereof. Sensilla approximately 1.5× width of flagellomere, recurved; dorsal scales of flagellum alternating between a dark brown basal row and a pale buff apical row. **Thorax.** Dorsum of pro- and meso-thorax red-orange with a few intermixed black scales; tegulae concolorous. Fore- and midlegs predominantly dark brown with intermixed pale yellow scales; hindlegs predominantly pale yellow to white with intermixed dark brown scales; tibiae and tibial spurs warm brown. Medial surface of legs pale yellow to white. FWL 7.5–9.5 mm (mean = 8.4; n=7); costa with basal third very gently curved, straight beyond. Dorsal surface of forewing (Fig. 9A) with basal fascia, median fascia, and subapical blotch brick red; antemedian and postmedian interfasciae white (visible along costa), but heavily suffused with pink-gray scales as to obscure much of the base color; a few black scales also scattered throughout, most visible along costa. Fringe bicolored, apical half with long mahogany red scales and short dark gray scales, tornal half off-white with occasional small patches of dark gray scales; short portion of long scales along inner margin near tornus dark gray. Dorsal surface of hindwing gray, with faint strigulae towards apex. Fringe with short pale brown scales and longer off-white scales along entire margin,. Ventral surface of hindwing warm brown, white and black spots present along costa. Ventral surface of hindwing as on dorsal surface but slightly paler and with strigulae more noticeable. **Abdomen.** Vestiture of abdomen warm brown with terminal row of scales on each segment paler. Genitalia (Fig. 15E) with uncus moderate, unmodified, widening in apical half to bulb, apicoventral setae long; arms of gnathos unmodified, moderate, evenly curved, minutely hooked at apex, terminal plate robust, notched at base; tegumen widened slightly posteriorly, small patch of sockets for setae

present laterally; transtilla broad, unmodified; valvae circular; presaccular gap moderate, uniform in width; sacculus to 0.33× of valvae; juxta minutely notched. Phallus pistol-shaped, slightly downturned at apex, caulis minute, approximately eight cornuti observed: short, moderate in width, straight, approximately 0.25× length of phallus, deciduous.

Description. Female. (n=2)

Head. Similar to male except with less extensive dark brown scaling on labial palpus, sensilla short, porrect, no more than 0.5× width of flagellomere. **Thorax.** Similar to male but with less extensive pink-gray scaling on the dorsal surface of the forewing (Fig. 8B), which produces a more "washed-out" appearance. FWL 8.5–9.0 mm (mean = 8.7; n = 2). Fringe with less extensive gray scaling. Frenulum with 2–3 bristles, asymmetrical in number in one specimen examined. **Abdomen.** Vestiture of abdomen similar to male. Genitalia (Fig. 16E) with papillae anales triangular, slightly rounded laterally; apophyses posteriores approximately 0.25× length of sternum VII; apophyses anteriores approximately 0.75× length of sternum VII; sterigma broad, well-sclerotized; ductus bursae broadening anteriorly; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursa oval, minute sclerite present at base of corpus bursa; signum thin to moderate, J-shaped; capitulum of signum acutely pointed.

Etymology. 'crypticus' (Latin), meaning hidden, referring to the possibility that *A. cryptica* **sp. nov.** may represent a cryptic species complex (see discussion under species account).

Distribution. *Argyrotaenia cryptica* **sp. nov.** is restricted to the Cordillera Central of the Dominican Republic (Fig. 24D). Elevation of examined specimens range from 1733–2310 meters.

Ecology. Nothing is known of its biology. Capture dates of examiened specimens are from May to November, suggesting at least two generations per year.

Discussion. See the discussion under the species account of *A. cryptica* **sp. nov.** for comments on this subspecies' relationship to *A. c. praeteritana* **ssp. nov.** and *A. paradisei* **sp. nov.**

Argyrotaenia cryptica praeteritana Austin & Dombroskie, 2020, **ssp. nov.**

(Figs 9C, D; 15D; 17F; 24D)

Type material.

Argyrotaenia cryptica praeteritana Austin & Dombroskie, 2020: **Holotype** ♂: **DOMINICAN REPUBLIC: Pedernales:** 9.7km NE Los Arroyos, 18°16'N, 71°44'W, 2070m, 15–16 vii 1990, J. Rawlins, C.W. Young, S.A. Thompson, Razowski genitalia slide #10732 (CMNH). HOLOTYPE *Argyrotaenia cryptica praeteritana* Austin & Dombroskie [typed red label]. HOLOTYPE *Argyrotaenia cineriptera* Razowski [red label; see etymology below]. **Paratypes** 7♂♂, 1♀: **DOMINICAN REPUBLIC: Independencia:** 4♂♂, Sierra de Bahoruco, Loma del Toro, 18°17'16"N, 71°42'46"W, 2310m, 7–8 xi 2002, meadow in pine woods, W. A. Zanol, C. W. Young, C. Staresinic, J. Rawlins (1♂ CUIC, remainder CMNH). KAA diss. #0113 (CMNH). 1♂, Sierra de Bahoruco, north slope, 13.5 km SE Puerto Escondido, 18°12'24"N, 71°30'54"W, 24–26 iii 2004, broadleaf *Pinus* dense woodland, R. Davidson, J. Rawlins, C. Young, D. Nunez,

M. Rial (CUIC). 1♂, Sierra de Bahoruco, north slope, 18°41’31”N, 71°35’35”W [18–17–30N, 71–43–08W], 2116m, broadleaf forest with pine, 8 xi 2002 W.A. Zanol, C.W. Young, C. Staresinic, J. Rawlins, KAA_DNA_0028 (CMNH). **Pedernales:** 1♂, 1♀, same data as holotype, Razowski genitalia slide #10731(♂); #10733(♀), KAA_DNA_0029 (CMNH). PARATYPE *Argyrotaenia cineriptera* Razowski [green label; see etymology below]. All paratypes affixed with the following typed blue label: PARATYPE *Argyrotaenia cryptica praeteritana* ♂/♀ Austin & Dombroskie, 2020.

Diagnosis. See diagnosis under *A. c. cryptica* **ssp. nov.**

Description. Male. (n=8)

Head. Scape on vertex white to pale yellow, dark gray with white apices in one specimen examined. Scales on frons straw yellow to red-orange. Lateral surface of labial palpus variable, sometimes entirely warm brown with intermixed pale yellow scales, other times red-orange with terminal segment dark brown. Medial face of labial palpus pale yellow. Scape equally variable, ranging from pale yellow to red-orange. Sensilla approximately 1.5× as long as width of flagellomere; recurved in some individuals but not so in others; dorsal scales of flagellum alternating between a warm brown basal row and a nearly white apical row; apical row expanding slightly. **Thorax.** Scales on dorsum of pro- and mesothorax variable, pale yellow or warm brown, but most commonly mahogany red. Tegulae concolorous with pro- and mesothorax except with a few pale yellow scales present apically. Forelegs entirely dark brown on lateral face in specimens from Pedernales, suffused with mahogany red in specimens from Independencia. Midlegs and hindlegs warm brown with intermixed pale yellow scales, especially so on hindlegs. Forewing (Fig. 9C) with basal third very gently curved, straight beyond; FWL 7.5–9.0

mm (mean = 8.7; n = 8). Dorsal surface of forewing identical to *A. c. cryptica* **ssp. nov.** (see description for that subspecies), but less washed out, giving a "grainier" appearance to it. Fringe without the red scaling present in *A. c. cryptica* **sp. nov.** Dorsal surface of hindwing white in specimens from Pedernales, darker in specimens from Independencia. Ventral surfaces of both wings identical to *A. c. cryptica* **ssp. nov. Abdomen.** Vestiture of abdomen warm brown with terminal row of scales on each segment white. Genitalia (Fig. 15D) with uncus moderate at neck, broadening to a rounded bulb with long apicoventral setae; socius obsolete; arms of gnathos moderate, unmodified, evenly curved; terminal plate moderate, distinctly curved, notched at base; tegumen with small patch of sockets present laterally; transtilla complete, uniform in width, unmodified; valvae nearly circular; sacculus to 0.33× presaccular gap moderate, uniform in width throughout; juxta diamond-shaped with shallow notch, sockets present laterally. Phallus pistol-shaped, elongate, slightly downturned at apex; caulis small; approximately ten cornuti observed in one specimen: short, moderate in width, slightly waved, approximately 0.2× length of phallus, deciduous.

Description. Female. (n=1)

Head. Similar to male except with vertex and frons pale yellow to white, lateral face of labial palpus pale yellow with only a few intermixed warm brown scales; sensilla short, porrect, no more than 0.5× as long as width of flagellomere**. Thorax.** Similar to male, forewing (Fig. 9D) similar to male, FWL 7.5 mm. **Abdomen.** Similar to male. Genitalia (Fig. 17F) with papillae anales broad, triangular, rounded slightly laterally; apophyses anteriores and posteriores similar in length to those of *A. c. cryptica* (sternum VII removed prior to examination); sterigma moderate, bowl-shaped, thin laterally; ductus

bursae narrow at base, widening gradually to corpus bursae; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursae oval-shaped, with distinct, tooth-like sclerite present at base; signum long, slightly hooked; capitulum irregularly rounded with noticeable hook at apex.

Etymology. From 'praeteritus' (Latin) meaning "passed over", referring to the fact that this taxon was known to Razowski, but unpublished. His manuscript name for it was '*cineriptera*'.

Distribution. *Argyrotaenia cryptica praeteritana* **ssp. nov.** is restricted to the Sierra de Bahoruco in the Dominican Republic (Fig. 24D). It likely occurs in neighboring Haiti. Elevation range of examined specimens range from 1807–2310 meters.

Ecology. Nothing is known of its biology. Capture dates of examiened specimens are March, July, and November, suggesting multiple broods per year.

Discussion. There is a discrepancy in the label of one male specimen from Independencia. The label reads "Sierra de Bahoruco" but the coordinates are for the Sierra de Neiba. After comparing coordinates from specimens collected the previous night and talking with Dr. John Rawlins, we interpret the coordinates to be incorrect. Dr. Rawlins kindly supplied us with the correct coordinates. See the discussion under the species account of *A. cryptica* **sp. nov.** for comments on this subspecies' relationship to *A. c. cryptica* **ssp. nov.** and *A. paradisei* **sp. nov.**

Argyrotaenia cubae Razowski, 1999

(Figs 8C, D; 14C; 16C; 24C)

Type material.

Argyrotaenia cubae Razowski, 1999: **Holotype** ♂: **CUBA: S[an]t[ia]go [de Cuba]:** Sier[ra] Maestra, P[ico] Cuba, 1500m, 31 vii 1990, V.O. Becker Col. 73584 [photograph examined], genitalia slide #016 [figure examined] (VBC, see discussion below).

Paratype, 1♀ same data as holotype (VBC) [not examined], genitalia slide #017 [figure examined] (VBC, see discussion below).

Additional material examined. (3♂♂, 4♀♀)

CUBA: S[an]t[ia]go [de Cuba]: 3♂♂, 1♀, same data as type series. KAA diss. #0162 (♂), KAA_DNA_0022; #0163(♀), KAA_DNA_0023 (VBC). **DOMINICAN REPUBLIC: Barahona:** 1♀, Eastern Sierra Bahoruco, Reserva Cachote, 12.8 km NE Paraiso, 18°05'54"N, 71°11'21"W, 1230 m, cloud forest with tree ferns, 19–21 v 2004, C. Young, C. Nunez, J. Rawlins, J. Fetzner; KAA diss. #0103 (CMNH). 1♀, same as previous except 21–23 iii 2004; KAA diss. #0100; KAA_DNA_0062 (CMNH). **La Vega:** 1♀, 4.1 km SW El Convento, 18°50'37"N, 70°42'48"W, 1710 m, secondary broadleaf forest, 14 xi 2002, W.A. Zanol, C.W. Young, C. Staresinic, J. Rawlins; KAA diss. #0102; KAA_DNA_0063 (CMNH).

Diagnosis. *Argyrotaenia cubae* most closely resembles *A. browni* **sp. nov.** in both forewing pattern and genitalia. Overall, *A. cubae* (Fig. 8C, D) has a "cleaner" appearance to the forewing without any hint of red scaling on the interfasciae compared to *A. browni* **sp. nov.** (Fig. 8E, F). Male genitalia of *A. cubae* (Fig. 14C) differ from *A. browni* **sp. nov.** (Fig. 14B) in possessing more pointed valvae with a significantly wider presaccular gap and a longer, thinner uncus. Female genitalia of *A. cubae* (Fig. 16C) differ from *A. browni* **sp. nov.** (Fig. 16B) in possessing a longer, thinner signum with an evenly-rounded capitulum and broader papillae anales.

Redescription. Male. (n=3)

Head. Scales on vertex, frons, and lateral face of labial palpus pale brown to dark chocolate brown. Scales on medial face of labial palpus pale brown to straw yellow. Scape concolorous with vertex; sensilla approximately width of flagellomere, strongly curved; dorsal scales of flagellum alternating between a dark reddish-brown and golden yellow row. **Thorax.** Dorsum of pro- and meso-thorax warm chocolate brown, tegulae concolorous. Forelegs with scaling on lateral surface concolorous with thorax; midlegs with scaling on lateral face pale brown; hindleg entirely pale to straw yellow; medial face of all legs with scaling straw yellow. FWL 8.5–9.0 mm (mean = 8.7 mm; n =3). Dorsal surface of forewing (Fig. 8C) with basal third gently curved, straight or nearly so beyond; basal fascia, median fascia, subapical blotch, and terminal blotch chocolate brown; antemedian and postmedian interfasciae pale brown, salmon pink and light red-orange scales present under magnification; fringe pale red-orange with a few chocolate brown scales intermixed, especially on apical half. Dorsal surface of hindwing light brown; strigulae faint, but more apparent towards apex; fringe light brown, slightly darker at apex. Ventral surface of forewing pale brown, dorsal pattern faintly visible. Ventral surface of hindwing pale brown, strigulae more apparent than on dorsal surface.

Abdomen. Vestiture of abdomen concolorous with dorsal surface of hindwing, straw yellow at apex. Genitalia (Fig. 14C) with uncus uniform in width, unmodified, rounded at apex, apicoventral setae long, projecting laterally on neck; arms of gnathos of unmodified, moderate, evenly curved; tegumen moderate; transtilla moderate, complete, unmodified; valvae semicircular, pointed at apex; presaccular gap wide, occupying approximately 0.5× surface of valvae; sacculus apparent at base to 0.75× of valvae,

narrow beyond; juxta minutely notched; phallus pistol-shaped, caulis reduced; cornuti short, rounded at base, slightly curved at tip; four deciduous cornuti present in one specimen examined.

Redescription. Female. (n=4)

Head. Similar to males but vertex and frons with intermixed mahogany red scaling. Antennal sensilla short, porrect, no more than 0.5× width of flagellomere. **Thorax.** Similar to male but with tegulae with intermixed mahogany red scales. Forewing (Fig. 8D) similar in pattern to male, but specimens from Hispaniola with fasciae darker brown. FWL 8.0–9.0 mm (mean = 8.5 mm; n =4). **Abdomen.** Vestiture of abdomen similar to males. Genitalia (Fig. 16C) with papillae anales elongate, triangular, slightly swollen posteriorly; apophyses posteriores approximately 0.4× length of sternum VII; apophyses anteriores approximately 0.8× length of sternum VII; sterigma broad, quadrate; ductus bursa approximately 1× length of sternum VII, broadening anteriorly; ductus seminalis arising at 0.25× length of ductus bursae; corpus bursa oval; signum long, J-shaped; capitulum of signum evenly rounded, opposite-facing.

Etymology. Refers to the type locality (Cuba).

Distribution. *Argyrotaenia cubae* is known from the Sierra Maestra range on southern Cuba, from the vicinity of Monumento Natural Miguel Domingo Fuerte on the eastern edge of the Sierra de Bahoruco in the Dominican Republic, and from the Cordillera Central in the Dominican Republic (Fig. 24C).

Ecology. Nothing is known of its biology. Specimens range in capture date from March to November.

Discussion. Both the holotype and paratype of *Argyrotaenia cubae* were found in the ISEZ, not the VBC as listed in Razowski & Becker (2010). The females from the Dominican Republic agree well in both forewing pattern, size, and genitalia to females from Cuba. Unfortunately, only one barcoded specimen recovered a COI sequence >500 bp, so we are unable to discuss sequence divergence within this species with any level of significance.

Argyrotaenia felisana Razowski, 1999

(Figs 7E–H, 14E, 16E, 24B)

Type material.

Argyrotaenia felisana Razowski, 1999: **Holotype** ♀: **DOMINICAN REPUBLIC: Independencia:** Sierra de Neiba, just south of crest, 5 km WNW Angel Feliz, 1780 m, cloud forest, 18°41'N, 71°47'W, 13–15 x 1991, J. Rawlins, R. Davidson, C. Young, S. Thompson (CMNH) [examined], Razowski genitalia slide #10692 [examined] (CMNH).

Additional material examined (14♂♂, 35♀♀ total).

DOMINICAN REPUBLIC: Azua: 1♂, East side of crest, Sierra Martin Garcia, 7km WNW Barrero, 18°21'N, 70°58'W, 860m, 25–26 vii 1992, cloud forest adjacent to disturbed forest, C. Young, R. Davidson, S. Thompson, J. Rawlins, KAA diss. #0076 (CMNH). **Barahona:** 1♀ (abdomen missing), nr. Filipinas Larimar Mine, 6–11 vii 1993, R.E. Woodruff, KAA_DNA_0060 (FSCA). 1♀, Eastern Sierra Bahoruco, Reserva Cachote, 11.3 km NNW Paraiso, 18°05'54"N, 71°11'21"W, 1230 m, cloud forest with tree ferns, 3 v 2006, R. Davidson, C. Nunez, D. Koenig, J. Hyland, J. Fetzner, C. Young, J. Rawlins, KAA diss. #0056, KAA_DNA_0005 (CMNH). **Elías Piña:** 1♂, Sierra de

Neiba, 9.0km WSW Hondo Valle, 18°41’34”N, 71°46’52”W, 1843m, 25 vi 2003, disturbed montane woodland with pine, J. Rawlins, C. Young, R. Davidson, C. Nunez, P. Acevedo, M. de la Cruz, KAA diss. #0046 (CMNH). **Independencia:** 1♂, 2♀♀, same data as holotype (1♂ CUIC, remainder CMNH). KAA diss. #0045(♂, CUIC); #0070(♀), KAA_DNA_0014 (CMNH). 1♂, 15♀♀, Sierra de Neiba near crest, 5.5km NNW Angel Feliz, 18°41’N, 71°47’W, 1750m, 21–22 vii 1992, dense cloud forest, J. Rawlins, S. Thompson, C. Young, R. Davidson (1♀ CUIC, remainder CMNH). KAA diss. #0042(♂), KAA_DNA_0017; #0050(♀); #0081(♀) (CMNH). 1♂, 6♀♀, Sierra de Neiba, south slope near summit, 4.0km N Angel Feliz, 18°40’21”N, 71°46’05”W, 1825m, 1–2 iv 2004, broadleaf cloud forest without pine, J. Rawlins, C. Young, R. Davidson, #0051(♀), #0074(♂) (CMNH). 1♂, same data as previous except 1 v 2006, J. Hyland, C. Young, R. Davidson, D. Koenig, J. Fetzner, J. Rawlins (CMNH). 1♀, Sierra de Bahoruco, north slope, 13.5 km SE Puerto Escondido, 1789 m, ecotonal *Pinus* grassland 18°12’18”N, 71°31’08”W, 24–25 xi 2004, J.E. Rawlins, C. Young, C. Nunez, V. Verdecia, W.A. Zanol, KAA diss. #0054, KAA_DNA_0006 (CMNH). **La Estrelleta [Independencia]:** 1♂, Sierra de Neiba at crest, 5.5 km WNW N Angel Feliz, 1800m, 18°41’, 71°47’W, 15 x 1991, cloud forest, R. Davidson, C. Young, S. Thompson, J. Rawlins, KAA diss. #0064 (CMNH). **La Vega:** 2♂♂, 1♀, La Palma, 12km E of El Rio, 2–13 vi 1969, Flint & Gomez (1♂ CUIC, remainder USNM); KAA diss. #0077(♂), USNMENT01480223; USNMENT01480225 (♀) (USNM). 2♂♂, Convento, 12km S of Constanza, 6–13 vi 1969, Flint & Gomez, KAA diss. #0079 (USNM). 1♂, Constanza, 2–6 vi 1969, Flint & Gomez (USNM). 1♀, Cordillera Central, 4.1km SW El Convento, 18°50’37”N, 70°42’48”W, 1730m, 31 v 2003, dense secondary evergreen forest with pine, J. Rawlins,

R. Davidson, C. Nunez, C. Young, P. Acevedo, KAA diss. #0080, KAA_DNA_0018 (CMNH). 1♂, same data as previous except 1710m, 14 xi 2002, secondary broadleaf forest, W.A. Zanol, C.W. Young, C. Staresinic, J. Rawlins, KAA diss. #0047 (CMNH). 1♀, 2.5km SW Pinar Bonito, 18°51'N, 70°43'W, 1430m, 26 ix 1992, riparian vegetation near stream in pine woodland, J. Rawlins, R. Davidson, M. Klingler, S. Thompson, KAA diss. #0071 (CMNH). **Monseñor Nouel:** 1♀, 1km E Paso Alto de Casabito, 7km NW La Ceiba, 1130m, 19°02'N, 70°29'W, 28 vii 1992, cloud forest, R. Davidson, J. Rawlins, S. Thompson, C. Young (CUIC). **Peravia [San José de Ocoa]:** 1♂, 4♀♀, 3km SW La Nuez, upper Rio Las Cuevas, 1880m, 18°39'N, 70°36'W, 5–6 x 1991, cloud forest on river, J. Rawlins, R. Davidson, C. Young, S. Thompson (1♀ CUIC, remainder CMNH). KAA diss. #0043(♂), KAA_DNA_0016; #0082(♀), KAA_DNA_0015 (CMNH). **Puerto Plata:** 1♀, Pico El Murazo, north slope near summit, 19°41'N, 70°57'W, 910m, 28 xi 1992, mesic deciduous forest, J. Rawlins, R. Davidson, M. Klingler, S. Thompson, KAA diss. #0053, KAA_DNA_0019 (CMNH).

Diagnosis. *Argyrotaenia felisana* (Figs 7E–H, 14E, 16E) most closely resembles *A. bisignata* (Figs 7A–D, 15A, 16F) in forewing appearance and genitalia. See the diagnosis under that species.

Description. Male. (n=14)

Head. Scales on vertex variable in color, usually with some combination of pale yellow, dark brown, or mahogany red. Frons dark brown, occasionally with mahogany red scales dorsally. Lateral surface of labial palpus with scales on first segment pale yellow, occasionally with dark brown scales intermixed; second and third segment dark brown and mahogany red. Medial face of palpus with pale yellow and dark brown scales

intermixed. Scape dark brown, nearly black, with a few mahogany red scales sometimes present apically. Sensilla approximately width of flagellomere, recurved; dorsal scales of flagellum alternating between a straw yellow and dark brown row. **Thorax.** Dorsum of pro- and meso-thorax variable: either pale yellow, dark brown, or mahogany red or some combination of the three. Lateral surface of forelegs and midlegs dark brown; hindlegs pale yellow to white, tarsi and tarsal spurs warm brown. Medial surface of legs pale yellow to white. Forewing (Fig. 7G, H) with basal third of costa smoothly curved, straight beyond except for subtle concavity along subapical blotch at apical third; FWL 6.0–8.0 mm (mean = 6.8; n = 14). Dorsal surface of forewing with antemedian and postmedian interfasciae fascia light brown to white, with faint darker brown to black reticulations, which are most apparent near fringe. Basal fascia, median fascia, and subapical blotch dark brown or deep mahogany red; under magnification these areas tinted with gray or salmon pink scales, especially along inner margin. Tornal blotch faint to obsolete. Fringe with apical half salmon pink to mahogany red, occasionally with a few dark gray scales, tornal half concolorous with interfasciae. Dorsal surface of hindwing white to light brown, with faint dark brown strigulae, especially towards apex. Fringe with pale short brown scales present along entire margin, longer pale yellow scales present along entire margin, becoming darker at apex. Ventral surface of forewing warm brown, costa straw yellow with warm brown dots. Ventral surface of hindwing as on dorsal surface. **Abdomen.** Vestiture of abdomen with first two segments pale yellow, remaining segments warm brown, becoming slightly darker terminally. Genitalia (Fig. 14E) with uncus extremely narrow at base, gradually widening to large bulb (acutely pointed in one population from near Constanza); apicoventral setae projecting laterally on

bulb; arms of gnathos of unmodified, moderate, abruptly bent at terminal plate. Tegumen with small patch of sockets laterally; transtilla moderate, complete, unmodified; valvae oval-shaped; presaccular gap narrow, widening slightly at apex of valvae; sacculus to 0.33× of valvae; juxta shallowly notched, with small patch of sockets laterally; phallus pistol-shaped, caulis reduced; approximately 5-18 cornuti observed: moderate, slightly waved, approximately 0.25× length of phallus, deciduous.

Redescription. Female. (n=36)

Head. Similar to male except scales on vertex predominantly pale yellow and antennal sensilla short, porrect, no more than 0.5× width of flagellomere. **Thorax.** Dorsum of pro- and meso-thorax predominantly pale yellow, only rarely with dark brown of mahogany red scales, a few specimens with mahogany red posterior thoracic scale tuft. Tegulae concolorous with dorsum of pro- and meso-thorax. Legs similar to male, but with hindlegs sometimes entirely warm brown. Dorsal surface of forewing (Fig. 7E, F) with slightly more pronounced concavity in some specimens (Fig. 7E) but nearly straight (Fig. 7F) in others; FWL 6.5–9.5 mm (mean = 8.0; n = 36); much wider dark brown or mahogany red median fascia as compared to male. Under magnification, the white antemedian and postmedian interfasciae almost completely overlaid by blue-gray and salmon pink scales, giving the appearance of a much less contrasting overall forewing pattern and a slightly purple hue. Fringe with much more extensive dark gray scaling on apical half than in male, long brick red scales present from apex to near tornus. Frenulum with 2–3 bristles, asymmetrical in number in several specimens examined. **Abdomen.** Genitalia (Fig. 16E) with papillae anales triangular; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum

VII; sterigma broad, quadrate; ductus bursa approximately 1.5–2× length of sternum VII, broadening anteriorly; ductus seminalis arising at approximately 0.25× length of ductus bursae; corpus bursae oval, with or without a minute sclerite at base; signum long, J-shaped; capitulum of signum globose, smooth.

Etymology. Based on an incorrect transcription of the type locality, Angel Feliz (see discussion below).

Distribution. *Argyrotaenia felisana* appears to be the most widespread *Argyrotaenia* in the Dominican Republic, occuring on all major mountain ranges, but has not been recorded in the western Sierra de Bahoruco, where it is replaced by *A. bisignata* (Fig. 24B). Elevation of examined specimens range from 860–1880 meters.

Ecology. Nothing is known of its biology. Capture dates range from April to November, suggesting multiple broods per year.

Discussion. The specific epithet of this species is based on an incorrect transcription by Razowski. The holotype label reads “Angel Feliz”, but Razowski erroneously transcribed this part of the label as “Angel Felis” in the original description. However, because there is no clear evidence of inadvertent error within the original publication itself, the spelling must be kept (ICZN Article 32.5.1).

A series of five males from the vicinity of Constanza deposited in the USNM differ in having a subtly spade-shaped uncus but otherwise agree with other males in genitalia and wing pattern. COI sequence divergence between barcoded specimens of *A. felisana* ranged from 0% to 3.3%, but in the absence of significant observed morphological differences between populations, we choose to treat *A. felisana* as a single broadly-distributed species on Hispaniola.

This represents the first description of *A. felisana* males. Initial assocatiations was based on wing pattern and shared locality data and subsequently confirmed with COI barcodes.

Argyrotaenia flavoreticulana Austin & Dombroskie, 2019

(Austin et al. 2019: figs 2a–c; 3c, d, h; 4b)

Type material.

Argyrotaenia flavoreticulana Austin & Dombroskie, 2019: **Holotype** ♂: **THE BAHAMAS: Great Exuma:** Simons Pt, 23.31.50, 75.47.30 [23.53238°, -75.79478°], 10 iv 1986, Tim L. McCabe, T. McCabe collection (CUIC) [examined]. **Paratypes** 2♂♂, 2♀♀: **THE BAHAMAS: Long Island:** 1♂, blue hole E of Anderson, 23.533233°, -75.237334°, 31 v 2014, J. Miller, G. Goss, M. Simon, D. Matthews, Bahamas Survey MGCL Accession No. 2014-14, MGCL 236227, K.A. diss. #0008 (MGCL). 1♀, same as previous but Bahamas Survey MGCL Accession No. 2014-14, D. Matthews Genitalia Prep. #1843 MGCL 236228 (MGCL). **South Andros:** 1♂, W of The Bluff Settlement, 24.106939°, -77.557659°, 29 iii 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-9, D. Matthews Genitalia Prep. #1825, MGCL 233628 (MGCL). **Great Exuma:** 1♀, Simons Pt, 23.31.50, 75.47.30 [23.53238°, -75.79478°], 17 i 1980, Tim L. McCabe, T. McCabe Collection (TM) [all examined].

Diagnosis. Unlikely to be confused with any described Caribbean Archipini. See Austin et al. 2019 for a full diagnosis.

Description. See Austin et al. 2019.

Etymology. The specific epithet is a reference to the reticulated (*reticulatus* Latin) forewing pattern and the yellow (*flavo*- Latin) ground color (Austin et al. 2019).

Distribution. *Argyrotaenia flavoreticulana* is known from Great Exuma, Long Island, and South Andros Island in The Bahamas (Austin et al. 2019).

Ecology. See Austin et al. 2019.

Argyrotaenia jamaicana Razowski & Becker, 2000b

(Figs 5G, H; 15B; 17A; 23)

Type material.

Holotype ♂: **JAMAICA**: Greenhills, Hardwar Gap, 27 iii 1936, E. Paine [examined]. Razowski genitalia slide #12274 [examined] (CMNH).

Additional material examined (17♂♂, 8♀♀)

JAMAICA: **Portland:** 2♂♂, 1♀, Green Hills, 11 iii [19]66, S.S. Duckworth, W.D. Duckworth (1♂ CUIC, remainder USNM). KAA diss. #0128(♀) (USNM). 3♂♂, Hardwar Gap, "Green Hills", 16–17 vii 1963, Flint & Farr. One with JAP diss. #3182, USNM diss. ##68325 [examined] (USNM). 1♂, 1♀, 1 mi N Hardwar Gap, 12–20 xi 1966, E.L. Todd (♂ CUIC, ♀ USNM). KAA diss. #0127(♀) (USNM). **St. Andrew:** 1♀, Newcastle, Rothschild Bequest, B.M. 1939-1 (BMNH). 1♂, Newcastle, str. at mile 16.5, 30 vii 1962, O. Farr, R. Flint (USNM). 2♂♂, same as previous but 18 vii 1963 (CUIC, USNM). 1♂, Chestervale, Yallahs River, 24–25 vii 1962, O. Farr, R. Flint, KAA diss. #0131 (USNM). 1♂, same as previous but 17 vii 1963 (USNM). 1♂, Hermitage Dam, 22–23 vii 1962, O. Farr, R. Flint (USNM). **St. Ann:** 1♂, Moneague, *Parthenium hysterophorus* ex. 23 ii 1905, Wlsm, 77032. Walsingham Collection, 1910–427. [*Tortrix*

partheniana type ♂]. **St. Catherine:** 4♂♂, 4♀♀, Mt. Diablo, Hollymount, 2754ft., 21–24 iv [19]73, Don Davis, Mignon Davis (2♀♀ CUIC; remainder USNM, including 1♂ USNMENT01480198 and 1♀ USNMENT01480208). KAA diss. #0129 (♀) (USNM). 1♀, Worthy Park, 2.2mi N on Camperdown Road, R.E. Woodruff, 18–25 ii [19]70, malaise trap (USNM).

Diagnosis. *Argyrotaenia jamaicana* is a strongly sexually dimorphic species. Worn males could be confused with *A. amatana* because of their diminutive size, but the strongly concave costa at the distal third of *A. jamaicana* (Fig. 5G) should easily separate them from males of *A. amatana* (Fig. 6E–H). Females are also similar to *A. amatana*, but also possess a strongly concave costa at the apical third and have a less strongly contrasting forewing pattern (Fig. 5H) compared to females of *A. amatana* (Fig. 6A–D). Females could also be confused with females of *A. felisana* (Fig. 7E, F) from Hispaniola, another sexually dimorphic species, especially as some female specimens of *A. felisana* also possess a strongly concave forewing costa (Fig. 7E). However, *A. jamaicana* females have a more orange overall hue in both forewings and hindwings (Fig. 5H). Male genitalia (Fig. 15B) are likely to be confused with *A. amatana*, *A. bisignata*, and *A. razowskiana* **sp. nov.** From *A. amatana* (Austin et al. 2019: fig. 3a), *A. jamaicana* differs in having a narrower uncus and longer terminal plate of the gnathos. From *A. bisignata* (Fig. 15A) it differs in having a much longer, thinner terminal plate of the gnathos and more curved phallus. From *A. razowskiana* (Fig. 15C) it differs in having a broader neck of the uncus and a more curved phallus. The female genitalia (Fig. 17A) most closely resemble these same three species, but can be separated by having smaller, less elongate papillae anales and a more evenly rounded capitulum. Both *A. jamaicana* and *A. amatana*

occur on Jamaica, but they appear to be allopatric, with *A. jamaicana* restricted to mid- and high elevations and *A. amatana* to the immediate coast (Fig. 23).

Redescription. Male. (n=17)

Head. Scales on vertex straw yellow with a few intermixed light red-orange scales. Frons with scaling red-orange. Labial palpus with scales on lateral surface dull red-orange, with scattered straw yellow and brick red scales; medial surface pale yellow. Scape pale yellow to straw yellow; sensilla approximately same width as flagellomere, recurved, but not as strongly as in other Caribbean *Argyrotaenia*; dorsal scales of flagellum alternating between a mahogany red basal row and red-orange apical row.

Thorax. Dorsum of pro-and meso-thorax pale yellow to red-orange; tegulae concolorous, slightly darker in some specimens. Lateral surface of forelegs warm brown to dark brown, lateral surface of midlegs and hindlegs straw yellow to white, tarsi and tibial spurs occasionally warm brown. Medial surface of legs white. Forewing (Fig. 5G) costa with a noticeably concavity at distal third, FWL 5.0–7.0 mm (mean = 5.9; n = 17). Scaling on dorsal surface of forewing with antemedian and postmedian interfasciae light yellow, strongly mottled with orange and ochraceous red throughout, banding obsolete in some specimens, well-developed in others; basal fascia, median fascia, and subapical blotch variable, sometimes nearly obsolete and only visible as faint brick red along costa, in other specimens jet black with a wash of blue-gray scales; fringe with apical half dark red-orange near apex, basal scales of fringe being replaced with dale yellow scales towards tornus. Dorsal surface of hindwing golden orange; short fringe scales concolorous, longer scales pale yellow to off-white. Ventral surface of forewing orange, white and ochraceous red markings present along costa. Ventral surface of hindwing as

on dorsal surface. **Abdomen.** Vestiture of abdomen with scaling concolorous with hindwing, almost gold. Genitalia (Fig. 15B) with uncus moderate in width, thinnest at middle, slightly bulbous in distal third, apicoventral setae sparse, short; arms of gnathos unmodified, evenly curved but with dorsal ridge giving the appearance of it being strongly bent; tegumen moderate; transtilla thick, U-shaped; valvae broadly circular; sacculus apparent at base to 0.5× of valvae, narrow beyond; dense cluster of thin deciduous setae present at base of valvae; presaccular gap relatively narrow; juxta hexagonal, shallowly notched; phallus evenly curved, caulis minute; approximately 12 cornuti observed in holotype, approximately 0.33× length of phallus, thin, curved, deciduous.

Description. Female. (n=8)

Head. Similar to male except with extensive ochraceous red scaling on vertex, frons, and scape; lateral face of labial palpus dull red-orange, with scattered brick red scales; sensilla short, porrect, no more than 0.5× width of flagellum. **Thorax.** Similar to male but dorsum of pro- and meso-thorax with more extensive mahogany red scaling. Forewing with slightly more pronounced concavity along distal third of costa at subapical blotch; FWL 6.5–9.5 mm (mean = 7.6; n = 8). Dorsal surface of forewing (Fig. 5H) with banding more apparent than in male, mottling absent, basal fascia, median fascia, and subapical blotch mahogany red, but overlaid with purplish scaling, which is most noticeable under magnification. Submedian and subterminal interfascia straw yellow, but similarly overlaid with purplish scaling, obscuring most of the yellow scales. Fringe with apical lighter than male, apical half salmon pink, occasional brick red scales present. Dorsal surface of hindwing with fringe entirely concolorous with hindwing. **Abdomen.** Vestiture

of abdomen golden orange to warm brown. Genitalia (Fig. 17A) with papillae anales triangular, rounded laterally; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores 0.75–1× length of sternum VII; sterigma well-sclerotized, broadly bowl-shaped; ductus bursae widening gradually anteriorly; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursae large, oval; signum moderate in width, long, J-shaped; capitulum of signum prominent, evenly rounded.

Etymology. Refers to the type locality (Jamaica).

Distribution. *Argyrotaenia jamaicana* is known exclusively from Jamaica (Fig. 23) at mid- to high elevations (350–1230 meters). It appears to be replaced by *A. amatana* on the immediate coast.

Ecology. One male from BMNH was reared from *Parthenium hysterophorus* L. (Asteraceae). Capture dates range from February to November, suggesting several generations per year.

Discussion. The holotype of *Argyrotaenia minisignaria chalarostium* was erroneously labeled as a female paratype of *A. jamaicana*. See the discussion under *Claduncaria chalarostium* for a full explanation. One male from BMNH is labeled as "*Tortrix partheniana* type ♂." We can find no published record of this name and treat it as an unavailable manuscript name.

Both a male and female specimen were barcoded, but only a >500 bp sequence was recovered for the female, so we are unable to discuss sequence divergence within this species with any level of significance. See the discussion under *A. amatana* regarding this species' relationship to it. COI sequence divergence between *A. jamaicana* and *A. vinalesiae* was 3.2%. This is represents the first description of *A. jamaicana* females.

Argyrotaenia kimballi Obraztsov, 1961

(Austin et al. 2019: figs 2d; 3b, g; 4c)

Type material.

Argyrotaenia kimballi Obraztsov, 1961: **Holotype** ♂: **USA: Florida:** Highlands Co., Archbold Biological Station, 10 ii 1958, R. W. Pease, Jr., genitalia on slide, no. 509-Obr. (AMNH) [photo examined]. **Paratypes** 5♂♂, 1♀: **USA:** 2♂♂, same as holotype but 25 xii 1957 and 5 i 1958 [not examined]. 3♂♂, same as holotype but 31 xii 1959, 5 i 1960, and 14 i 1960, S.W. Frost [not examined] (Collection of C.P. Kimball, possibly donated to AMNH after Kimball's death). 1♀, same as holotype but 22 ii 1958 (genitalia on slide, no. 510-Obr.) [not examined] (AMNH).

Additional material examined (5♂♂ total).

THE BAHAMAS: **North Andros:** 1♂, Captain Bill's Blue Hole, 24.742046°, -77.862031°, 13 vi 2012, Mark Simon, Gary Goss, Rick Rozycki & Michael Simon, M. Simon MGCL Accession No. 2012-28, MGCL 233014 (MGCL). 1♂, 2.4 mi. S of Staniard Creek, dirt road W of Queen's Hwy., 24.797594°, -77.888264°, 27 x 2011, J.Y. Miller, M. Simon, G. Goss, D. Matthews, MGCL Accession No. 2011-32, MGCL 233015 (MGCL). **South Abaco:** 1♂, Schooner Bay, coppice trail, 26.167000°, -77.181167°, 30 x 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-31, D. Matthews Genitalia Prep. #1795, MGCL 238664 (MGCL); 1♂, Schooner Bay Institute, 26.161333°, -77.187667°, 31 x 2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, Bahamas Survey MGCL Accession No. 2014-31, MGCL 241639 (MGCL); 1♂, vicinity of Sawmill Sink, 26.218346°, -77.210170°, 31 x

2014, J. Miller, M. Simon, R. Rozycki, D. Matthews, N. & M. Albury, Bahamas Survey MGCL Accession No. 2014-31, MGCL 241702 (MGCL).

Diagnosis. See Austin et al. 2019.

Description. See Austin et al. 2019.

Etymology. Patronym of lepidopterist Charles P. Kimball.

Distribution. *Argyrotaenia kimballi* is known in the USA from east Texas to Florida, north to Tennessee and Maryland. In the Caribbean, it has only been recorded from the Bahamas (Austin et al. 2019).

Ecology. See Austin et al. 2019.

Argyrotaenia nuezana Razowski, 1999

(Figs 8A, B; 14D; 16D; 25B)

Argyrotaenia nuesana, misspelling in Razowski, 1999

Type material.

Argyrotaenia nuezana Razowski, 1999: **Holotype** ♀: **DOMINICAN REPUBLIC: La Vega:** 24km SE La Constanza, 18°44'N, 70°36'W, 2220m, 16 viii 1990, grassland, J.E. Rawlins, S. Thompson [examined], Razowski genitalia slide #10694 [examined] (CMNH). **Paratype**, ♀ **DOMINICAN REPUBLIC**: **Peravia [San José de Ocoa]:** 3 km SW La Nuez, tributary to Rio Las Cuevas, 18°40'N, 70°36'W, 1870m, 5–6 viii 1990. J Rawlins, S. Thompson [examined], Razowski genitalia slide #10693 [examined] (CMNH).

Additional material examined (12♂♂, 10♀♀ total).

DOMINICAN REPUBLIC: La Vega: 1♂, 6♀♀, 18 km SE Constanza, 18°46'N, 70°39'W, 2310m, 25 xi 1992, M. Klingler, J. Rawlins, R. Davidson, S. Thompson, pine woodland near head of small canyon (1♀ CUIC; remainder CMNH, including 1♀ with KAA_DNA_0008). KAA diss. #0027 (♀) (CMNH). 4♂♂, 2♀♀, Reserva Cientifica Valle Nuevo, Sector La Nevera, 3 km WNW La Nuez, 2200m, 18°42'N, 70°36'W, 7 x 1991, C. Young, S. Thompson, R. Davidson, J. Rawlins, mesic pine woodland (1♂, 1♀ CUIC; remainder CMNH). KAA diss. #0023 (♂), #0024 (♀), #0028 (♂) (CMNH). 2♂♂, 1♀, Cordillera Central, Reserva Valle Nuevo, La Nevera, 15.3 km SE Valle Nuevo, 18°41'39"N, 70°35'28"W, 2244 m, 25 v 2003, wet montane forest with pine, R. Davidson, C. Young, C. Nunez, J. Rawlins, P. Acevedo (1♂ CUIC, remainder CMNH). 1♀, Cordillera Central, Valle Nuevo Station, 5.2 km ESE Valle Nuevo, 18°46'42"N, 70°38'22"W, 2277 m, 23 v 2003, open pine-shrub woodland, C. Young, J. Rawlins, C. Nunez, R. Davidson, C. Acevedo, KAA diss. #0026, KAA_DNA_0007 (CMNH). 2♂♂, 5.2 km ESE Valle Nuevo, Valle Nuevo Field Station, 18°46'40"N, 70°38'22"W, 2120 m, 12–13 xi 2002, pine forest and grassland, W.A. Zanol, C.W. Young, C. Staresinic, J. Rawlins (CMNH). 3♂♂, Reserva Cientifica, Valle Nuevo, Sector La Nevera, 2150m, 2 viii 1980, Allen Norrbom (1♂ CUIC, remainder CMNH).

Diagnosis. *Argyrotaenia nuezana* can be separated from all other Caribbean Archipini by its large size (FWL 8.5–10.5 mm), its dark chocolate brown color, and presence of a dark L-shaped mark along the medial half of the inner margin of the median fascia in most specimens (Fig. 8A, B). In some females, this mark borders a distinctive white rectangular patch of scales (Fig. 8A). The male genitalia (Fig. 14D) are most similar to *A. cubae* (Fig. 14C) in that they both possess extremely wide folds of the valvae, but the

uncus of *A. nuezana* expands apically. The female genitalia (Fig. 16D) are typical for the genus, but the signum is especially thin and strongly hooked.

Description. Male. (n=12)

Head. Scales on vertex primarily pale yellow, brick red anteriorly. Scales on frons with dorsal dark gray, nearly black, occasionally with portions pale yellow. Lateral surface of labial palpus with first segment pale yellow, second segment dark brown to black, third segment primarily straw yellow, occasionally entirely light brown. Some specimens have brick red scales present on the second and third segments. Medial face of palpus pale yellow. Scape variable, with any combination of the aforementioned colors. Sensilla variable in length and shape, short (0.5× width of flagellomere) and relatively porrect in some individuals, as wide as flagellomere and curved in others; scales on dorsal surface of flagellomeres variable in color, usually dominated by pale yellow and brick red, dark brown or black scales sometimes present. **Thorax.** Scales on dorsum of pro- and mesothorax chocolate brown, tegulae chocolate brown to light brown. Foreleg and midleg dark brown to black, pale yellow at apex of segments; medial surface pale yellow to white. Hindleg as in foreleg and midleg, but occasionally all pale yellow to white. Forewing (Fig. 8B) with costa gently curved along basal third, straight or nearly so beyond; FWL 8.5–9.5 mm (mean = 9.0; n = 12); apex distinctly acute, dorsal surface with warm brown base, overlaid with chocolate brown to black basal fascia, median fascia and subapical blotch. In fresher specimens, there are chalky blue-gray scales on the inner margin of the median fascia and subapical blotch. There is often a distinctive dark L-shaped mark running parallel to the inner margin and intersecting it at two-thirds the wing length. Fringe salmon pink with short chalky blue-gray scales at vein terminals.

Ventral surface light brown to white, inner margin and apical half of costa pale yellow. Dorsal surface of hindwing light brown to white, strigulae becoming apparent towards apex; fringe with short pale brown scales present along entire margin, longer pale brown scales also present, but becoming distinctly paler along posterior margin. Ventral surface as on dorsal surface. **Abdomen.** Vestiture of abdomen with basal segments pale yellow to white, apical segments warm brown. Genitalia (Fig. 14D) with uncus broad, neck gradually widening apically, bulb quadrate, approximately 2.0× wider than base of neck; socius obsolete; arms of gnathos broad and of uniform width; terminal plate robust, short, notched at base; tegumen with small patch of sockets present laterally; transtilla complete, uniform in width, unadorned; valva broad, semicircular, membranous; sacculus to 0.33×, presaccular gap extremely wide, occupying approximately half of surface of valva; juxta diamond-shaped with shallow notch, sockets for setae present laterally; phallus pistol-shaped, bent at nearly 90º angle; caulis small; cornuti not observed in dissected specimens, but sockets present, presumably deciduous.

Redescription. Female. (n=12)

Head. Similar to male except antenna with sensilla minute, no more than 0.25× width of flagellomere. **Thorax.** Thorax, foreleg, and midleg similar to male. Hindleg only rarely brown, usually pale yellow to white. Forewing (Fig. 8A) length 8.5–10.5 mm (mean = 9.5; n = 12). Dorsal surface of forewing similar to that of male, but some specimens have a rectangular patch of white scales at the midpoint of the inner margin bordering the dark L-shaped mark on the median fascia. This patch is more developed in some specimens than in others. Frenulum with 2–4 bristles, occasionally asymmetrical in number. **Abdomen.** Vestiture of abdomen similar to male. Genitalia (Fig. 16D) with papillae

anales broad, triangular, rounded laterally; apophyses posteriores approximately 0.67× length of sternum VII, very thin; apophyses anteriores approximately 0.75× length of sternum VII, very thin; sterigma broad, deep (difficult to see in slide-mounted specimens); ductus bursae narrow at base, widening gradually to corpus bursae; ductus seminalis arising at approximately 0.25× length of ductus bursae; corpus bursae oval-shaped, with minute sclerite sometimes present at base of corpus bursae; signum long, thin, strongly hooked; capitulum with distinctly acute apex.

Etymology. Refers to the locality from which the paratype was collected, La Nuez.

Distribution. *Argyrotaenia nuezana* is restricted to the Cordillera Central of the Dominican Republic (Fig. 25B). All examined specimens are from La Vega and San José de Ocoa provinces, just south of Loma Alto de la Bandera. Its range is likely restricted to this immediate area.

Ecology. Capture dates range from March to November, suggesting multiple broods per year. All examined specimens were collected at or above 1870 meters and most included habitat labels mention the presence of pines, a putative host. The only native pine on Hispaniola is *Pinus occidentalis* Swartz.

Discussion. This represents the first description of *A. nuezana* males. Initial association was based on forewing pattern and shared localities and subsequently confirmed with COI barcoding. COI sequence data suggests that *A. nuezana* is sister to a Hispaniolan group of *Argyrotaenia* composed of *A. bisignata*, *A. cryptica* **sp. nov.**, *A. felisana*, *A. paradisei* **sp. nov.**, and *A. razowskiana* **sp. nov.** (Fig. 4). Whether or not this Hispaniolan group is monophyletic requires more extensive sampling of *Argyrotaenia*, especially in Central America.

Argyrotaenia paradisei Austin & Dombroskie, 2020, **sp. nov.**

(Figs 9E, F; 15F; 17D; 24D)

Type material.

Argyrotaenia paradisei Austin & Dombroskie, 2020: **Holotype** ♂: **DOMINICAN REPUBLIC: Independencia:** Sierra de Neiba near crest, 5.5 km NNW Angel Feliz, 18°41'N, 71°47'W, 1750m, 21–22 vii 1992, dense cloud forest, J. Rawlins, S. Thompson, C. Young, R. Davidson (CMNH). HOLOTYPE *Argyrotaenia paradisei* Austin & Dombroskie [typed red label]. **Paratypes** 5♂♂, 2♀♀: **DOMINICAN REPUBLIC: Independencia:** 4♂♂, 1♀, same data as holotype (1♂ CUIC, remainder CMNH). KAA diss. #0049(♀), KAA_DNA_0064; #0116(♂), KAA_DNA_0026 (CMNH). **San Juan:** 1♂, Sierra de Neiba, Sabana del Silencio, 10.1 km SSW El Cercado, 18°39'07"N, 71°33'26"W, 2017m, 16–17 xi 2004, cloud forest with juniper, *Danthonia*, J. Rawlins, C. Young, C. Nunez, V. Verdecia, W. Zanol, KAA diss. #0117, KAA_DNA_0027 (CMNH). 1♀, Sierra de Neiba, 9.3 km SSW El Cercado, 18°39'19"N, 71°32'49"W, 1968m, 18–19 xi 2004, J. Rawlins, C. Young, C. Nunez, V. Verdecia, W. Zanol, KAA diss. #0073, KAA_DNA_0057 (CUIC). All paratypes affixed with the following typed blue label: PARATYPE ♂/♀ *Argyrotaenia paradisei* Austin & Dombroskie, 2020.

Diagnosis. Undamaged males of *Argyrotaenia paradisei* **sp. nov.** (Fig. 9E) are unlikely to be confused with any other Caribbean *Argyrotaenia*. Worn specimens, however, could be confused with males of *A. browni* **sp. nov.** (Fig. 8E), with which it is sympatric, but lack the strongly contrasting off-white interfasciae present in *A. paradisei* **sp. nov.** The genitalia (Fig. 15F) are distinct, however. The uncus of *A. paradisei* **sp. nov.** possesses a

distinct bulb with setae only in the apicoventral area. In *A. browni* **sp. nov.** (Fig. 14B), the neck of the uncus is of uniform width throughout and possesses ventral setae across its entire length. Females of *A. paradisei* **sp. nov.** (Fig. 9F) are strikingly different from males and look like washed out versions of *A. felisana* (Fig. 7E, F). Female genitalia (Fig. 17D) are typical for the genus but have an unusually large basal plate of signum; females are best identified through association with males.

Description. Male. (n=6)

Head. Scales on vertex pale yellow to straw yellow, a few dark brown or mahogany red scales sometimes present anteriorly. Frons with scaling mahogany red or dark brown. Labial palpus with lateral face predominantly dark brown to black, a few mahogany red scales sometimes present on second segment; medial surface pale yellow. Scape dark brown to straw yellow. Sensilla approximately 1.5× width of flagellomere, recurved; dorsal scales of flagellum alternating between a dark brown basal row and a straw yellow apical row. **Thorax.** Dorsum of pro- and meso-thorax dark brown; tegulae concolorous with a few white scales posteriorly. Lateral surface of legs dark brown, hindlegs sometimes intermixed with pale yellow scales; medial surface of legs pale yellow to white. Forewing (Fig. 9E) with costa gently curved along basal third, straight or nearly so beyond, minutely concave along subapical blotch in some specimens; FWL 7.5–8.0 mm (mean = 7.8; n = 6). Dorsal surface of forewing with basal fascia, median fascia, subapical blotch, and tornal blotch dark red-brown with faint black reticulations throughout; antemedial and postmedial interfasciae off-white, but also with dark reticulations, contrasting strongly with the ground color in most specimens. The overall forewing appearance for most specimens has a very crisp, yet strongly mottled

appearance to it. Under magnification, blue-gray scales are sometimes present in the median fascia. Fringe dark brick red with longer salmon pink scales, pale yellow at tornus. Dorsal surface of hindwing warm brown with distinct strigulae. Fringe with short pale brown scales present along entire margin, longer pale yellow scales also present, but becoming pale brown at apex and along posterior margin. Ventral surface of forewing dark brown, white spots present along costa. Ventral surface of hindwing as on dorsal surface, but slightly paler and more contrasting strigulae. **Abdomen.** Vestiture with segments dark brown ventrally, terminal row of scales on each segment white. Genitalia (Fig. 15F) with uncus moderate in width, widening apically to form rounded bulb, long apicoventral setae projecting laterally from bulb; arms of gnathos unmodified, moderate in width, terminal plate robust, minutely hooked apically, notched at base; tegumen unmodified, with small patch of sockets present laterally; transtilla moderate, even in width throughout, complete, unmodified; valvae nearly circular; presaccular gap moderate in width, even to apex; sacculus to 0.33× of valvae; juxta shallowly notched, rounded laterally, sockets present laterally of notch; phallus pistol-shaped, slightly down-curved apically, caulis reduced, approximately 15–20 cornuti observed in two specimens examined, moderate in width and length, slightly waved, approximately 0.25× length of phallus.

Description. Female. (n=2)

Head. Similar to male except lateral face of labial palpus with black scaling restricted to ventral and apical portions of second segment, predominantly mahogany red on lateral face of other segments, scattered straw yellow scales present. Antenna with sensilla only observable ventrally, no more than 0.5× width of flagellomere. **Thorax.** Thorax, foreleg,

and midleg similar to male. Forewing (Fig. 9F) length 8.0–8.5 mm (mean = 8.3; n = 2). Dorsal surface of forewing with basal fascia, median fascia, and subapical blotch dark brown, but heavily suffused with mahogany red and purple-gray scales under magnification; antemedian and postmedian interfasciae pale brown; fringe similar to male but paler. In one paratype postmedian interfascia suffused with dark brown scales as to obscure it entirely. Dorsal surface of hindwing paler than male, but with strongly contrasting dark cubital pecten; strigulae less contrasting compared to male; fringe with less extensive long pale brown scales at apex and along posterior margin. Ventral surface of forewing pale brown, white along portions of costa, dark brown at apex. Ventral surface of hindwing white with strigulae strongly contrasting. Frenulum with 2–3 bristles.

Abdomen. Vestiture of abdomen similar to male. Genitalia (Fig. 17D) with papillae anales broad, triangular, rounded laterally; apophyses posteriores approximately 0.5× length of sternum VII, widened anteriorly; apophyses anteriores approximately 0.75× length of sternum VII, widened anteriorly; sterigma deep, lightly sclerotized ventrally; ductus bursae narrow at base, widening gradually to corpus bursae; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursae oval-shaped, with basal sclerite not observed; signum long, moderate, slightly curved (broken in Fig. 17D); capitulum globose, evenly-rounded, opposite-facing.

Etymology. We take great pleasure in naming this species after Dr. Chris Paradise, professor and chair of biology at Davidson College, who was the undergraduate advisor and a mentor of KAA.

Distribution. *Argyrotaenia paradisei* **sp. nov.** is known from two localities in the Sierra de Neiba of the Dominican Republic (Fig. 24D). It likely occurs in neighboring regions of Haiti. Elevation of examined specimens range from 1750–2017 meters.

Ecology. Nothing is known of its biology. Capture dates of examined specimens are June, July, and November, suggesting at least two generations per year.

Discussion. This is among the most strongly sexually dimophic Caribbean *Argyrotaenia*. DNA barcoding was required to associate sexes. See discussion under *A. cryptica* **sp. nov.** regarding this species' relationship to that species. Maximum COI sequence divergence within sampled *A. paradisei* **sp. nov.** was 0.1%.

Argyrotaenia razowskiana Austin & Dombroskie, 2020, **sp. nov.**

(Figs 8G, H; 15C; 17C; 23)

Type material.

Argyrotaenia razowskiana Austin & Dombroskie, 2020: **Holotype** ♂: **DOMINICAN REPUBLIC: La Vega:** Cordillera Central, Valle Nuevo Station, 5.4km ESE Valle Nuevo, 18°46'35"N, 70°38'20"W, 2260m, 23 v 2003, C. Young, J. Rawlins, C. Nunez, R. Davidson, P. Acevedo, open, riparian grass-pine forest. HOLOTYPE *Argyrotaenia razowskiana* Austin & Dombroskie [typed red label]. **Paratypes** 1♂, 2♀♀: **DOMINICAN REPUBLIC**: **La Vega:** 1♂, 1♀, same data as holotype except 5.2km ESE Valle Nuevo, 18°46'42"N, 70°38'22"W, 2277m, open pine-shrub woodland. KAA diss. #0104(♂, CUIC), KAA_DNA_0024; #0105(♀, CMNH), KAA_DNA_0025. **Peravia [San José de Ocoa]:** 1♀, 3km SW La Nuez, upper Rio Las Cuevas, 18°40'N, 70°36'W, 1850m, 5–6 viii 1990, J. Rawlins, S. Thompson, KAA diss. #0106 (CMNH).

All paratypes affixed with the following typed blue label: PARATYPE ♂/♀

Argyrotaenia razowskiana Austin & Dombroskie, 2020.

Diagnosis. *Argyrotaenia razowskiana* **sp. nov.** (Fig. 8G, H) is an externally unremarkable species. It more closely resembles males of *Claduncaria mesosignaria* (Fig. 11B) or *Clepsis deroni* **sp. nov** (Fig. 12B) than any Caribbean *Argyrotaenia*. Male genitalia (Fig. 15C) are typical for the genus and closely resemble several other Caribbean species but can be separated by the angled saccular margin at 0.33× length (smoothly curved in all other Caribbean *Argyrotaenia*). Female genitalia (Fig. 17C) are typical for the genus. The large size, plain brown forewing, hindwing without obvious strigulae, combined with typical *Argyrotaenia* genitalia should be sufficient to identify this species from any other archipine in the Caribbean.

Description. Male. (n=2)

Head. Scales on vertex with basal half white to pale yellow, apical half straw yellow. Frons straw yellow to light orange-red. Lateral surface of labial palpus with a mixture of dark brown and mahogany red scales; pale yellow on medial face. Labial palpus missing in paratype. Scape with a mixture of straw yellow, dark brown, and mahogany red scales. Sensilla approximately width of flagellomere, recurved; scales on flagellomeres bicolored, with alternating rows of straw yellow and dark brown rows. **Thorax.** Scales on dorsum of pro- and mesothorax almost completely missing in both males examined. The few that remain are pale yellow. Tegulae predominantly warm brown, with intermixed straw yellow and mahogany red scales. Forelegs and midlegs dark brown on lateral surface. Hindlegs pale yellow to white, with tarsi and tibial spurs warm brown. Medial surface of legs pale yellow. Forewing (Fig. 8H) with basal third of costa gently

curved, straight beyond (minutely concave along distal third in paratype); FWL 8.5–9.5 mm (mean = 9.0; n = 2). Dorsal surface of forewing uniformly warm brown, with faint dark brown reticulations throughout; the only exception being the subapical blotch, which is dark brown. Under magnification, mahogany red scales are also visible in this area and thinly scattered elsewhere. Fringe with short scales salmon pink basally, brick red apically except near tornus; longer scales red-orange, pale yellow at tornus. Dorsal surface of hindwing light grayish brown, strigulae absent, slightly darker along outer margin; fringe with short pale brown scales along entire margin, longer pale yellow to off-white scales also present along entire margin, becoming slightly darker at apex. Ventral surface of forewing warm brown with straw yellow costa with dark brown spots. Ventral surface of hindwing as on dorsal surface. **Abdomen.** Vestiture of abdomen warm brown. Genitalia (Fig. 15C) with neck of uncus moderate, uniform in width, widening slightly to form rounded bulb; arms of gnathos moderate, unmodified, slightly bent; tegumen unmodified; transtilla complete, unmodified; valvae broad, nearly circular; sacculus to 0.25×; presaccular gap moderate; juxta diamond-shaped with shallow notch, sockets for setae present laterally; phallus elongate, pistol-shaped; caulis minute; approximately ten cornuti in one specimen examined: moderate, straight, approximately 0.25× length of phallus, presumably deciduous.

Description. Female. (n=2)

Head. Similar to male except scales on vertex and frons with apical half warm brown or mahogany red, not straw yellow**;** sensilla short, porrect, 0.25–0.5× width of flagellomere. **Thorax.** Similar to male except forewing (Fig. 8G) with darker, slightly more red overall hue, subapical blotch less distinct, FWL 9.5 mm (n = 2); under magnification salmon

pink and mahogany red scales much more prevalent; forewing fringe with less extensive salmon pink and brick red scaling compared to male. Dorsal surface of hindwing with less extensive warm brown scaling near apex. **Abdomen.** Vestiture of abdomen similar to male. Genitalia (Fig. 17C) with papillae anales triangular; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII; sterigma lightly sclerotized, thin, broadly bowl-shaped; ductus bursae widening gradually anteriorly; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursae large, elongate oval; minute sclerite present near base; signum moderate in width, J-shaped; capitulum of signum prominent, evenly rounded.

Etymology. We take great pleasure in naming this species after Dr. Józef Razowski in honor of his lifetime of immense contributions towards our current understanding of tortricid taxonomy.

Distribution. *Argyrotaenia razowskiana* is known from La Vega and San José de Ocoa in the Dominican Republic, on the eastern edge of the Cordillera Central, south of Loma Alto de la Bandera (Fig. 23). Elevation of examined specimens range from 1850–2277 meters.

Ecology. Nothing is known of its biology. Capture dates are from May and August.

Discussion. COI sequence divergence for sampled specimens of *A. razowskiana* **sp. nov.** was 0%

Argyrotaenia vinalesiae Razowski & Becker, 2010

(Figs 5F, 17B, 23; Razowski & Becker 2010: figs 9, 10, 61)

Type material.

Argyrotaenia vinalesiae Razowski & Becker, 2010: **Holotype**, ♂ [see discussion below]: **CUBA**: **Pinar del Río**: Viñales, 100m, 20 viii 1990, V. O. BECKER Col; Col. BECKER 73817 [photograph examined] (VBC, see discussion below). Genitalia slide #404 [figure examined]. **Paratype**, ♀, same data as holotype [photograph examined]. Genitalia slide #405 [figured examined] (VBC, see discussion below).

Additional material examined.

CUBA: Pinar del Río: 2♀♀, same data as holotype (VBC). KAA diss. #0159; #0160, KAA_DNA_0034 (VBC).

Diagnosis. *Argyrotaenia vinalesiae* (Fig. 5F) is most similar to *A. amatana* (Fig. 6), a widespread northern Caribbean species. It differs in its smaller size (4.5–5.0 mm in females), uniformly-colored forewing, and shorter, broader signum in the female genitalia (Fig. 17B) compared to *A. amatana* (Austin et al. 2019: fig. 4a). Male genitalia are indistinguishable from *A. amatana*.

Redescription. Male*.

Head. Not examined beyond what is visible in fig. 61 of Razowski & Becker (2010).

Thorax. Scaling on dorsum of pro- and meso-thorax slightly darker than examined females. Forewing with basal quarter of costa gently curved, straight beyond; dorsal surface of forewing darker than female with more distinct banding: basal fascia and median fascia red-orange, fringe warm orange; dorsal surface of hindwing similar to female; ventral surface of wings unexamined. **Abdomen.** Vestiture of abdomen similar to female. Genitalia (Razowski & Becker (2010): fig. 9) with uncus uniformly broad throughout, quadrate at apex; arms of gnathos moderate, unmodified, evenly curved;

transtilla complete, narrowest mesad; valvae broad, circular; sacculus to 0.33×; presaccular gap moderate, uniform in width; juxta hexagonal with moderate notch, small setae present laterally; phallus (Razowski & Becker (2010): fig. 10) pistol-shaped, gently curved, caulis moderate; deciduous cornuti present (five observed in corpus bursae of one examined female), moderate in size, slightly waved.

*We were unable to examine any male specimens, so our redescription here is based on photographs of specimens in ISEZ and VBC and the figures available in Razowski & Becker (2010).

Description. Female. (n=2)

Head. Scales on vertex, frons, and labial palpus golden yellow to straw yellow. Scape with scales similarly-colored; sensilla approximately 0.5× width of flagellomere; scales on flagellomeres bicolored, alternating between a golden yellow apical row and a caramel brown basal row. **Thorax.** Scales on dorsum of pro- and meso-thorax golden yellow; tegulae concolorous. Scaling on lateral face of foreleg straw yellow, tarsi warm brown; scaling on midleg and hindleg pale yellow; medial face of all legs with pale yellow scaling. Forewing (Fig. 5F) with basal quarter of costa gently curved, straight beyond; FWL 4.5–5.0 mm (mean = 4.8; n = 2); dorsal surface uniformly warm orange-yellow to golden yellow, fringe concolorous; dorsal surface of hindwing orange-yellow, strigulae absent, fringe concolorous; ventral surface of both wings similar to ventral surface but slightly paler. **Abdomen.** Vestiture of abdomen concolorous with dorsal surface of hindwing, slightly darker terminally. Genitalia (Fig. 17B) with papillae anales triangular; apophyses posteriores approximately 0. 5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII; sterigma lightly sclerotized, thin, broadly

bowl-shaped; ductus bursae widening gradually anteriorly; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursae large, circular; signum moderate, only moderately hooked at apex; capitulum moderately acute, opposite-facing.

Etymology. Refers to the type locality, Viñales, Cuba.

Distribution. *Argyrotaenia vinalesiae* is known from a series of specimens taken on a single night in Viñales, Cuba at an elevation of 100 meters (Fig. 23).

Ecology. Nothing is known of its biology. The sole series of this species was collected in August.

Discussion. The holotype of *A. vinalesiae* is listed as a female in the original description, but the male adult and its genitalia illustrated are listed as the holotype. Both the holotype and paratype were found in the ISEZ, not the VBC as listed in Razowski & Becker (2010). The male specimen in the ISEZ has a red holotype label, so we interpret the "female" in the description to be an error and the holotype to be male.

We were unable to find significant differences in male genitalia between *A. vinalesiae* and *A. amatana*. However, differences in size and forewing pattern despite sympatry in western Cuba as well as COI sequence divergences between these two taxa support treating *A. vinalesiae* as a distinct species (see discussions under *A. amatana* and *A. jamaicana* regarding these three species' relationships).

Claduncaria Razowski, 2000, in Razowski & Becker

Type species: *Cladotaenia ochrochlaena* Razowski, 1999

Cladotaenia Razowski, 1999 (homonym of *Cladotaenia* Cohn, 1901)

Because we expand the concept of *Claduncaria*, which is endemic to the Greater Antilles, a generic rediagnosis is presented here.

Diagnosis. Labial palpus 1.5–2× width of compound eye; second segment expanding apically ocellus small, separated from compound eye by approximately 1–1.5× width of ocellus; chaetosemata 0.25–0.75× length of scales on vertex; metathorax without dorsal scaling a small patch of pale yellow setae present instead;costal fold absent; costa with basal third gently curved, straight beyond or nearly so. Male genitalia with a vertically bifid terminal plate of gnathos and broad, apically rounded valves (*ochrochlaena* group) or simple terminal plate of gnathos and elongate, apically acute valves (*mesosignaria* group); uncus either divergently bifid or apically broadened; socii present as small setose raised nubs (absent in *Cla. rufochlaena*); transtilla with lateral processes; phallus pistol- or dagger-shaped, sharp at apex, caulis variable. Female genitalia with papillae anales laterally notched and with distinct ventroposterior grooves (*ochrochlaena* group) or large and posteriorly swollen (*mesosignaria* group); sterigma well-sclerotized; colliculum present; signum reduced or absent entirely; capitulum absent. Some species sexually dimorphic in forewing coloration.

Key to described species of *Claduncaria**

1. Males with terminal plate of gnathos vertically bifid; valves broad, apically rounded (Fig. 18A–C); females with papillae anales laterally notched and with distinct ventroposterior groove (Fig. 19A–D)...…….....……*ochrochlaena* group, 2

1.' Males with terminal plate of gnathos not vertically bifid; valves elongate, apically acute (Fig. 18D–G); females with papillae anales massively swollen apically, never with distinct ventroposterior groove (Fig. 19E–G)....……..……...……..*mesosignaria* group, 5

2. Males with apically-quadrate arms of uncus (Fig. 18A,C); female with signum present (Fig. 19A, C, D)…...……..…….…….3

2.' Males with apically-rounded arms of uncus (Fig. 18B); female with signum absent (Fig. 19B); Hispaniola……..…….……..…*C. ochrochlaena* (Razowski)

3. Males with terminal plate of gnathos with vertically-paired processes acute (Fig. 18C); females with colliculum ring-like (Fig. 19C); Hispaniola….....…….*C. rawlinsana* **sp. nov.**

3.' Males with terminal plate of gnathos with vertically-paired processes rounded (Fig. 18A); female with colliculum tube-like (Fig. 19A, D)……...…..……..……..…4

4. Female with groove in ventroposterior portion of papillae anales large, occupying at least 0.75× length of posterior edge (Fig. 19D); male unknown; Hispaniola……
……..…….*C. praedictana* **sp. nov.***

4.' Female with groove in ventroposterior portion of papillae anales moderate, occupying approximately 0.5× length of posterior edge (Fig. 19A); male with vertically-paired processes terminally rounded, symmetrical (Fig. 18A); Cuba….....…..*C. maestrana* Razowski & Becker

5. Jamaica……...6

6. Cuba or Hispaniola……7

6. Male uncus divergently bifid (Fig. 18D); female unknown; Jamaica….....

……*C. rufochlaena* Razowski & Becker*

6.' Female with signum absent (Fig. 19E); male unknown; Jamaica…..……..

……...*C. chalarostium* (Razowski & Becker)*

7. FWL short (6.0–7.0 mm), uncus distinctly Y-shaped, notched mesally, not widening until 0.5× length (Fig. 18G); female unknown; Hispaniola……...…*C. taino* **sp. nov.***

7.' FWL long (8.0–9.0 mm), male with uncus only with shallow indentation mesally, widening from base (Fig. 18E, F)……...8

8. Male with uncus at apex 3× width of neck (Fig. 18E); female with signum well-developed, at least 3× as long as width at base (Fig. 19G); Hispaniola…….....*C. mesosignaria* (Razowski)

8.' Male with uncus at apex no more than 2× width of neck (Fig. 18F); female with signum reduced, approximately as long as width at base (Fig. 19F); Hispaniola..……..……...

……..*minisignaria* (Razowski)

*Males of *C. chalarostium* and *C. praedictana* unknown; females of *C. rufochlaena* and *C. taino* unknown.

***mesosignaria* group**

Claduncaria chalarostium Razowski & Becker, 2000b **comb. nov., stat. nov.**

(Figs 11E, 19E, 25A)

Type material.

Argyrotaenia minisignaria chalarostium Razowski & Becker, 2000b: **Holotype** ♀: **JAMAICA**: Blue Mt. Peak, viii, Avinoff & Shoumatoff [examined], genitalia slide #12273 [examined], KAA_DNA_0036 (CMNH).

Diagnosis. The female of *Claduncaria chalarostium* (Fig. 11E) is unique among described *Claduncaria* in possessing the following combination of features: female genitalia (Fig. 19E) with papillae anales apically swollen without a ventroposterior groove and complete absence of a signum in the corpus bursae. Males are unknown.

Redescription. Female. (n=1)

Head. Scales on vertex, frons, lateral face of palps brick red, medial face pale yellow. Scape brick red. Dorsal scales of flagellum with segments alternating between a brick red row and pale yellow row. Sensilla short, porrect, approximately 0.25× width of flagellomere. **Thorax.** Dorsum of pro- and mesothorax brick red; tegulae concolorous. Lateral face of forelegs brick red, tibia and tarsi dark brown, medial face straw yellow; midlegs missing; hindlegs straw yellow. Dorsal surface of forewing (Fig. 11E) uniformly brick red, banding obsolete; fringe with short scales chalky purple-gray along apical half, pale red-orange along tornal half; long scales entire pale red-orange; FWL 8.5 mm. Dorsal surface of hindwing uniformly pale yellow, slightly orange towards apex, some gray scaling on inner half; no strigulae apparent; fringe concolorous, including pale red-orange scales at apex. Ventral surface of forewing pale brown, light red-orange along

costa and along fringe. Ventral surface of hindwing as on dorsal surface. **Abdomen.** Vestiture of abdomen unknown. Genitalia (Fig. 19E) with papillae anales large, without obvious groove, but slightly indented semi-circular patch present on ventrolateral surface; apophyses anteriores short, approximately 0.25× length of sternum VII, barely extending beyond papillae anales; apophyses posteriores also short, approximately 0.33× length of sternum VII; sterigma quadrate, heavily sclerotized; antrum lightly sclerotized; colliculum present as a pair of lateral sclerites; ductus bursae moderate, widening gradually to corpus bursae; ductus seminalis arising at 0.2× length of ductus bursae; corpus bursae moderate; signum, capitulum absent.

Description. Male.

Male unknown.

Etymology. Unknown, not mentioned by Razowski & Becker (2000b).

Distribution. *Claduncaria chalarostium* is known from a single female collected on Blue Mountain Peak, the highest point of Jamaica with an peak elevation of 2256 meters (Fig. 25A).

Biology. Nothing is known of its biology. The only specimen was collected in August (but see discussion below).

Discussion. Initially, the holotype of *A. m. chalarostium* Razowski & Becker, 2000b could not be located in the CMNH. Curiously, this was because the holotype had been mislabeled as a female paratype of *Argyrotaenia jamaicana* Razowski & Becker, 2000b, a species for which females were unknown at the time of its description. The genitalia slide and data label on this “paratype” are identical to illustrated and transcribed in Razowski & Becker 2000b. We have placed an additional label beneath this specimen

explaining this but have left the *A. jamaicana* paratype label in place on the *A. m. chalarostium* holotype.

Additionally, the holotype of *A. m. chalarostium* initially had the same data label as that of *Cla. rufochlaena*. However, the date and month on the label of the former had been subsequently crossed out and "Aug." had been written instead. We do not know who did this or why it was done. We interpret the handwritten date to be correct.

Our Maximum Likelihood analysis (Fig. 4) suggests that this species may belong to the *ochrochlaena* group, but the genitalia are more similar to members of the *mesosignaria* group. In the absence of more robust molecular sampling, we choose to include *Cla. chalarostium* in the *mesosignaria* group.

Morphologically, both *Cla. chalarostium* and *Cla. rufochlaena* are members of the *mesosignaria* group, are both only known from Blue Mountain Peak, and are each only known from a single female and single male respectively, which could lead to the conclusion that they are conspecific. However, partial DNA barcodes were recovered from holotypes and sequence divergence was 5.9%, so we choose to maintain them as separate species pending more specimens.

If future research supports the synonymization of these two aforementioned taxa, it would set a new and unusual taxonomic precedent. Both taxa were described in different articles in the same journal, published on the same date. Thankfully, ICZN 24.1 clearly supports the priority of *Cla. rufochlaena*, as it was originally described as a full species, whereas *A. m. chalarostium* was described as a subspecies.

Claduncaria mesosignaria (Razowski, 1999), **comb. nov.**

(Figs 11A, B; 18E; 19G; 25A)

Argyrotaenia mesosignaria Razowski, 1999

Argyrotaenia thamaluncus Razowski, 1999, **syn. nov.**

Clepsis mesosignaria error in figure of Razowski & Becker, 2010

Type material.

Argyrotaenia mesosignaria Razowski, 1999: **Holotype** ♀: **DOMINICAN REPUBLIC: La Vega:** 9km SE Constanza, near Valle Nuevo, 18°50'N, 70°42'W, 1930m, 17 viii 1990, J.E. Rawlins, S. Thompson [examined], Razowski genitalia slide #10702 [examined] (CMNH).

Argyrotaenia thamaluncus Razowski, 1999: **Holotype** ♂: **DOMINICAN REPUBLIC: Peravia [San José de Ocoa]:** 3km SW La Nuez, upper Rio Las Cuevas, 18°40'N, 70°36'W, 1850m, 5–6 viii 1990, J. Rawlins, S. Thompson [examined], Razowski genitalia slide #10704 [examined] (CMNH).

Additional material examined (3♂♂, 4♀♀ total).

DOMINICAN REPUBLIC: Peravia [San José de Ocoa]: 2♂♂, 2♀♀, 3km SW La Nuez, upper Rio Las Cuevas, 1880m, 18°39'N, 70°36'W, 5–6 x 1991, J. Rawlins, R. Davidson, C. Young, S. Thompson, cloud forest on river (1♂, 1♀ CUIC; remainder CMNH). KAA diss. #0107(♀), KAA_DNA_0037 (CMNH); #0108(♀, CUIC); #0111(♂), KAA_DNA_0038 (CMNH). 1♀, same as previous except 2 ix 1995, J. Rawlins, G. Onore, R. Davidson, KAA diss. #0110 (CMNH). **La Vega:** 1♂, 2.3km SE Constanza, 18°45'N, 70°37'W, 2225m, 24–25 xi 1992, R. Davidson, M. Klingler, S. Thompson, J. Rawlins, grassland with pines and scattered marshes, KAA diss. #0112 (CMNH). 1♀,

Cordillera Central, Valle Nuevo Station, 5.2km ESE Valle Nuevo, 18°46’40”N, 70°38’26”W, 2288m, 23 v 2003, C. Young, J. Rawlins, C. Nunez, R. Davidson, P. Acevedo, open pine forest on slope, KAA diss. #0109 (CMNH).

Diagnosis. *Claduncaria mesosignaria* (Fig. 11A, B) is most similar to *Cla. minisignaria* (Fig. 11C, D). *Cla. mesosignaria* is a markedly sexually dimorphic species, whereas *Cla. minisignaria* is not. Male genitalia of *C. mesosignaria* (Fig. 18E) are distinct from *Cla. minisignaria* (Fig. 18F) in possessing a broader apex of the uncus and nearly completely straight phallus. Females can be separated from *C. minisignaria* by the presence of a moderate signum (Fig. 19G), which is much shorter in *C. minisignaria* (Fig. 19F).

Redescription. Male. (n=4)

Head. Scales on vertex and frons pale brown. Lateral surface of labial palpus with first segment mahogany red-orange, second segment red-orange on basal half and pale brown on apical half, third segment pale brown, white at extreme apex. Labial palpus with remarkable iridescent purple and green coloration when viewed at certain angles. Medial face of labial palpus pale yellow. Scape light brown with occasional mahogany red scales. Sensilla approximately 1.25× width of flagellomere, lightly curved; dorsal scales of flagellomere dark brown with bases golden. **Thorax.** Scales on dorsum of pro- and mesothorax concolorous with vertex. Foreleg dark brown with red-orange scales present on coxa and femur; midleg dark brown to light brown; hindleg pale yellow with tibial spurs and tarsi pale brown. Dorsal surface of forewing (Fig. 11B) with antemedian and postmedian interfasciae ashy gray to pale brown, nearly white in some individuals; basal fascia, median fascia, and postmedian fascia dark brown, most visible along costa, sometimes fading to obsolescence near inner margin, mahogany red scales scattered

throughout, but most dense along costa; fringe with short scales gray-brown, especially along apical half, becoming concolorous with ground color of forewing towards tornus but still with a few small patches of gray-brown scales or lone brick red scales; longer scales concolorous with shorter scales but without red; FWL 8.5–9.0 mm (mean = 8.8; n = 4). Dorsal surface of hindwing white but with dark brown strigulae, especially so near apex; concolorous with dorsal surface of hindwing, including darker scales at apex. Ventral surface of forewing warm brown, costa white with dark brown spots. Ventral surface of hindwing as on dorsal surface, but more distinctive strigulae. As on palps, similar green-purple iridescence visible on ventral surfaces of wings from certain angles.

Abdomen. Vestiture of abdomen with first segment white, remaining segments warm brown, white scales present at tip of abdomen. Genitalia (Fig. 18E) with uncus robust at base, widening dramatically to broad apex, approximately as wide as tegumen, indented slightly medially, apicoventral setae moderate, projecting from lateral lobes; socii present as small nubs with projecting setae; arms of gnathos robust, minutely roughened on lateral surface; terminal plate long, smoothly rounded, with thin medial ridge; tegumen massive, robust, unmodified; transtilla with large lateral processes, complete, unadorned; valvae acute apically, nearly triangular, with dense patch of long, deciduous, paddle-like setae present near base; sacculus to 0.8×; juxta with moderate notch, short setae present on lateral lobes; phallus dagger-like, nearly completely straight, sharply acute at apex, caulis obsolete; 2–4 cornuti observed in three specimens examined (including holotype of *A. thamaluncus*): thin, straight, approximately 0.25× length of phallus, deciduous (cornutus observed in ductus bursae of one female examined).

Redescription. Female. (n=5)

Head. Similar to male except scaling on vertex and frons brick red to red-orange, as are the scales on the palps. Sensilla short, porrect, no more than 0.5× width of flagellomere. **Thorax.** Dorsum of pro- and mesothorax similar to male but with more extensive brick red or red-orange scaling. Dorsal surface of forewing (Fig. 11A) almost uniformly brick red, heavily reticulated; median fascia and subapical blotch only faintly discernable as a slightly darker shade of red; fringe with short scales chalky purple-gray, longer scales pale orange-yellow; FWL 8.5–10.5 mm (mean = 9.4; n = 5). One individual with a more red-orange wash to it, making the banding more apparent. Under magnification this individual with dark brown scaling present on the median fascia and subapical blotch as males. Frenulum with three bristles. **Abdomen.** Vestiture of abdomen similar to male but with brick red to red-orange scaling. Genitalia (Fig. 19G) with papillae anales massive, laterally rounded and apically slightly swollen, evenly roughened on ventral surface; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII; sterigma heavily sclerotized, quadrate; antrum lightly sclerotized, colliculum present as tube-shaped structure; ductus bursae widening gradually anteriorly; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursae not much wider than widest portion of ductus bursae, thus making it difficult to tell where one begins and the other ends; signum short, straight; capitulum absent.

Etymology. Not mentioned by Razowski, but presumably from ‘meso-’ (Greek) meaning “middle” or “intermediate” and refers to the intermediate-sized signum (larger than in *Cla. minisignaria*, but much smaller than in *Argyrotaenia*, where it was originally placed.

Distribution. *Claduncaria mesosignaria* is known from the Cordillera Central in the Dominican Republic in the provinces of La Vega and San José de Ocoa. It appears to be highly restricted in its distribution (Fig. 25A). Elevation of examined specimens range from 1850–2288 meters.

Ecology. Nothing is known of its biology. Captures dates of examined specimens range from May to November.

Discussion. Because of the similarity of the male genitalia of *Argyrotaenia thamaluncus* to those of *Argyrotaenia minisignaria* (see discussion under *C. minisignaria*), the identical data labels many of the specimens possess, and only 0.54% COI sequence divergence between barcoded males and females, there is sufficient evidence to support *A. thamaluncus* as being the previously unknown male of *Argyrotaenia mesosignaria*.

Because both species were described in the same paper, one name does not have priority over the other. We opt to preserve *A. mesosignaria* and treat *A. thamaluncus* as a junior synonym to reduce potential confusion and to ensure the holotype of both species is of the same sex. Despite not having a bifid uncus, the presence of small setose nub-like socii, a robust, well-sclerotized tegumen, a transtilla with lateral processes, and pointed valvae, place both *A. mesosignaria* and *A. minisignaria* in *Claduncaria*.

Our Maximum Likelihood analysis (Fig. 4) strongly support the monophyly of *A. mesosignaria* + *A. minisignaria*. Minimum COI sequence divergence between the two species was 5.3%.

Claduncaria minisignaria Razowski, 1999, **comb. nov.**

(Figs 11C, D; 18F; 19F; 25A)

Argyrotaenia minisignaria Razowski, 1999

Type material.

Argyrotaenia minisignaria Razowski, 1999: **Holotype** ♀: **DOMINICAN REPUBLIC: Pedernales:** 8km NE Los Arroyos, 18°16'N, 71°44'W, 1940m, 14 vii 1990, J. Rawlins, C.W. Young, S.A. Thompson [examined], Razowski genitalia slide #10700 [examined] (CMNH). **Paratype** ♀: same as previous [examined], Razowski genitalia slide #10701 [not examined], KAA_DNA_0045 (CMNH).

Additional material examined (1♂ total).

DOMINICAN REPUBLIC: 1♂, same data as holotype [examined], Razowski genitalia slide #10703 [examined], KAA_DNA_0046 (CMNH).

Diagnosis. *Claduncaria minisignaria* (Fig. 11C, D) is most similar to *C. mesosignaria* (Fig. 11A, B). See diagnosis for that species.

Description. Male. (n=1)

Head. Scales on vertex warm brown with row of red-orange scales anteriorly. Scales on frons red-orange with shorter light brown scales present ventrally. Labial palpus with lateral face entirely red-orange, with the exception of the apical tip of the third segment, which is white. Lateral face of labial palpus with iridescent purple coloration faintly visible at certain angles, but not as dramatic as in *C. mesosignaria*. Medial face of labial palpus pale yellow. Scape red-orange with a few intermixed dark brown scales. Dorsal scales of flagellum dark brown with bases golden. **Thorax.** Scales on dorsum of pro- and mesothorax dark brown. Tegulae concolorous with pro- and mesothorax but with a few pale brown scales at apex. Forelegs with ventral face red-orange with a few dark brown scales on tarsi; midlegs missing; hindlegs with ventral surface red-orange, tarsi missing;

medial face pale yellow. Dorsal surface of forewing (Fig. 11D) brick red, but red scaling only visible under magnification, heavily suffused with warm brown scales with darker reticulations, causing the moth to appear almost uniformly brown; banding faint; fringe predominantly gray-brown, long scales intermittently brick red or red-orange; FWL 8.0 mm. Dorsal surface of hindwing white with heavy warm brown shading and strigulae towards apex; fringe off-white, becoming darker towards apex. Ventral surface of forewing warm brown; costa pale yellow with red-orange spots. Ventral surface of hindwing white with less extensive brown shading. **Abdomen.** Vestiture of abdomen unknown. Genitalia (Fig. 18F) with uncus robust at base, widening in apical half to broad apex, almost as wide as tegumen, nearly flat apically, apicoventral setae moderate, projecting from lateral lobes; socii present as a small nub with projecting setae; arms of gnathos robust, minutely roughened on lateral surface; terminal plate long, smoothly rounded, with thin medial ridge; tegumen large, robust, unmodified; transtilla with lateral processes, but difficult to see, complete, unadorned; valvae acute apically, slightly elongate, nearly triangular, with dense patch of long, deciduous, paddle-like setae present near base; sacculus to 0.8×; juxta with deep notch, short setae present on lateral lobes; phallus pistol-shaped, gently curved, sharply acute at apex, caulis minute; two cornuti observed: thin, straight, approximately 0.5× length of phallus.

Redescription. Female. (n=2)

Head. Similar to male except vertex and frons entirely red-orange. Labial palpus entirely red-orange. Scape entirely red-orange. Dorsal scales of flagellum red-orange with golden bases, becoming dark brown at approximately 0.33× length of antenna. **Thorax.** Similar to male except dorsum of pro- and mesothorax with more extensive red-orange scaling.

Legs similar to male but with no brown scales on tarsi; midlegs similar to coloration on forelegs. Dorsal surface of forewing (Fig. 11C) red-orange and salmon pink under magnification, but more brick red without magnification; banding faint to obsolete; light red-orange; fringe almost entirely red-orange, longer scales pale orange towards tornus; FWL 8.5–10.0 mm (mean = 9.3; n = 2). Frenulum with three bristles. **Abdomen.** Vestiture of abdomen unknown. Genitalia (Fig. 19F) identical to *Claduncaria mesosignaria* except with lateral lobes of sterigma rounded and signum reduced to a near sclerite. Sternum VII not present in holotype slide.

Etymology. Not mentioned by Razowski, but presumably from 'mini-' (Latin) meaning "small" or "reduced" and refers to the reduced signum (smaller than in *Cla. mesosignaria*).

Distribution. *Claduncaria minisignaria* is known from a single locality in the Dominican Republic in the Sierra de Bahoruco near the Haitian border (Fig. 25A). It is likely to occur in Haiti as well. It is sympatric with *C. ochrochlaena*. Elevation of examined specimens is 1940 meters.

Biology. Nothing is known of its biology. All examined specimens were collected in July.

Discussion. Razowski determined the single known male of this species as *Argyrotaenia mesosignaria* Razowski. Both the specimen and genitalia slide possess these determination labels. Because it is from the same night and location as the type series of *C. minisignaria*, we have good reason to treat it as conspecific. See discussion under *C. mesosignaria* regarding this species' transferal to *Claduncaria* and its relationship to that species.

This represents the first description of *Cla. minisignaria* males.

Claduncaria rufochlaena Razowski & Becker, 2000a

(Figs 11F, 18D, 25A)

Type material.

Claduncaria rufochlaena Razowski & Becker, 2000a: **Holotype** ♂: **JAMAICA:** Blue Mt. Peak, 14 vii 1936, Avinoff & Shoumatoff [examined], genitalia slide #12275 [examined], KAA_DNA_0035 (CMNH).

Diagnosis. Males of *Claduncaria rufochlaena* are unique among described *Claduncaria* in possessing both a divergently bifurcate uncus and a smoothly-rounded terminal plate of the gnathos without a vertical bifurcation (Fig. 16D). Females are unknown.

Redescription. Male. (n=1)

Head. Scales on vertex missing, scales on frons and frons red-orange, with intermixed dark brown scales. Labial palpus with lateral face red-orange, becoming predominantly dark brown towards apex, slightly iridescent when viewed at an angle under light; medial face pale yellow. Scape dark brown, brick red at apex. Dorsal scales of flagellum with segments of basal third pale yellow, alternating rows of pale yellow and warm brown beyond. Sensilla 1× width of flagellomere, nearly porrect, but slightly hooked apically.

Thorax. Dorsum of pro- and mesothorax light brown with a few brick red scales; tegulae concolorous, but with more extensive brick red scaling. Forelegs missing; midleg with lateral face straw yellow, tibia silvery brown; hindlegs straw yellow to pale yellow. Dorsal surface of forewing (Fig. 11F) with banding faint; antemedian and postmedian interfasciae warm brown with faint darker reticulations, basal fascia, median fascia, and

postmedian fascia brown, median fascia the most distinct, darker than interfasciae, scattered pinkish-orange scales visible under magnification; fringe pale red-orange, chalky gray at apex; apex slightly produced; FWL 8.5 mm. Dorsal surface of hindwing uniformly pale brown, no strigulae apparent; fringe concolorous, slightly darker at apex. Ventral surface of both wings pale brown, a few red-orange scales present along forewing costa. **Abdomen.** Vestiture of abdomen unknown. Genitalia (Fig. 18D) with uncus divergently bifurcate, branches thin, pointed at apices; apicoventral setae projecting from apices; socii not observed; arms of gnathos moderate, smooth; terminal plate smoothly rounded with medial ridge; tegumen robust, unmodified; transtilla with large pointed lateral processes, complete; valvae triangular, elongate, rounded on ventral edge, patch of deciduous setae at base not observed; sacculus to 0.9×; juxta with broad V-shaped notch, short setae not observed on lateral lobes; phallus pistol-shaped, sharply elongate and acute at apex, caulis pronounced; three cornuti observed: thin, straight, approximately 0.25× length of phallus.

Description. Female.

Female unknown.

Etymology. Not mentioned by Razowski & Becker (2000a), but presumably from *rufo-* (Latin: ‘red’) and *chlaena* (Greek: ‘cloaked’).

Distribution. *Claduncaria rufochlaena* is known from a single male collected on Blue Mountain Peak, the highest point of Jamaica with an peak elevation of 2256 meters (Fig. 25A).

Biology. Nothing is known of its biology. The only known specimen was collected in July.

Discussion. See discussion under *Cla. chalarostium* concerning possibly conspecifity with that species. Our Maximum Likelihood analysis (Fig. 4) suggest that *Cla. rufochlaena* may belong to the *ochrochlaena* group. Though it does possess a divergently bifid uncus, other characters support its inclusion in the *mesosignaria* group. In the absence of more robust molecular sampling, we choose to include *Cla. rufochlaena* in the *mesosignaria* group.

Claduncaria taino Austin & Dombroskie, 2020, **sp. nov.**

(Figs 11G, 18G, 25A)

Type material.

Claduncaria taino Austin & Dombroskie, 2020: **Holotype** ♂: **DOMINICAN REPUBLIC: La Vega:** Cordillera Central, Loma Casabito, 15.8km NW Bonao, 19°02'12"N, 70°31'08"W, 1455m, 28 v 2003, evergreen cloud forest, east slope, J. Rawlins, C. Young, R. Davidson, C. Nunez, P. Acevedo. HOLOTYPE *Claduncaria taino* Austin & Dombroskie [typed red label] (CMNH). **Paratypes** 2♂♂: **DOMINICAN REPUBLIC: La Vega:** 2♂♂, Loma del Casabito, 19°03'N, 70°31'W, 1390m, 3 xi 2002, wet cloud forest, W.A. Zanol, C.W. Young, C. Staresinic, J. Rawlins (CUIC, CMNH). KAA diss. #0119, KAA_DNA_0041 (CMNH). All paratypes affixed with the following typed blue label: PARATYPE ♂ *Claduncaria taino* Austin & Dombroskie, 2020.

Diagnosis. Males of *Claduncaria taino* **sp. nov.** (Fig. 11G) are most likely to be confused with males of *Cla. maestrana* (Fig. 10B) from Cuba. The male genitalia of *Cla. taino* **sp. nov.** (Fig. 18G) differs from those of *Cla. maestrana* (Fig. 18A) in lacking a strongly

divergently bifurcate uncus and possessing a terminal plate of the gnathos without a vertical bifurcation. Females are unknown.

Description. Male. (n=3)

Head. Scales on vertex and frons white, a few brick red and brown scales present near base of antenna. Labial palpus with scales on lateral face of first segment red-orange, second segment with lateral face red-orange on basal half, white on apical half, third segment white; medial face of palpus white. Scape dark brown with a few brick red and white scales. Dorsal scales of flagellum with alternating rows of white and brown. Sensilla 0.5–0.75× width of flagellomere, nearly porrect. **Thorax.** Dorsum of pro- and mesothorax white to pale brown; tegulae concolorous. Foreleg and midleg with lateral face red-orange and dark brown scaling, tarsi dark brown; hindlegs white. Medial face of legs white. Dorsal surface of forewing (Fig. 11G) silvery-white with dark brown median fascia and subapical blotch, brick red scales present along inner margin of median fascia under magnification, fringe chalky gray-brown, becoming paler at tornus; FWL 6.0–7.0 mm (mean = 6.5; n = 3). Dorsal surface of hindwing white with faint brown strigulae and shading near apex; fringe concolorous, including faint brown scales near apex. Ventral surface of forewing warm brown, light red-orange along costa. Ventral surface of hindwing as on dorsal surface but lacking brown shading, making the brown strigulae appear more prominent. **Abdomen.** Vestiture of abdomen white to pale brown, terminal segment straw yellow. Genitalia (Fig. 18G) with uncus Y-shaped, medial notch deeper than in similar members of the *mesosignaria* group; apicoventral setae projecting from apices; socii present as small nubs with projecting setae (not observed in *Cla. rufochlaena*); arms of gnathos moderate, minutely roughened on lateral surface; terminal

plate long, smoothly rounded at apex with medial ridge; tegumen robust, unmodified; transtilla broad, unadorned; valvae triangular, flat on dorsal edge, rounded on ventral edge, patch of deciduous setae at base not observed; sacculus to 0.8×; juxta with deep V-shaped notch, short setae not observed on lateral lobes; phallus pistol-shaped, sharply acute at apex, caulis small; two cornuti observed in one specimen examined: thin, straight, approximately 0.33× length of phallus.

Description. Female.

Female unknown.

Etymology. The specific epithet honors the Taíno people, the principle inhabitants of Hispaniola prior to European colonization.

Distribution. *Claduncaria taino* **sp. nov.** is known from the vicinity of Loma del Casabito in the Cordillera Central of the Dominican Republic (Fig. 25A). Elevation of examined specimens range from 1390 to 1455 meters.

Biology. Nothing is known of its biology. Capture dates of examined specimens are from May and November, suggesting multiple broods per year.

Discussion. See discussion under *Cla. praedictana* **sp. nov.** We predict that the yet-to-be discovered females of *Cla. taino* **sp. nov.** will possess apically swollen papillae anales without a ventroposterior groove, similar to other members of the *mesosignaria* group.

***ochrochlaena* group**

Claduncaria maestrana Razowski & Becker, 2010

(Figs 10A, B; 18A; 19A; 25B)

Clepsis labisclera Razowski & Becker, 2010, **syn. nov.**

Type material.

Claduncaria maestrana Razowski & Becker, 2010: **Holotype** ♂: **CUBA: S[an]t[ia]go [de Cuba]:** Sierra Maestra, P[ico] Cuba, 1500m, 31 vii 1990, 73582 [photograph examined], genitalia slide #015 [figure examined] (VBC, see discussion below). **Paratypes** 3♂♂**, CUBA: Holguín:** Pin[ares de] Mayarí, 640 m, viii 1990, 72022 [not examined] (VBC, see discussion below).

Clepsis labisclera Razowski & Becker, 2010: **Holotype** ♀: **CUBA**: **S[an]t[ia]go [de Cuba]:** Sier[ra] Maestra, 1500m, 31 vii 1990, 73583 [photograph examined], genitalia slide number not listed [figure examined] (VBC, see discussion below). **Paratype** ♀: **CUBA**: same data as holotype [not examined] (VBC, see discussion below).

Additional material examined. (11♂♂, 2♀♀)

CUBA: S[an]t[ia]go [de Cuba]: 7♂♂, 2♀♀, same data as *Claduncaria maestrana* holotype (1♂ KAA_DNA_0039); KAA diss. #0150 (♂); #0153 (♀); #0154(♀), KAA_DNA_0040 (VBC). **Holguín:** 2♂♂, same data as *Claduncaria maestrana* paratypes except vii 1990. KAA diss. #0152 (VBC). **S[an]t[ia]go:** 2♂♂, Gran Piedra, 20 vii 1990. KAA diss. #0151 (VBC).

Diagnosis. Males of *Claduncaria maestrana* (Fig. 10B) are most similar to males of *Cla. taino*, **sp. n.** (Fig. 11G) from Hispaniola. They can be easily separated by the shape of the uncus: divergently bifurcate in *Cla. maestrana* (Fig. 18A) and apically broadened in *Cla.*

taino (Fig. 18G). Females (Fig. 10A) are most similar to *Cla. praedictana* **sp. nov.** (Fig. 10G) from Hispaniola, from which they can be separated by possessing relatively narrower ventroposterior grooves on the papillae anales (Fig. 19A) compared to *Cla. praedictana* **sp. nov.** (Fig. 19D).

Redescription. Male. (n=11)

Head. Scales on vertex pale brown, occasionally with a few brick red scales, usually concentrated anteriorly. Scales on frons brick red to deep blood red. Lateral surface of labial palpus concolorous with scales on frons, second segment expanding apically. Medial face of labial palpus pale yellow. Scape concolorous with scales on frons, sometimes slightly darker. Sensilla approximately 1× width of flagellomere, lightly curved; dorsal scales of flagellomere alternating between dark brown basal row and golden apical row. **Thorax.** Scales on dorsum of pro- and mesothorax concolorous with vertex. Lateral face of foreleg with red-orange scales on coxa and femur; tibia and tarsus dark brown. Lateral face of midleg light with red-orange and straw yellow scales, tarsi pale brown. Lateral face of hindleg straw yellow, tarsi pale brown. Dorsal surface of forewing (Fig. 10B) with basal fascia, median fascia, and subapical blotch light red-orange, brick red, or dark brown, often most distinct along costa; antemedian and postmedian interfasciae ashy gray with faint red-orange reticulations present, usually with a pair of distinct red-orange dots present in the antemedian interfascia; fringe with short scales dark red-brown, off-white at tornus; longer scales pale gray-brown; FWL 5.5–7.0 mm (mean = 6.2; n = 11). Dorsal surface of hindwing uniformly pale brown, with darker scales in outer half especially along veins, strigulae absent; fringe concolorous, including darker scales at apex. Ventral surface of forewing pale brown, pale red-orange

along costa. Ventral surface of hindwing concolorous except apically where there is a defined pale base to short dark scales amongst longer pale scales. **Abdomen.** Vestiture of abdomen straw yellow to pale brown. Genitalia (Fig. 18A) with uncus divergently bifurcate, broad at apex, smoothly rounded on anterior edge, quadrate on posterior edge with small ridge present, apicoventral setae minute; socii present as a small setose bump; arms of gnathos joined apically, vertically bifid, with both apices globose; terminal plate vertically bifurcate at apex; tegumen massive, robust; transtilla with small lateral processes, complete, unadorned; valvae semicircular, with dense patch of thin, deciduous setae present at base; sacculus to 0.75×; juxta with moderate notch, short setae present on lateral lobes; phallus pistol-shaped, slightly curved, sharply acute at apex, caulis moderate, sharp; cornuti thin, straight, approximately 0.25× length of phallus.

Redescription. Female. (n=2)

Head. Similar to male but scaling on vertex pale red-orange; sensilla approximately 0.5× width of flagellomere. **Thorax.** Scales on dorsum of pro- and mesothorax similar to male, but with more extensive red-orange scaling. Legs similar to male. Dorsal surface of forewing (Fig. 10A) red-orange or brick red, banding obscure; fringe brick red, off-white at tornus; FWL 8.5–9.0 mm (mean = 8.8; n = 2). Dorsal surface of hindwing pale brown, fringe similar to male; strigulae distinct in one specimen examined; ventral surface of forewing similar to male; ventral surface of hindwing similar to male but with strigulae apparent. **Abdomen.** Vestiture of abdomen pale brown. Genitalia (Fig. 19A) with papillae anales notched laterally, evenly roughened on anterior portion, only sparsely roughened on posterior portion with broad groove; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum

VII; sterigma heavily sclerotized, quadrate; antrum lightly sclerotized, colliculum present as tube-shaped structure; ductus bursae long, widening gradually anteriorly; ductus seminalis arising at approximately 0.2× length of ductus bursae; signum short, straight; capitulum absent.

Etymology. Named after the Sierra Maestra range in Cuba, where the holotype was collected.

Distribution. *Claduncaria maestrana* is known from three widely separated localities of the Sierra Maestra range of southeastern Cuba (Fig. 25B). This appears to be the most widely-distributed species of *Claduncaria*; all other species are known from single mountain peaks or a series of closely-situated peaks. Elevation of examined specimens range from 640–1500 meters.

Ecology. Nothing is known of its biology. Capture dates of examined specimens are from July and August.

Discussion. The holotypes of *Clepsis labisclera* Razowski & Becker and *Claduncaria maestrana* Razowski & Becker were collected from the same locality on the same date. The female genitalia are not like those of any known *Clepsis*, but they fit well with our revised concept of *Claduncaria*. Razowski may have only placed it in *Clepsis* because females of *Claduncaria* had not been described before. The notched papillae anales, heavily-sclerotized, quadrate sterigma, and reduced signum corroborate that *Clepsis labisclera* Razowski & Becker is the female of *Claduncaria maestrana* Razowski & Becker. Razowski listed the paratypes as being collected in August, but we suspect the label was erroneously transcribed. We examined two males with identical VBC ascension numbers and labels, but with “vii” instead of “viii”. The holotype and paratype of *Cle.*

labisclera, as well as the holotype of *Cla. maestrana* were found in the ISEZ, not the VBC as listed in Razowski & Becker (2010). The remaining male paratypes of *Cla. maestrana* are probably in the ISEZ as well.

Two specimens of *Cla. maestrana* were submitted for barcoding. Unfortunately, one failed completely and the other was incomplete (280 bp), so we were unable to include it in either analysis (Figs 3, 4).

Claduncaria ochrochlaena (Razowski, 1999)

(Figs 10C, D; 18B; 19B; 25B)

Cladotaenia ochrochlaena Razowski, 1999

Type material.

Cladotaenia ochrochlaena Razowski, 1999: **Holotype** ♂: **DOMINICAN REPUBLIC: Pedernales:** 5km NE Los Arroyos, 18°15'N, 71°45'W, 1680m, 28 vii 1990, C.W. Young, J.E. Rawlins, S. Thompson [examined], Razowski genitalia slide #10699 [examined] (CMNH).

Additional material examined (3♂♂, 1♀ total).

DOMINICAN REPUBLIC: **Independencia:** 2♂♂ [one with abdomen missing], Sierra de Bahoruco, north slope, 18°41'31"N, 71°35'35"W [18°17'30"N, 71°43'08"W], 2116m, 8 xi 2002, broadleaf forest with pine, W.A. Zanol, C. W. Young, C. Staresinic, J. Rawlins. KAA diss. #0120, KAA_DNA_0043 (CMNH). **Pedernales:** 1♂, same data as holotype except with 30 ix 1991, cloud forest, J. Rawlins, R. Davidson, C. Young, S. Thompson, J. Rawlins. 1♀, same data as holotype except 20 x 1991, cloud forest, J.

Rawlins, R. Davidson, C. Young, S. Thompson, KAA diss. #0126, KAA_DNA_0044 (CMNH).

Diagnosis. The combination of a divergently bifurcate uncus with smoothly-rounded apices and an irregular vertically bifurcate terminal plate of the gnathos in the male genitalia (Fig. 18B) will distinguish *Cla. ochrochlaena* from all other members of the genus. Female genitalia (Fig. 19B) are unique in having the following combination of features: a narrow groove in the ventroposterior portion of the papillae anales and the complete absence of a signum.

Redescription. Male. (n=4)

Head. Scales on vertex and frons red-orange to mahogany red. Labial palpus with lateral face of all three segments light red-orange, medial surface pale yellow. Scape brick red to mahogany red with a few straw yellow scales. Dorsal scales of flagellum with first few segments with alternating rows of straw yellow and red-orange scales, the red-orange scales becoming dark brown after the first few segments. Sensilla 0.5–0.75× width of flagellomere, only slightly recurved. **Thorax.** Dorsum of pro- and mesothorax light red-orange to warm brown; tegulae concolorous. Lateral face of forelegs light red-orange, tarsi dark brown; lateral face of midlegs straw yellow, tarsi dark brown; lateral face of hindlegs pale yellow to white. Medial face of legs pale yellow to white. Dorsal surface of forewing (Fig. 10D) ochraceous red, overlaid by a thin network of white reticulations; median fascia and subapical blotch visible along costa, brick red; fringe with short scales pale red-orange, long scale off-white to pale brown; FWL 7.0–8.0 mm (mean = 7.5; n = 4). Dorsal surface of hindwing white, light brown shading present towards apex; fringe off-white, pale brown at extreme apex. Ventral surface of forewing warm brown. Ventral

surface of hindwing white. **Abdomen.** Vestiture of abdomen warm brown. Genitalia (Fig. 18B) with uncus divergently bifurcate, moderate in width, smoothly rounded apically, apicoventral setae not observed, but sockets present at apices; socii present as small nub with projecting setae; arms of gnathos robust, slightly irregular, smooth; terminal plate irregularly bifurcate; tegumen massive, robust, swollen anteriorly, unmodified; transtilla with lateral processes, complete, unadorned; valvae somewhat triangular but with rounded apex, with dense patch of long, thin, deciduous setae at base; sacculus to 0.8×; juxta with shallow notch, sockets present on lateral lobes; phallus pistol-shaped, abruptly angled, sharply acute at apex, caulis prominent; two cornuti present in each of two specimens examined (including holotype): thin, straight, approximately 0.33× length of phallus.

Description. Female. (n=1)

Head. Similar to male except vertex, frons, and lateral face of palpus entirely brick red. Sensilla short, no more than 0.25× width of flagellomere. **Thorax.** Similar to male but dorsum of pro- and mesothorax, tegulae entirely brick red. Dorsal surface of forewing (Fig. 10C) with costa subtly concave along distal third; uniformly red with fine network of brick red reticulations; fringe with short scales concolorous with ground color of forewing, long scales pale yellow to off-white; FWL 7.5 mm. Dorsal surface of hindwing similar to male but fringe with short scales pale brown, longer scales off-white. Frenulum with three bristles. **Abdomen.** Vestiture of abdomen unknown. Genitalia (Fig. 19B) with papillae anales notched laterally, evenly roughened except for narrow groove on ventroposterior portion; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.5× length of sternum VII, slightly kinked; sterigma

heavily sclerotized, shallow; antrum lightly sclerotized; colliculum present as short tube-shaped structure; ductus bursae long, of almost uniform width throughout; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursae small; signum, capitulum absent.

Etymology. Not mentioned by Razowski (1999), but presumably from *ochra,-* (Latin: 'ocher') and *chlaena* (Greek: 'cloaked').

Distribution. *Claduncaria ochrochlaena* is known from two localities in the Dominican Republic in the Sierra de Bahoruco near the Haitian border (Fig. 25B). It is likely to occur in Haiti as well. It is sympatric with *Cla. minisignaria*.

Biology. Nothing is known of its biology. Capture dates of examined specimens range from from July to November.

Discussion. There is a discrepancy in the label of two male specimens from Independencia. The label reads "Sierra de Bahoruco" but the coordinates are for the Sierra de Neiba. After comparing coordinates from specimens collected the previous night and talking with Dr. John Rawlins, we interpret the coordinates to be incorrect. Dr. John Rawlins kindly supplied us with the correct coordinates.

Maximum COI sequence divergence for two barcoded specimens of *Cla. ochrochlaena* was 0%. This represents the first description of *Cla. ochrochlaena* males.

Claduncaria praedictana Austin & Dombroskie, 2020 **sp. nov.**

(Figs 10G, 19D, 25B)

Type material.

Claduncaria praedictana Austin & Dombroskie, 2020: **Holotype ♀: DOMINICAN REPUBLIC: Monseñor Nouel:** 1km E Paso Alto de Casabito, 7km NW La Ceiba, 1130m, 19°02'N, 70°29'W, 28 vii 1992, cloud forest, R. Davidson, J. Rawlins, S. Thompson, C. Young; KAA diss. #0123; KAA_DNA_0042 (CMNH). HOLOTYPE *Claduncaria praedictana* Austin & Dombroskie [typed red label] (CMNH).

Diagnosis. Females of *Cla. praedictana* **sp. nov.** (Fig. 9G) are most similar to females of *Cla. maestrana* (Fig. 9A). See the diagnosis under that species. Males are unknown (but see discussion below).

Description. Female. (n=1)

Head. Scales on vertex white and warm brown, blood red anteriorly. Scales on frons red-orange. Labial palpus with lateral face entirely red-orange, medial face pale yellow. Slight purple iridescence present on lateral face of palpus, visible at certain angles. Scape straw yellow with a few blood red scales. Dorsal scales of flagellum with alternating rows of warm brown and straw yellow, many missing. Sensilla short, straight, no more than 0.5× width of flagellomere. **Thorax.** Dorsum of pro- and mesothorax warm brown with a few red-orange scales. Metathorax missing (see discussion below), but presumably typical for the genus. Tegulae concolorous with dorsum of pro- and mesothorax. Foreleg with many scales missing, but apparently light red-orange on lateral face, tarsi warm brown; midlegs similar; hindlegs pale yellow to white on lateral face. Medial face of legs pale yellow to white. Dorsal surface of forewing (Fig. 10G) heavily worn, but apparently light red-orange with dark brown reticulations; banding faint; fringe damaged, but appears to have short scales pale gray-brown, intermixed with brick red scales at apex and replaced with off-white scales at tornus; FWL 8.0 mm. Dorsal surface of hindwing

white with heavy brown shading towards apex, no strigulae; fringe with short scales pale brown along entire margin, long scales off-white. Ventral surface of forewing warm brown, costa straw yellow with light red-orange spots. Ventral surface of hindwing white with light brown strigulae present at apex. Frenulum with at least two bristles. **Abdomen.** Vestiture of abdomen unknown. Genitalia (Fig. 19D) with papillae anales notched laterally, evenly roughened except for broad groove, which occupies most of the swollen ventroposterior portion; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.5× length of sternum VII, curved; sterigma heavily sclerotized, broad, quadrate; antrum lightly sclerotized; colliculum present as short tube-shaped structure; ductus bursae long, widening gradually anteriorly; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursae small; signum short, straight; capitulum absent.

Description. Male.

Male unknown.

Etymology. '*praedictus*' (Latin), meaning predicted, referring to the predicted structure of the yet unknown male genitalia (but see discussion below).

Distribution. At present, *Cla. praedictana* is only known from the vicinity of Loma del Casabito in the Cordillera Central of the Dominican Republic at an elevation of 1130 meters (Fig. 25B).

Biology. Nothing is known of its biology. The capture date of the only known specimen is from July.

Discussion. The hindwings and metathorax of the holotype broke off when removing the abdomen for dissection. The hindwings were carefully reattached before photographing, but unfortunately the metathorax was lost.

Despite the type locality of *Cla. praedictana* **sp. nov.** being very close (<4 kilometers) to the type locality of *Cla. taino* **sp. nov.** (known only from males), we do not conclude that the two species are conspecific. Based on the genitalia, *Cla. praedictana* is a member of the *ochrochlaena* group, whereas *Cla. taino* is a member of the *mesosignaria* group. We predict that the yet-to-be-discovered males of *Cla. praedictana* will have a strongly divergent bifid uncus, similar to that of *Cla. maestrana*. Further, a partial DNA barcode was recovered for the holotype of *Cla. praedictana* (563bp) and a complete DNA barcode for a paratype of *Cla. taino*. Sequence divergence was 11.1%.

Our Maximum Likelihood analysis (Fig. 4) suggests that *Cla. praedictana* **sp. nov.** may be sister to *Cla. rawlinsana* **sp. nov.** Minimum sequence divergence between these two species was 0.9%. Differences in the colliculum of the female and patterns of distribution in *Claduncaria* support *Cla. praedictana* **sp. nov.** as being distinct from *Cla. rawlinsana* **sp. nov.**

Claduncaria rawlinsana Austin & Dombroskie, 2020, **sp. nov.**

(Figs 10E, F; 18C; 19C; 25B)

Type material.

Claduncaria rawlinsana Austin & Dombroskie, 2020: **Holotype** ♂: **DOMINICAN REPUBLIC: Pedernales:** Sierra de Baoruco, Aceitillar, 25.2km ENE Pedernales, 18°05’29”N, 71°31’16”W, 1272m, 14 vi 2003, dense broadleaf forest, pine, C. Young, J.

Rawlins, C. Nunez, R. Davidson, P. Acevedo, M. de la Cruz. HOLOTYPE *Claduncaria rawlinsana* Austin & Dombroskie [typed red label] (CMNH). **Paratypes** 1♂, 1♀: **DOMINICAN REPUBLIC: Pedernales:** 1♂, same data as holotype, KAA diss. #0121, KAA_DNA_0047 (CUIC). 1♀, 37km N Cabo Rojo, 1480m, 18°09'N, 71°35'W, 19 x 1991, grassland with pines, J. Rawlins, R. Davidson, C. Young, S. Thompson, KAA diss. #0122, KAA_DNA_0048 (CMNH). All paratypes affixed with the following typed blue label: PARATYPE ♂/♀ *Claduncaria rawlinsana* Austin & Dombroskie, 2020.

Diagnosis. *Claduncaria rawlinsana* **sp. nov.** (Fig. 10E, F) is most likely to be confused with *Cla. ochrochlaena* (Fig. 10C, D). Both occur in the Sierra de Bahoruco of Hispaniola, but do not appear to be sympatric (Fig. 25B). Male genitalia of *Cla. rawlinsana* **sp. nov.** (Fig. 18C) can be separated from those of *Cla. ochrochlaena* (Fig. 18B) by possessing uncus arms with quadrate apices, which are rounded in *Cla. ochrochlaena*. Female genitalia differ in the presence of a signum in the corpus bursae (Fig. 19C), which is absent in *Cla. ochrochlaena* (Fig. 19B).

Description. Male. (n=2)

Head. Scales on vertex and frons ochraceous red to brick red. Labial palpus with lateral face of all three segments light red-orange, medial surface pale yellow. Scape brick red to straw yellow. Dorsal scales of flagellum with first few segments with alternating rows of straw yellow and ochraceous red, the ochraceous red scales becoming dark brown after the first few segments. Sensilla 0.5–0.75× width of flagellomere, porrect. **Thorax.** Dorsum of pro- and mesothorax light red-orange with intermixed warm brown and white scales; tegulae concolorous. Legs similar to *C. ochrochlaena*. Dorsal surface of forewing (Fig. 10F) and ventral surfaces of both wings identical to *C. ochrochlaena*, but with

banding slightly more distinct, fringe more salmon pink under high magnification; FWL 6.5–7.0 (mean = 6.8; n = 2). Dorsal surface of hindwing similar to *C. ochrochlaena* but with more extensive light brown shading. **Abdomen.** Vestiture of abdomen with pale yellow to white scaling. Genitalia (Fig. 18C) with uncus divergently bifurcate, quadrate at apices; apicoventral setae minute, projecting from apices; socii present at small nubs with setae projecting; arms of gnathos robust, smooth; terminal plate vertically bifurcate at apex, both apices sharpened; tegumen massive, robust; transtilla with small pointed lateral processes, complete, unadorned; valvae nearly triangular, rounded at apex, with dense patch of long, thin, deciduous setae at base; sacculus to 0.75×; juxta with shallow notch, short setae present on lateral lobes; phallus pistol-shaped, downcurved, sharply acute at apex, caulis moderate; two cornuti observed in one specimen examined: thin, straight, approximately 0.2× length of phallus.

Description. Female. (n=1)

Head. Similar to male except with vertex, frons, palps, and flagellomeres with more extensive brick red scaling. Sensilla short, porrect, no more than 0.25× width of flagellomere. **Thorax.** Similar to male except with more extensive brick red scaling on dorsum of pro- and mesothorax as well as tegulae. Dorsal surface of forewing (Fig. 10E) similar to *Cla. ochrochlaena* but lacking the subtle concavity of *C. ochrochlaena* and with slightly more ochreous and less brick red scaling; fringe similar to male, but with less extensive salmon pink scaling; FWL 8.0 mm. Dorsal surface of hindwing nearly pure white, only faint pale brown shading present near apex. Ventral surface of both wings similar to *C. ochrochlaena*. Frenulum with three bristles. **Abdomen.** Vestiture of abdomen unknown. Genitalia (Fig. 19C) with papillae anales notched laterally, evenly

roughened except for moderate groove on ventroposterior portion; apophyses posteriores approximately 0.5× length of sternum VII; apophyses anteriores approximately 0.67× length of sternum VII; sterigma heavily sclerotized, deep, wide, almost perfectly quadrate; antrum lightly sclerotized; colliculum present as narrow ring; ductus bursae long, of almost uniform width throughout; ductus seminalis arising at approximately 0.2× length of ductus bursae; corpus bursae small; signum short, straight; capitulum absent.

Etymology. We take great pleasure in naming this species after John E. Rawlins, curator emeritus of the Section of Invertebrate Zoology at the Carnegie Museum of Natural History, who led numerous entomological expeditions to the Dominican Republic and collected the vast majority of the specimens examined for this study.

Distribution. *Claduncaria rawlinsana* **sp. nov.** is known from two localities in the Dominican Republic in the eastern end of the Sierra de Bahoruco (Fig. 25B). Elevation of examined specimens range from 1272–1480 meters.

Ecology. Nothing is known of its biology. Capture date of examined specimens are from June and October.

Discussion. See the discussion under *Cla. praedictana* **sp. nov.** regarding this species' relationship to it. Maximum COI sequence divergence between barcoded specimens of *Cla. rawlinsana* **sp. nov.** was 0%.

Clepsis Guenée, 1845

Type species: *Tortrix rusticana* Hübner [1796-1799] *sensu* Treitschke, 1830 [=*Tortrix senecionana* Hübner, [1818-1819]

Clepsodes Diakonoff, 1957 [subgenus of *Clepsis*]

Mochlopyga Diakonoff, 1964

Pseudamelia Obraztsov, 1954 [subgenus of *Clepsis*]

Siclobola Diakonoff, 1948

Smicrotes Clemens, 1860

The following diagnosis is specific to Caribbean *Clepsis*. The Caribbean species of *Clepsis* are not conspecific with *Tortrix senecionana* Hübner, [1818-1819], the type species of *Clepsis*. *Smicrotes* Walker, currently a synonym of *Clepsis*, may deserve to be resurrected to accommodate many species currently placed in *Clepsis*, including all the Caribbean species mentioned below. As it currently stands, *Clepsis* is paraphyletic and in need of serious and careful taxonomic revision.

Diagnosis. Labial palpus 1.5–2× width of compound eye; second segment expanding apically; ocellus minute, separated from compound eye by approximately 0.5–1× width of ocellus; chaetosemata 0.25–0.75× length of scales on vertex; metathorax without dorsal scalinga small patch of setae present instead, usually concolorous with cubital pecten; costal fold absent; costa with basal third gently curved, straight beyond, never with concavity along distal third like in some species of *Argyrotaenia*. Forewing pattern (Fig. 12) generally with ground color straw yellow to brown, never with red scaling like in many species of *Argyrotaenia* and *Claduncaria*. Generally smaller (FWL 4.0–6.5 mm) than most species of *Argyrotaenia* and *Claduncaria*, although *Cle. deroni* **sp. nov.** (Fig. 12A, B) is unsually large for *Clepsis* (FWL 7.0–9.5 mm).

Some species sexually dimorphic in forewing coloration. Male genitalia (Fig. 20A–C, Austin et al. 2019: 3e) with uncus with weakly-developed bulb; gnathos with arms evenly curved, acutely united apically; socii obsolete; tegumen moderate; labides separate, densely spined; valvae triangular, weakly-sclerotized; juxta near-hexagonal, with or without dorsal notch; phallus variable. Female genitalia (Fig. 21A–D; Austin et al. 2019: 4d) extremely variable: papillae anales usually triangular, but occasionally broadly rectangular (*Cle. deroni* **sp. nov.**, Fig. 21A); ductus bursae usually tightly coiled with cestum present, but occasionally only loosely coiled and cestum absent (*Cle. peroniae* **sp. nov.**, Fig. 21C); signum usually present but occasionally absent (*Cle. peritana*, Austin et al. 2019: 4d); capitulum may or not be present.

Key to female *Clepsis* known from the Caribbean

1. Signum absent (Austin et al. 2019: fig. 4d); Cuba, The Bahamas……...*C. peritana* (Clemens)

1'. Signum present (Fig. 21A–D)..……...…….2

2. Cestum absent (Fig. 21C); Hispaniola...……...…….*C. peroniae* **sp. nov.**

2'. Cestum present (Fig. 21A, B, D)…….…….3

3. Capitulum absent (Fig. 21A, C); FWL >7.0mm; Hispaniola……..*C. deroni* **sp. nov.**

3'. Capitulum present (Fig. 21B, D); FWL <7.0mm……4

4. Lateral edges of sterigma with short anterior extensions (Fig. 21D); Guadeloupe, Dominica……...…....*C. davisi* **sp. nov.**

4'. Lateral edges of sterigma without short anterior extensions (Fig. 21B); Hispaniola……..…

……...……..*C. jamesstewarti* **sp. nov.**

Key to male Clepsis known from the Caribbean*

1. Phallus distinctly bent ventrally (Fig. 20A); FWL >7.0mm (Fig. 12B); Hispaniola……...
……...*C. deroni* **sp. nov.**

1'. Phallus not distinctly bent ventrally; FWL <7.0mm …...……2

2. Labides large, globose, densely spined nearly joined mesally; neck of uncus broad (Fig. 20C); Guadeloupe, Dominica…….……*C. davisi* **sp. nov.**

2'. Labides more sparsely spined, not appearing inflated or globose, broadly separated mesally; neck of uncus narrow……..3

3. Phallus elongate with distinctly acute apex (Fig. 20B); Hispaniola……..
……...*C. jamesstewarti* **sp. nov.**

3'. Phallus shorter with less distinctly acute apex (Austin et al. 2019: fig 3e); Cuba, The Bahamas……...…….…...*C. peritana* (Clemens)

*Male of *Cle. peroniae* **sp. nov.** unknown (but see discussion under that species account).

Clepsis davisi Austin & Dombroskie, 2020, **sp. nov.**

(Figs 12E, F; 20C; 21D; 27)

Type material.

Clepsis davisi Austin & Dombroskie, 2020: **Holotype** ♀: **GUADELOUPE: St.-Claude:** Sentier du Matouba, 16.048, -61.691, 11 vi 2019, K.A. Austin, J.J. Dombroskie, UV LED light, 723m, JD41526. KAA diss. #0183. HOLOTYPE *Clepsis davisi* Austin & Dombroskie [typed red label] (CUIC).

Paratypes 26♂♂, 17♀♀: **DOMINICA: St. David:** 1♂, 1♀, 2.2 mi E. of Pont Cassé, 11 v 1964, O.S. Flint. Jr (USNM). 1♀, same as previous but 2 v 1964 (CUIC). 1♀, same as previous but 19 v 1964 (USNM). 1♀, same as previous but 21 v 1964 (USNM). 1♂, Fond Figures, 1 v 1965, D.R. Davis (CUIC). **St. George:** 1♂, Freshwater, 5–8 xi 1966, A.B. Gurney (USNM). 1♀, Sylvania, Mt. Trois Pitons, 1800ft., 9 ii 1964, D.F. Bray. KAA diss. #0180 (USNM). 1♂, Trafalgar, 10 vi 1965, D.R. Davis; USNMENT01480258 (USNM). **St. Joseph:** 1♂, 2.5 mi N Pont Cassé, 8 iv 1965, D.R. Davis (USNM). 2♂♂, 1♀, Clarke Hall, 20–27 iii 1965, J.F.G., T.M. Clarke (1♂ CUIC, remainder USNM). **St. Paul:** 1♂, 0.5 mi S Pont Cassé, 5 iv 1965, D.R. Davis (CUIC). 2♂♂, 1 mi E Pont Cassé, 29 i 1965, J.F.G. Clarke, Thelma M. Clarke. KAA diss. #0182 (USNM). 1♂, 1♀, 1 mi N Pont Cassé, 15 iv 1965, D.R. Davis (USNM). 1♀, 1.3 mi E of Pont Cassé, 29 iv 1964, O.S. Flint, Jr. KAA diss. #0179; USNMENT01480274 (USNM). 2♀♀, same as previous but 10 v 1964 (CMNH, USNM). 3♂♂, 3♀♀, same as previous but 11 vi 1964 (1♂, CMNH, 1♀ CUIC, remainder USNM). 1♂, 1.5 mi NW Pont Cassé, 3 iv 1965, D.R. Davis (USNM). 1♂, 1 mi N Pont Cassé, 15 iv 1965, D.R. Davis (USNM). 1♂, 2 mi NW Pont Cassé, 16 iv 1965, D.R. Davis (CUIC). 1♀, same as previous but 25 v 1965 (CUIC).

3♂♂, Pont Cassé, 6 iv 1965, D.R. Davis (USNM). 1♀, same as previous but 19 v 1965 (CUIC). 3♂♂, Springfield, 1 vi 1965, D.R. Davis. KAA diss. #0181 (USNM).

GUADELOUPE: St.-Claude: 2♂♂, 1♀, Rue des Pimentiers, 16.043, -61.688, 12 vi 2019, K.A. Austin, J.J. Dombroskie, UV LED light, 827m (CUIC). 1♀, same as previous but 10–11 vi 2019 (CUIC). 1♂, same as holotype, except JD4157. KAA diss. #0184 (CUIC). All paratypes affixed with the following typed blue label: PARATYPE *Clepsis davisi* ♂/♀ Austin & Dombroskie, 2020.

Diagnosis. Within the Caribbean, *Clepsis davisi* **sp. nov.** (Fig. 12E, F) is most similar to *Clepsis jamesstewarti* **sp. nov.** (Fig. 12C, D), but females can be separated by the presence of a small anterior projection on the lateral edges of the sterigma (Fig. 21D), which are absent in *Cle. jamesstewarti* **sp. nov.** (Fig. 21B). Males can be separated by the larger, more densely spinose labides (Fig. 20C) than those in *Cle. jamesstewarti* **sp. nov.** (Fig. 20B).

Description. Male. (n=26)

Head. Scales on vertex and frons straw yellow to warm brown. Scaling on lateral face of labial palpus with first and second segments golden brown, third segment straw yellow; medial face of labial palpus straw yellow. Scape bicolored: golden brown anteriorly and straw yellow posteriorly. Dorsal scales of flagellum with alternating rows of dark brown and golden yellow scales, becoming predominantly darker apically. Sensilla porrect, 0.75–1× width of flagellomere. **Thorax.** Dorsum of pro- and meso-thorax with scaling concolorous with vertex (one aberrant specimen dark brown, nearly black); tegulae similarly-colored. Foreleg with lateral face dark brown; midleg similarly-colored, but with golden yellow scales occasionally present; hindlegs pale brown to straw yellow.

Medial face of legs straw yellow. Dorsal surface of forewing (Fig. 12F) with ground color straw yellow; basal fascia usually obsolete, median fascia and subapical blotch warm brown to dark brown (nearly black in one aberrant specimen), subapical blotch occasionally continuing to near tornus as thin line; heavily mottled throughout; interfasciae occasionally suffused with gray. Fringe with short scales dark gray, nearly black; longer scales straw yellow; FWL 4.0–6.0 mm (mean = 5.2; n = 26). Dorsal surface of hindwing gray, faint strigulae present at apex; fringe predominantly dark gray, a few long off-white scales present along extreme posterior margin and apex. Ventral surface of forewing warm brown to gray, forewing markings visible along costa. Ventral surface of hindwing similar to dorsal surface but slightly paler with strigulae more distinct.

Abdomen. Vestiture of abdomen silver-gray, concolorous with dorsal surface of hindwing, terminal segment straw yellow. Genitalia (Fig. 20C) with uncus moderate, widening apically to rounded bulb; socii present as minute setose nubs; arms of gnathos moderate, evenly curved throughout entire length, joined acutely at apex; tegumen moderate, unadorned; labides large, globose, densely spined (large enough that they almost form a complete transtilla); valvae triangular, weakly-sclerotized; sacculus well-developed, to 0.5× valva length; juxta hexagonal with moderate dorsal notch. Phallus (Fig. 20C) irregularly shaped, angled at 180º on ventral margin, with semicircular swelling mesally on dorsal margin; caulis minute to obsolete; two deciduous spindle-shaped cornuti observed in one specimen.

Description. Female. (n=18)

Head. Vertex, frons, and labial palpus similar to male, but scaling darker throughout, never straw yellow. Flagellomeres with more extensive straw yellow scaling. Sensilla

minute, no more than 0.5× width of flagellomere, porrect. **Thorax.** Scaling on dorsum of pro-, meso-thorax, and tegulae concolorous with vertex. Legs similar to male. Dorsal surface of forewing (Fig. 12E) narrower than in male, dark brown, sometimes so dark as to obscure median fascia and subapical blotch. When not obscured, median fascia and subapical blotch darker brown, nearly black in some specimens; median fascia bordered on inner margin by thin line of straw yellow scales (this line is present in males, but difficult to see because of the lack of contrast); subterminal blotch occasionally continuing to near tornus as a thin line; interfasciae often strongly suffused with purple-gray scales; mottled throughout, but not as noticeably as in males; fringe similar to male but short scales darker, black; FWL 6.0–7.0 mm (mean = 6.3; n = 18). Dorsal surface of hindwing gray to pale brown, strigulae as in male; hindwing fringe similar to forewing fringe but with long scales gray-brown along posterior margin. Ventral surfaces of both wings as in male. **Abdomen.** Vestiture of abdomen entirely concolorous with dorsal surface of hindwing. Genitalia (Fig. 21D) with papillae anales triangular; apophyses posteriores 0.5× length of sternum VII, straight; apophyses anteriores approximately 0.75× length of sternum VII, straight; sterigma well-sclerotized, with small lateral convexity and short, anterior, unsclerotized extension; antrum narrow, lightly sclerotized; colliculum present as a ring-like structure, but sclerotization absent ventrally, tightly constricted anteriorly; ductus bursae long, coiled; cestum present, beginning at approximately 0.2× length of ductus bursae; ductus seminalis arising at approximately 0.05× length of ductus bursae; corpus bursae spherical; signum short, capitulum present; basal plate obsolete.

Etymology. *Clepsis davisi* is named in honor of Dr. Donald R. Davis, collector of much of the type series, for his long and unparalleled career in Lepidoptera morphology and systematics.

Distribution. *Clepsis davisi* is known from Guadeloupe and Dominica (Fig. 27). Despite extensive collecting efforts by the authors, none were found on Martinique. It could be present elsewhere in the Lesser Antilles.

Ecology. Nothing is known of the biology of this species. Specimens range in capture date from January to June, with a single specimen having been collected in November.

Discussion. All of the Dominica specimens were collected as part of the Bredin-Archbold-Smithsonian Biological Survey of Dominica from 1960–1965, with the majority having been collected by Donald R. Davis and the late trichopterist Oliver S. Flint.

Maximum COI sequence divergence between barcoded specimens from the same island was 0%; from different islands 2.1%. We were unable to find any significant differences between specimens from Dominica and Guadeloupe, so we choose to treat the populations on these two islands as one species.

Clepsis deroni Austin & Dombroskie, 2020, **sp. nov.**

(Figs 12A, B; 20A; 21A; 26)

Type material.

Clepsis deroni Austin & Dombroskie, 2020: **Holotype** ♀: **DOMINICAN REPUBLIC: Peravia [San José de Ocoa]:** 3km SW La Nuez, upper Rio Las Cuevas, 1880 m, cloud forest on river, 18°39’N, 70°36’W, 5–6 x 1991, J. Rawlins, R. Davidson, C. Young, S.

Thompson. KAA diss. #0058. HOLOTYPE *Clepsis deroni* Austin & Dombroskie [typed red label] (CMNH). **Paratypes** 8♂♂, 7♀♀: **DOMINICAN REPUBLIC: Peravia [San José de Ocoa]:** 6♂♂, 4♀♀, same data as holotype (2♂♂, 1♀ CUIC; remainder CMNH, including 1♀ KAA_DNA_0049). KAA diss. #0057(♂) (CMNH). 1♀, same as holotype except 2 ix 1995, J. Rawlins, G. Onore, R. Davidson; KAA diss. #0067; KAA_DNA_0051 (CMNH). **La Vega:** 2♂♂, 2♀♀, Reserva Cientifica Valle Nuevo, Sector La Nevera, 3 km WNW La Nuez, 2200m, 18°42'N, 70°36'W, 7 x 1991, C. Young, S. Thompson, R. Davidson, J. Rawlins, mesic pine woodland (1♀ CUIC; remainder CMNH, including 1♀ KAA_DNA_0052); KAA diss. #0078(♂), KAA_DNA_0050 (CMNH). All paratypes affixed with the following typed blue label: PARATYPE ♂/♀ *Clepsis deroni* Austin & Dombroskie, 2020.

Diagnosis. *Clepsis deroni* **sp. nov.** can be separated from all other Caribbean *Clepsis* by its large size (FWL 7.0–9.5 mm; Fig. 12A, B) and female genitalia with a thin, straight signum without a capitulum (Fig. 21A).

Description. Male. (n=8)

Head. Scales on vertex and frons straw yellow to pale brown. Scaling on lateral face of labial palpus with first segment straw yellow, second and third segment pale brown, becoming slightly darker apically; medial face of labial palpus pale yellow. Scape concolorous with vertex, a few dark brown scales present dorsally. Dorsal scales of flagellum with alternating rows of brown basal scales and straw yellow apical scales. Sensilla approximately 1× width of flagellomere, nearly porrect. **Thorax.** Dorsum of pro- and meso-thorax with scaling sometimes concolorous with vertex, but usually brown; tegulae concolorous. Foreleg and midleg with lateral face dark brown; hindlegs pale

brown to straw yellow. Medial face of legs straw yellow. Dorsal surface of forewing (Fig. 12B) with ground color dirty straw yellow, heavily mottled with dark brown, giving the forewing a slightly messy look to it; basal fascia obsolete; median fascia and subapical blotch dark brown; fringe predominantly straw yellow, a few long, scattered pale brown scales present; FWL 7.0–8.5 mm (mean = 7.8; n = 8). Dorsal surface of hindwing white to pale brown, heavily marked with dense, dark brown strigulae; fringe similar to forewing fringe. Ventral surface of forewing dark brown, straw yellow markings present along costa. Ventral surface of hindwing concolorous with dorsal surface, but strigulae more distinct. **Abdomen.** Vestiture of abdomen warm brown. Genitalia (Fig. 20A) with neck of uncus, moderate, parallel-sided; bulb wide, subquadrate, densely covered with apicoventral setae; socii obsolete; arms of gnathos narrow, evenly curved throughout entire length, joined acutely at apex; tegumen moderate, unadorned; labides spinulate; valvae triangular, weakly-sclerotized, produced at apex; sacculus well-developed, to 0.5×; juxta hexagonal with moderate dorsal notch. Phallus (Fig. 20A) irregularly-shaped, angled at approximately 140º; caulis minute; one spindle-shaped cornutus observed in one specimen.

Description. Female. (n=8)

Head. Similar to male but scaling almost entirely dark brown. Sensilla minute, no more than 0.5× width of flagellomere. **Thorax.** Similar to male but dorsum of pro- and meso-thorax with scaling entirely dark brown. Dorsal surface of forewing (Fig. 12A) entirely dark brown and heavily mottled, as to almost entirely obscure the fasciae, which are distinct in the male; forewing slightly narrower than in male; fringe entirely dark brown; FWL 7.0–9.5 mm (mean = 8.2; n = 8). Dorsal surface of hindwing similar to male but

without any yellow scaling, white instead; strigulae more contrasting; hindwing fringe concolorous with forewing fringe but with long off-white scales present along entire margin. Ventral surface of both wings similar to male. **Abdomen.** Vestiture of abdomen dark brown. Genitalia (Fig. 21A) with papillae anales broad, rectangular; apophyses posteriores approximately 0.5× length of sternum VII, straight; apophyses anteriores approximately 0.67× length of sternum VII, straight; sterigma moderate, ventral portion well-sclerotized; antrum narrow, lightly sclerotized; colliculum present as ring-like structure, but sclerotization absent ventrally; ductus bursae long, coiled; cestum present; ductus seminalis arising at approximately 0.1× length of ductus bursae; corpus bursae nearly perfectly spherical; signum short to moderate, thin; capitulum absent.

Etymology. This species is named in honor of KAA's father, Deron Austin, for his unwavering support and love.

Distribution. *Clepsis deroni* **sp. nov.** is known from two close localities in the southern portion of the Cordillera Central range on the border of San José de Ocoa and La Vega provinces (Fig. 26). Elevation of examined specimens range from 1880–2200 meters.

Ecology. Nothing is known of its biology. All but one of the type series were collected in October; the other was collected in September.

Discussion. Maximum COI sequence divergence for barcoded specimens of *Cle. deroni* **sp. nov.** was 0%.

Clepsis jamesstewarti Austin & Dombroskie, 2020, **sp. nov.**

(Figs 12C, D; 20B; 21B; 26)

Type material.

Clepsis jamesstewarti Austin & Dombroskie, 2020: **Holotype** ♀: **DOMINICAN REPUBLIC: Pedernales:** 5 km NE Los Arroyos, 1680 m, 18°15'N, 71°45'W, 30 ix 1991, R. Davidson, C. Young, S. Thompson, J. Rawlins; KAA diss. #0149; KAA_DNA_0072. HOLOTYPE *Clepsis jamesstewarti* Austin & Dombroskie [typed red label] (CMNH). **Paratypes** 8♂♂, 6♀♀: **DOMINICAN REPUBLIC: Independencia:** 4♂♂, 3♀♀, Sierra de Bahoruco, north slope, 13.5 km SE Puerto Escondido, 1789 m, 18°12'18"N, 71°31'08"W, 24–25 xi 2004, ecotonal *Pinus* grassland, J.E. Rawlins, C. Young, C. Nunez, V. Verdecia, W.A. Zanol (1♂ CUIC, remainder CMNH). KAA diss. #0142(♂), KAA_DNA_0071 (CMNH); KAA diss. #0188(♂, CMNH); KAA diss. #0189(♂, CMNH); KAA diss. #0190(♀), KAA_DNA_0079 (CMNH). 2♂♂, 3♀♀, Sierra de Bahoruco, north slope, 2116 m, broadleaf forest with pine, 18°41'31"N, 71°35'35"W [18°17'30"N, 71°43'08"W], 8 xi 2002, W.A. Zanol, C.W. Young, C. Staresinic, J. Rawlins (1♂ CUIC, remainder CMNH); KAA diss. #0061(♂, CUIC); KAA diss. #0063(♀, CMNH); KAA diss. #0141(♂), KAA_DNA_0069 (CMNH); KAA diss. #0148(♀, CMNH); KAA diss. #0187(♀), KAA_DNA_0076 (CMNH). 1♂, Sierra de Bahoruco, Loma del Toro, 18°17'16"N, 71°42'46"W, 2310m, 7–8 xi 2002, meadow in pine woods, W.A. Zanol, C.W. Young, C. Staresinic, J. Rawlins; KAA diss. #0065; KAA_DNA_0078 (CUIC). **Pedernales:** 1♂, same data as holotype except 18 x 1991 (CMNH). 1♂ same data as holotype except 20 x 1991, KAA diss. #0143 (CMNH). All paratypes affixed with the following typed blue label: PARATYPE ♂/♀ *Clepsis jamesstewarti* Austin & Dombroskie, 2020.

Additional material examined (16♂♂, 12♀♀ total).

DOMINICAN REPUBLIC: Dajabon: 1♀, 13 km S. Loma de Cabrera, ca. 400 m, 20–22 v 1973, Don & Mignon Davis; KAA diss. #0139; USNMENT01480226 (USNM). **Independencia:** 1♂, Sierra de Bahoruco, north slope, 13.5 km SE Puerto Escondido, 1789 m, 18°12'18"N, 71°31'08"W, 24–25 xi 2004, ecotonal *Pinus* grassland, J.E. Rawlins, C. Young, C. Nunez, V. Verdecia, W.A. Zanol; KAA diss. #0068; KAA_DNA_0068 (CMNH). 7♂♂, 3♀♀, Sierra de Neiba, just south of crest, 5 km WNW Angel Feliz, 18°41'N, 71°47'W, 1780 m, 13–15 x 1991, cloud forest, J. Rawlins, R. Davidson, C. Young, S. Thompson (1♂, 1♀ CUIC, remainder CMNH). KAA diss. #0059(♂, CMNH); KAA diss. #0062(♀), KAA_DNA_0075; KAA diss. #0136(♀, CMNH); #0145(♂), KAA_DNA_0070 (CMNH); KAA diss. #0191(♂, CMNH); KAA diss. #0192(♂, CMNH), KAA diss. #0194(♀, CMNH). 1♀, Sierra de Neiba, south slope near summit, 4.0 km N Angel Feliz, broadleaf cloud forest without pine, 1825 m, 18°40'21"N, 71°46'05"W, 1 v 2006, J. Hyland, C. Young, R. Davidson, D. Koenig, J. Fetzner, J. Rawlins. KAA diss. #0137, KAA_DNA_0077 (CMNH). 3♂♂, same as previous but 1–2 iv 2004, J. Rawlins, C. Young, R. Davidson. KAA diss. #0144; KAA diss. #0193, KAA_DNA_0080 (CMNH). **La Vega:** 1♂, 2.5 km SW Pinar Bonito, 1430 m, 18°51'N, 70°43'W, riparian vegetation near stream in pine woodland, 26 xi 1992, J. Rawlins, R. Davidson, M. Klingler, S. Thompson; KAA diss. #0048; KAA_DNA_0073 (CMNH). 6♀♀, Convento, 12km S of Constanza, 6-13 vi 1969, Flint, Gomez (1♀ CUIC, remainder USNM). KAA diss. #0069, USNMENT01480227 (USNM); KAA diss. #0138 (USNM); KAA diss. #0195 (USNM). **Pedernales:** 2♂♂, 1♀, 1 km S Los Arroyos, 1125 m, 18°14'N, 71°45'W, second growth forest, 18 x 1991, R. Davidson, C. Young, S. Thompson, J. Rawlins. KAA diss. #0066(♂), KAA_DNA_0067; KAA diss. #0186(♀)

(CMNH). 1♂, same data as holotype (CMNH). **HAITI: Ouest:** 1♂, Kenscoff, 1310 m, 30 iv 1937, Roys. *Clepsis* ?*developa* Meyrick. Razowski. diss. #12282 [only genitalia slide examined] (CMNH).

Diagnosis. *Cle. jamesstewarti* **sp. nov.** (Fig. 12, D) looks like a smaller version of *Cle. deroni* **sp. nov.** (Fig. 12A, B) with narrower forewings. Forewing length alone should be sufficient to separate the two externally (5.5–6.5mm in *Cle. jamesstewarti* **sp. nov.**, 7.0–9.5mm in *Cle. deroni* **sp. nov.**). Genitalia are distinct (see diagnosis under that species). Both male (Fig. 20B) and female (Fig. 21B) genitalia are similar to *Cle. davisi* **sp. nov.** (see diagnosis under that species). Male genitalia are extremely similar to *Cle. peritana* but can be separated by phallus shape: narrow and elongate with distinctly acute apex in *Cle. jamesstewarti* **sp. nov.** (Fig. 20B) but noticeably broader and apex less acute in *Cle. peritana* (Austin et al. 2019: fig. 3e).

Description. Male. (n=8)

Head. Scales on vertex and frons straw yellow to golden brown. Scaling on lateral face of labial palpus straw yellow with scattered dark brown scales, second segment expanding apically. Scape concolorous with vertex. Dorsal scales of flagellum with alternating rows of warm brown basal scales and straw yellow apical scales. Sensilla approximately 0.75× width of flagellomere, nearly porrect. **Thorax.** Dorsum of pro- and meso-thorax with scaling concolorous with vertex; tegulae similarly colored. Foreleg and midleg with lateral face with brown scaling; hindlegs pale yellow to white, tarsi brown. Medial face of legs straw yellow to white. Forewing relatively narrow; dorsal surface of forewing (Fig. 12D) with ground color straw yellow, mottled with dark brown in interfasciae; basal fascia obsolete; median fascia entire to inner margin, dark brown;

subapical blotch dark brown, variously developed; fringe with short scales pale brown, longer scales straw yellow; FWL 5.5–6.5 mm (mean = 6.0; n = 8). Dorsal surface of hindwing white to pale brown, heavily marked with dense, dark brown strigulae; hindwing fringe similar to forewing fringe. Ventral surface of forewing dark brown, straw yellow markings present along costa. Ventral surface of hindwing concolorous with dorsal surface. **Abdomen.** Vestiture of abdomen warm brown. Genitalia (Fig. 20B) with neck of uncus narrow, widening slightly to form rounded bulb; socii obsolete; arms of gnathos narrow, evenly curved throughout entire length, joined acutely at apex; tegumen moderate, unadorned; labides small to moderate, spinulate, evenly rounded; valvae triangular, weakly-sclerotized, produced slightly at apex; sacculus moderate, to 0.6×; juxta hexagonal, medial notch variable, but never V-shaped. Phallus (Fig. 20B) swollen dorsomedially, not distinctly angled ventrally, apex very acute; caulis small to minute. Cornuti thin, slightly waved.

Description. Female. (n=7)

Head. Similar to male but scaling almost entirely dark brown. Sensilla minute, no more than 0.25× width of flagellomere. **Thorax.** Similar to male but dorsum of pro- and meso-thorax with scaling entirely dark brown, tegulae dark brown. Dorsal surface of forewing (Fig. 12C) with ground color brown, heavily mottled; median fascia dark brown, scarcely distinct; subapical botch dark brown, slightly darker, variously developed; fringe with short scales dark brown, longer scales straw yellow; FWL 6.0–6.5 mm (mean = 6.1; n = 7). Dorsal surface of hindwing similar to male; hindwing fringe concolorous with forewing fringe. Ventral surface of both wings similar to male, but darker. **Abdomen.** Vestiture of abdomen dark brown. Genitalia (Fig. 21B) with papillae anales triangular;

apophyses posteriores approximately 0.5× length of sternum VII, straight; apophyses anteriores approximately 0.67× length of sternum VII, slightly outcurved; sterigma bowl-shaped, thinly sclerotized, small medial-facing lateral sclerotizations on dorsal portion; antrum constricted; colliculum present as small, weakly-sclerotized ring-like structure; ductus bursae long, tightly coiled; cestum present; ductus seminalis arising near base of ductus bursae; corpus bursae spherical; signum short to moderate, straight; capitulum present as small cylindrical projection.

Etymology. This species is named in loving memory of James Peter Stewart (1995–2019), Cornell University entomology graduate student and dear friend of KAA.

Distribution. This appears to be the most common and widespread species of *Clepsis* on Hispaniola, with specimens having been collected from 400 to 2310 meters elevation. The type series is restricted to Sierra de Bahoruco, but additional specimens examined were collected in the Sierra de Neiba and Cordillera Central in the Dominican Republic and Chaîne de la Selle in Haiti (Fig. 26).

Ecology. Nothing is known of its biology. Capture dates for the type series range from September to November. Non-type specimens range in capture date from April to November.

Discussion. A genitalia slide of a male of this species was found in the CMNH. The specimen itself, from Kenscoff, Haiti could not be located. Razowski had labeled the slide as "*Clepsis* ?*developa* Meyr.". We can find no published record of this Meyrick name and thus treat it as unavailable.

There is a discrepancy in the label of five paratypes from Independencia. The label reads "Sierra de Bahoruco" but the coordinates are for the Sierra de Neiba. After

comparing coordinates from specimens collected the previous night and talking with Dr. John Rawlins, we interpret the coordinates to be incorrect. Dr. Rawlins kindly supplied us with the correct coordinates.

We examined a large number of specimens from other localities on Hispaniola and were unable to find consistent genitalic differences between them and the type series of *Cle. jamesstewarti* **sp. nov.** However, COI sequence divergence between populations occurring in the Sierra de Bahoruco and the Sierra de Neiba/Cordillera Central was high (3.7–5.3%). In light of this, we choose to restrict the type series to specimens from Sierra de Bahoruco (excluding an unusual single male and female pair). Maximum COI sequence divergence for barcoded type specimens was 0.9%. We refrain from describing the other populations as a different species due to the absence of observed morphological differences.

Clepsis peritana (Clemens, 1860)

(Figs 12G, H; 26; Austin et al. 2019: figs 3e, 4d)

Smicrotes peritana Clemens, 1860

Ptycholoma peritana (Clemens, 1860)

Dichelia inconclusana Walker, 1863

Clepsis pinaria Razowski & Becker, 2010, **syn. nov.**

Type material.

Smicrotes peritana Clemens, 1860: **Lectotype** ♂: **"Canada and USA"** [not examined] (ANSP).

Dichelia inconclusana Walker, 1863: **Lectotype** ♂: **"North America"** [not examined]

(BMNH).

Clepsis pinaria Razowski & Becker, 2010: **Holotype** ♀: **CUBA: Pinar [del] Río:** Sierra Rosario, 400 m, 5–15 vi [1]990, V.O. Becker, 71532 [figure examined]. Genitalia slide #413 [figured examined] (VBC, see discussion below). **Paratypes** 2♂♂: **CUBA:** ♂♂, same data as holotype [photographs examined], genitalia slide #412 [figure examined] (VBC, see discussion below).

Additional material examined (16♂♂, 6♀♀ total).

BAHAMAS: Central Abaco: 1♂, E side of S.C. Bolle Hwy., 3 mi. S of Treasure Cay Rd., 26.656294°, -77.306661°, 2 xi 2014, MGCL 239361 (MGCL); 1♀, same as previous except MGCL 239362 (MGCL). **CUBA: Ciego de Ávila:** 1♂, Central Baragua, H.K. Plank (USNM). 1♂, same as previous except ii 1931 (USNM). 1♂, same as previous except iii 1931. KAA diss. #0165 (USNM). 2♂♂, same as previous except iv 1931. KAA diss. #0164 (USNM). 1♀, same as previous except v 1931. KAA diss. #0167 (USNM). **Cienfuegos:** 1♀, 5km W Topes de Collantes, 21º56.5'N, 80º2.3'W, R. Caburni, 10–11 xii 1994, D.R. Davis; KAA diss. #0168; USNMENT01480241 (USNM). **Holguín:** 1♂, Pinares de Mayari, 640m, vii 1990, V.O. Becker (VBC). **La Habana:** 2♂♂, Havana, Baker. KAA diss. #0166 (USNM). **Pinar del Río:** 1♂, Robert. KAA diss. #0177 (USNM). 1♂, 2♀♀, Mogote dos Hermanos, 3km W Viñales, 7–8 ii 1981, ca. 150m, D.R. Davis (1♂, 1♀ CUIC; remainder USNM). KAA diss. #0178(♂), USNMENT01480235 (CUIC); KAA diss. #0169(♀, USNM). 1♂, Sierra Rosario, 400m, 4–6 x 1989, V.O. Becker (VBC). 2♂♂, same as previous except 5–15 vi 1990 (VBC). **Santiago de Cuba:** 1♂, Turquino, 470m, 27/9 vii 1990, V.O. Becker (VBC). 1♂, 1♀, Santiago [de Cuba], vi [19]02, W. Schaus, 1905–244. KAA diss. #0170(♂) (BMNH).

Diagnosis. See Austin et al. 2019 and other *Clepsis* species diagnoses in this paper.

Description. See Austin et al. 2019.

Etymology. Not mentioned by Clemens, but possibly from Latin ‘peritus’, meaning “skillful” or “clever”.

Distribution. Widespread in North America, Cuba, and two records from Central Abaco in The Bahamas (Fig. 26, Florida records omitted).

Ecology. See Austin et al. 2019.

Discussion. We treat *Clepsis pinaria* Razowski & Becker, 2010 as a junior synonym of *Clepsis peritana* (Clemens, 1860) as both the male and female genitalia are indistinguishable from dissected specimens of *Clepsis peritana* from both the United States and The Bahamas. Maximum COI sequence divergence of barcoded Cuban *Cle. peritana* was 2.8%, which is high, but not unusual for *Cle. peritana* (KAA pers. obs.).

In their diagnosis of the female, Razowski & Becker compare *Cle. pinaria* to *Cle. naucinum* Razowski, 1990 from Costa Rica, claiming that *Cle. pinaria* differs from *Cle. naucinum* in lacking a signum, despite the female of *Cle. naucinum* being unknown (Razowski 1990). The males are very similar.

Razowski & Becker (2010) state that the specific epithet of *Clepsis pinaria* is derived from the “Pinar River”, but no such river exists. The holotype data label reads “Pinar Rio”, referring to the province of Pinar del Río. Coordinates for the type locality are not given on the data label, but the type locality lies somewhere in the Sierra del Rosario of western Cuba. The holotype of *Clepsis pinaria* is listed as a female in the original description, but the male genitalia illustrated are captioned as being the holotype. The photograph of the adult specimen in Razowski & Becker (2010) is of the female.

Both the holotype and one male paratype were found in the ISEZ, not the VBC as listed in Razowski & Becker (2010). The additional male paratype is likely in the ISEZ as well. The female specimen found in the ISEZ bears a red holotype label. For these reasons, we interpret the caption for the male genitalia be an error and the holotype of *Clepsis pinaria* to be female.

Clepsis peroniae Austin & Dombroskie, 2020, **sp. nov.**

(Figs 12I, J; 21C; 26)

Type material.

Clepsis peroniae Austin & Dombroskie, 2020: **Holotype** ♀: **DOMINICAN REPUBLIC: La Estrelleta [Elías Piña]:** 4km SE Rio Limpio, ca. 760m., 24-25 v 1973, Don & Mignon Davis; KAA diss. #0140; USNMENT01480234 (USNM). HOLOTYPE ♀ *Clepsis peroniae* Austin & Dombroskie, 2020 [typed red label] (USNM).

Diagnosis. *Clepsis peroniae* **sp. nov.** can be easily separated from all other Caribbean *Clepsis* by its loosely-coiled ductus bursae (Fig. 20C). All other known Caribbean *Clepsis* possess a tightly-coiled ductus bursae. In addition, *Cle. peroniae* **sp. nov.** is unique among female *Clepsis* on Hispaniola by possessing a strongly contrasting median fascia and subapical blotch (Fig. 12I, J). Males are unknown (but see discussion below).

Description. Female. (n=1)

Head. Scales on vertex and frons uniformly warm brown. Labial palpus approximately 2× width of compound eye. Scaling on lateral face of labial palpus straw yellow pale scattered pale brown scales; medial face of labial palpus straw yellow. Scape concolorous with vertex. Dorsal scales of flagellum with alternating rows of straw yellow basal scales

and dark brown apical scales. Sensilla approximately 0.5× width of flagellomere, porrect. **Thorax.** Dorsum of pro- and meso-thorax with scaling concolorous with vertex; tegulae similar. Foreleg with lateral face femur and tibia golden brown, tarsus dark brown, nearly black, medial face straw yellow; midleg similar to foreleg but lateral faces of femur and tibia straw yellow, tibial spurs dark brown on lateral face, pale yellow medially; lateral face of hindlegs not observed due to positioning, medial face pale yellow, tarsi dark brown. Dorsal surface of forewing (Fig. 12I, J) with ground color golden brown, but heavily suffused with ashy gray scaling as to obscure much of the ground color; median fascia dark brown, bordered by golden brown scales basally, narrowing considerably towards inner margin, widening slightly along inner margin; subapical blotch dark brown with two small patches of ashy gray scales present, bordered with golden brown scales; fringe with short ashy gray scales and long golden brown scales; FWL 6.0 mm. Dorsal surface of hindwing difficult to see owing to specimen not being spread, but appears to be dark brown with distinct strigulae; fringe with short scales concolorous, long scales off-white to pale yellow. Ventral surface of forewing brown without any obvious markings; ventral surface of hindwings pale brown with distinct strigulae. **Abdomen.** Vestiture not noted prior to dissection. Genitalia (Fig. 21C) with papillae anales triangular, broadest apically; apophyses posteriores approximately 0.5× length of sternum VII, straight; apophyses anteriores approximately 0.67× length of sternum VII, straight; sterigma relatively narrow, quadrate, well-sclerotized laterally, with shallow depression ventromesally near ostium; antrum moderate; colliculum not entire, unsclerotized ventrally; ductus bursa only loosely coiled (so much so that appears to be not coiled at

all); cestum absent; ductus seminalis arising at base of ductus bursae; corpus bursae relatively small, oblong; signum robust, sickle-shaped; capitulum absent.

Description. Male.

Male unknown.

Etymology. This species is named in memory of Dr. Patricia Peroni (1956–2019), professor of biology at Davidson College, for her support, encouragement, and mentorship of KAA.

Distribution. *Cle. peroniae* **sp. nov.** is known exclusively from the type locality in the western Cordillera Central of the Dominican Republic (Fig. 26). Elevation of the examined specimen was approximately 760 meters.

Ecology. Nothing is known of its biology. The holotype was collected in May.

Discussion. One unusual CMNH male from the the Sierra de Neiba range was dissected (KAA diss. #0060, KAA_DNA_0066). The shape of the phallus and cornuti are unlike any known *Clepsis* from the Caribbean. COI barcode sequence divergence between this male and the holotype of *Cle. peroniae* **sp. nov.** was 2.55%, much closer than any other barcoded Clepsis from Hispaniola, but divergent enough for us not to be confident it is conspecific.

Mictocommosis Diakonoff, 1977

Type species: *Simaethis nigromaculata* Issiki, 1930

Diagnosis. As in species description below. *Mictocommosis lesleyae* **sp. nov.** may not be conspecific with *Simaethis nigromaculata* Issiki, 1930, the type species of *Mictocommosis* (see discussion under species account below).

Mictocommosis lesleyae Austin & Dombroskie, 2020, **sp. nov.**

(Figs 13B, C; 20E; 21E; 27)

Type material.

Mictocommosis lesleyae Austin & Dombroskie, 2020: **Holotype** ♂: **DOMINICAN REPUBLIC: Azua:** East side of crest, Sierra Martin Garcia, 7km WNW Barrero. 18°21'N, 70°58'W, 860m, 25–26 vii 1992, cloud forest adjacent to disturbed forest, C. Young, R. Davidson, S. Thompson, J. Rawlins. KAA diss. #0173. HOLOTYPE *Mictocommosis lesleyae* Austin & Dombroskie [typed red label] (CMNH). **Paratypes** 3♀♀: **DOMINICAN REPUBLIC: Azua:** 1♀, same data as holotype. KAA diss. #0174 (CMNH). **Hato Mayor:** 1♀, Parque Los Haitises, 3km W Cueva de Arena, 19°04'N, 69°29'W, 20m, 7–9 vii 1992, mesic lowland forest, R. Davidson, J. Rawlins, S. Thompson, C. Young. KAA diss. #0175 (CMNH). 1♀, Parque Los Haitises, near Cueva de Arena, 19°04'N, 69°28'W, 10m, 7–9 vii 1992, coastal vegetation on limestone, C. Young, R. Davidson, S. Thompson, J. Rawlins, KAA_DNA_0053 (CUIC). All paratypes affixed with the following typed blue label: PARATYPE ♂/♀ *Mictocommosis lesleyae* Austin & Dombroskie, 2020.

Diagnosis. Wing pattern alone should be sufficient to identify *Mictocommosis lesleyae* **sp. nov.** (Fig. 13B, C). It lacks the complex scaling patterns on the dorsal surface of the

hindwing present in *Mictocommosis godmani* (Walsingham, 1914), the only other species of *Mictocommosis* known from the Neotropics (but see discussion below).

Description. Male. (n=1)

Head. Scales on vertex thin, leaden gray, pale orange-yellow laterally. Scales on frons concolorous, but absent ventrally. Labial palpus approximately 1.5× width of compound eye, thin; scales absent laterally and medially, but white ventrally. Proboscis naked at base, fine setae present laterally. Scape leaden gray dorsally, pale yellow to orange-yellow ventrally. Antenna massively thickened, slightly compressed laterally; sensilla approximately width of flagellomere, tightly appressed. Dorsum of flagellum with one row of scales per segment; orange-yellow to 0.8× length of antennae, then dark gray for 0.1×, then pale yellow for 0.1×, terminal segment dark gray; ventral surface of flagellum naked. Ocellus large, separated from compound eye by approximately 0.5× width of ocellus. Chaetosemata 0.5–2× length of scales on vertex. **Thorax.** Dorsum of pro- and meso-thorax ashy gray, with intermixed orange-yellow scales; dorsum of metathorax orange-yellow; tegulae leaden gray. Foreleg with lateral face with ashy gray scaling, tarsi with intermixed white scales; midleg pale yellow, with ashy gray scales restricted to tarsi; hindlegs missing; medial face of legs pale yellow to white. Forewing (Fig. 13C) broad, costa evenly and gently curved throughout entire length; FWL 6.0mm. Dorsal surface of forewing beautiful, unmistakable, with ground color deep red-orange, heavily suffused with orange-yellow; two silver lines running parallel to costa from base to 0.33× length of costa, separated by an equally-wide yellow streak; median area of forewing heavily peppered with brilliantly bicolored scales, (ashy gray basally, white terminally), patches of black scales scattered in apically; three silver fasciae present towards the outer margin:

the most basal of the three running from 0.6× length of costa to just below the termen, composed of entirely silver scales, separated from the next fascia by an orange gap; the next fascia faint, composed primarily of the same bicolored present in the medial area of the forewing, separated from the terminal fascia by deep red scales; the terminal fascia running from 0.8× length of costa to 0.5× length of outer margin, composed entirely of silver scales; orange scales beyond to fringe. Fringe with short scales red-orange, long scales silver. Dorsal surface of hindwing orange, becoming slightly darker apically; fringe concolorous, longer scales slightly paler. Ventral surface of forewing orange, with scattered black scales in median area. Ventral surface of hindwing concolorous with dorsal surface. **Abdomen.** Vestiture of abdomen orange, leaden gray at base. Genitalia (Fig. 20E) with uncus broad, well-developed, expanding to broad, flattened apex with shallow notch, covered in robust spines on lateral edge of neck near apex and apex itself; socii well-developed as large pads thinly-connected to tegumen, densely covered in thick spines; tegumen and gnathos weak, gnathos without terminal plate; transtilla weak with long medial process; valvae elongate, triangular; sacculus with spine-like extension extending into basal cavity; juxta with shallow notch; phallus short, rounded basally, downturned and deeply-notched apically, with blunt, thorn-like cornutus.

Description. Female. (n=3)

Head. Similar to male except lateral face of labial palpus with scaling pale yellow to white. **Thorax.** Similar to male except hindlegs with femur and tibia pale yellow to orange, tarsi leaden gray and white. Dorsal surface of forewing (Fig. 13B) with small white patches of scales in the center of two of the black patches in the median area of the forewing, which could be interpreted as false eye spots, FWL 6.0–6.5mm (mean = 6.3; n

= 3). Dorsal surface of hindwing with a few silver scales on costal edge; a small black patch of scales present in two of the three paratypes along Cu2 near the fringe, a darkening of scales in the same area in the third paratype; frenulum with 3–4 bristles.

Abdomen. Vestiture of abdomen similar to male. Genitalia (Fig. 21E) with papillae anales triangular posteriorly, anterior lobe narrowed; apophyses both approximately 0.75× length of sternum VII; sterigma broad, quadrate, well-sclerotized, covered in minute spines; colliculum present as small sclerotized plate; ductus bursae uniform in width throughout, twice-coiled; ductus seminalis arising near base of ductus bursae; corpus bursae large, oval; signum present as short, rounded nub; with long, paired scobinate extensions of finely-spined basal plate to bottom of corpus bursae; capitulum absent.

Etymology. This beautiful species is named in honor of KAA's mother, Lesley Austin, for her unwavering support and love.

Distribution. *Mictocommosis lesleyae* **sp. nov.** is known from two localities in the Dominican Republic (Fig. 27): at high elevation on Sierra Martin Garcia in the south and at low elevation in Parque Nacional de Los Haitises on the northern coast.

Biology. Nothing is known of the biology of *Mictocommosis lesleyae* **sp. nov.** Like other members of the *Mictopsichia* group of genera, it is presumed to be diurnal but may also come to lights. The four known specimens were collected in July.

Discussion. Unfortunately, the phallus of the holotype was lost prior to slide mounting. With the description of *Mictocommosis lesleyae* **sp. nov.** there are now two described species of *Mictocommosis* in the Neotropics. Two more, *Mictopsichia ornatissima* (Dognin, 1909) and *Mictopsichia buenavistae* Razowski, 2009 may also belong to this

group. *Mictopsichia ornatissima* was not examined nor dissected by Razowski (2009) and appears to be closely related to *Mictocommosis godmani* (Walsingham, 1914), a possible relationship which was alluded to by Walsingham. *Mictopsichia buenavistae* is known only from a female. Its genitalia are similar to known females of *Mictocommosis* and its similarity to *Mictopsichia ornatissima* was noted by Razowski (2009). Whether or not these Neotropical species truly belong to *Mictocommosis*, remains to be seen. We suggest it is unlikely, as the type species of *Mictocommosis* (*Simaethis nigromaculata* Issiki, 1930) was described from Japan and possesses a basally scaled proboscis (Diakonoff 1977), a character not seen in *Mictocommosis lesleyae* **sp. nov.**, nor any other known tortricid genus with the exception of *Thaumatographa* Walsingham (Diakonoff 1977). One additional species, *Mictopsichia jamaicana* Razowski, 2009, may also belong to this group of Neotropical "*Mictocommosis*", but we were unable to examine the holotype and thus choose to retain it in *Mictopsichia*.

Mictopsichia Hübner, [1825] 1816

Type species: *Phalaena* (*Tortrix*) *hubneriana* Stoll, 1791

Micropsichia Agassiz, 1848 (misspelling)

Micropsychia Agassiz, 1848 (misspelling)

Mictopsychia Riley, 1889 (misspelling)

Mictropsichia Heppner, 1978 (misspelling)

The following diagnosis is specific to the two examined species of Caribbean *Mictopsichia*. Some characters mentioned may not apply to *Mictopsichia jamaicana* Razowski, 2009, which we were unable to examine. The majority of *Mictopsichia*, including the Caribbean species, may not be conspecific with *Phalaena* (*Tortrix*) *hubneriana*, the type species of *Mictopsichia* Hübner, [1825] 1816. See the comments below the *Mictopsichia* key and discussion under *Mictocommosis lesleyae* **sp. nov.**

Diagnosis. Labial palpus approximately width of compound eye;ocellus large, separated from reduced compound eye by approximately width of ocellus; chaetosemata 0.25–0.75× length of scales on vertex; dorsal surface of metathorax with dark silver scaling; foreleg significantly shorter than midleg and hindleg; forewing and hindwing pattern (Fig. 13D–G; Razowski 2009: fig. 55) unlikely to be confused with any other Caribbean tortricid. Male genitalia (Fig. 20F, G) with uncus obsolete, socii composed of dorsally setose, acute-pointed processes; gnathos composed of broad, laterally-rounded, quadrate mesal process; transtilla obsolete; valvae elongate and densely setose: broad, scale-like setae present along ventral margin; thin hair-like setae scattered over entire surface, but most densely clustered along dorsal margin at 0.5× length; submedian belt with several tooth-like dorsal projections. Female genitalia (Fig. 21F, G; Razowski 2009: fig. 39) with papillae anales thin (triangular in *Mictopsichia jamaicana*),

elongate, slightly kinked anteriorly; sterigma broad posteriorly, much more constricted and very deep anteriorly (except in *Mictopsichia jamaicana*); ostium similar in width to anterior portion of sterigma, colliculum present as a uniformly broad, ring-like structure (absent in *Mictopsichia jamaicana*); ductus bursae of uniform width; ductus seminalis arising at base of ductus bursae; sterigma well-developed, with or without parallel distinct rows of scobinations along wall of ductus bursae; capitulum absent; elongate basal plate present in *Mictopsichia jamaicana*.

Key to the species of *Mictopsichia* known from the Caribbean*

1. FW with distinct black tornal patch; hindwing entirely orange (Razowski 2009: fig. 55); Jamaica…….....*M. jamaicana* Razowski*

1.' FW without distinct black tornal patch; hindwing with distinct patches of silver-blue and black scales (Fig. 13D–G)……...……...……...……..……...2

2. Dorsal surface of thorax with two slender transverse bands of orange scaling; dorsal surface of hindwing with more extensive silver-blue and black scaling (Fig. 13D, E); male genitalia with valvae narrowing apically (Fig. 20F); female genitalia with signum robust, two distinct parallel lines of scobinations present along wall of corpus bursae (Fig. 21F); Cuba, Hispaniola, Costa Rica……...….....……...…..……...*M. cubae* Razowski

2.' Dorsal surface of thorax entirely silver; dorsal surface of hindwing with less extensive silver-blue and black scaling (Fig. 13F, G); male genitalia with valvae not narrowing apically (Fig. 20G); female genitalia with signum thin, slightly irregular, without distinct parallel lines of scobinations along wall of corpus bursae (Fig. 21G); Hispaniola, Cuba……...

……...…….……*M. nyhllinda* **sp. nov.**

***The male of *Mictopsichia jamaicana* is unknown. This species likely belongs to *Mictocommosis* (see discussion under *Mictocommosis lesleyae* **sp. nov.**).

Comments. *Phalaena* (*Tortrix*) *hubneriana* Stoll, 1791, the type species of *Mictopsichia*, is significantly different from all subsequently described species in *Mictopsichia* in both wing pattern and male genitalia. This was alluded to by Razowski (2009), but unfortunately not given adequate discussion in his papers. The vast majority of *Mictopsichia*, then, may be deserving of a new genus. We choose to treat the following species as *Mictopsichia* for the sake of simplicity,

as describing a new genus for so many species is beyond the scope of this paper. The male of *M. jamaicana* is unknown.

The only host record for the genus is from a series of four specimens from Venezuela in the USNM identified as *Mictopsichia gemmisparsana* and reportedly reared from *Vitis vinifera* Linnaeus (Matthews et al. 2011). Matthews et al. (2011) suggested *Mictopsichia* may use their metallic markings as a startle or mimicry display to escape jumping spider predators. Similar markings and behavior have been observed in many other insect lineages (Rota & Wagner 2006; Hill et al. 2019).

Mictopsichia cubae Razowski, 2009

(Figs 13D, E; 20F; 21F; 25C)

Type material.

Mictopsichia cubae Razowski, 2009: **Holotype** ♂: **CUBA:** Santiago [de Cuba], ii [19]02, W. Schaus, 1905-244 [examined], BM genitalia slide #31697 [examined] (BMNH).

Additional material examined. (2♂♂, 2♀♀).

COSTA RICA: [Alajuela]: 1♂, Área de Conservación Guanacaste, [Sector Rincon Rain Forest, Sendero Anonas, 10.9053, -85.2788, 405m, 8 v 2013], 13-SRNP-42649, KAA diss. #0201 (USNM). 1♀, same as previous but [31 vii 2013], 13-SRNP-41503, KAA diss. #0202 (USNM). **DOMINICAN REPUBLIC: Hato Mayor:** 1♂, 1♀, Parque Los Haitises, 3km W Cueva de Arena, 19°04'N, 69°29'W, 20m, 7–9 vii 1992, mesic lowland forest, R. Davidson, J. Rawlins, S. Thompson, C. Young; KAA diss. #0130(♂), KAA_DNA_0056; KAA diss. #0196(♀), KAA_DNA_0055 (CMNH).

Diagnosis. In the Caribbean, *Mictopsichia cubae* (Fig. 13D, E) is most likely to be confused with *M. nyhllinda* **sp. nov.** (Fig. 13F, G). From this species it differs in possessing two slender transverse bands of orange scaling on the dorsal surface of the thorax, a feature absent in all examined specimens of *M. nyhllinda* **sp. nov.** Male genitalia (Fig. 20F) differ in the shape of the valvae, with the base noticeably wider than the apex and the presence of a weakly-developed basal lobe on the dorsal margin. In *M. nyhllinda* **sp. nov.**, the valvae are even in width throughout their length and lack such a basal lobe (Fig. 20G). Female genitalia (Fig. 21F) is distinct from *M. nyhllinda* **sp. nov.**

(Fig. 21G) by possessing a more robust signum and distinct parallel lines of scobinations along the wall of the corpus bursae.

Redescription. Male. (n=3)

Head (n=2). Scales on vertex brown and orange, long and thin. Scales on frons straw yellow and orange, appressed. Scales on lateral face predominatly pale yellow, but with a few straw yellow and black scales intermixed. Medial face of palpus pale yellow to white. Scape concolorous with scales on vertex. Dorsal scales of flagellum predominantly black, a few straw yellow scales interspersed. Sensilla approximately width of flagellomere, recurved. **Thorax.** Dorsum of pro- and mesothorax shining silver with two lateral parallel bands of orange scaling, tegulae silver with orange scaling at base. Foreleg with lateral face with shining black scaling. Midleg and hindleg with lateral face of femur straw yellow; lateral face of tibia straw yellow and orange, terminal portion black; tarsi black. Medial face of all legs pale yellow to white. Forewing (Fig. 13D) with basal half of costa straight or nearly so, distal third very gently curved; FWL 5.0–5.5 mm (mean = 5.2; n = 3). Dorsal surface of forewing dark brown, nearly black, heavily sprinkled with white in median area and suffused with orange in basal and terminal area. There are two metallic blue-silver lines present in the basal area running from inner margin to costa; three present in the terminal area, two running from either side of the tornus to the costa and one very short, near the apex. The portion along the costa of all these streaks is white. Fringe predominantly dark gray, nearly black, with a few scattered short dark red scales; iridescent blue-purple when viewed from certain angles under light. Dorsal surface of hindwing orange, with heavy black-and-white speckling from M2 to A2 ("cubito-anal field" sensu Razowski 2009); black spots present near apex (especially so in holotype);

metallic blue-silver spots present along margin. Fringe with short scales predominantly dark gray, red-orange scales present in small patches; long scales entirely gray; iridescent blue-purple when viewed from certain angles under light. Ventral surface of forewing orange with two wide dark-brown bands (weakly developed in some specimens) running from costa to M3, bordering the two longest blue-silver lines on terminal area of forewing, which are present on ventral surface as pale yellow lines. Ventral surface of hindwing orange, with large dark brown spots present along fringe. **Abdomen.** Vestiture of abdomen with shining gray-brown scales on dorsal surface, terminal row of scales on each segment light orange; ventral surface covered in straw yellow scales. Genitalia (Fig. 20F) with uncus obsolete; socii terminally acute, with long setae projecting laterally; tegumen weak, membranous; arms of gnathos not converging, forming a broad, somewhat quadrate terminal complex, joined by a thin membrane; valvae moderate, elongate; submedian belt with 4–5 noticeable tooth-like projections on dorsal edge; elongate cavity present between the pulvinus and submedian belt; basal cavity small, obsolete; phallus broad, rounded basally, truncate apically, with broad, spatulate extension and short non-deciduous cornutus-like thorn present at apex.

Redescription. Female. (n=2)

Head. Similar to male, except sensilla porrect, no more than 0.5× width of flagellomere.

Thorax. Dorsal surface of wings (Fig. 13E) similar to male, but with fringes with more extensive short red-orange scales; FWL 5.5 mm (n = 2). Frenulum with 3 bristles.

Abdomen. Vestiture of abdomen similar to male. Genitalia (Fig. 21F) with papillae anales elongate, narrow, flared anteriorly; apophyses anteriores and posteriores approximately both 1× length of sternum VII; sterigma broad, quadrate, membranous;

ostium broad, with weakly sclerotized ring-like colliculum; ductus bursae uniform in width throughout length; ductus seminalis arising at base of ductus bursae, uniform in width throughout; corpus bursae globose; signum robust, sickle-shaped, with long, scobinate extension of basal plate present as two parallel lines; capitulum absent.

Etymology. Refers to the type locality (Cuba).

Distribution. *Mictopsichia cubae* is known from coastal elevations on Cuba and Hispaniola (Fig. 25C), as well at 405 meters from a single location in Costa Rica. Matthews et al. (2011) reported it from Honduras, but we conclude only the female was correctly identified (see discussion below).

Ecology. Nothing is known of the biology for this species. Like other members of the genus, *M. cubae* is presumed to be diurnal but may also come to lights. Examined specimens range in capture date from February to July.

Discussion. The holotype is in poor condition. The head is missing, as are the legs. The right forewing is stored in a plastic capsule separate from the specimen and the wings are heavily worn and partially torn. Razowski described the head in his original description, but the holotype he figured lacks a head. Either the head was lost between his description and photography, or Razowski erroneously described the head when it was lost before he examined the specimen.

One Costa Rican specimen was a 100% COI sequence matches to a pair of barcoded *M. cubae* from Hispaniola. This specimen, along with a similar one with 1.7% COI sequence divergence, represents the the second report of *M. cubae* from Central America.

Matthews et al. (2011) reported *Mictopsichia cubae* from Honduras from both a male and female specimen. They obtained a 606bp fragment of Mitochondrial Cytochrome Oxidase Subunit 1 (CO1) from the leg of the male Honduran specimen, but because of the age of the holotype, a comparison between the two was not conducted. This male Honduran specimen, however, is significantly different from *M. cubae* from Hispaniola and Costa Rica in both DNA barcode (10.44% sequence divergence) and genitalia morphology.

Most significantly in the male genitalia, the Honduran specimen lacks noticeable tooth-like projections on the dorsal rib of the submedian belt and a large cavity between the pulvinus and submedian belt, both of which are present in the holotype of *M. cubae*, the male from Hispaniola, and the male from Costa Rica. As far as we can tell, this is not due to an artifact of mounting. In addition, the shape of the valvae is different. In the Honduran specimen, the valvae are of almost uniform width throughout their entire length (similar to *M. nyhllinda* **sp. nov.**), whereas in the holotype, Hispaniolan, and Costa Rican specimens, the valvae is widest at the base and gradually narrows apically. Unfortunately the adult male was not figured beyond the genitalia and we were unable to examine it. It does not appear to be conspecific with *M. nyhllinda* **sp. nov.**, as minimum COI sequence divergence was significantly different (9.5%) from a barcoded non-type specimen from Cuba.

The Honduran female described and figured in Matthews et al. (2011), on the other hand, is a good match in both wing pattern and genitalia to *M. cubae* from Hispaniola and Costa Rica. The signum in the Honduran specimen is a little more robust than in the specimens we examined, but otherwise is identical. Unfortunately, it was not

barcoded. The two Honduran specimens are from two localities about five kilometers apart and were collected five months apart, so it is unclear how they were associated beyond wing pattern. Many species of *Mictopsichia* are exceedingly similar in wing pattern and often occur sympatrically with one another (KAA pers. obs.). It is upon this basis that we conclude the specimens described in Matthews et al. (2011) are not conspecific and only the female represents *M. cubae*.

Mictopsichia jamaicana Razowski, 2009

(Fig. 25C; Razowski 2009: figs 39, 55)

Type material.

Mictopsichia jamaicana Razowski, 2009: **Holotype ♀: JAMAICA: [St. Thomas]: Corn Puss Gap,** 19 vii 1936, Avinoff & Shoumatoff [could not locate, figure examined], genitalia slide #12363 [could not locate, figure examined] (CMNH).

Diagnosis. *Mictopsichia jamaicana* (Razowski 2009: fig. 55) cannot be confused with any other species. The large black tornal patch on the dorsal surface of the forewing should be enough to distinguish it from all other Neotropical telechromatic tortricines.

Description. Male.

Male unknown.

Description. Female.

See Razowski (2009).

Etymology. Refers to the type locality (Jamaica).

Distribution. Jamaica (Fig. 25C).

Ecology. Nothing is known of its biology. Like other species of the *Mictopsichia* group of genera, *Mictopsichia jamaicana* is presumed to be diurnal but may also come to lights. The holotype was collected in July.

Discussion. The holotype and genitalia slide of *Mictopsichia jamaicana* could not be located in the CMNH. It may still be with Razowski in the ISEZ. The wing pattern is more similar to *Mictocommosis godmani* (Walsingham, 1914) and *Mictocommosis lesleyae* **sp. nov.** than any described *Mictopsichia*. We suspect it may belong to this Neotropical group of *Mictocommosis* rather than *Mictopsichia* (see discussion under *Mictocommosis lesleyae* **sp. nov.**), but choose to retain it in *Mictopsichia* in the absence of known males and having not been able to examine the holotype.

Mictopsichia jamaicana is known only from the holotype collected over 80 years ago. Further searching should be done to confirm its continued existence on Jamaica.

Mictopsichia nyhllinda Austin & Dombroskie, 2020, **sp. nov.**

(Figs 13F, G; 20G; 21G; 25C)

Type material.

Mictopsichia nyhllinda Austin & Dombroskie, 2020: **Holotype** ♂: **DOMINICAN REPUBLIC: Hato Mayor:** Parque Los Haitises, 3km W Cueva de Arena, 19°04'N, 69°29'W, 20m, 7–9 vii 1992, mesic lowland forest, R. Davidson, J. Rawlins, S. Thompson, C. Young, KAA diss. #0200 (CMNH). **Paratype** ♀: **DOMINICAN REPUBLIC:** same data as holotype, KAA diss. #0199 (CMNH). Paratype affixed with the following typed blue label: PARATYPE ♀ *Mictopsichia nyhllinda* Austin & Dombroskie, 2020.

Additional material examined (5♀♀).

CUBA: Pinar del Río: 1♀, Sierra del Rosario, 4–6 x 1989, 400m, V. O. Becker, KAA diss. #0172, KAA_DNA_0054 (VBC). 1♀, same as previous except 5–15 vi 1990, KAA diss. #0198 (VBC). **DOMINICAN REPUBLIC: Hato Mayor:** 2♀♀, same data as holotype (CUIC, CMNH). **Pedernales:** 1♀, Along Rio Mulito, 13km N Pedernales, 18°09'N 71°46'W, 230m, 17 vii 1992, riparian woodland, J. Rawlins, S. Thompson, C. Young, R. Davidson, KAA diss. #0132 (CMNH).

Diagnosis. *Mictopsichia nyhllinda* **sp. nov.** (Fig. 13F, G) is most likely to be confused with *M. cubae* (Fig. 13D, E). See the diagnosis for that species.

Description. Male. (n=1)

Head. Scales on vertex brown, orange laterally, long and thin. Scales on frons straw yellow and orange, brown dorsally; appressed. Scales on lateral face straw yellow, but with a dark brown scales intermixed; second segment expanding ventrally. Medial face of palpus pale yellow to white. Scape predominantly orange, a few brown scales present basally. Dorsal scales of flagellum predominantly black, a few straw yellow scales interspersed. Sensilla approximately width of flagellomere, recurved. **Thorax.** Dorsum of pro- and mesothorax entirely silver, tegulae silver with orange scaling at base. Foreleg with lateral face with shining black scaling. Midleg and hindleg with lateral face of femur straw yellow; lateral face of tibia straw yellow and orange, terminal portion black; tarsi black. Medial face of all legs pale yellow to white. Forewing (Fig. 13F) including fringe similar to *M. cubae*, FWL 5.0 mm. Dorsal surface of hindwing orange, with black-and-white speckling from M2 to A2 ("cubito-anal field" sensu Razowski 2009); black spots present near apex, but smaller and less consolidated than in *M. cubae*; metallic blue-

silver spots along margin smaller and less extensive than in *M. cubae*; fringe similar to *M. cubae*. Ventral surface of forewing similar to *M. cubae*, but with more prominent dark brown bands. Ventral surface of hindwing similar to *M. cubae*. **Abdomen.** Vestiture of abdomen similar to *M. cubae*. Genitalia (Fig. 20G) with uncus obsolete; socii joined dorsally, terminally acute, with long setae projecting from dorsal surface; tegumen weak, membranous; arms of gnathos joined, forming a broad, somewhat quadrate medial complex; transtilla obsolete; valvae moderate, parallel-sided, evenly-rounded apically, without obvious dorsal lobe on dorsal margin; submedian belt with 2–3 tooth-like dorsal projections; basal cavity obsolete; thin, juxta-like sclerotization present. Phallus elongate, slightly curved, with broad, spatulate extension present apically (the natural orientation of this extension may be distorted in Fig. 19G as the vesica appears to have been partially everted), minute non-deciduous cornutus-like thorn present.

Description. Female. (n=1)

Head. Similar to male but sensilla shorter, approximately 0.5× width of flagellomere, straight. **Thorax.** Thorax, legs and forewing (Fig. 13G) similar to male but with even less extensive black scaling near apex of dorsal and ventral surface of hindwing. FWL 5.0mm. Frenulum with three bristles. **Abdomen.** Vestiture of abdomen similar to male. Genitalia (Fig. 21G) with papillae anales narrow, elongate, flared anteriorly; apophyses anteriores approximately 0.75× length of sternum VII; apophyses posteriores approximately 1× length of sternum VII; sterigma broad, quadrate, membranous; ostium broad, with weakly sclerotized ring-like colliculum; ductus bursae uniform in width throughout length; ductus seminalis arising at base of ductus bursae, uniform in width throughout; corpus bursae globose; signum thin, slightly irregular, moderate in length,

finely roughened at base, with short, almost obsolete scobinate extension of basal plate; capitulum absent.

Etymology. This species is named in honor of KAA's paternal grandparents, Nyhl and Linda Austin, for their unwavering support and love for their children and grandchildren.

Distribution. *M. nyhllinda* **sp. nov.** is known from Hispaniola and Cuba (Fig. 25C).

Ecology. Nothing is known of its biology. Like other species of the *Mictopsichia* group of genera, *Mictopsichia jamaicana* is presumed to be diurnal but may also come to lights. Examined specimens range in capture date from July to October.

Discussion. Unfortunately, the phallus of the holotype was lost prior to slide mounting. We choose to exclude five female specimens of *M. nyhllinda* **sp. nov.** from the type series because of lack of barcoding information for Hispaniolan specimens and the absence of reliably-associated males for Cuban specimens. See the discussion under *M. cubae* for comments on COI sequence divergence between these two species.

Rubropsichia Razowski, 2009

Type species: *Rubropsichia brasiliana* Razowski, 2009

Diagnosis. As in species account below. See Razowski (2009) for the original diagnosis for *Rubropsichia*, in which more than one species was examined.

Rubropsichia santaremana Razowski, 2009

(Figs 13A, 20D, 26)

Type material.

Rubropsichia santaremana Razowski, 2009: **Holotype** ♂: **BRAZIL: [Pará]:** Santarém, v 1919, S.M. Klages leg., Acc. 6324 [figure examined], genitalia slide #12367 [figure examined] (CMNH).

Additional material examined (1♂ total).

GRENADA: 1♂**,** 20 iv 1968, C. deWorms. KAA diss. #0133 (BMNH).

Diagnosis. *Rubropsichia santaremana* is unique among *Rubropsichia* in possessing small, cap-like fused socii (Fig. 19D). In *R. brasiliana* Razowski and *R. fuesliniana* (Stoll), this structure is massive and "mushroom-shaped" (Razowski 2009). *Rubropsichia kartaboana* Razowski differs from *R. santaremana* in having elongate, fused socii.

Redescription. Male. (n=1)

Head. Head, compound eyes small. Scales on vertex mostly missing, a few thin orange scales present; scales on frons black. Labial palpus short, approximately width of compound eye, scales on lateral and medial face entirely black. Scape black; dorsal scales of flagellum entirely orange; sensilla 0.5× width of flagellomere, nearly porrect. Ocellus prominent, separated from compound eye by approximately width of ocellus. Chaetosemata sparse, short, approximately 0.5× length of orange scales on vertex.

Thorax. Dorsum of pro- and mesothorax metallic silver with orange longitudinal streaks; dorsum of metathorax with pale yellow and pale orange scaling; tegulae metallic silver with lateral orange scaling. Foreleg short, with black and orange scaling on lateral face, tarsi entirely black; midleg and hindleg, with lateral face shining pale gray, tarsi black; medial face of all legs pale yellow to white. Forewing (Fig. 13A) broad, acutely hooked at apex, costa evenly curved throughout entire length; FWL 9.0 mm. Dorsal surface of forewing with basal third orange with broad silver and black streaks; distal two-thirds

dark gray with dense orange speckling; area near apex orange with short silver streaks. Fringe with short scales black, longer scales silver-gray. Dorsal surface of hindwing orange with gray scales present near base; dark gray to black streaks present near apex; fringe similar to forewing fringe. Ventral surface of hindwing orange with dark gray scaling present along costa and outer margin. Ventral surface of hindwing as on dorsal surface. **Abdomen.** Vestiture of abdomen dark gray with pale orange scales present on the posterior edge of each segment. Genitalia (Fig. 20D) with uncus small, hidden behind socii; socii fused into small cap-like structure, with dense, long setae; gnathos obsolete; tegumen short, moderate; transtilla obsolete; valvae elongate, thin, curved; deciduous setae present on ventral edge near apex; cucullus thin, broadened slightly at 0.33× length; caudal lobe of sacculus pronounced, forming a right angle, with long, thin setae present on surface; basal cavity of valvae acutely triangular; juxta broadest at sacculus, narrow at vinculum, shallow notch present where phallus rests; vinculum deep, U-shaped; phallus irregular, large, narrow, rounded at apex, small nub present near base; cornuti not observed.

Description. Female.

Female unknown.

Etymology. Refers to the type locality (Santarém, Pará, Brazil).

Distribution. *Rubropsichia santaremana* was previously known from a single specimen from Santarém in northern Brazil. It is also now reported from Grenada (Fig. 27). The two localities are approximately 1800 kilometers apart.

Ecology. Nothing is known of its biology. Judging by its reduced compound eyes, large ocelli, and telechromatic coloration, it is probably diurnal, like other members of the *Mictopsichia* group of genera. It may also come to lights.

Discussion. This is the first record of *Rubropsichia* in the Caribbean. The other three species in the genus are known from northern South America, so this new record is not too surprising (*R. brasiliana* Razowski, 2009, TL: São Paulo de Olivença, Amazonas, Brazil; *R. fuesliniana* [Stoll, 1781], TL: Surinam; *R. kartaboana* Razowski, 2011, TL: Bartica, Guyana).

There are subtle differences in the forewing and genitalia of the Grenada specimen compared to the holotype from Brazil. Most noticeably, the terminal two rows of orange spots near the termen of the forewing are fused in the Brazilian specimen, but separate in the Grenadan specimen. In the genitalia, the basal cavity is more elongate and ventral process on the dorsal margin of the valve is more prominent in the Grenada specimen compared to the holotype. Despite these differences, we choose not to describe Grenada specimen as new, owing to the limited material available.

Taxonomic Checklist of Caribbean Archipini

As part of this taxonomic checklist we also include the (1) type locality as the country and state or province (if known), (2) the institutional abbreviation where primary type(s) are deposited, and (3) the sex of the primary type(s). All names considered valid in this paper are listed in boldface italicized type; synonyms, unavailable names, and subsequent misspellings are given in regular italicized type. Unavailable names are denoted by the "‡" symbol. Type species of genera are denoted by an asterisk. New taxonomic proposals are given in boldface type.

ARGYROTAENIA Stephens, 1852: 67 (type species: *Tortrix politana* Haworth, [1811])

ARGYROTHAENIA‡ in Diakonoff 1939 (misspelling): 190

SUBARGYROTAENIA Obraztsov, 1961: 38 (type species: *Tortrix purata* Meyrick, 1932)

amatana Dyar, 1901 (*Lophoderus*): 24 (USA: Florida, USNM)

chioccana Kearfott, 1907 (*Tortrix*): 72 (USA: Florida, AMNH)

chiococcana Meyrick, 1912, in Wagner (*Argyrotoxa*): 52; unjustified emendation of *chioccana*

neibana **syn. nov.** Razowski, 1999 (*Argyrotaenia*): 310 (Dominican Republic: Baoruco, CMNH)

ochrochroa **syn. nov.** Razowski, 1999 (*Argyrotaenia*): 310 (Turks & Caicos: Providenciales, CMNH)

ochrotona‡ in Razowski & Becker 2000: 312 (misspelling of *ochrochroa*)

bisignata Razowski, 1999 (*Argyrotaenia*): 310 (Dominican Republic: Pedernales, CMNH)

browni Austin & Dombroskie, 2020 **sp. nov.** (*Argyrotaenia*): 94 (Dominican Republic:

Independencia, CMNH)

ceramica ceramica Razowski, 1999 (*Argyrotaenia*): 309 (Dominican Republic: Pedernales, CMNH)

ceramica granpiedrae Razowski & Becker, 2010 **stat. nov.** (*Argyrotaenia*): 17 (Cuba: Santiago de Cuba, VBC†)

cryptica Austin & Dombroskie, 2020 **sp. nov.** (*Argyrotaenia*): 108 (Dominican Republic: La Vega, CMNH)

cryptica cryptica Austin & Dombroskie, 2020 **ssp. nov.** (*Argyrotaenia*): 108 (Dominican Republic: La Vega, CMNH)

cryptica praeteritana Austin & Dombroskie, 2020 **ssp. nov.** (*Argyrotaenia*): 112 (Dominican Republic: Pedernales, CMNH)

cineriptera‡ Razowski, unavailable manuscript name

cubae Razowski & Becker, 2010 (*Argyrotaenia*): 13 (Cuba: Santiago de Cuba, VBC†)

felisana Razowski, 1999 (*Argyrotaenia*): 309 (Dominican Republic: Independencia, CMNH)

felizana‡ in Razowski 1999 (misspelling): 309

flavoreticulana Austin & Dombroskie, 2019 (*Argyrotaenia*): 9 (The Bahamas: Great Exuma, CUIC)

jamaicana Razowski & Becker, 2000 (*Argyrotaenia*): 313 (Jamaica: ?Portland, CMNH)

partheniana‡ unattributed, unavailable manuscript name

kimballi Obraztsov, 1961 (*Argyrotaenia*): 13 (USA: Florida, AMNH)

nuezana Razowski, 1999 (*Argyrotaenia*): 309 (Dominican Republic: La Vega, CMNH)

nuesana‡ in Razowski 1999 (misspelling): 317

paradisei Austin & Dombroskie, 2020 **sp. nov.** (Argyrotaenia): 137 (Dominican Republic:

Independencia, CMNH)

razowskiana Austin & Dombroskie, 2020 **sp. nov.** (*Argyrotaenia*): 141 (Dominican Republic: La Vega, CMNH)

vinalesiae Razowski & Becker, 2010 (*Argyrotaenia*): 13 (Cuba: Pinar del Río, VBC†)

CLADUNCARIA Razowski, 2000, in Razowski & Becker: 208 (replacement name) (type species: *Cladotaenia ochrochlaena* Razowski, 1999

CLADOTAENIA‡, Razowski, 1999: 312 (preoccupied by Cohn, 1901)

mesosignaria group

chalarostium Razowski & Becker, 2000 **comb. nov.**, **stat. nov.** (*Argyrotaenia*): 315 (Jamaica: ?Portland, CMNH)

mesosignaria (Razowski, 1999) **comb. nov.** (*Argyrotaenia*): 311 (Dominican Republic: La Vega, CMNH)

thamaluncus Razowski, 1999 **syn. nov.** (*Argyrotaenia*): 311 (Dominican Republic: La Vega, CMNH)

Clepsis mesosignaria, error in figure of Razowski & Becker, 2010: 37

minisignaria Razowski, 1999 **comb. nov.** (*Argyrotaenia*): 311 (Dominican Republic: Pedernales, CMNH)

rufochlaena Razowski & Becker, 2000 (*Claduncaria*): 208 (Jamaica: ?Portland, CMNH)

taino Austin & Dombroskie, 2020 **sp. nov.** (*Claduncaria*): 164 (Dominican Republic: La Vega, CMNH)

ochrochlaena group

maestrana Razowski & Becker, 2010: 11 (Cuba: Santiago de Cuba, VBC†)

labisclera Razowski & Becker, 2010 **syn. nov.** (*Clepsis*): 20 (Cuba: Santiago de Cuba, VBC†)

ochrochlaena** (Razowski, 1999) (*Cladotaenia*): 312 (Dominican Republic: Pedernalis, CMNH)

praedictana Austin & Dombroskie, 2020 **sp. nov.** (*Claduncaria*): 174 (Dominican Republic: Monseñor Nouel, CMNH)

rawlinsana Austin & Dombroskie, 2020 **sp. nov.** (*Claduncaria*): 177 (Dominican Republic: Pedernales, CMNH)

CLEPSIS Guenée, 1845: 149 (type species: *Tortrix rusticana* Hübner [1796-1799] *sensu* Treitschke, 1830 [=*Tortrix senecionana* Hübner, [1818-1819])

SMICROTES Clemens, 1860: 355 (type species: *Smicrotes peritana* Clemens, 1860)

SICLOBOLA Diakonoff, 1948: 25 (type species: *Tortrix unifasciana* Duponchel, 1842)

PSEUDAMELIA Obraztsov, 1954: 196 (type species: *Tortrix unicolorana* Duponchel, 1835) [described as a subgenus of *Clepsis*]

CLEPSODES Diakonoff, 1957: 240 (type species: *Clepsis tetraplegma* Diakonoff, 1957) [described as a subgenus of *Clepsis*]

MOCHLOPYGA Diakonoff, 1964: 44 (type species: *Tortrix humana* Meyrick, 1912)

davisi Austin & Dombroskie, 2020 **sp. nov.** (*Clepsis*): 185 (Guadeloupe, Saint-Claude, CUIC)

deroni Austin & Dombroskie, 2020 **sp. nov.** (*Clepsis*): 189 (Dominican Republic: San José de

Ocoa, CMNH)

jamesstewarti Austin & Dombroskie, 2020 **sp. nov.** (*Clepsis*): 192 (Dominican Republic: Pedernales, CMNH)

developa‡ Meyrick, unpublished manuscript name?

peritana (Clemens, 1860) (*Smicrotes**): 356 ("Canada and USA", ANSP)

inconclusana Walker, 1863 (*Dichelia*): 318. ("North America", BMNH)

pinaria Razowski & Becker, 2010 **syn. nov.** (*Clepsis*): 22 (Cuba: Pinar del Río, VBC†)

peroniae Austin & Dombroskie, 2020 **sp. nov.** (*Clepsis*): 201 (Dominican Republic: Elías Piña, USNM).

MICTOCOMMOSIS Diakonoff, 1977 (type species: *Simaethis nigromaculata* Issiki, 1930)

lesleyae Austin & Dombroskie, 2020 **sp. nov.** (*Mictocommosis*): 204 (Dominican Republic: Azua, CMNH)

MICTOPSICHIA Hübner, [1825] 1816: 374 (type species: *Phalaena* (*Tortrix*) *hubneriana* Stoll, 1791)

MICROPSICHIA‡ in Agassiz, 1848: 674 (misspelling)

MICROPSYCHIA‡ in Agassiz, 1848: 674 (misspelling)

MICTOPSYCHIA‡ in Riley, 1889: 158 (misspelling)

MICTROPSICHIA‡ in Heppner, 1978: 53 (misspelling)

cubae Razowski, 2009 (*Mictopsichia*): 227 (Cuba: Santiago de Cuba, BMNH)

jamaicana Razowski, 2009 (*Mictopsichia*): 238 (Jamaica: St. Thomas, CMNH)

nyhllinda Austin & Dombroskie, 2020 **sp. nov.** (*Mictopsichia*): 219 (Dominican Republic: Hato

Mayor, CMNH)

RUBROPSICHIA Razowski, 2009: 240 (type species: *Rubropsichia brasiliana* Razowski, 2009)

santaremana Razowski, 2009 (*Rubropsichia*): 242 (Brazil: Pará, CMNH)

[†]Types were found in the ISEZ, not the VBC as listed in Razowski & Becker (2010).

Geographic Checklist of Caribbean Archipini by Island or Archipelago

*=endemic

Cayman Islands

Argyrotaenia amatana

Cuba

Argyrotaenia amatana

*A. ceramica granpiedrae** **stat. nov.**

A. cubae

*A. vinalesiae**

*Claduncaria maestrana**

Clepsis peritana

Mictopsichia cubae

Mictop. nyhllinda **sp. nov.**

Dominica

Clepsis davisi **sp. nov.**

Grenada

Rubropsichia santaremana

Guadeloupe

Clepsis davisi **sp. nov.**

Hispaniola

Argyrotaenia amatana

*A. bisignata**

*A. browni** **sp. nov.**

*A. ceramica ceramica**

*A. cryptica cryptica** **ssp. nov.**

*A. cryptica praeteritana** **ssp. nov.**

A. cubae

*A. felisana**

*A. nuezana**

*A. paradisei** **sp. nov.**

*A. razowskiana** **sp. nov.**

*Claduncaria mesosignaria** **comb. nov.**

*Cla. minisignaria** **comb. nov.**

*Cla. ochrochlaena**

*Cla. praedictana** **sp. nov.**

*Cla. rawlinsana** **sp. nov.**

*Cla. taino** **sp. nov.**

*Clepsis deroni** **sp. nov.**

*Cle. jamesstewarti** **sp. nov.**

*Cle. peroniae** **sp. nov.**

*Mictocommosis lesleyae** **sp. nov.**

Mictopsichia cubae

Mictop. nyhllinda **sp. nov.**

Jamaica

Argyrotaenia amatana

*A. jamaicana**

*Claduncaria chalarostium** **comb. nov.,**

stat. nov.

*Cla. rufochlaena**

*Mictopsichia jamaicana**

Lucayan Archipelago

(The Bahamas, Turks & Caicos)

Argyrotaenia amatana

*A. flavoreticulana**

A. kimballi

Clepsis peritana

Discussion

COI sequence data suggest the presence of at least four groups of *Argyrotaenia* in the Caribbean (Figs 3, 4). Further sampling, especially of Central American species, would be required to determine group monophyly and relationships to mainland taxa.

The first group, consisting of *A. amatana*, *A. vinalesiae*, and *A. jamaicana*, is primarily coastal (except *A. jamaicana*, which is a mid- to high elevation species), externally very distinct from one another, but possess very similar genitalia. Representatives of this group are found in The Bahamas, the Cayman Islands, Cuba, Hispaniola, Jamaica, and the Turks & Caicos Islands. Based on similarities in genitalia and its low-elevation distribution, *A. flavoreticulana* may also belong to this group, but COI barcodes were unfortunately not available for it to include in our analyses. Our Maximum Likelihood analysis suggests that this group is distinct from the rest of the Caribbean *Argyrotaenia* + *Claduncaria*. The second group, consisting of *A. ceramica*, is very distinct, both externally and in genitalia, from the rest of the Caribbean *Argyrotaenia*. It appears to be closely allied to the *A. ponera* group (Brown & Cramer 1999) of Mexico and the southwestern United States. It is found on both Cuba and Hispaniola. The third group, consisting of *A. cubae* and *A. browni* **sp. nov.**, are remarkably similar externally, but distinct in both male and female genitalia. Representatives of this group are found on both Cuba and Hispaniola. The fourth group may represent an exclusively Hispaniolan radiation of *Argyrotaenia*, but further sampling would be necessary to confirm its monophyly. It consists of six species: *A. nuezana*, *A. razowskiana* **sp. nov.**, *A. bisignata*, *A. felisana*, *A. paradisei* **sp. nov.**, and

A. cryptica **sp. nov.** All of these species are relatively distinct from one another in forewing pattern and male genitalia, but less so in female genitalia.

Our Maximum Likelihood analysis (Fig. 4) recovers *Claduncaria* as we define it to be monophyletic with moderate support, with two subclades with similar compositions to our *mesosignaria* and *ochrochlaena* groups. The two exceptions to this are *Cla. chalarostium* and *Cla. rufochlaena*, which this molecular analysis find to be part of the *ochrochlaena* group. Further studies are warranted to elucidate relationships within *Claduncaria*. Interestingly, this analysis suggests that *Claduncaria* may be a highly-derived Caribbean lineage of *Argyrotaenia*. This putative relationship and its taxonomic status also warrant further investigation.

The relationships between Caribbean *Clepsis* are much less clear. Our Maximum Likelihood analysis (Fig. 4) gives little resolution above the species level and comes out as a grade instead of as monophyletic. The genus as a whole is in need of revision, so any proposed relationships to mainland taxa would be purely speculative at this point.

Unsurprisingly, the two genera of the *Mictopsichia* group that were sampled, *Mictopsichia* and *Mictocommosis*, came out as sister to *Clepsis* + *Claduncaria* + *Argyrotaenia*. The relationships of these genera to Archipini, to each other, and to Tortricidae as a whole deserve careful future examination.

Hypothesized coupling mechanism in **Claduncaria**

The functional morphology of Lepidoptera genitalia is poorly understood (Cordero & Baixeras 2015). Part of the reason for this is the extreme variation in the size, shape, development, and presence/absence of different genitalic structures across the order and even within genera. Genitalic structures that serve one copulatory function in one group of Lepidoptera, may serve a completely different function in another group or be reduced or lost entirely. Even if structures do serve the same function, they may act on a different structure in the opposite sex to accomplish it. For this reason, a generalized functional morphology for Lepidoptera genitalia is not possible beyond perhaps a few highly-conserved structures. Published instances of precise structural interactions during copulation are few, scattered and often restricted to large, showy, or economically important species. For a detailed account of modern understanding as well as historical understanding of the functional morphology of Lepidoptera genitalia, see Cordero & Baixeras (2015).

Precise coupling mechanisms in Tortricidae are even more poorly known, having only been investigated or hypothesized in a few instances (Ferro & Akre 1975; Pérez Santa-Rita & Baixeras 2017), despite recent interest in more generalized functional morphology (Lincago et al. 2013; Anzaldo et al. 2014; Zlatkov 2016) and intraspecific variation (Mutaten et al. 2007; Gilligan & Wenzel 2008; Rentel et al. 2017).

A putative autapomorphy for the family Tortricidae is the presence of flattened papillae anales, a feature only modified in some plesiomorphic groups, presumably to facilitate oviposition (Horak 1999). To our knowledge, the hypothesized coupling

method presented here for *Claduncaria* Razowski is only the third proposed sexual coupling mechanism for Tortricidae (Ferro & Akre 1975; Pérez Santa-Rita & Baixeras 2017), the second where interactions take place externally (Pérez Santa-Rita & Baixeras 2017), and the first which describes interspecific differences.

In situ, the ventroposterior portion of the papillae anales of the *ochrochlaena* group form a cup-like structure (Fig. 22A). Males have a divergently bifurcate uncus (Fig. 22B) which can be experimentally inserted between the papillae anales under the microscope to "couple" the two. The size/width of the cup of the papillae anales (referred to as a groove when flattened under glass for photography) seems to correspond very well to the width and shape of the arms of the uncus of the male for each species in this group. For example, the grooves in the papillae anales and arms of the uncus in *Cla. ochrochlaena* are narrow (Figs 18B, 19B), whereas those of *Cla. maestrana* (Figs 18A, 19A) are much wider.

In the *ochrochlaena* group, we hypothesize that the uncus is inserted between the papillae anales and acts to push the papillae anales into the abdominal cavity, thereby exposing the ostium to allow for insertion of the phallus and eversion of the vesica, similar to the generalized strategy outlined in Cordero & Baixeras (2015). Simultaneously, the terminal plate of the gnathos may fit into a corresponding structure (e.g. a "pocket") between the anterior portion of the papillae anales. Such a deep pocket has been observed in *Cla. ochrochlaena* and likely occurs in other females of the *ochrochlaena* group. We suspect careful histological work in females may be necessary to investigate this further. The gnathos is distinctly articulated in the *ochrochlaena* group, suggesting that musculature may be more strongly developed in

these species and may serve additional functions, perhaps even acting independently of the uncus to "pry open" the sterigma for copulation. With such odd and divergent shapes in the terminal plate of the gnathos in this group, we posit that this structure serves some sort of copulatory function.

Females of the *mesosignaria* group, in contrast, have developed massively swollen papillae anales (Fig. 19E–G) and males have developed a correspondingly-large apex of the uncus (Fig. 18E–G). *Cla. rufochlaena*, for which the female is unknown (but see discussion under its species account) is the exception to this. Even though it is undoubtedly a member of the *mesosignaria* group based on the shared valvae and gnathos structure, it possesses a divergently bifid uncus. Excluding *Cla. rufochlaena*, we hypothesize the uncus in the *mesosignaria* group serves a similar function as in the *ochrochlaena* group; that is, to push the papillae anales into the abdominal cavity and thus expose the ostium.

Whether these structures arose as part of a sexual arms race between the sexes, as an adaptation to a novel oviopositional strategy, or as cryptic female choice is yet to be seen (Cordero & Baixeras 2015). The host preference for this genus is not yet known, but we hypothesize it must be very unusual in members of the *ochrochlaena* group if ovipositional strategy is what drove its evolution. That males seem to have adapted alongside females in both of these groups is certainly worthy of further study, both from a morphological and evolutionary perspective.

Biogeographical note on Puerto Rico

Interestingly, no species of Archipini are known from Puerto Rico. We did dissect a pair of tortricids that superficially resembled Clepsis, but they turned out to be *Coelostathma parallelana* Walsingham, 1897 (Sparganothini), a widespread Caribbean species. We do not think the absence of Archipini on Puerto Rico is an artifact of a lack of collecting, as the island is among the most well-collected for insects in the Caribbean, including microlepidoptera (e.g. Forbes 1931). In fact, Puerto Rico is listed as the type locality of no fewer than 23 species of tortricids (Brown 2005). Why then, Puerto Rico is so depauperate when it comes to Archipini?

For most insect taxa, particularly montane species, overall species diversity decreases in the Greater Antilles from west to east and has been well-documented by entomologists (Liebherr 1988 and references therein). Possible explanations for this were first laid out by Martorell (1945). First, Puerto Rico's positioning in the Caribbean (farthest east of the Greater Antilles and farthest north of the Lesser Antilles) act as a barrier to colonization. Second, trade winds coming from the east makes overall dispersal, especially by weak flyers, difficult. Lastly, deforestation may have contributed to the local extinction of some species, although we have no evidence Archipini occurred in Puerto Rico in the past. Suitable habitat certainly exists on Puerto Rico, but with no archipines present on the low-elevation east coast of Hispaniola (see Figs. 23–26) nor in the northern half of the Lesser Antilles, distance may be enough of a barrier to have prevented colonization. Puerto Rico and northern Hispaniola were connected until the formation of the Mona Passage (~30-20 mya; Van Gestel et al. 1999; MacPhee et al. 2003), suggesting that colonization of the Caribbean by Archipini may not have occurred until after the two islands became separated.

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FIGURES

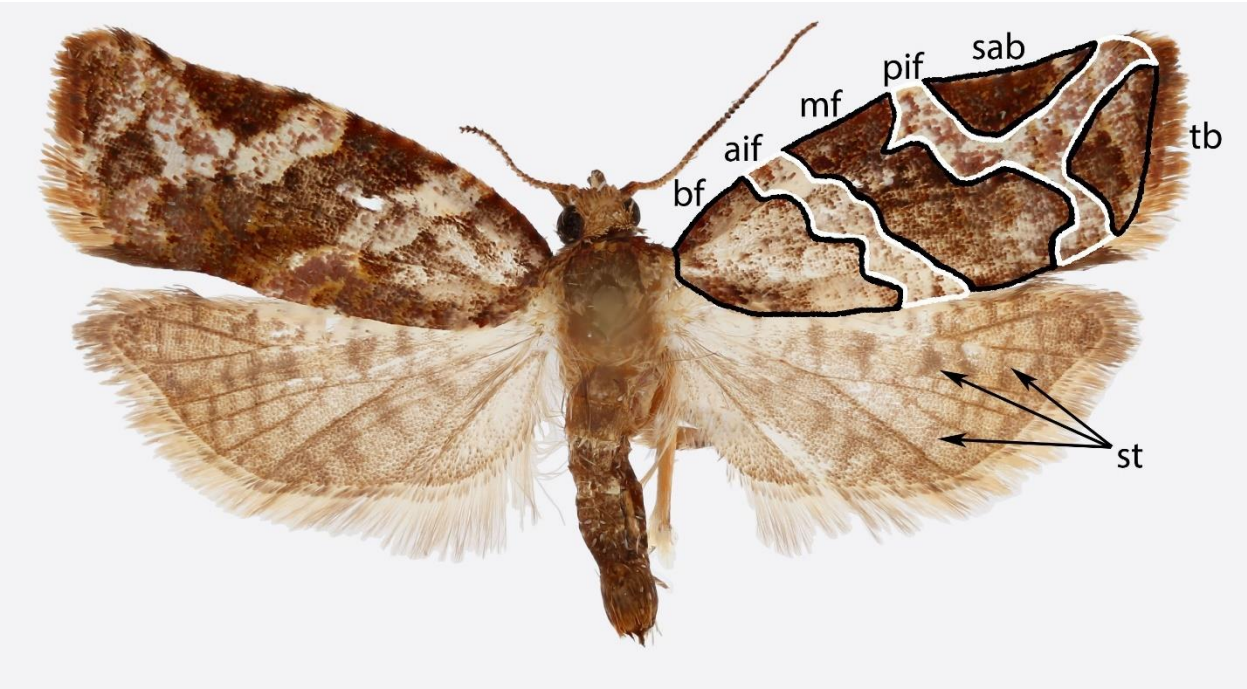


Figure 1. Typical Archipini wing pattern (*Argyrotaenia paradisei* **sp. nov.** holotype ♂). *aif*, antemedian interfascia; *bf*, basal fascia; *mf*, median fascia; *pif*, postmedian interfascia; *sab*, subapical blotch; *st*, strigulae; *tb*, tornal blotch.

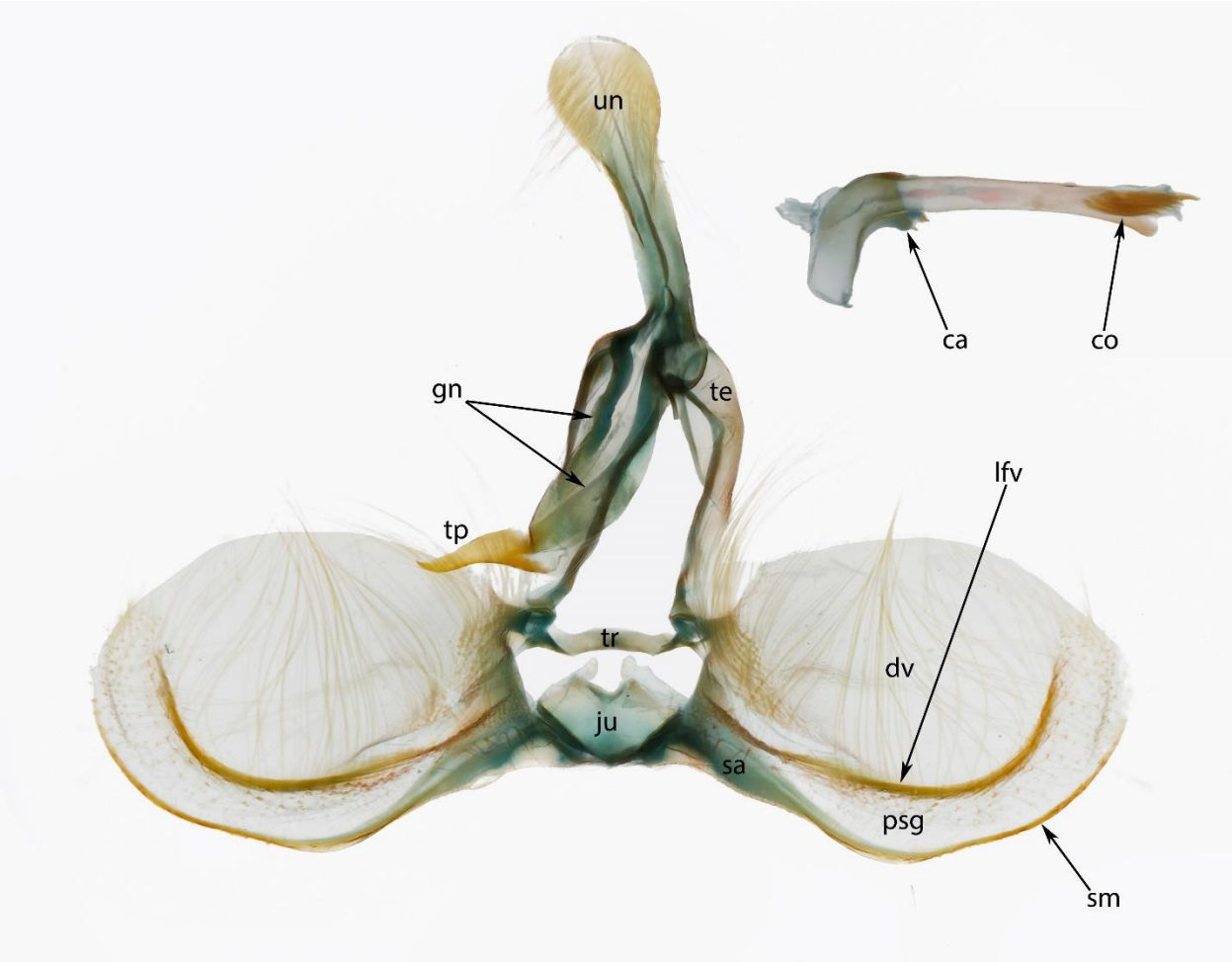
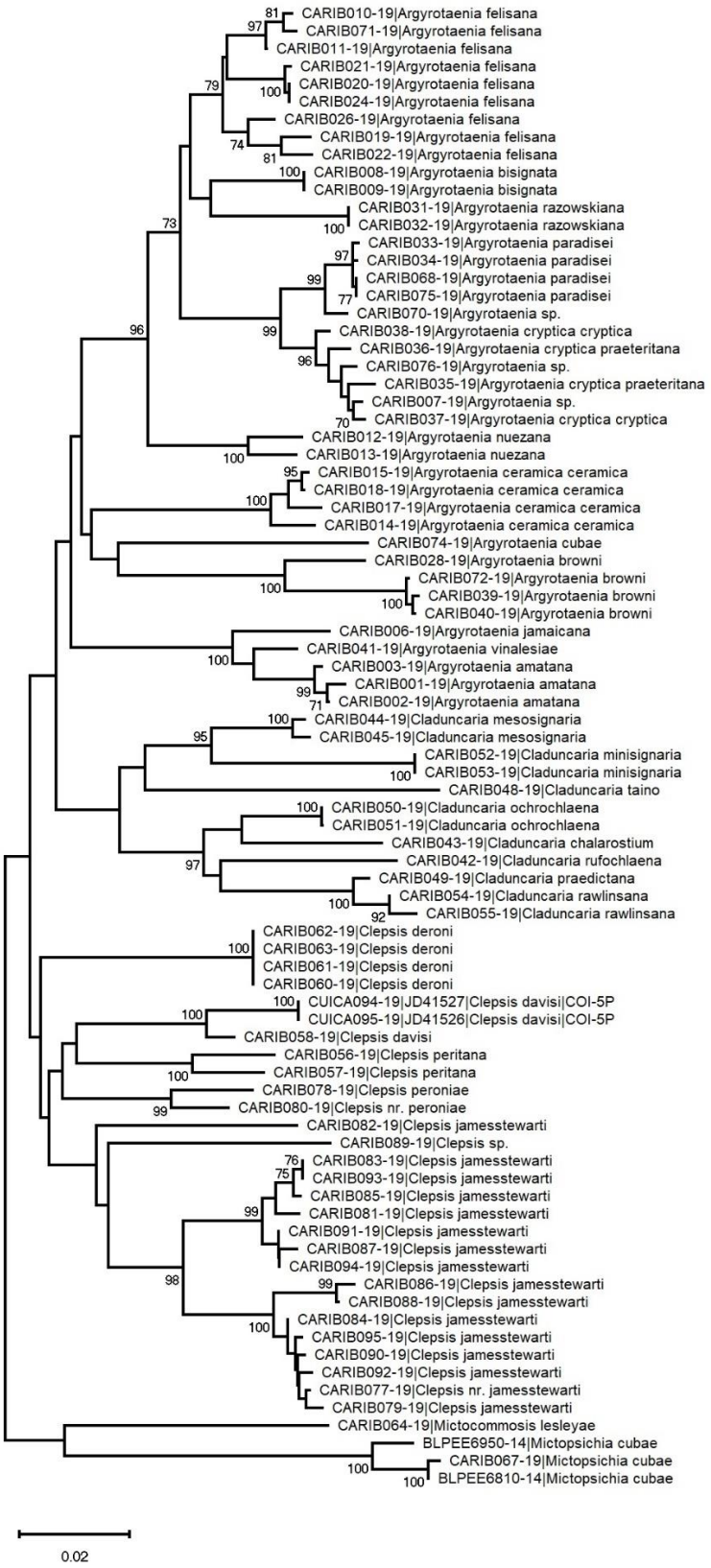


Figure 2. Typical Archipini male genitalia (*Argyrotaenia cryptica praeteritana* **ssp. nov.** paratype), phallus inset. *ca*, caulis; *co*, cornuti; *dv*, disc of valva; *gn*, gnathos; *ju*, juxta; *lfv*, longitudinal fold of valva; *psg*, presaccular gap; *sa*, sacculus; *sm*, saccular margin; *te*, tegumen; *tp*, terminal plate; *tr*, transtilla; *un*, uncus.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CARIB022-19|Argyrotaenia felisana
CARIB008-19|Argyrotaenia bisignata
CARIB009-19|Argyrotaenia bisignata
CARIB031-19|Argyrotaenia razowskiana
CARIB032-19|Argyrotaenia razowskiana
CARIB033-19|Argyrotaenia paradisei
CARIB034-19|Argyrotaenia paradisei
CARIB068-19|Argyrotaenia paradisei
CARIB075-19|Argyrotaenia paradisei
CARIB070-19|Argyrotaenia sp.
CARIB038-19|Argyrotaenia cryptica cryptica
CARIB036-19|Argyrotaenia cryptica praeteritana
CARIB076-19|Argyrotaenia sp.
CARIB035-19|Argyrotaenia cryptica praeteritana
CARIB007-19|Argyrotaenia sp.
CARIB037-19|Argyrotaenia cryptica cryptica
CARIB012-19|Argyrotaenia nuezana
CARIB013-19|Argyrotaenia nuezana
CARIB015-19|Argyrotaenia ceramica ceramica
CARIB018-19|Argyrotaenia ceramica ceramica
CARIB017-19|Argyrotaenia ceramica ceramica
CARIB014-19|Argyrotaenia ceramica ceramica
CARIB074-19|Argyrotaenia cubae
CARIB028-19|Argyrotaenia browni
CARIB072-19|Argyrotaenia browni
CARIB039-19|Argyrotaenia browni
CARIB040-19|Argyrotaenia browni
CARIB006-19|Argyrotaenia jamaicana
CARIB041-19|Argyrotaenia vinalesiae
CARIB003-19|Argyrotaenia amatana
CARIB001-19|Argyrotaenia amatana
CARIB002-19|Argyrotaenia amatana
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CARIB045-19|Claduncaria mesosignaria
CARIB052-19|Claduncaria minisignaria
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CARIB048-19|Claduncaria taino
CARIB050-19|Claduncaria ochrochlaena
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CARIB043-19|Claduncaria chalarostium
CARIB042-19|Claduncaria rufochlaena
CARIB049-19|Claduncaria praedictana
CARIB054-19|Claduncaria rawlinsana
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CARIB060-19|Clepsis deroni
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CUICA095-19|JD41526|Clepsis davisi|COI-5P
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CARIB057-19|Clepsis peritana
CARIB078-19|Clepsis peroniae
CARIB080-19|Clepsis nr. peroniae
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CARIB089-19|Clepsis sp.
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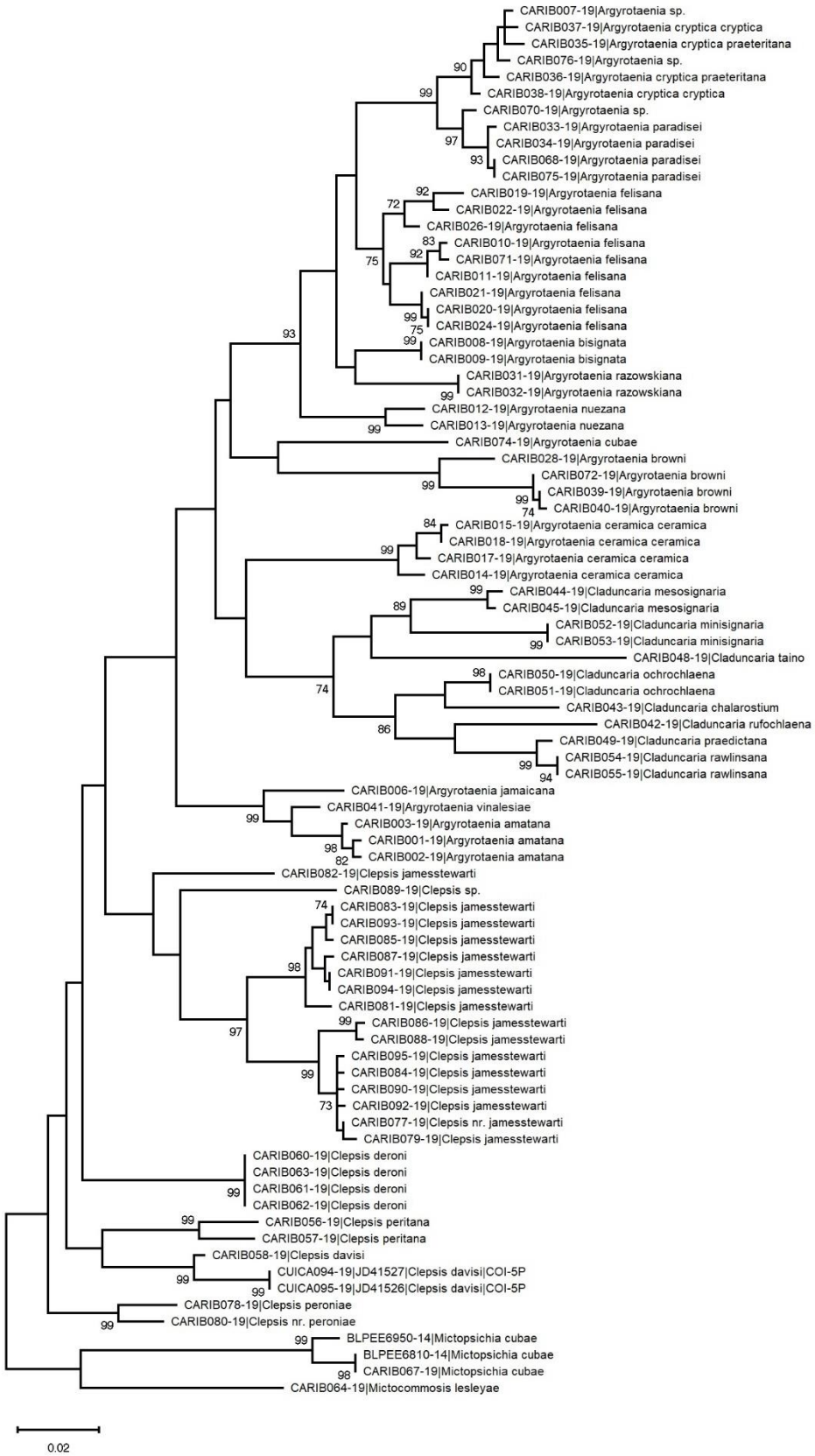
CARIB077-19|Clepsis nr. jamesstewarti
CARIB079-19|Clepsis jamesstewarti
CARIB064-19|Mictocommosis lesleyae
BLPEE6950-14|Mictopsichia cubae
CARIB067-19|Mictopsichia cubae
BLPEE6810-14|Mictopsichia cubae
0.02

Figure 3. Neighbor-joining (NJ) tree inferred using the Neighbor-Joining method (Saitou & Nei 1987) from COI barcode sequence data for specimens for which >500 base pairs recovered. The optimal tree with the sum of branch length = 1.2731 is shown. 1000 bootstrap replicates were conducted and their scores are shown next to branches. Only bootstrap scores greater than 70% are shown. Distances were computed using the Maximum Composite Likelihood (MCL) method (Tamura et al. 2004) and are in the units of the number of base substitutions per site. Analysis conducted in MEGA X (Kumar et al. 2018). BOLD process IDs and identifications are given at branch tips. Voucher specimen data and a pairwise distance matrix are given in Supplementary File 1.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CARIB057-19|Clepsis peritana
CARIB058-19|Clepsis davisi
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CARIB080-19|Clepsis nr. peroniae
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BLPEE6810-14|Mictopsichia cubae
CARIB067-19|Mictopsichia cubae
CARIB064-19|Mictocommosis lesleyae
0.02

Figure 4. Maximum Likelihood (ML) tree inferred using the Kimura 2-parameter model (Kimura 1980) from COI barcode sequence data for specimens for which >500 base pairs were recovered. The tree with the highest log likelihood (-5939.70) is shown. 1000 bootstrap replicates were conducted and their scores are shown next to branches. Only bootstrap scores greater than 70% are shown. This phylogenetic analysis was conducted in MEGA X (Kumar et al. 2018). BOLD process IDs and identifications are given at branch tips. Voucher specimen data and a pairwise distance matrix are given in Supplementary File 1.

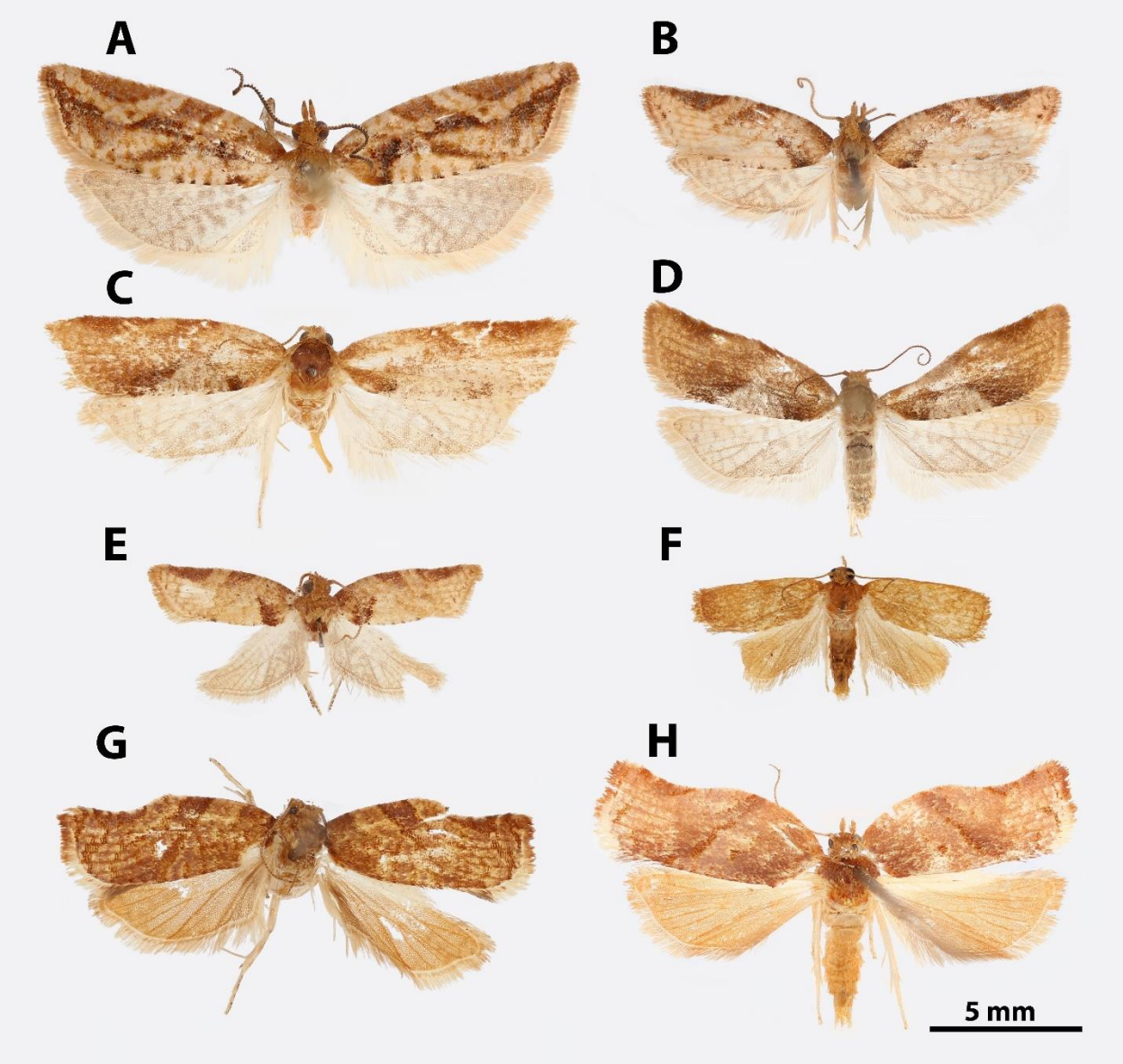

Figure 5. *Argyrotaenia* adults. **A.** *A. ceramica* holotype ♂, Dominican Republic (CMNH). **B.** *A. ceramica* paratype ♂, Dominican Republic (CMNH). **C.** *A. ceramica* paratype ♀, Haiti (CMNH). **D.** *A. ceramica* ♀, Dominican Republic (CUIC). **E.** *A. ceramica granpiedrae* **stat. nov.** Cuba (VBC). **F.** *A. vinalesiae* ♀, Cuba (VBC). **G.** *A. jamaicana* holotype ♂**,** Jamaica (CMNH). **H.** *A. jamaicana* ♀, Jamaica (CUIC).

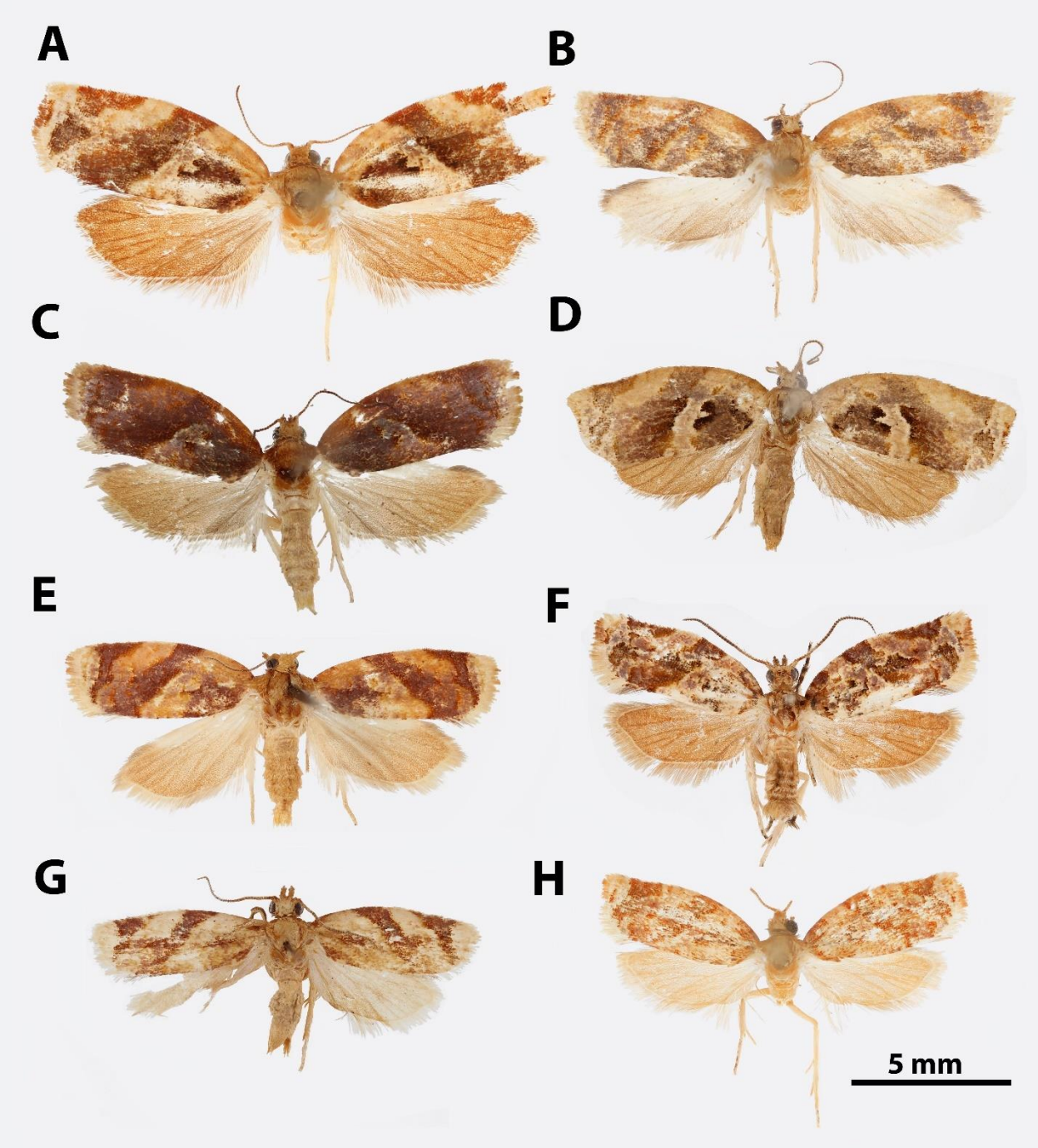

Figure 6. *Argyrotaenia amatana* adults. **A.** *A. amatana* ♀ (holotype of *A. neibana* **syn. nov.**), Dominican Republic (CMNH). **B.** *A. amatana* ♀ (holotype of A. *ochrochroa* **syn. nov.**), Turks & Caicos (CMNH). **C.** *A. amatana* ♀, The Bahamas (MEM). **D.** *A. amatana* ♀, Cuba (USNM). **E.** *A. amatana* ♂, Florida (CUIC). **F.** *A. amatana* ♂, Cuba (USNM). **G.** *A. amatana* ♂, Grand Cayman (BMNH). **H.** *A. amatana* ♂, Dominican Republic (CMNH).

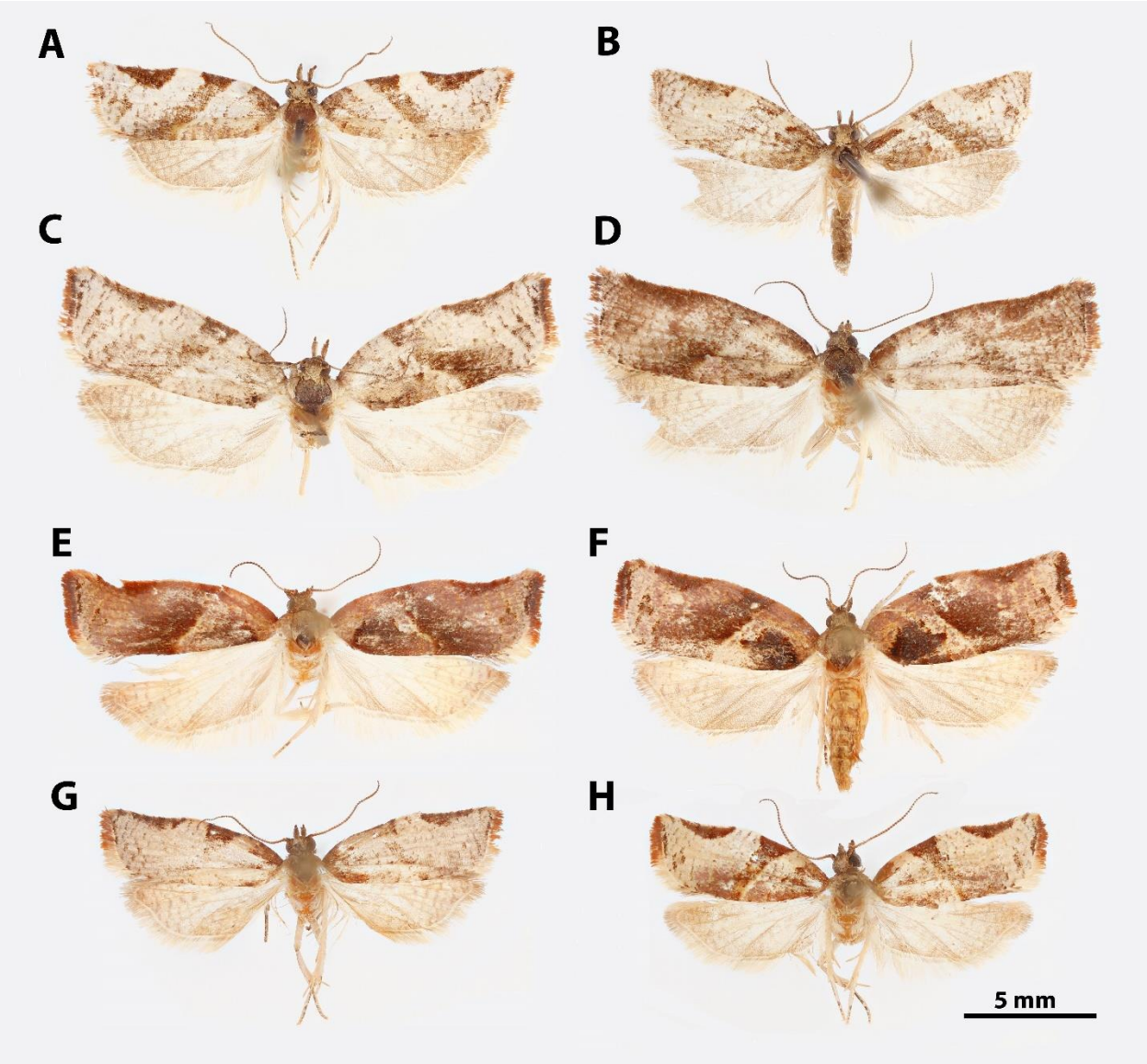

Figure 7. *Argyrotaenia* adults. **A.** *A. bisignata* holotype ♂, Dominican Republic (CMNH). **B.** *A. bisignata*, ♂ Dominican Republic (CMNH). **C.** *A. bisignata* paratype ♀, Dominican Republic. **D.** *A. bisignata* paratype ♀, Dominican Republic (CMNH). **E.** *A. felisana* holotype ♀, Dominican Republic (CMNH). **F.** *A. felisana* ♀, Dominican Republic (CUIC). **G.** *A. felisana* ♂, Dominican Republic (CUIC). **H.** *A. felisana* ♂, Dominican Republic (CUIC).

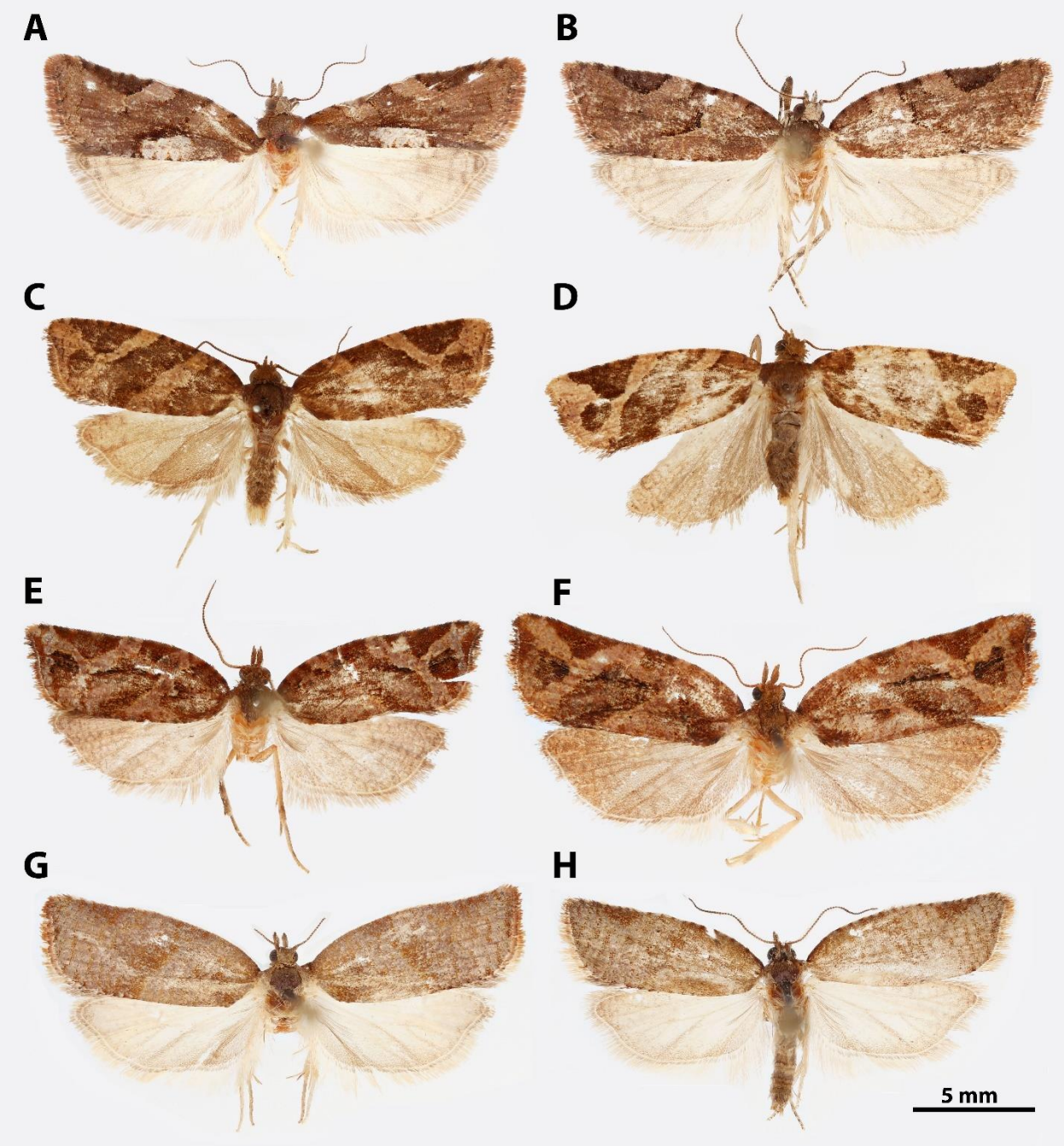

Figure 8. *Argyrotaenia* adults. **A.** *A. nuezana* holotype ♀, Dominican Republic (CMNH). **B.** *A. nuezana* ♂, Dominican Republic (CMNH). **C.** *A. cubae* ♂, Cuba (VBC**). D.** *A. cubae* ♀, Cuba (VBC). **E.** *A. browni* **sp. nov.** holotype ♂, Dominican Republic (CMNH). **F.** *A. browni* **sp. nov.** paratype ♀, Dominican Republic (CUIC). **G.** *A. razowskiana* **sp. nov.** paratype ♀, Dominican Republic (CMNH). **H.** *A. razowskiana* **sp. nov.** holotype ♂, Dominican Republic (CMNH).

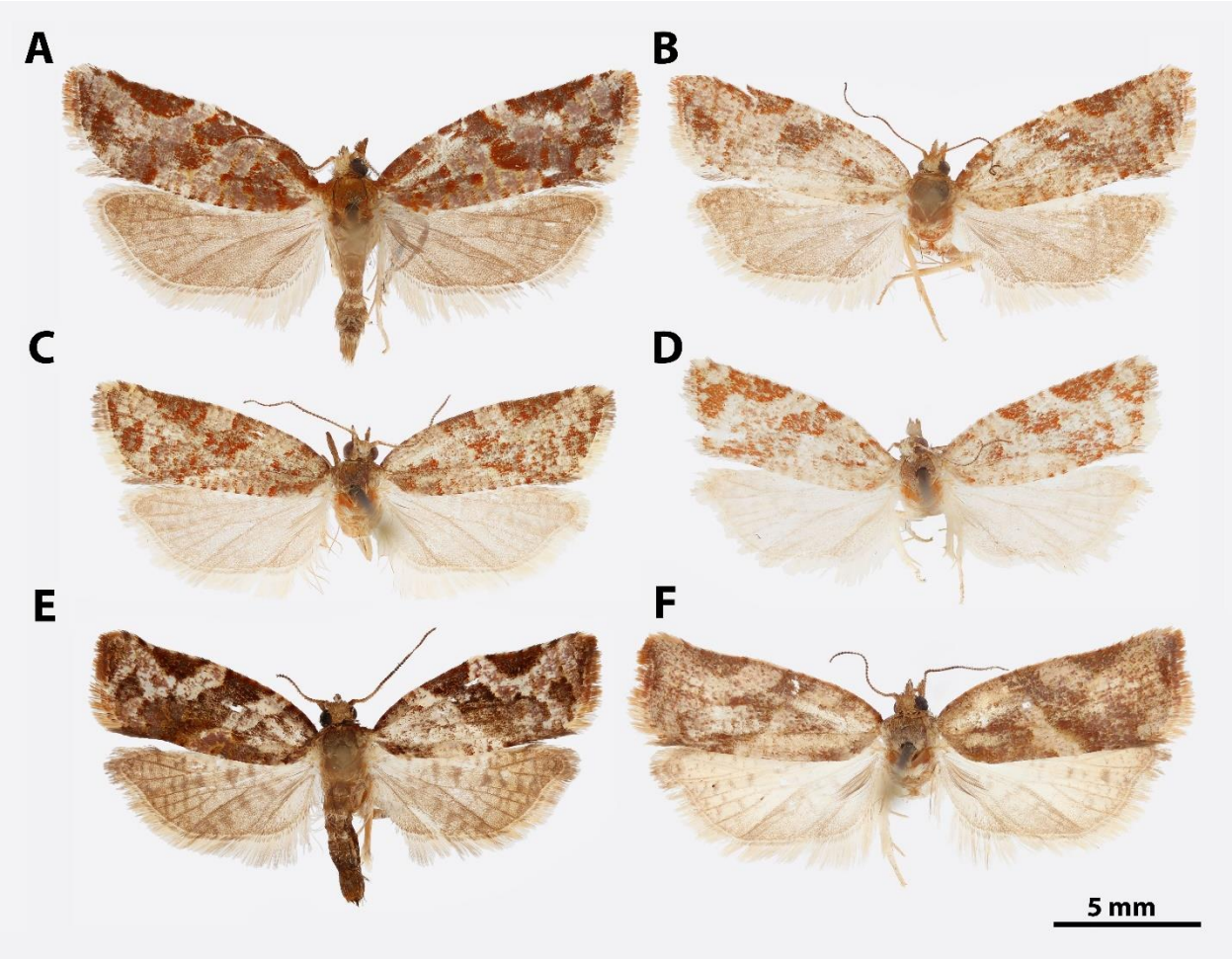

Figure 9. *Argyrotaenia* adults. **A.** *A. cryptica* **sp. nov.** holotype ♂, Dominican Republic (CMNH). **B.** *A. cryptica* **sp. nov.** paratype ♀, Dominican Republic (CMNH). **C.** *A. crpytica praeteritana* **ssp. nov.** holotype ♂, Dominican Republic (CMNH). **D.** *A. cryptica praeteritana* **ssp. nov.** paratype ♀, Dominican Republic (CMNH). **E.** *A. paradisei* **sp. nov.** holotype ♂, Dominican Republic (CMNH). **F.** *A. paradisei* **sp. nov.** paratype, ♀, Dominican Republic (CMNH).

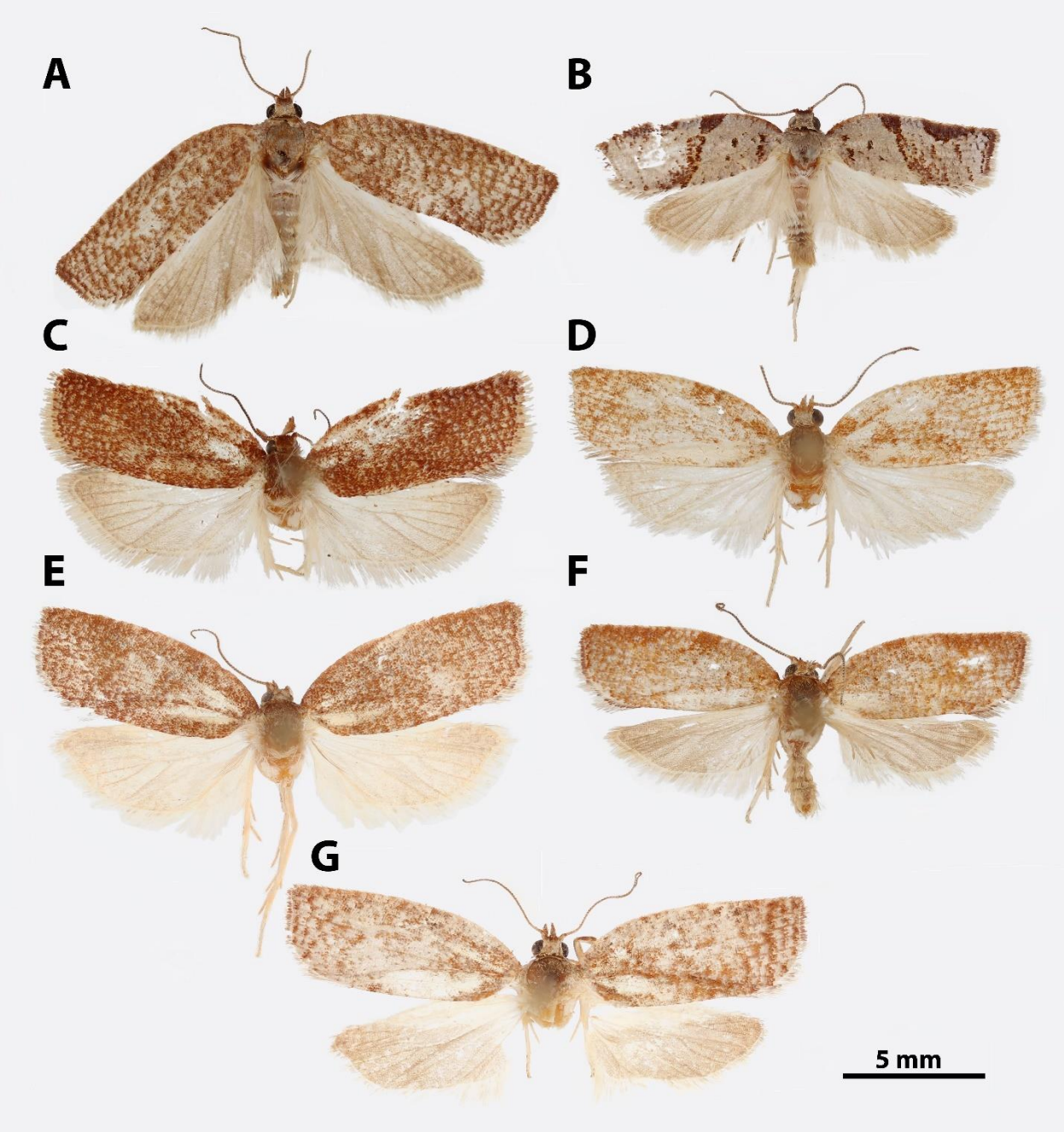

Figure 10. *Claduncaria ochrochlaena* group adults. **A.** *Cla. maestrana* ♀, Cuba (VBC). **B.** *Cla. maestrana* ♂, Cuba (VBC). **C.** *Cla. ochrochlaena* ♀, Dominican Republic (CMNH). **D.** *Cla. ochrochlaena* holotype ♂, Dominican Republic (CMNH). **E.** *Cla. rawlinsana* **sp. nov.** paratype ♀, Dominican Republic (CMNH). **F.** *Cla. rawlinsana* **sp. nov.** holotype ♂, Dominican Republic (CMNH). **G.** *Cla. praedictana* **sp. nov.** holotype ♀, Dominican Republic (CMNH).

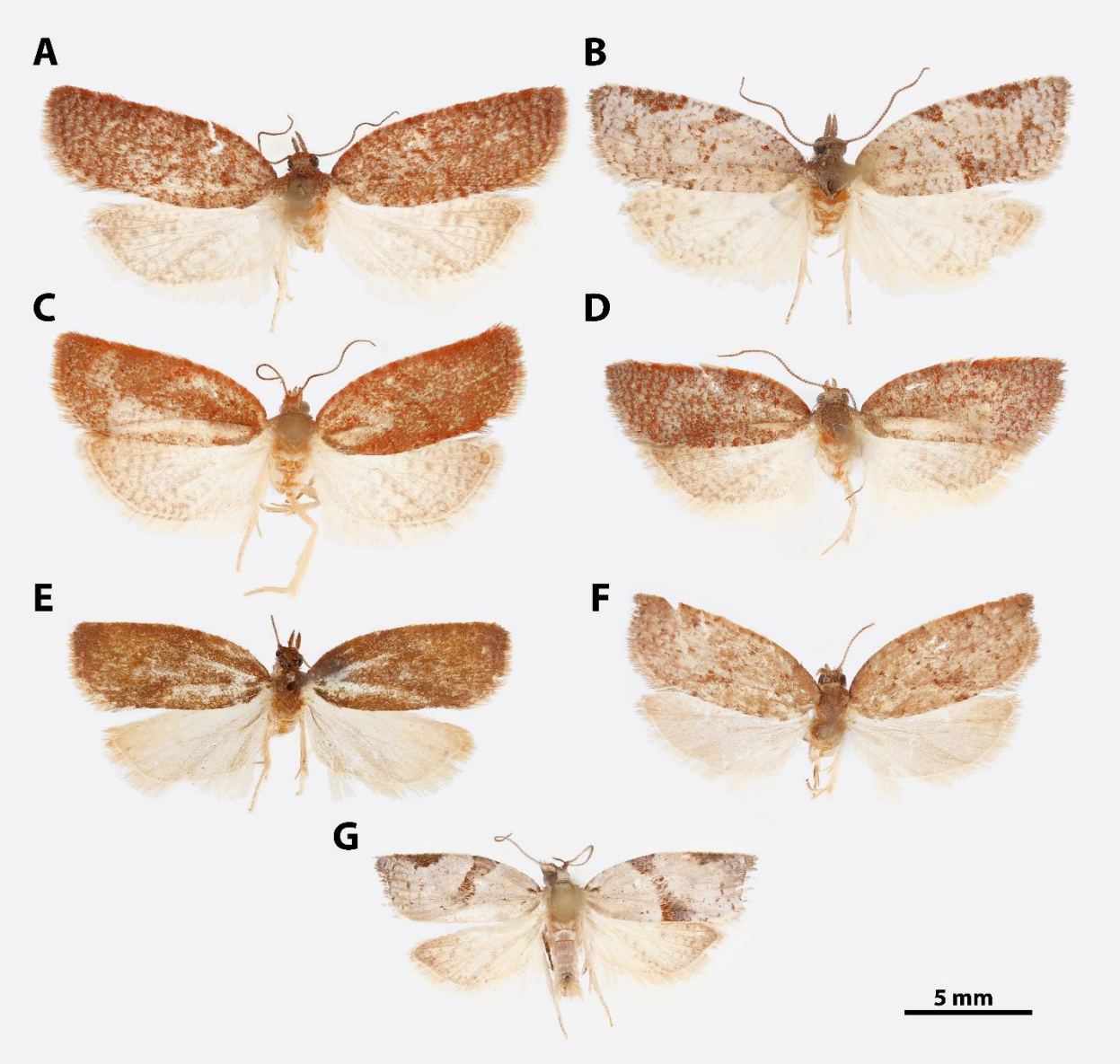

Figure 11. *Claduncaria mesosignaria* group adults. **A.** *Cla. mesosignaria* holotype ♀, Dominican Republic (CMNH). **B.** *Cla. mesosignaria* ♂ (holotype of *Argyrotaenia thamaluncus* **syn. nov.**), Dominican Republic (CMNH). **C.** *Cla. minisignaria* holotype ♀, Dominican Republic (CMNH). **D.** *Cla. minisignaria* ♂, Dominican Republic (CMNH). **E.** *Cla. chalarostium* **comb. nov.**, **stat. nov.** holotype ♀ (erroneously affixed with *Argyrotaenia jamaicana* paratype label), Jamaica (CMNH) **F.** *Cla. rufochlaena* holotype ♂, Jamaica (CMNH). **G.** *Cla. taino* **sp. nov.** holotype ♂, Dominican Republic. (CMNH).

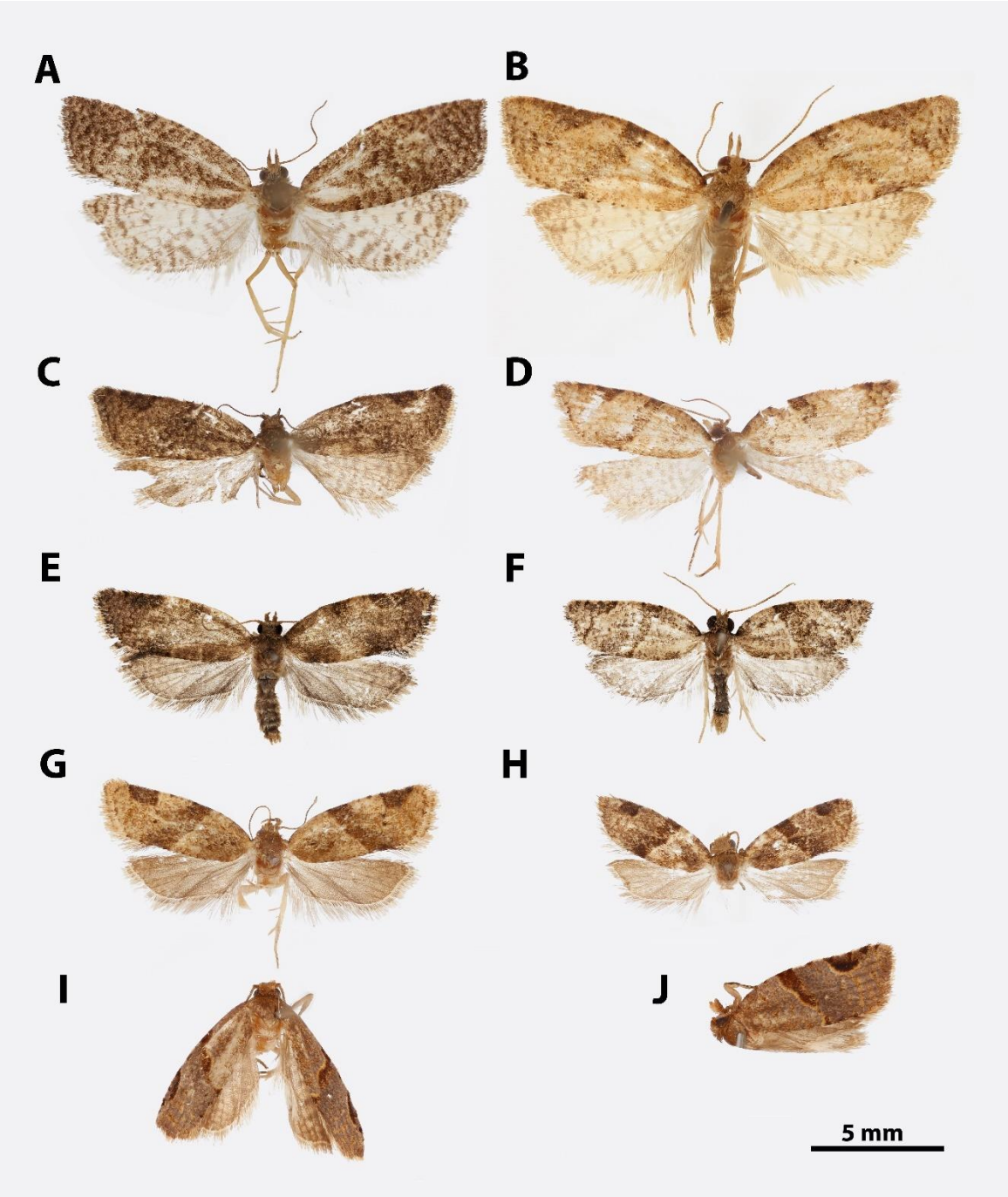

Figure 12. *Clepsis* adults. **A.** *Cle. deroni* **sp. nov.** holotype ♀, Dominican Republic (CMNH). **B.** *Cle. deroni* **sp. nov.** paratype ♂, Dominican Republic (CUIC). **C.** *Cle. jamesstewarti* **sp. nov.** holotype ♀, Dominican Republic (CMNH). **D.** *Cle. jamesstewarti* **sp. nov.** paratype ♂, Dominican Republic (CMNH). **E.** *Cle. davisi* **sp. nov.** holotype ♀, Guadeloupe (CUIC). **F.** *Cle. davisi* **sp. nov.** paratype ♂, Guadeloupe (CUIC). **G.** *Cle. peritana* ♀, Cuba (USNM). **H.** *Cle. peritana* ♂, Cuba (CUIC). **I.** *Cle. peroniae* **sp. nov.** holotype ♀, Dominican Republic, dorsal (USNM). **J.** same as previous, lateral, rotated for ease of comparison.

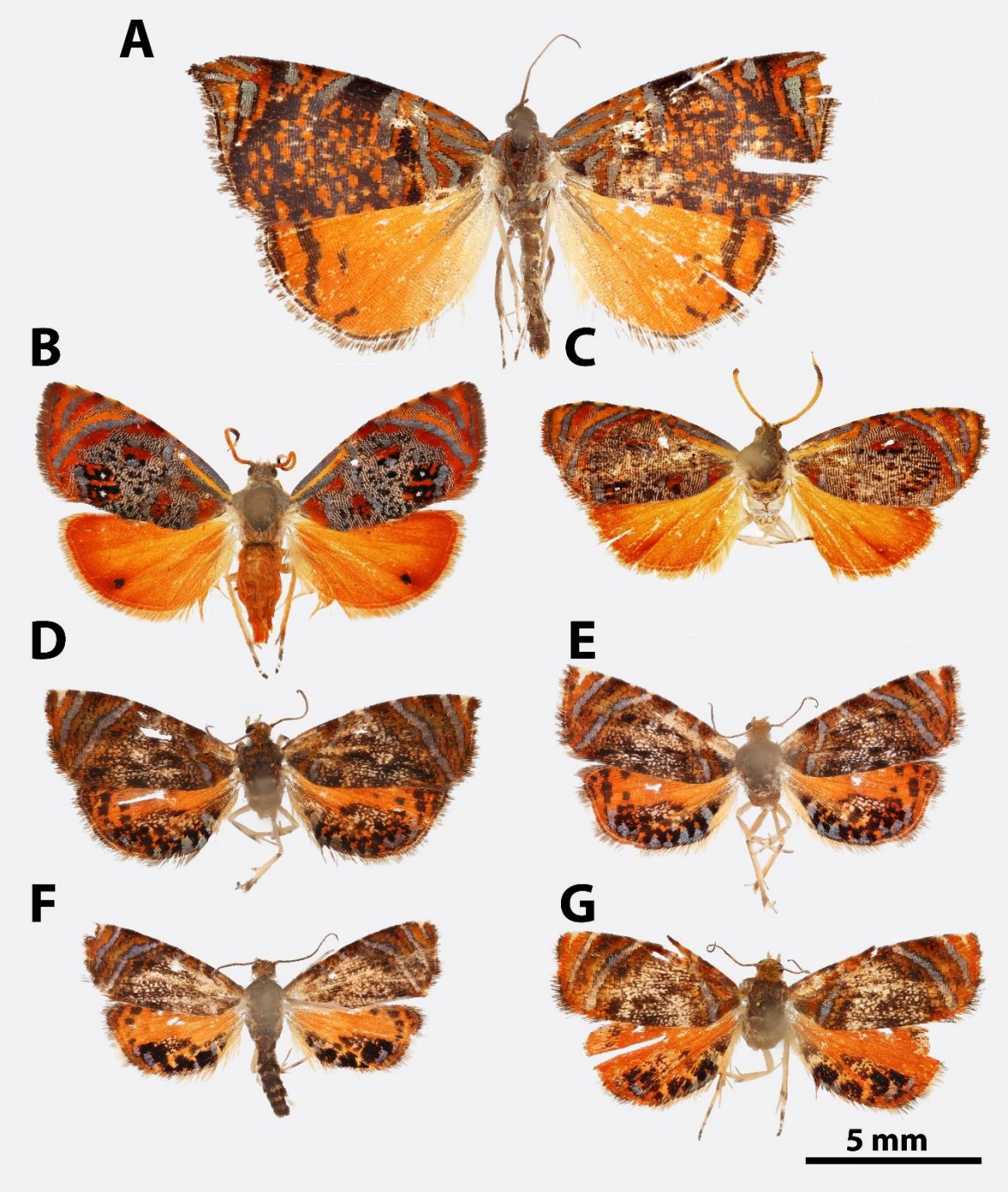

Figure 13. *Mictopsichia* group of genera. **A.** *Rubropsichia santaremana*, ♂, Grenada (BMNH). **B.** *Mictocommosis lesleyae* **sp. nov.** paratype, ♀, Dominican Republic (CUIC). **C.** *Mictocommosis lesleyae* **sp. nov.** holotype ♂, Dominican Republic (CMNH). **D.** *Mictopsichia cubae* ♂, Dominican Republic (CMNH). **E.** *Mictopsichia cubae* ♀, Dominican Republic. (CMNH). **F.** *Mictopsichia nyhllinda* **sp. nov.** holotype ♂, Dominican Republic. **G.** *Mictopsichia nyhllinda* **sp. nov.** paratype ♀ Dominican Republic (CMNH).

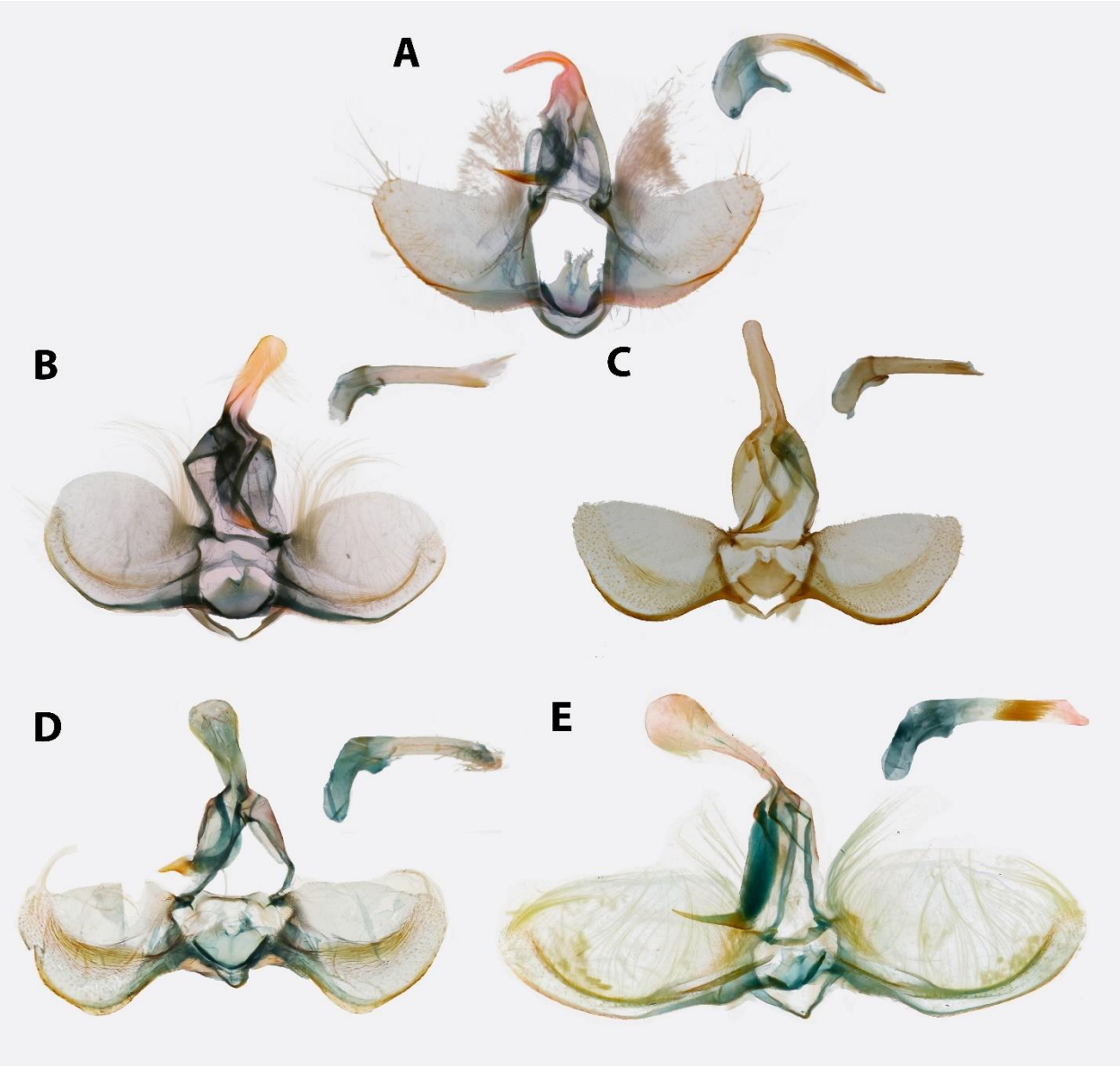

Figure 14. *Argyrotaenia* male genitalia. Not to scale. **A.** *A. ceramica*, Dominican Republic. KAA diss. #0089 (CMNH). **B.** *A. browni* **sp. nov.** holotype, Dominican Republic. KAA diss. #0097 (CMNH). **C.** *A. cubae*, Cuba. KAA diss. #0162 (VBC). **D.** *A. nuezana*, Dominican Republic. KAA diss. #0028 (CMNH). **E.** *A. felisana*, Dominican Republic. KAA diss. #0045 (CUIC).

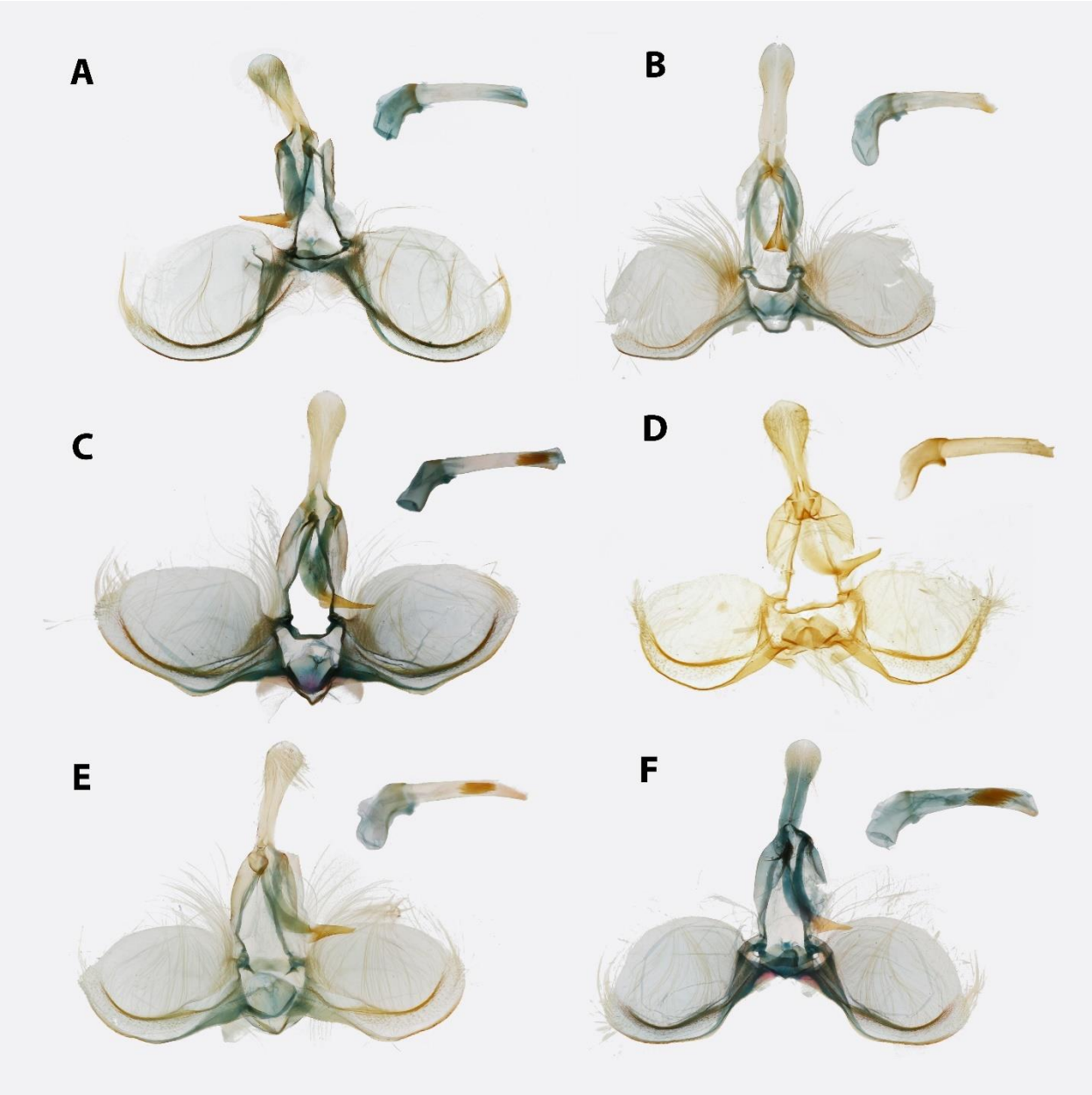

Figure 15. *Argyrotaenia* male genitalia. Not to scale. **A.** *A. bisignata* paratype, Dominican Republic. KAA diss. #0044 (CMNH). **B.** *A. jamaicana*, Jamaica. KAA diss. #0131 (USNM). **C.** *A. razowskiana* **sp. nov.** paratype, Dominican Republic. KAA diss. #0104 (CUIC). **D.** *A. cryptica praeteritana* **ssp. nov.** holotype, Dominican Republic. Razowski diss. #10732 (CMNH). **E.** *A. cryptica cryptica* **ssp. nov.** paratype, Dominican Republic. KAA diss. #0115 (CMNH). **F.** *A. paradisei* **sp. nov.** paratype, Dominican Republic. KAA diss. #0116 (CMNH).

Figure 16. *Argyrotaenia* female genitalia. Not to scale. **A.** *A. ceramica*, Dominican Republic. KAA diss. #0083 (CMNH). **B.** *A. browni* **sp. nov.** paratype, Dominican Republic. KAA diss. #0099 (CUIC). **C.** *A. cubae*, Cuba. KAA diss. #0163 (VBC). **D.** *A. nuezana*, Dominican Republic. KAA diss. #0024 (CMNH). **E.** *A. felisana*, Dominican Republic. KAA diss. #0081 (CMNH). **F.** *A. bisignata*, Dominican Republic. KAA diss. #0054 (CMNH).

Figure 17. *Argyrotaenia* female genitalia. Not to scale. **A.** *A. jamaicana*, Jamaica. KAA diss. #0127 (USNM). **B.** *A. vinalesiae*, Cuba. KAA diss. #0159 (VBC). **C.** *A. razowskiana* **sp. nov.** paratype, Dominican Republic. KAA diss. #0106 (CMNH). **D.** *A. paradisei* **sp. nov.** paratype, Dominican Republic. KAA diss. #0073 (CUIC). **E.** *A. cryptica cryptica* **ssp. nov.** paratype, Dominican Republic. KAA diss. #0171 (CMNH). **F.** *A. cryptica praeteritana* **ssp. nov.** paratype, Dominican Republic. Razowski diss. #10733 (CMNH).

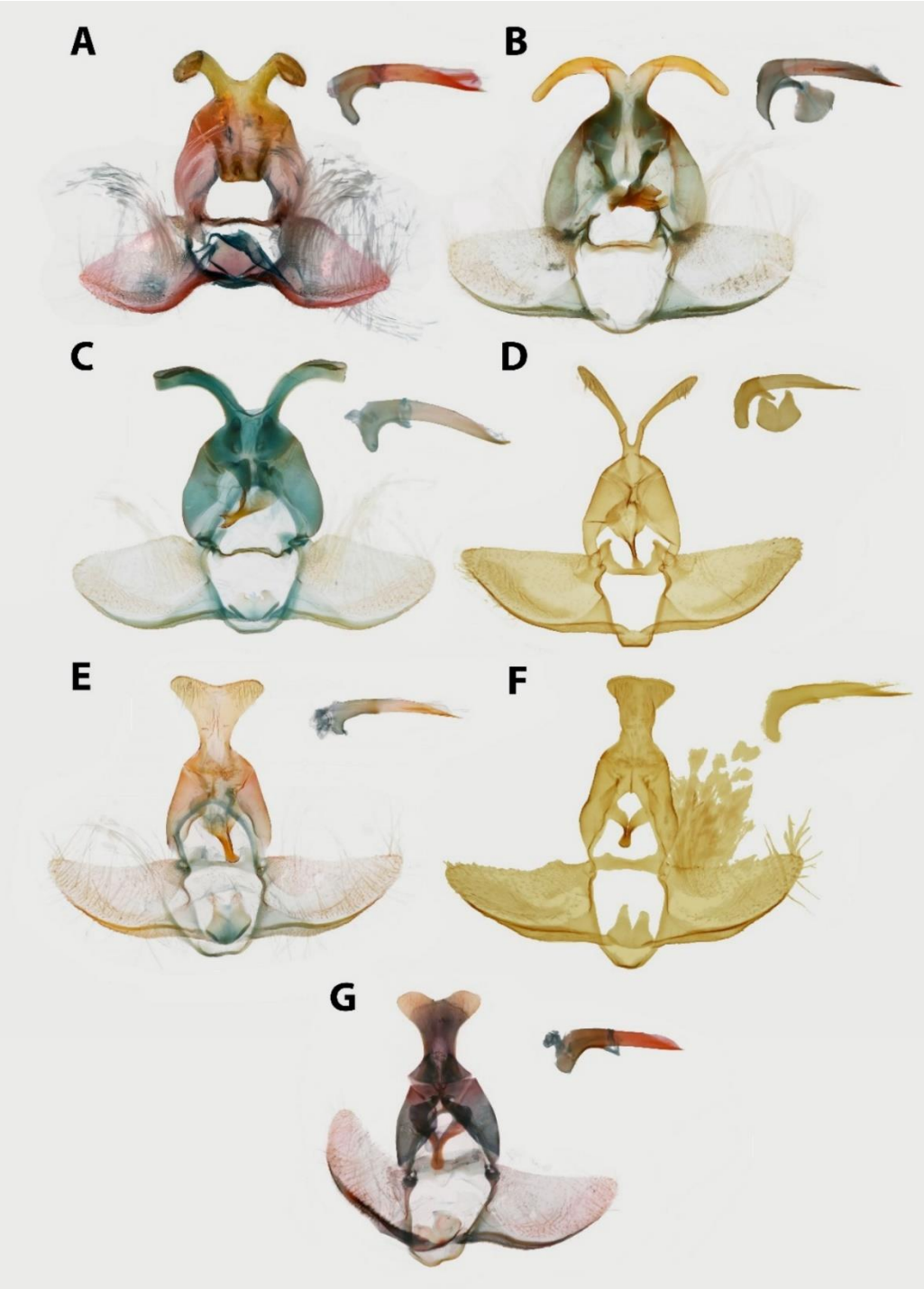

Figure 18. *Claduncaria* male genitalia. Not to scale. **A.** *Cla. maestrana*, Cuba. KAA diss. #0150 (VBC). **B.** *Cla. ochrochlaena*, Dominican Republic. KAA diss. #0120 (CMNH). **C.** *Cla. rawlinsana* **sp. nov.** paratype, Dominican Republic. KAA diss. #0121 (CUIC). **D.** *Cla. rufochlaena* holotype, Jamaica. Razowski diss. #12275 (CMNH). **E.** *Cla. mesosignaria*, Dominican Republic. KAA diss. #0112 (CMNH). **F.** *Cla. minisignaria*, Dominican Republic. Razowski diss. #10703 (CMNH). **G.** *Cla. taino* **sp. nov.** paratype, Dominican Republic. KAA diss. #0119 (CMNH).

Figure 19. *Claduncaria* female genitalia. Not to scale. **A.** *Cla. maestrana*, Cuba. KAA diss. #0154 (VBC). **B.** *Cla. ochrochlaena*, Dominican Republic. KAA diss. #0126 (CMNH). **C.** *Cla. rawlinsana* **sp. nov.** paratype, Dominican Republic. KAA diss. #0122 (CMNH). **D.** *Cla. praedictana* **sp. nov.** holotype, Dominican Republic. KAA diss. #0123 (CMNH) **E.** *Cla. chalarostium* **comb. nov., stat. nov.** holotype (erroneously labeled as paratype of *Argyrotaenia jamaicana*), Jamaica. Razowski diss. #12273 (CMNH). **F.** *Cla. minisignaria* holotype, Dominican Republic. Razowski diss. #10700 (CMNH). **G.** *Cla. mesosignaria*, Dominican Republic. KAA diss. #0108 (CUIC).

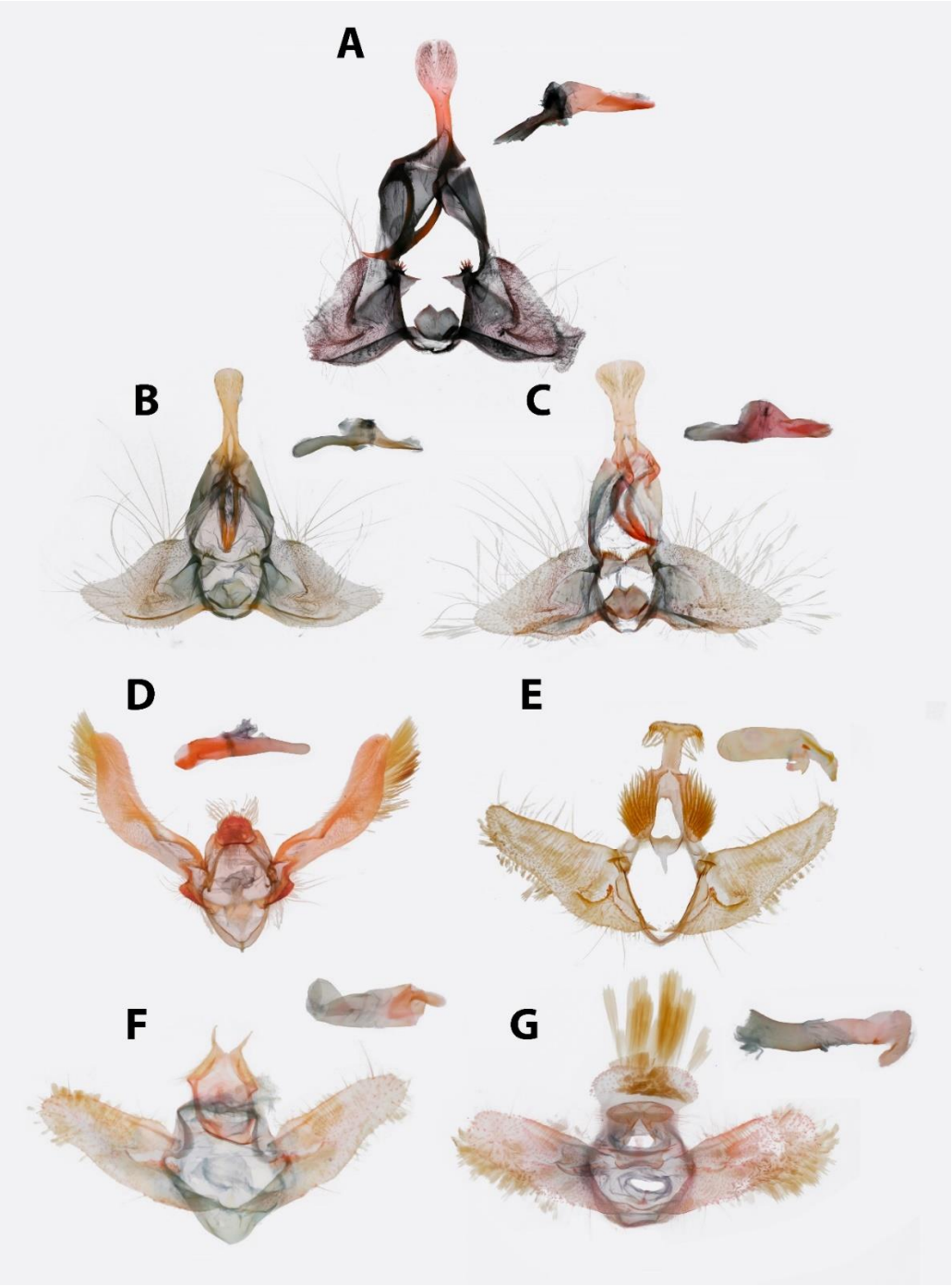

Figure 20. *Clepsis* and *Mictopsichia* group of genera male genitalia. Phallus inset. Not to scale. **A.** *Cle. deroni* **sp. nov.** paratype, Dominican Republic. KAA diss. #0057 (CMNH). **B.** *Cle. jamesstewarti* **sp. nov.** paratype, Dominican Republic. KAA diss. #0143 (CMNH). **C.** *Cle. davisi* **sp. nov.** paratype, Guadeloupe. KAA diss. #0184 (CUIC). **D.** *Rubropsichia santaremana*, Grenada. KAA diss. #0133 (BMNH). **E.** *Mictocommosis lesleyae* **sp. nov.** holotype, Dominican Republic. KAA diss. #0173 (CMNH). **F.** *Mictopsichia cubae*, Dominican Republic. KAA diss. #0130 (CMNH). **G.** *Mictopsichia nyhllinda* **sp. nov.** holotype, Dominican Republic. KAA diss. #0200; scaled tergite VIII left intact (CMNH).

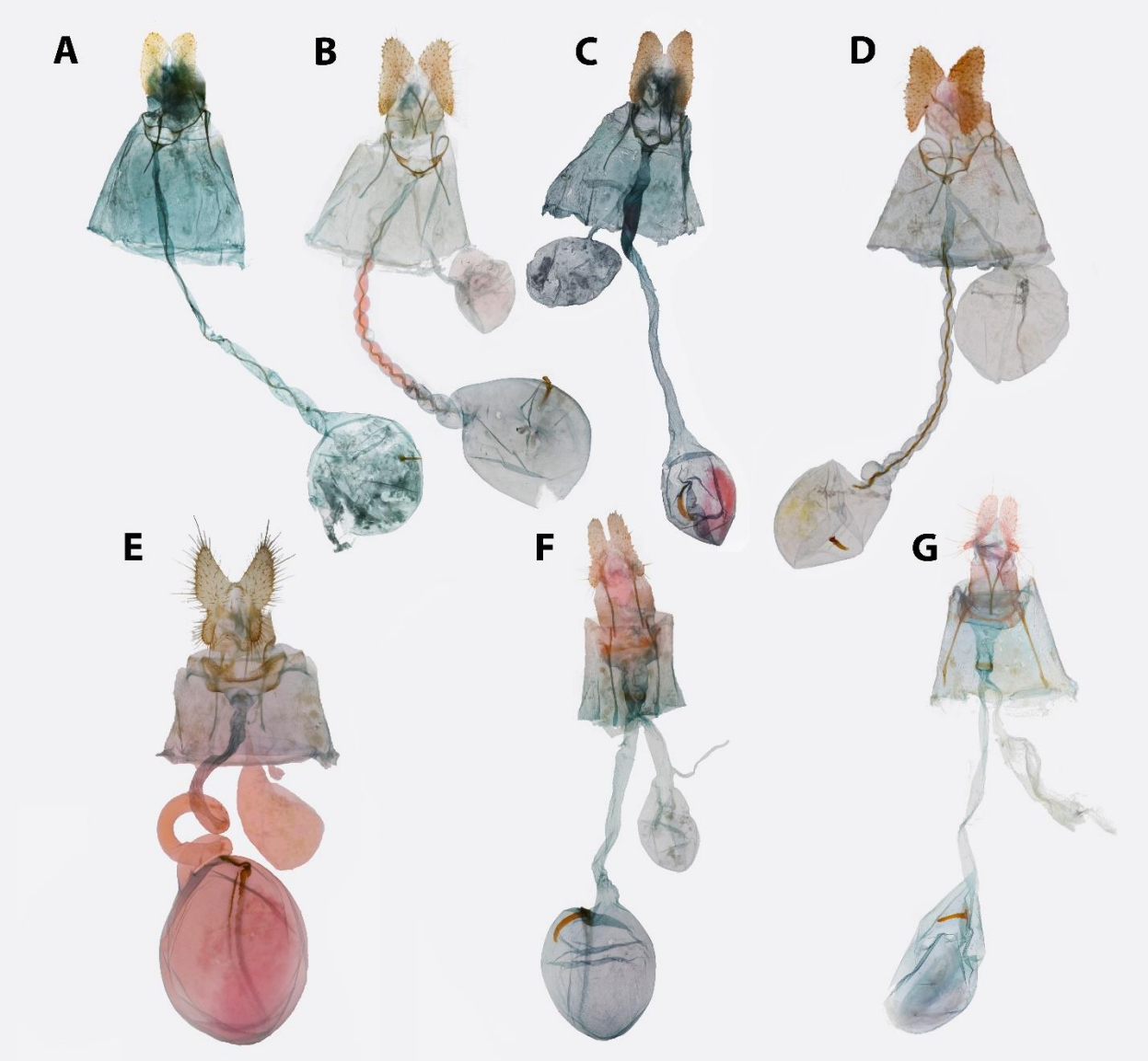

Figure 21. *Clepsis* and *Mictopsichia* group of genera female genitalia. Not to scale. **A.** *Cle. deroni* **sp. nov.** holotype, Dominican Republic. KAA diss. #0058 (CMNH). **B.** *Cle. jamesstewarti* **sp. nov.** holotype, Dominican Republic. KAA diss. #0149 (CMNH). **C.** *Cle. peroniae* **sp. nov.** holotype, Dominican Republic. KAA diss. #0140 (USNM). **D.** *Cle. davisi* **sp. nov.** holotype, Guadeloupe. KAA diss. #0183 (CUIC). **E.** *Mictocommosis lesleyae* **sp. nov.** paratype, Dominican Republic. KAA diss. #0175 (CMNH). **F.** *Mictopsichia cubae*, Dominican Republic. KAA diss. #0196 (CMNH). **G.** *Mictopsichia nyhllinda* **sp. nov.** paratype, Dominican Republic. KAA diss. #0199 (CMNH).

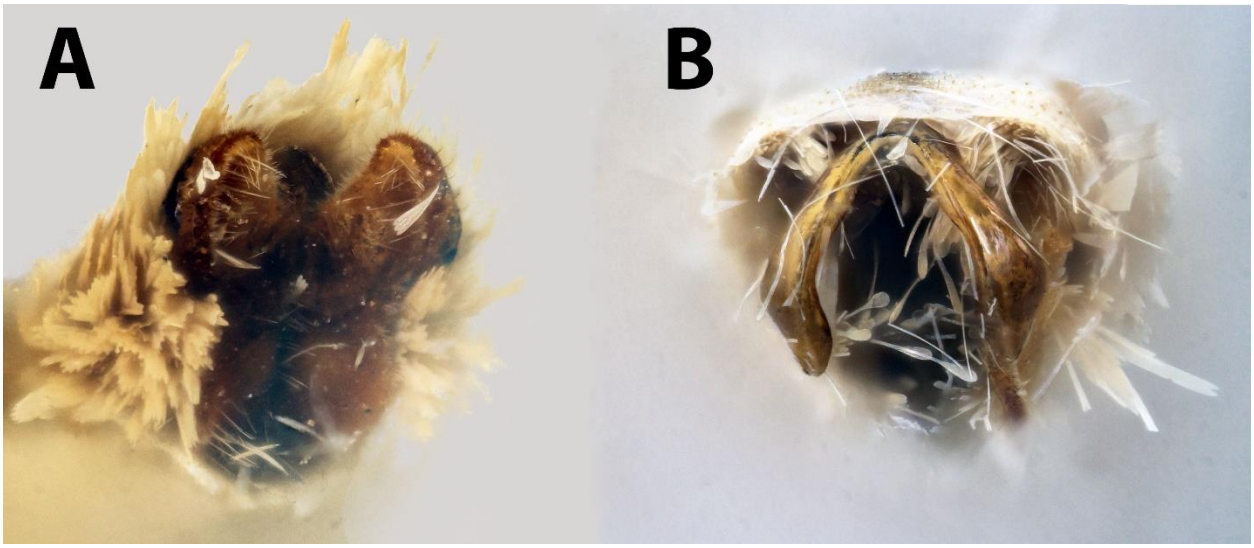

Figure 22. *Claduncaria maestrana* external genitalia. **A.** Female. **B.** Male**.**

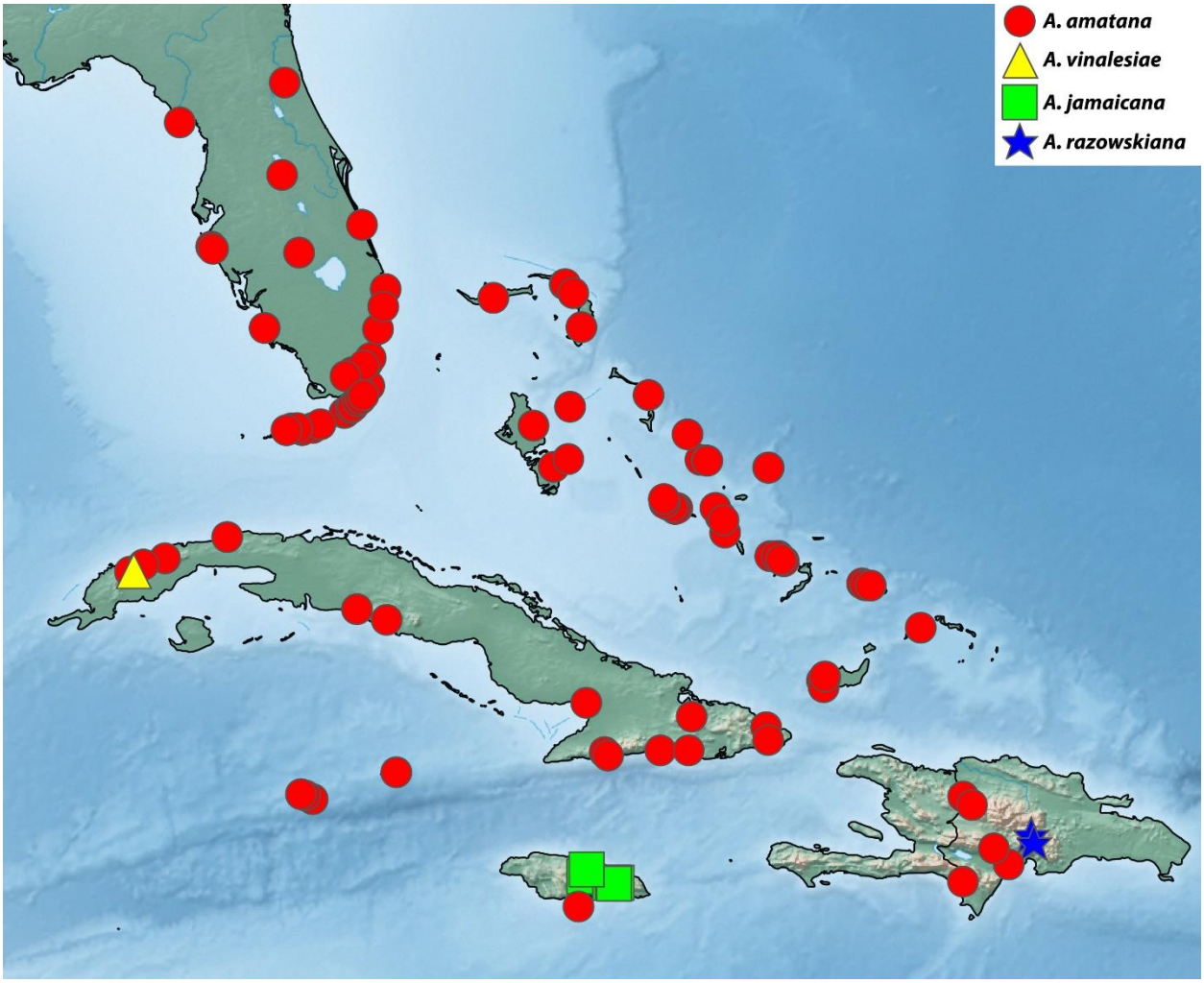

Figure 23. *Argyrotaenia* species distributions. Legend inset.

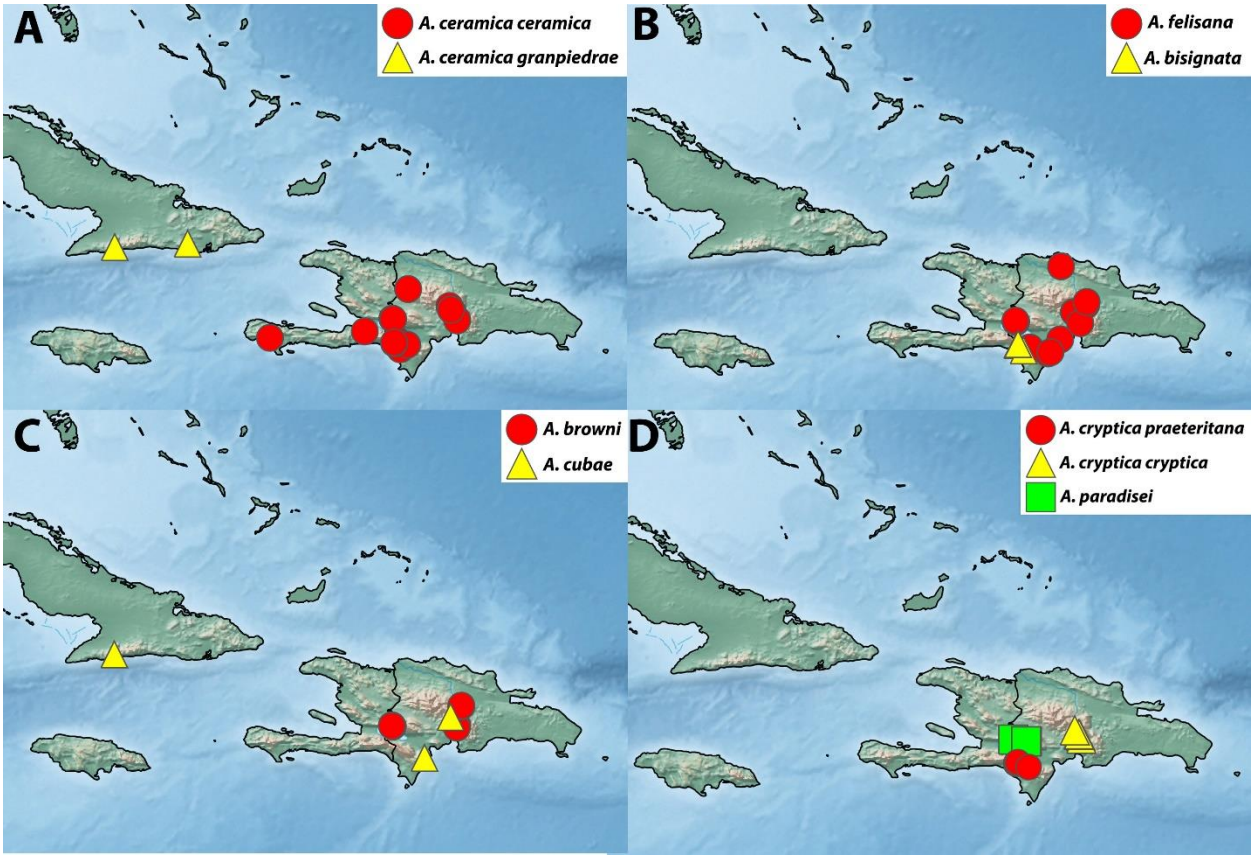

Figure 24. *Argyrotaenia* species distributions. Legends inset.

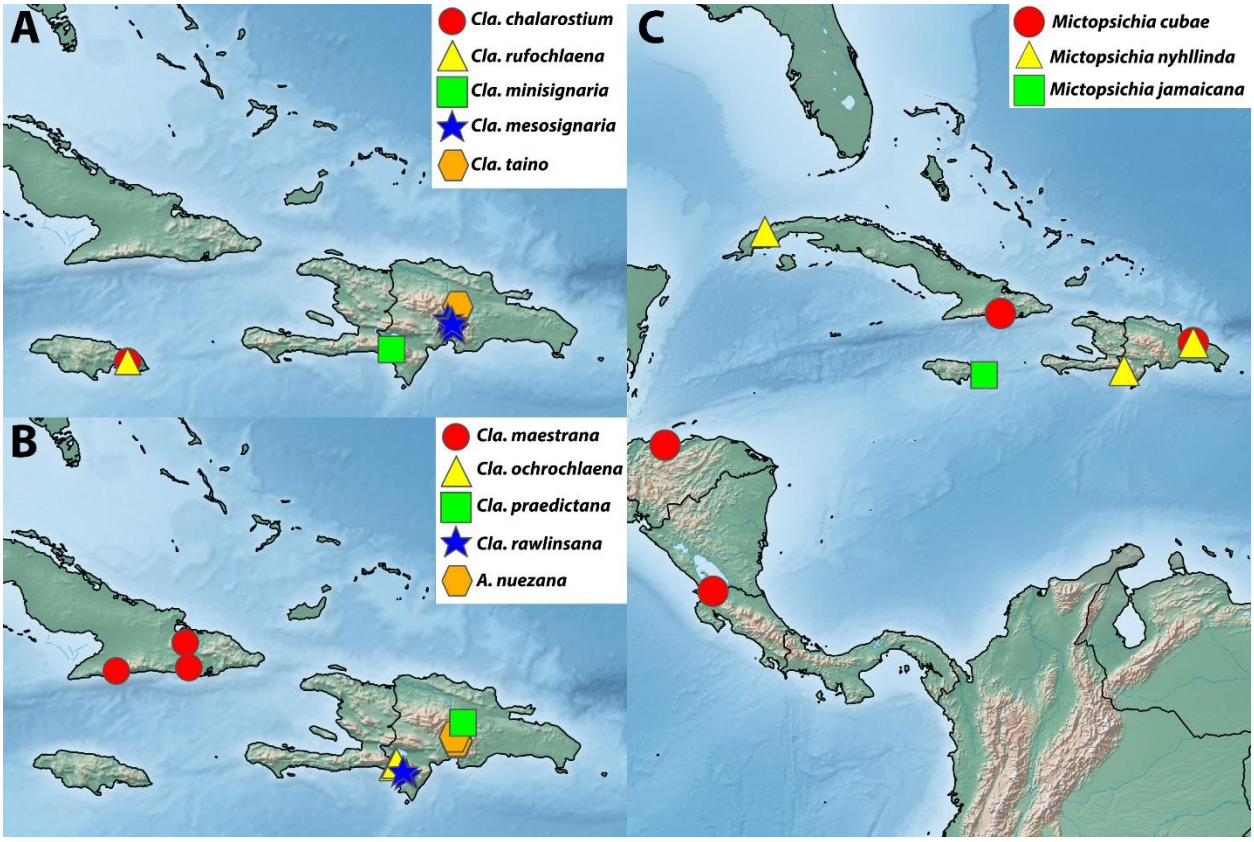

Figure 25. *Argyrotaenia*, *Claduncaria*, and *Mictopsichia* species distributions. Legends inset.

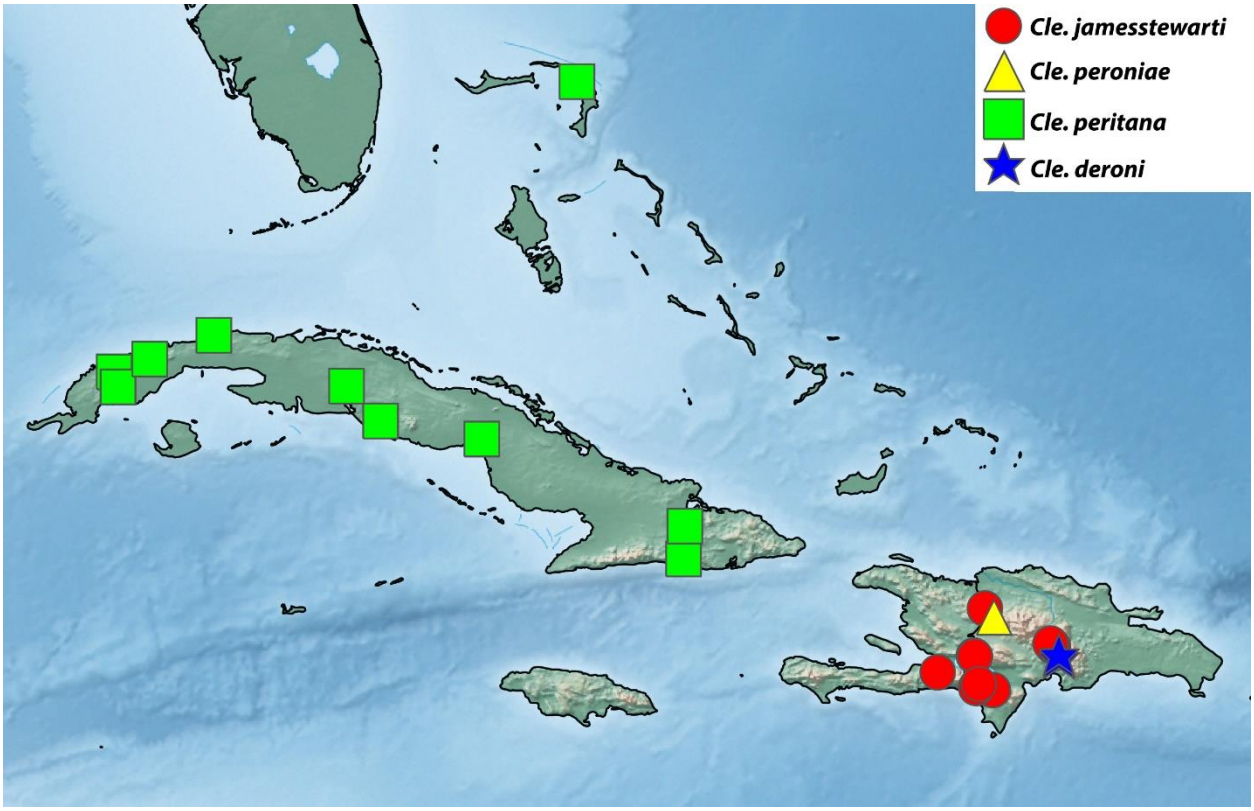

Figure 26. *Clepsis* species distributions. Legend inset. Florida records of *Cle. peritana* omitted.

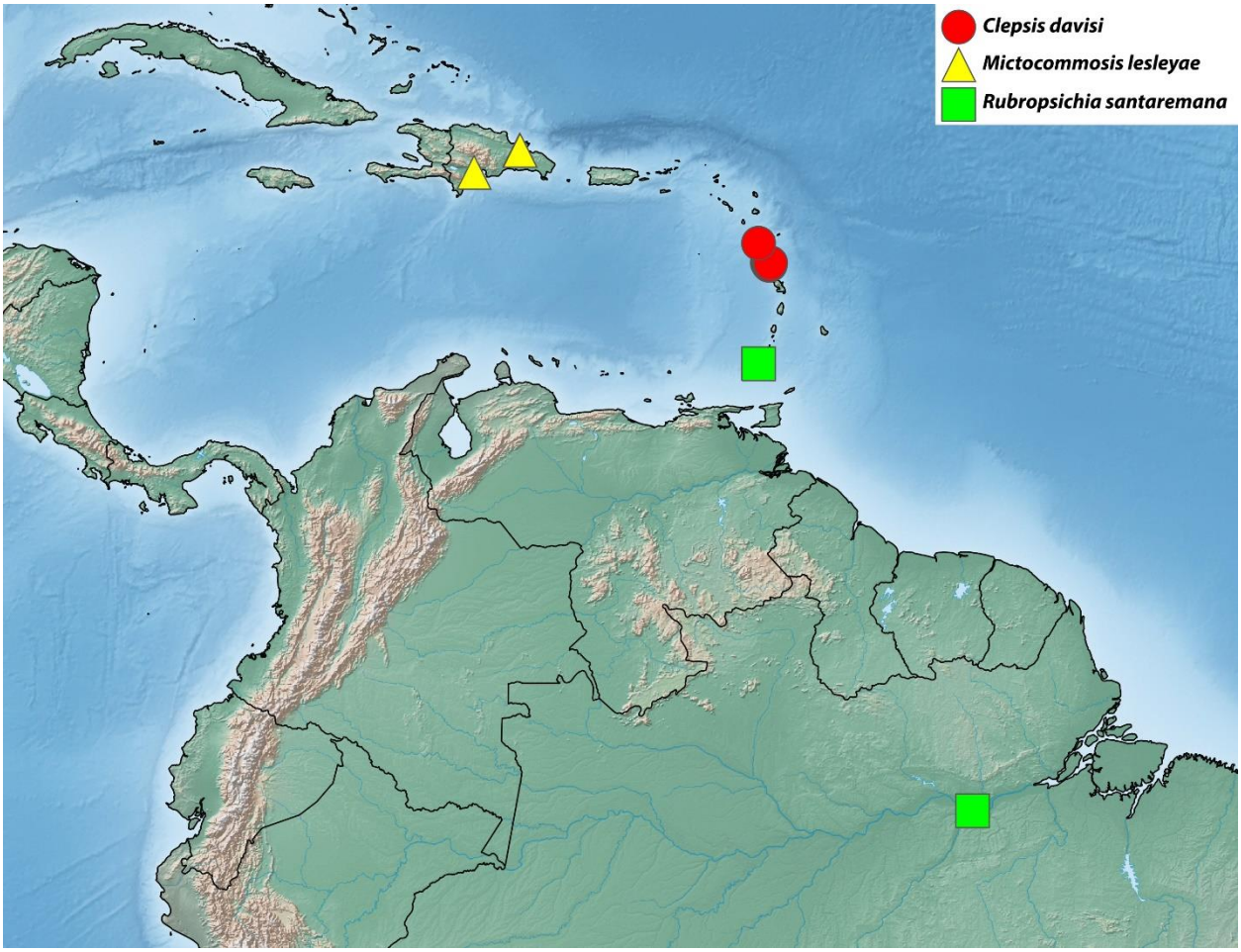

Figure 27. *Clepsis, Mictocommosis, and Rubropsichia* species distributions. Legend inset.