

New records of butterflies and moths (Lepidoptera) from Tobago, West Indies, with two new combinations and one new synonym in Erebiidae.

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ABSTRACT

Details of two new butterfly and 65 new moth records from Tobago are presented, including species of Aididae (1), Crambidae (8), Erebiidae (23), Euteliidae (1), Geometridae (12), Lasiocampidae (1), Limacodidae (1), Noctuidae (5), Nolidae (3), Notodontidae (2), Nymphalidae (2), Pyralidae (5), Sphingidae (2) and Tortricidae (1). All except one of these records are based solely on photographs from life, and representative images are included as vouchers. One duplicate record in the Tobago checklist is corrected and two species are reidentified. The total number of Lepidoptera species known from Tobago is now 524 moths and 159 butterflies. All newly reported species except one are also known from Trinidad (although some have not been previously published from Trinidad). *Rhosologia pantina* Schaus, 1901 is a **new synonym** of *Scolecocampa xanthipterygia* Kaye, 1901. *Ophisma ablunaris* Guenée, 1852, currently in the combination *Achaea ablunaris* is placed in the **new combination** *Mimophisma ablunaris*. *Bleptina dejecta* Schaus, 1916 is placed in the **new combination**, *Monochroides dejecta*.

Key words: Trinidad, Aididae, Crambidae, Erebiidae, Euteliidae, Geometridae, Lasiocampidae, Limacodidae, Noctuidae, Nolidae, Notodontidae, Nymphalidae, Pyralidae, Sphingidae, Tortricidae

ZooBank registration: <https://zoobank.org/urn:lsid:zoobank.org:pub:6A63241E-4C89-4259-82AC-C5E3D907E0E3>

INTRODUCTION

Trinidad and Tobago are two small islands off the northeast coast of South America with a combined land area of about 5100 km² and a maximum elevation slightly below 1000 m. Together with some very small associated islands, they make up the country Trinidad & Tobago. As continental islands, they have a biota that is a subset of that of the nearby South American mainland. The fauna of Trinidad is by far the better known of the two, and Tobago being further offshore has a biota that is largely a subset of that of Trinidad (Starr 2009, Cock 2017a, 2017b). Here, we use Trinidad & Tobago to refer to the country, whereas Trinidad and Tobago refer to the two separate islands.

The butterflies of Tobago are fairly well known, and an updated checklist of 150 species was recently published (Cock 2017a). Since then, seven species have been added to this total (Cock 2021b, Cock *et al.* 2022). In contrast, the moths of Tobago are not well known and only in 2017 was the first checklist of 355 species published (Cock 2017b). Cock and Kelly (2020) added 45 new records of moths from Tobago, based mostly on photographs taken by MK at the lights of his house near Englishman's Bay, Deo *et*

al. (2020) pointed out an old literature record, and Cock (2021b) added a further 11 moths based on images posted on iNaturalist (www.iNaturalist.org). Cock *et al.* (2022) added a further 49 moths based on the authors' images and photographic records from iNaturalist, and removed one misidentified species. Here we add new records of 65 moths and two butterflies, and remove one duplicate record. Most of these were observed when attracted to lights at night, but some were photographed during night walks (Deo *et al.* 2020). The total number of Lepidoptera species known from Tobago is now 524 moths and 159 butterflies. This is still a relatively small total for moths compared to the more than 742 species extrapolated by Cock (2003). Many more moth species are expected to occur in Tobago, particularly those of smaller size. All species newly recorded here from Tobago except *Glyphodes sibillalis* Walker (Crambidae) are also known to occur in Trinidad, although not all have been previously published as occurring in Trinidad.

We refer to material examined in the following collections: Matthew J.W. Cock's, private research collection (MJWC), The Natural History Museum, London, UK (NHMUK),

National Museums of Scotland (NMS), Oxford University Museum of Natural History (OUMNH), United States National Museum (USNM), and the University of the West Indies Zoology Museum, St. Augustine, Trinidad and Tobago (UWIZM). Identifications were made by comparison with the first author's collection of Trinidad Lepidoptera (MJWC), which have been named primarily in the context of the collections of NHMUK and USNM. In selected cases, we also refer to species' barcode index numbers (BINs) (Ratnasingham and Hebert 2013) as used in the Barcode of Life database (Hebert *et al.* 2003, <https://www.boldsystems.org/>).

Species are arranged by family alphabetically, and alphabetically within families; subfamilies (where used) are included in parentheses after each species heading. Comments on the status of each species in Trinidad are based on the first author's unpublished records; these indicate how commonly and in which habitats these species may occur in Tobago. The figures show photographs taken in Tobago, except as indicated. © in the figure legend refers to the photographer. As the photographs are without any indication of scale, the forewing length (F: base of forewing – wing tip) is provided in the figure legends based on Trinidad material in MJWC or the original descriptions.

AIDIDAE

Aidos amanda (Stoll, 1782)

This species has been reported from Trinidad by Lamont and Callan (1950) and Laurence (1974), and MJWC compared specimens with the NHMUK series. Known food plants in Trinidad include chenette, *Melicoccus bijugatus* Jacq. (Sapindaceae; Laurence 1974), cocoa, *Theobroma cacao* L. (Malvaceae; specimens in UWIZM), *Terminalia* (Combretaceae; specimens in MJWC and UWIZM), and an ornamental *Acalypha* (Euphorbiaceae, M.J.W. Cock unpublished). In Trinidad, this is an occasional but widespread species occurring in both forested and suburban areas. SMT photographed a female at Castara (Fig. 1).



Fig. 1. Female *Aidos amanda*, Castara, 15 September 2022, S.M. Tran (iNaturalist observation 135230466); F 25 mm.

CRAMBIDAE

Argyria lacteella (Fabricius, 1794) (Crambinae)

The identity of *A. lacteella* and some synonyms has been clarified by Landry *et al.* (2023), who considered that it is found from Florida and Mexico, through the Caribbean to Argentina. Further, the name *A. lacteella* has been applied to comparable Trinidad material by Kaye and Lamont (1927) and in both NHMUK and USNM, and so it is used here for matching material from Tobago photographed at Englishman's Bay by MK (22 January 2022, photo 1357), AED (Fig. 2) and MK (15 December 2022). However, specimens to dissect and/or DNA barcode are needed to confirm this treatment.



Fig. 2. *Argyria lacteella*, Englishman's Bay, at light, 3 December 2022, A. Deacon (iNaturalist observation 143615179); F 5.5–7 mm.

Arthromastix lauralis (Walker, 1859) (Spilomelinae)

This species has not previously been reported from Trinidad or Tobago. However, it is a widespread but uncommon species in Trinidad, with specimens from Curepe (20 August 1978, 10 November 1978, 13 January 1979), and photographic records from Penal (14 January 2010, K. Sookdeo) and St. Ann's (18 November 2019, M. Gibson, iNaturalist observation 35836413; Fig. 3). One of the Curepe specimens was identified by the late Michael Shaffer (NHMUK). Recently, John Morrall collected a male at Lowlands, Tobago, 28 June 2022 (now in MJWC).



Fig. 3. *Arthromastix lauralis*, Port of Spain, St. Ann's, 18 November 2019, M. Gibson (iNaturalist observation 35836413); F 13 mm.

***Ategumia matutinalis* (Guenée, 1854)**

This species was recorded from Trinidad by Kaye and Lamont (1927), based on specimens from Tabaquite (W.J. Kaye) and Palmiste (N. Lamont). However, MJWC did not find either of these specimens in NHMUK, NMS or UWIZM, and so could not confirm their identification. Nevertheless, this species is common in forested areas of Trinidad, where the caterpillars feed on *Miconia crenata* (Vahl) Michelang. (= *Clidemia hirta* (L.) D. Don.) (Melastomataceae) (Nakahara *et al.* 1992). MK photographed one at Englishman's Bay (Fig. 4).



Fig. 4. *Ategumia matutinalis*, Englishman's Bay, at light, 17 November 2022, M. Kelly; F 11 mm.

***Glyphodes sibillalis* Walker, 1859 (Spilomelinae)**

This species has not previously been recorded from Trinidad or Tobago, although it is widespread in the Neotropics, including the Caribbean. Stephen_WV photographed the first observation for the country near Castara (Fig. 5).

***Microthyris prolongalis* (Guenée, 1854) (Spilomelinae)**

Kaye and Lamont's (1927) record of this species from Trinidad is based on specimens from Verdant Vale (S. Kaye), Guaico (18 April 1915, N. Lamont) and 'Trinidad' (F.W. Jackson). MJWC examined Lamont's specimen (a male with abdomen missing) in NMS and Jackson's (two females) in NHMUK. It is a common and widespread species in Trinidad. SMT photographed a mating pair at Charlotteville during a night walk (Fig. 6). The male is in the lower half of the figure and can be distinguished by the strong lobe at the tornus of the hindwing, which is also useful for recognising this species.

***Neurophyseta* sp.**

This species is close to *Neurophyseta narcissusalis* (Walker), but is likely to be an undescribed species. There are no published records, but there are voucher specimens from



Fig. 5. Female *Glyphodes sibillalis*, Castara, Indus Springs, 15 November 2022, Stephen_WV (iNaturalist observation 142078103); F 11 mm; ©, under CC-BY-NC. The dark brown patches of the forewing and hindwing are actually transparent, with or without a yellow tint, and the dark brown colour here is due to the substrate showing through.



Fig. 6. Mating pair of *Microthyris prolongalis*, Charlotteville, by night, 13 November 2022, S.M. Tran (iNaturalist observation 142265613); F 13–14 mm.

Trinidad in MJWC, NHMUK, and UWIZM (Simla, Morne Bleu Textel). RND photographed the same species at light on the Tobago Main Ridge (Fig. 7).

***Petrophila opulentalis* (Lederer, 1863) (Acentropinae)**

This species has not been previously reported from Trinidad, but MJWC compared material from Arima Valley, Cumaca Road, and Hollis Reservoir with the type



Fig. 7. Female *Neurophyseta* sp., Tobago Main Ridge, 11.28 -60.60, at light, 4 December 2022, R. Deo (iNaturalist observation 143704515); F 6 mm.

(NHMUK Colombia) and NHMUK series. It seems to be a common species in Trinidad. However, this is a genus that needs much more work, so this identification should be considered provisional. It is now recorded from Tobago based on photographs from Englishman's Bay by MK (♀ 22 November 2021) and AED (Fig. 8).



Fig. 8. Female *Petrophila opulentalis*, Englishman's Bay, at light, 9 December 2022, A. Deacon (iNaturalist observation 144046072); F 7–7.5 mm.

***Pycnarmon* sp. (Spilomelinae)**

It is not clear whether the material examined from Trinidad represents a single species, or two species most readily separated by size, the smaller being recorded from the Nariva Swamp, and the larger from Curepe, Simla and Lalaja Ridge. One or both of these is likely to be *Pycnarmon levinia* (Cramer). AED photographed one at Englishman's Bay (Fig. 9), but further research on the genus and specimens from Tobago will be needed to evaluate this record.

***Wanda sadotha* Schaus, 1922 [misplaced] (Epipaschiinae)**
 [*Phidotricha baradata* Schaus, 1922 (Epipaschiinae)]
 Cock *et al.* (2022) reported and illustrated *Phidotricha baradata* from Tobago, but the figures have now been



Fig. 9. Male *Pycnarmon* sp., Englishman's Bay, at light, 3 December 2022, A. Deacon (iNaturalist observation 143615144); F 7–8 mm.

reidentified by M. Alma Solis, USDA Systematic Entomology Lab (pers. comm.). *Wanda sadotha* is misplaced in the genus *Wanda*, as it will need a new genus (Solis pers. comm.)

EREBIDAE

***Amolita sentalis* (Kaye, 1901)**

Kaye (1901) described and illustrated this small pale species from Tabaguite, Trinidad and Panama. Implicitly, the type should be the Trinidad specimen and it should be in NHMUK. However, Hampson (1910) refers to the Panama specimen as the type and lists eight males and a female from Trinidad in NHMUK, which MJWC has not examined. This species is fairly common, mostly in disturbed lowland areas of Trinidad. In Tobago, MK photographed a male attracted to light at Englishman's Bay (Fig. 10). Females are larger and usually more heavily marked, and we show a female photographed in Trinidad (Fig. 11) for comparison.



Fig. 10. Male *Amolita sentalis*, Englishman's Bay, at light, 17 November 2022, M. Kelly; F 8.5 mm.



Fig. 11. Female *Amolita sentalis*, La Romain, Concord, 25 January 2022, sheneller (iNaturalist observation 105808197); F 10–11 mm; ©, under CC-BY-NC.

***Antiblemma imitans* (Walker, 1858) (Eulepidotinae)**

Although not previously reported from Trinidad, this is an occasional species, particularly in the forested Northern Range. Trinidad material was identified by comparison with the NHMUK series. Here we report one record at light in the Tobago Main Ridge forest (Fig. 12) photographed by RND.



Fig. 12. Female *Antiblemma imitans*, Main Ridge, at light, 10 June 2022, R. Deo (iNaturalist observation 121324944); F 18 mm.

***Coremagnatha orionalis* (Walker, 1859) (Herminiinae)**

This species is known from Trinidad (Kaye and Lamont 1927), where it is occasional in both forest and suburban situations. RND photographed a male feeding at a guava bait on the Tobago Main Ridge (Fig. 13).

***Dyomyx cimolia* Guenée, 1852 (Eulepidotinae)**

This subfamily placement is not authoritatively documented, but we refer *Diomyx* to Eulepidotinae because the DNA barcodes of *Dyomyx* and *Eulepidotis* (the type genus of Eulepidotinae) are intermingled. This is a new record for both Trinidad and Tobago. MJWC identified the only



Fig. 13. Male *Coremagnatha orionalis*, Main Ridge, at guava bait by night: 10 June 2022, R. Deo (iNaturalist observation 121322211); F 18 mm.

known Trinidad specimen (Curepe, 22–31 May 1982) by comparison with the NHMUK series. Since then there have been two further records from Trinidad (Brasso Seco, 25 September 2021, R. Deo, iNaturalist observation 96328996; Blanchisseuse Lookout, 19 November 2022, S. Tran, iNaturalist observation 142456522), and here we report the first from Tobago, based on RND's photograph on the Main Ridge (Fig. 14).



Fig. 14. *Dyomyx cimolia*, Main Ridge, 4 December 2022, R. Deo (iNaturalist observation 143704691); F 21 mm.

***Dysgonia expediens* (Walker, 1858) (Erebinae)**

Kaye and Lamont (1927) did not know this species from Trinidad, where it is an uncommon species, mostly found in the forests of the Northern Range. Trinidad material was identified by comparison with the NHMUK series. A DNA barcode from Trinidad in BOLD (sample no EJS-TRIN-021) forms part of BIN BOLD:AEN6919. The current generic placement is incorrect (the type species of *Dysgonia* is an Old World species that is not closely related), and a new genus

will probably be needed for *D. expediens*, *D. purpurata* Kaye and related species. The first Tobago record of *D. expediens* is RND's photo at light on the Main Ridge (Fig. 15).



Fig. 15. *Dysgonia expediens*, Main Ridge, at light, 10 June 2022, R. Deo (iNaturalist observation 121321444); F 30 mm.

***Elysius conspersus* Walker, 1855 (Arctiinae)**

In spite of a specimen from Caparo in NHMUK dating back to the beginning of last century, this species has not previously been reported from Trinidad. MJWC collected one further specimen (Curepe, MVL, 18 December 1978) which he identified by comparison with the NHMUK series. RND's photograph from the Main Ridge (Fig. 16) is the first record from Tobago, and SMT's of 3 December 2022 from the same location (iNaturalist observation 143906873) is the second.



Fig. 16. Male *Elysius conspersus*, Main Ridge, at light, 10 June 2022, R. Deo (iNaturalist observation 121322497); F 27 mm.

***Epidromia* sp. (Erebinae)**

In spite of recent valuable work on this genus (Becker 2001, Lafontaine and Dickel 2008, Barbut 2009), more needs to be done to understand and characterise all species, delineate their distributions, and establish which (if any) characters can be relied upon to identify them from images. As an interim measure, DNA barcodes could be used to characterise

species, but none are available yet for Trinidad & Tobago. Judging from DNA barcodes four species of *Epidromia* are likely to be present in Trinidad: BOLD:AAA3449, BOLD:ABX5280, BOLD:AAB4684 (*E. poaphiloides* Guenée, 1852) and BOLD:AAC2736 (*E. dickeli* Barbut, 2009), but it is not clear which names should be applied to the first two BINs – possibly *E. lienaris* (Hübner, 1823) and *E. pannosa* Guenée, 1852. These two species as currently treated (Lafontaine and Dickel 2008) can only be reliably identified by their genitalia, and the variable females in particular lack useful characters for their separation. One of these species was recorded from Trinidad as *E. zetophora* Guenée (Kaye and Lamont 1927), and one or both of *E. lienaris* and *E. pannosa* is not uncommon in Trinidad, mainly in disturbed and suburban areas. The only record from Tobago is a female photographed by MG (Fig. 17). Specimens from Tobago will be needed to further evaluate which species are present there.



Fig. 17. Female *Epidromia* sp., Englishman's Bay, at light, 2 July 2022, M. Gibson (iNaturalist observation 124323737); F 20–21 mm.

***Eulepidotis hermura* (Schaus, 1898) (Eulepidotinae)**

This species has not previously been reported from Trinidad, but two females (Curepe, MVL, 24 December 1978; Mount St. Benedict, at light, 8 May 1995) collected by MJWC were identified by comparison with the USNM and NHMUK series. MG photographed adults at Englishman's Bay on 2 July 2022 (Fig. 18) and 9 July 2022 (iNaturalist observation 125532498).

***Eulepidotis perducens* (Walker, 1858) (Eulepidotinae)**

This species has not previously been recorded from Trinidad or Tobago. MJWC collected specimens at MV light at Curepe (♂ 7 November 1978, ? 23 November 1978) and Simla (♂ 14 June 1981, ♀ 30 July 1981, ♂ 9 October 1982), which he identified by comparison with the NHMUK



Fig. 18. *Eulepidotis hermura*, Englishman's Bay, at light, 2 July 2022, M. Gibson (iNaturalist observation 124491710); F 12 mm

series. Recently, Tarran P. Maharaj photographed a further individual at South Oropuche, Mon Desir (19 February 2022, iNaturalist observation 149125945). MG photographed one at Englishman's Bay (Fig. 19).



Fig. 19. *Eulepidotis perducens*, Englishman's Bay, at light, 5 July 2022, M. Gibson (iNaturalist observation 124955789); F 11 mm.

***Eulepidotis micca* (Druce, 1889) (Eulepidotinae)**

This is another species of *Eulepidotis* not previously recorded from Trinidad or Tobago, although there is a male specimen with no data label from Sir Norman Lamont's collection in NMS (the lack of a data label usually implies that the specimen was collected at Palmiste before April 1915). MJWC collected a female at Simla (6 August 1982) which he identified by comparison with NHMUK series. Since then RND photographed one in Upper Caura Valley (11 February 2023, iNaturalist observation 148577657) and Tarran P. Maharaj photographed one at South Oropuche, Mon Desir (19 February 2022, iNaturalist observation 149123347). MG's photograph (Fig. 20) is the first record from Tobago.

***Gonodonta sinaldus* Guenée, 1852 (Calpinae)**

This species is known from Trinidad (Lamont and Callan



Fig. 20. *Eulepidotis micca*, Englishman's Bay, at light, 15 July 2022, M. Gibson (iNaturalist observation 126413967); F 12 mm.

1950, Todd 1959), and MJWC identified Trinidad material from Todd (1959). This is an occasional and widespread species in both forested and suburban habitats in Trinidad, but MG's photograph from Englishman's Bay (Fig. 21) is the first record for Tobago.



Fig. 21. *Gonodonta sinaldus*, Englishman's Bay, at light, 2 July 2022, M. Gibson (iNaturalist observation 124491647); F 16–18 mm.

***Lascoria orneodalis* (Guenée, 1854) (Herminiinae)**

This species has previously been reported from Tobago as *Tortricodes orneodalis* (Longstaff 1912), but Cock (2017b) could not locate Longstaff's specimen in OUMNH and knew of no other records. A photograph by SMT on a night walk near Charlotteville (Fig. 22), confirms that this is a Tobago species. There is also a female specimen in poor condition in MJWC (Crown Point, at light, 15–17 May 1981), which is probably this species. A photograph by Tarran Maharaj (Fig. 23) shows a female from Trinidad, where this species is common and widespread, mostly in disturbed areas. The females of several *Lascoria* spp. are rather similar.



Fig. 22. Male *Lascoria orneodalis*, Charlotteville, by night, 13 November 2022, S.M. Tran (iNaturalist observation 142265617); F 9.5–11 mm.



Fig. 23. Female *Lascoria orneodalis*, Trinidad, South Oropouche, 28 November 2022, T.P. Maharaj (iNaturalist observation 143219527); F 11 mm; ©, under CC-BY-NC.

***Hypocala andremona* (Stoll, 1781) (Hypocalinae)**

This species has not been previously reported from Trinidad, although there are specimens from Curepe (♀ 29 August 1980, ♂ 1 September 1980, ♀ 16–19 December 1980, ♂ 28 May–2 June 1981) and Morne Bleu, Textel Installation (♂, ♀ 26 July 1978, ♀ 21 July 1989) in MJWC and UWIZM. MJWC identified these by comparison with the NHMUK series. A photographic record by MG (Fig. 24) is the first for Tobago.

***Macrodes cynara* (Cramer, 1775) (Calpinae)**

Kaye and Lamont (1927) recorded this species from Trinidad (as *M. gyges* (Cramer)) based on specimens in NHMUK and from Palmiste in RSM. MJWC has examined these and



Fig. 24. *Hypocala andremona*, above Englishman's Bay, 11.288 -60.674, 6 July 2022, M. Gibson (iNaturalist observations 125101149); F 18–21 mm.

identified further specimens, which show that this species is occasional and widespread in Trinidad, mostly in forested areas. RND photographed a female attracted to guava bait at Englishman's Bay (Fig. 25). This species is moderately sexually dimorphic, so a male from Trinidad is shown for completeness (Fig. 26).



Fig. 25. Female *Macrodes cynara*, Englishman's Bay, at guava bait by night, 3 December 2022, R. Deo (iNaturalist observation 143618871); F 25–27 mm.

***Micramma croceicosta* Schaus, 1916 (Herminiinae)**

This species was reported from Trinidad by Kaye and Lamont (1927) based on a specimen from Caparo in NHMUK. MJWC has examined this specimen and the type in USNM (♀, French Guiana). In Trinidad, this is an uncommon species in forested areas (Arima Valley, Brasso Seco). A female at guava bait photographed by RND is the first record for Tobago (Fig. 27)

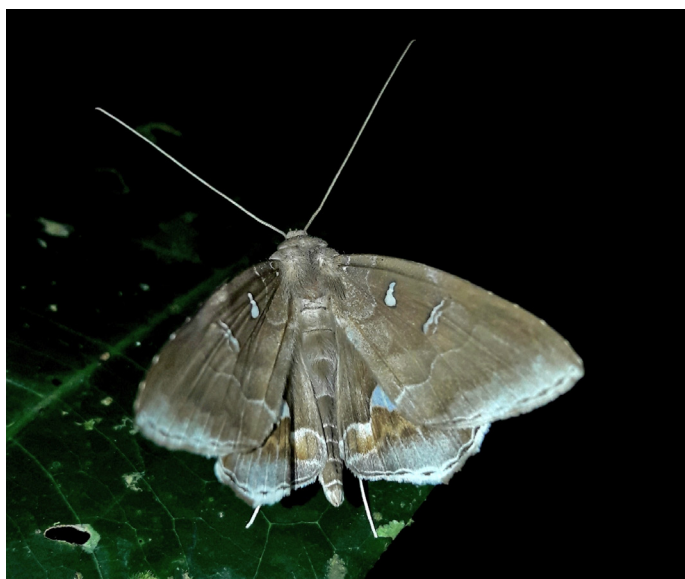


Fig. 26. Male *Macrodes cynara*, Trinidad, Trinity Hills Reserve, by night, 14 November 2020, R. Deo (iNaturalist observation 64982546); F 25–27 mm.



Fig. 27. Female *Micramma croceicosta*, Englishman's Bay, at guava bait by night, 3 December 2022, R. Deo (iNaturalist observation 143619016); F 14 mm.

***Mimophisma ablunaris* (Guenée, 1852) comb. nov.
(Erebinae)**

Guenée (1852) described *Ophisma ablunaris* from Colombia and *Ophisma delunaris* (unknown type locality). Hampson (1913) treated *ablunaris* in the Asian genus *Achaea* (type species *Noctua melicerta* Drury, a synonym of *Geometra janata* Linnaeus, a widespread Old World species). Druce (1881–1890) recognised *Ophisma delunaris* as occurring from Mexico to south-east Brazil. Hampson (1926) described *Mimophisma* and made *O. delunaris* the type species. The two species are similar and somewhat variable, *M. delunaris* being darker, but can be easily distinguished by the spined mid- and hind-tibiae of *A. ablunaris*, which are unspined in *M. delunaris* (J.G. Franclemont in Dickel 1991).

Mimophisma delunaris appears in BOLD as BIN BOLD:AAB2848 from Canada to Argentina, whereas *A. ablunaris* appears as BOLD:AAB7888, from Puerto Rico, and Costa Rica to south-east Brazil and Paraguay. The two BINs are only 4.69% different, and it is clear that *A. ablunaris* is not close to the Old World *Achaea* species, but instead belongs in the **new combination** *Mimophisma ablunaris*.

Kaye and Lamont (1927) recorded *Mimophisma delunaris* from Trinidad based on specimens from San Fernando (22 February [1916]) and Palmiste (16 April 1922), both collected by Sir Norman Lamont. MJWC examined these two specimens, which are now in NMS. They, and all other material examined from Trinidad of this common and widespread species, are *M. ablunaris*. A photograph by Rachael Williams-Littzen from near Black Rock (Fig. 28) is the first record from Tobago. A clearer picture from Trinidad (Fig. 29) is included for comparison.



Fig. 28. *Mimophisma ablunaris*, Buccoo to Black Rock, 20 November 2022, R. Williams-Littzen (iNaturalist observation 142641039); F 21–23 mm; ©, under CC-BY-NC.



Fig. 29. *Mimophisma ablunaris*, Trinidad, Wa Samaki Ecosystems, 23 July 2022, R. Deo (iNaturalist observation 127612632); F 21–23 mm.

Monochroides sp. (Herminiinae)

The genus *Monochroides* Kaye and Lamont was inadvertently introduced by Kaye and Lamont (1927) for *M. olivescens* (Warren, 1889), based on a Hampson manuscript on Herminiinae that was never published. Because of this, the genus has never been properly defined, nor other members clarified. There are at least three similar-looking species of *Monochroides* found in Trinidad (Fig. 30): *M. olivescens*, a very similar but larger species with different male genitalia which appears to be unnamed (*Monochroides* sp.), and *Bleptina dejecta* Schaus, 1916. The last-named closely resembles *M. olivescens* rather than other species currently placed in *Bleptina*, including the type species *B. caradrinalis* Guenée, so it is appropriate to transfer it to the new combination *Monochroides dejecta*.

Of the three Trinidad species, *Monochroides* sp. is clearly larger (F 15–16 mm) than *M. dejecta* (F 14 mm) and *M. olivescens* (F 12–13 mm); *M. dejecta* is a paler brown than the dark olive-brown of *M. olivescens* and *M. sp.*; the forewing white discal dot is strongest in *Monochroides* sp. (which may also have a smaller white dot distal to this), and more or less absent in *M. dejecta*; the hind wing discal dot of *Monochroides* sp. and *M. olivescens* is white, but in *M. dejecta* it is black. It is very difficult to separate *M. olivescens* and *Monochroides* sp. in photos without a scale.

SMT's photograph (Fig. 31 taken on a night walk at Charlotteville is *Monochroides* sp. based on markings and estimated size; it is the only record to date of a *Monochroides* from Tobago.

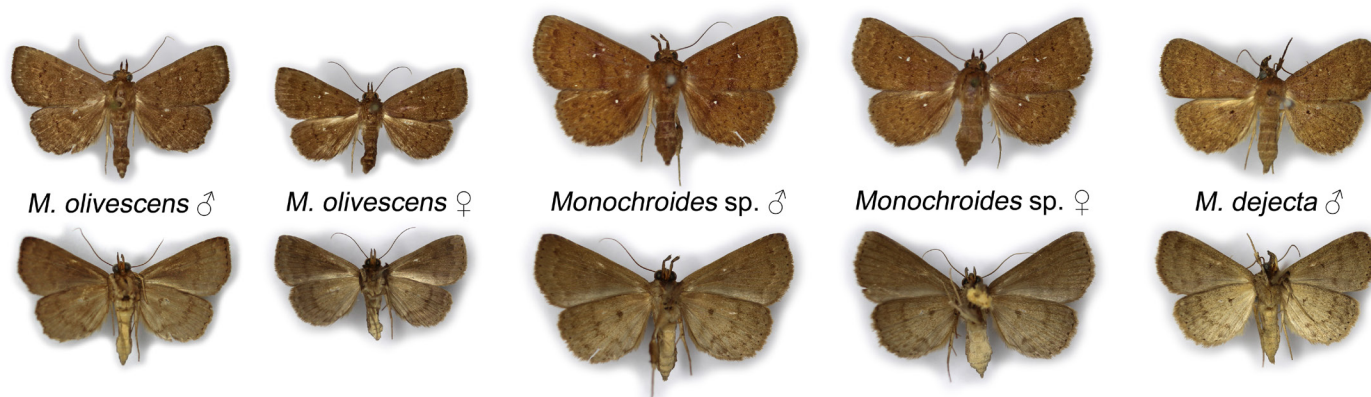


Fig. 30. *Monochroides* spp. *M. olivescens* ♂, Curepe, MVL, 18 December 1978; *M. olivescens* ♀, Cumaca Road, 4.6 miles, MVL, 18 July 1981; *M. sp.* ♂, Morne Bleu, Textel Installation, at light, 14 October 1980; *M. sp.* ♀, Arima Valley, Simla, MVL, 6 August 1982; *M. dejecta* ♂, Curepe, MVL, 18 October 1979. Life size.



Fig. 31. *Monochroides* sp., Charlotteville, by night, 13 November 2022, S.M. Tran (iNaturalist observation 142265612).

Plusiodonta clavifera (Walker, 1869) (Calpinae)

This species was recorded from Trinidad by Kaye and Lamont (1927), and MJWC confirmed this identification by reference to the NHMUK. It is an occasional and widespread species in disturbed lowland areas Trinidad. SMT's photograph (Fig. 32) taken on a night walk at Charlotteville is the first record from Tobago.

Rejectaria sp. nr. *arata* Druce (Herminiinae)

This is an uncommon species from the forested Northern Range of Trinidad (Brasso Seco, Cumaca Road, Morne Bleu), which MJWC did not find in NHMUK or USNM. RND photographed a male attracted to guava bait by night on the Main Ridge of Tobago (Fig. 33).

Rejectaria theclalis Walker, [1859] (Herminiinae)

This is an occasional species of the forests of the Northern Range (Brasso Seco, Cumaca Road), that has not previously been reported from Trinidad. In Trinidad, it has most frequently been seen when attracted to fruit baits, and RND photographed a male attracted to guava bait by night on the Main Ridge of Tobago (Fig. 34).

Salia anna (Druce, 1891) (Herminiinae)

This species is a new record for both Trinidad and Tobago. MJWC identified a male from Curepe (MVL, 4 February 1979) by comparison with the type (NHMUK, ♂ Panama). Since then photographic records by RND and AED show this to be an occasional species in Trinidad, predominantly in forested areas. RND photographed females at what seemed to be damaged or fermented flowers (Inniss Field, 16 April

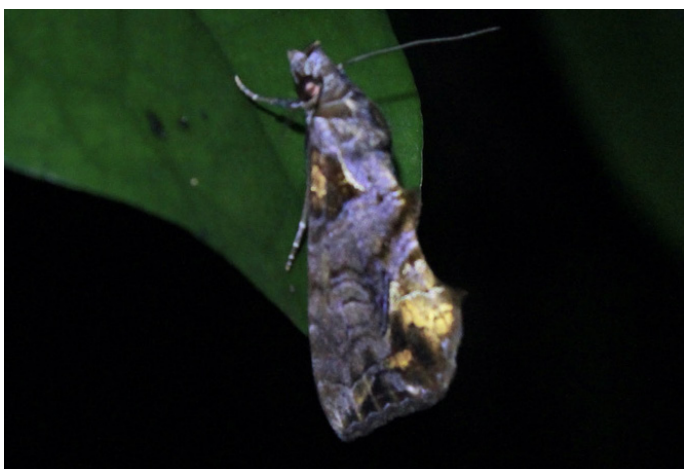


Fig. 32. *Plusiodontia clavifera*, Charlotteville, 13 November 2022, S.M. Tran (iNaturalist observation 142265618); F 14 mm.



Fig. 33. Male *Rejsectaria* sp. nr. *arata*, Main Ridge, at guava bait by night, 10 June 2022, R. Deo (iNaturalist observation 121323787); F 14 mm.



Fig. 34. Male *Rejsectaria theclalis*, Main Ridge, at guava bait by night, 10 June 2022, R. Deo (iNaturalist observation 121324223); F 14 mm.

2021, iNaturalist observation 74383171) and at *Rollinia* bait (Wa Samaki Ecosystems, 15 January 2021, iNaturalist observation 68136666). He also photographed a female at guava bait at Englishman's Bay (Fig. 35). The male has long pale brown labial palps that extend back over the head (Fig. 36).



Fig. 35. Female *Salia anna*, Englishman's Bay, at guava bait by night, 3 December 2022, R. Deo (iNaturalist observation 143618502); F 14 mm.



Fig. 36. Male *Salia anna*, Trinidad, Wa Samaki Ecosystems, by night, 30 November 2022, R. Deo (iNaturalist observation 143408571); F 14 mm.

Scolecocampa xanthipterygia (Kaye, 1901) (*Scolecocampinae*)

Species currently placed in *Scolecocampa* were placed in the genus *Herminodes* (and often still are on the internet), but Franclemont (1949) made *Herminodes* a synonym of *Scolecocampa*. Kaye (1901) described and illustrated *S. xanthipterygia* (Kaye) from Trinidad, and the male type (Fig. 39A) was examined in NHMUK. Based on a review of Trinidad material to hand, this seems to be a moderately variable species, in colour, markings, size and wing proportions (Figs. 37A–F), and this was confirmed by examination of the male genitalia of three dissimilar examples (Figs. 37C, D, F). The congeneric North American species *S. liburna* (Geyer) is similarly variable (Pogue 2012), which may be linked to the caterpillar feeding on dead wood, which is likely to be variable in quality.

Rhosologia pantina Schaus, 1901 was described from Trinidad (Schaus 1901), and the type (Fig. 37B) was examined in USNM. Given the demonstrated variability of *S. xanthipterygia*, and the common type locality, it is clear that *Rhosologia pantina* Schaus, 1901 is a **new synonym** of *S. xanthipterygia* Kaye, 1901, the latter being published 10 July 1901 (taken from journal end papers), and the former in August 1901 (journal part date).

There is a second species of this group in Trinidad of which one male was available (Fig. 37G); it can be separated by the male genitalia (Fig. 38), but the markings are almost identical, and although this second species has broader forewings in the male, we hesitate to conclude that this character is diagnostic based on the single male available. The forewing costa is slightly concave in most examples of male *S. xanthipterygia* (Figs. 37A–F), but straight in the

single male of the second species (Fig. 37G). The single female of this group to hand (Fig. 37H) is larger, with broader, more rounded wings, and could be associated with either species. Further research, with more material and DNA barcodes will help clarify these species.

Schaus, Trinidad [USNM]. **C**, Cumaca Road, 4.6 miles, MVL, 18 July 1981. **D**, Cumaca Road, 0.5 miles, MVL, 27 October 1980 [genitalia 1177]. **E**, Arima Valley, Simla, MVL, 12 February 1982. **F**, Valencia Forest, MVL, April 1980 [genitalia 1174]. **G**, *Scolecocampa* sp. male, Arima Valley, Simla, MVL, 6 August 1982 [genitalia 1175]. **H**, *Scolecocampa* sp. female. Arima Blanchisseuse Road, milestone 9 $\frac{3}{4}$, MVL, 9 November 1978. A–B enlarged, C–H life size.

Given the foregoing, the identification of photographs of these two species is challenging. The five photographs

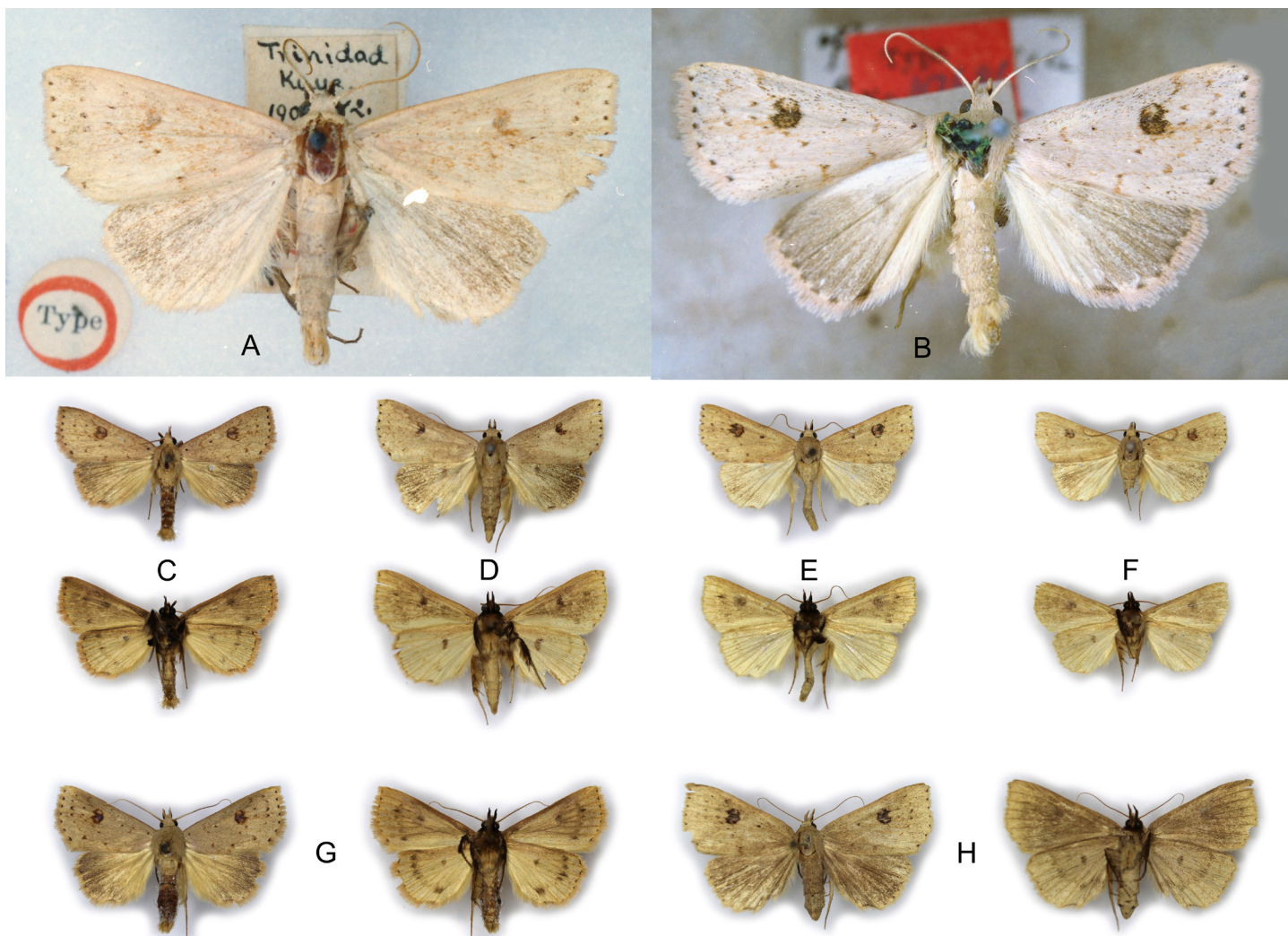
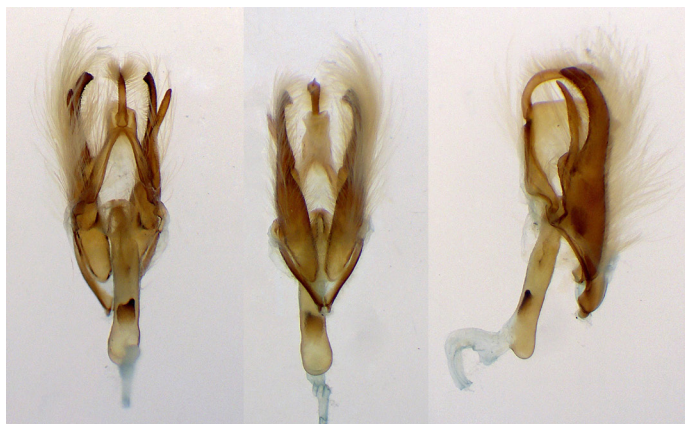


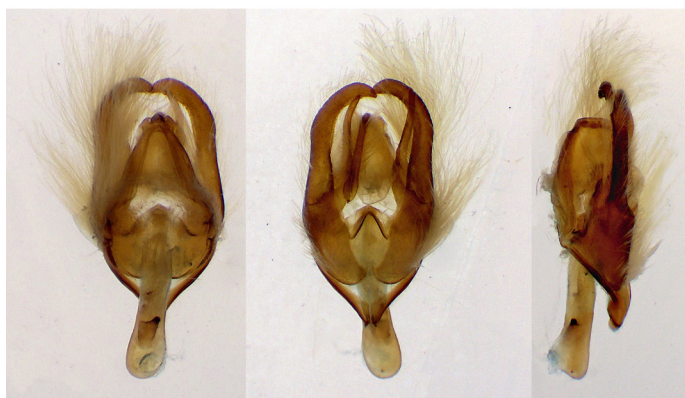
Fig. 37. *Scolecocampa* spp., **A–F**, *S. xanthipterygia* males: **A**, male holotype of *Herminodes xanthipterygia* Kaye, Trinidad, W.J. Kaye [NHMUK], ©, The Trustees of the Natural History Museum, London, made available under Creative Commons License 4.0 <https://creativecommons.org/licenses/by/4.0/>; **B**, male holotype of *Rhosologia pantina* Schaus, Trinidad [USNM]. **C**, Cumaca Road, 4.6 miles, MVL, 18 July 1981. **D**, Cumaca Road, 0.5 miles, MVL, 27 October 1980 [genitalia 1177]. **E**, Arima Valley, Simla, MVL, 12 February 1982. **F**, Valencia Forest, MVL, April 1980 [genitalia 1174]. **G**, *Scolecocampa* sp. male, Arima Valley, Simla, MVL, 6 August 1982 [genitalia 1175]. **H**, *Scolecocampa* sp. female. Arima Blanchisseuse Road, milestone 9 $\frac{3}{4}$, MVL, 9 November 1978. A–B enlarged, C–H life size.

by MK (Fig. 39), RND (Figs. 40, 42), AED (Fig. 43) and Mark Hulme (Bloody Bay, 22 December 2022, iNaturalist observation 145114911) newly available from Tobago suggest that four are of male *S. xanthipterygia* (Figs. 39–41), based on the relative width of the forewings, and the

slightly concave costa, while the fifth is a female (Fig. 42) that could be of either species. Provisionally, we treat all five as *S. xanthipterygia*, and this is the first record of this complex from Tobago.



Scolecocampa xanthipterygia (genitalia 1174)



Scolecocampa sp. (genitalia 1175) 1 mm

Fig. 38. Male genitalia of *Scolecocampa* spp. from Trinidad, dorsal, ventral and lateral views.



Fig. 39. Male *Scolecocampa xanthipterygia*, Englishman's Bay, 26 February 2022, M. Kelly (photo 2629); F 13–16 mm.



Fig. 40. Male *Scolecocampa xanthipterygia*, Arnos Vale, 11 June 2022, R. Deo (iNaturalist observation 121389303); F 13–16 mm.



Fig. 41. Male *Scolecocampa xanthipterygia*, Englishman's Bay, 8 December 2022, A. Deacon (iNaturalist observation 143929357); F 13–16 mm.



Fig. 42. Female *Scolecocampa* sp., Englishman's Bay, 3 December 2022, R. Deo (iNaturalist observation 143619584).

***Valvaminor jacerda* Cock & Laguerre 2022 (Arctiinae, Arctiini, Euchromiina)**

This species was recently described from Trinidad and reported from Tobago (Cock and Laguerre 2022; Cock and Laguerre 2023). This Tobago record was based on RND's photograph from Arnos Vale (Fig. 43). AED subsequently photographed a female above Englishman's Bay (30 November 2022, iNaturalist observation 143347036).



Fig. 43. Male *Valvaminor jacerda*, Arnos Vale, 11 June 2022, R. Deo (iNaturalist observation 121361203); F 10 mm.

EUTELIIDAE

***Eutelia abscondens* (Walker, 1858) (Euteliinae)**

Lamont and Callan (1950) first reported this species from Trinidad (♂, Golden Grove, 20 July 1923). MJWC identified a second Trinidad specimen (♂, Morne Bleu, Textel Installation, at light, 11 October 1978) by comparison with the NHMUK series. Recently, MG photographed a female at Englishman's Bay (Fig. 44).

GEOMETRIDAE

***Chloractis pulcherrima* (Butler, 1881) (Geometrinae)**

Kaye (1901), Kaye and Lamont (1927) and Pitkin (1996) have recorded this distinctive species from Trinidad, where it is an uncommon species in forest habitats. MJWC confirmed the identification of Trinidad material by comparison with the type (NHMUK, ♂ Amazons) and NHMUK series. MK photographed the first Tobago record at Englishman's Bay (Fig. 45).



Fig. 44. Female *Eutelia abscondens*, Englishman's Bay, at light, 2 July 2022, M. Gibson (iNaturalist observation 124324151); F 16 mm.



Fig. 45. *Chloractis pulcherrima*, Englishman's Bay, at light, 22 November 2022, M. Kelly; 11 mm.

***Dolichoneura nigrinotata* Warren, 1906 (Desmobathrinae)**

This species was recorded from Trinidad based on a specimen collected by F.W. Jackson and now in NHMUK (Kaye and Lamont 1927), which MJWC examined and confirmed. It is a rare species in Trinidad, the only other records being photographs from Brasso Seco (17 April 2022, M. Hulme) and Bush Bush (18 October 2014, K. Sookdeo). Hence, MK's photograph from Englishman's Bay (Fig. 46) was not anticipated.



Fig. 46. Male *Dolichoneura nigrinotata*, Englishman's Bay, at light, 17 November 2022, M. Kelly; F 19 mm.

***Eois marcearia* (Guenée, [1858]) (Larentiinae)**

Kaye and Lamont (1927) recorded this species from Trinidad under the name *Cambogia simplicearia* Walker, which is a synonym of *E. marcearia* (Scoble 1999). It is an occasional species in Trinidad, mostly recorded from suburban and disturbed situations. SMT photographed a female on a night walk near Charlotteville (Fig. 47).



Fig. 47. Female *Eois marcearia*, Charlotteville, by night, 13 November 2022, S.M. Tran (iNaturalist observation 142265615); F 9 mm.

***Erastria decrepitaria* (Hübner [1823]) (Ennominae)**

This is a common and widespread species in Trinidad (Kaye and Lamont 1927, authors' observations), which MJWC identified by comparison with the NHMUK series. Although it is found in suburban areas in Trinidad, it is most prevalent in forested areas, where it can be observed by day, flying and settling close to the ground. The first record from Tobago is a photo of a male taken by RND early in the morning near Arnos Vale (Fig. 48). The male is variable in colour from yellow to dull brown-green, and lacks the dark spots near the apex and tornus seen in the female (Fig. 49). In turn the female lacks the sharp defined discal line of the male,



Fig. 48. Male *Erastria decrepitaria*, Arnos Vale, 12 June 2022, R. Deo (iNaturalist observation 121397062); F 17 mm.

which is darker distally. MG subsequently photographed a female at light at Englishman's Bay (15 July 2022, iNaturalist observation 126414377), but we include here a clearer image from Trinidad (Fig. 49).



Fig. 49. Female *Erastria decrepitaria*, Trinidad, Arima valley, Temple Village, at light, 16 September 2022, S.M. Tran (iNaturalist observation 135328287); F 20–22 mm.

***Euphyia strenuaria* (Walker, 1860) (Larentiinae)**

Two specimens from Parrylands (25 July 1981) in MJWC were identified by comparison with the type (NHMUK, ♂ Venezuela) and NHMUK series. These are the only records known from Trinidad, and MG's photo from Englishman's Bay (Fig. 50) is the only one for Tobago.



Fig. 50. Male(?) *Euphyia strenuaria*, Englishman's Bay, at light, 10 July 2022, M. Gibson (iNaturalist observation 125855060); F 18–21 mm.

***Macaria gambarina* (Stoll, 1781) (Ennominae)**

Kaye and Lamont (1927) recorded this species (as its synonym *Semiothisa agnitaria* (Hübner)) from Palmiste. As has been previously noted (Cock and Laguerre 2023), when Kaye and Lamont (1927) record a species from Palmiste without a

collection date, this usually means there is a specimen with no data label in NMS (or UWIZM), which would have been collected at Palmiste before 1915 when Lamont first labelled his specimens. In this case there is a specimen without data label in NMS, with a curation label as *Semiothisa agnitaria* Hüb., which is accepted as the specimen to which Kaye and Lamont referred. MJWC confirmed it as a female *M. gambarina*, based on a comparison with the NHMUK series of this species. In addition to the Palmiste record, *M. gambarina* has been occasionally recorded from the Arima Valley and Brasso Seco. AED and MK photographed this species at Englishman's Bay in December 2022 (Fig. 51).



Fig. 51. *Macaria gambarina*, Englishman's Bay, 3 December 2022, A. Deacon (iNaturalist observation 143615156); F 15 mm.

***Nepheloleuca politia* (Cramer, 1777) (Ennominae)**

Kaye and Lamont (1927) recorded this species from Trinidad, where it is an occasional species, widespread in diverse habitats. MJWC identified it from Trinidad by comparison with the NHMUK series. RND's photo of one attracted to house lights at Arnos Vale (Fig. 52) is the first record for Tobago. It is more heavily speckled than Trinidad specimens.



Fig. 52. *Nepheloleuca politia*, Arnos Vale, at light, 11 June 2022, R. Deo (iNaturalist observation 121387276); F 22–25 mm.

***Nepheloleuca semiplaga* Warren, 1894 (Ennominae)**

Lamont and Callan (1950) recorded a specimen from Trinidad (Palmiste, 20 January 1926, N. Lamont), which MJWC examined in NMS. Trinidad specimens are close to the type of *N. semiplaga* (NHMUK, Mexico), but this genus merits more work, so this should be considered a provisional identification. This is an uncommon species in Trinidad, with additional records from Curepe and Maracas Valley. It can be distinguished from *N. politia* as it is smaller, is a paler yellow and has a black spot within the hindwing tail. AW photographed one at Black Rock (Fig. 53), which is a darker yellow and more heavily marked than the material seen from Trinidad, but treated here as *N. semiplaga* because of the dark spot in the hindwing tails.



Fig. 53. *Nepheloleuca semiplaga*, Black Rock, 6 August 2022, A. Wheeler (iNaturalist observation 129695713); F 18 mm; ©.

***Perissopteryx trinidadicola* Krüger & Scoble, 1992 (Ennominae)**

This species was described from Trinidad (Krüger and Scoble 1992), and is not uncommon in forested areas of northern Trinidad. MG's photo of a female attracted to house lights above Englishman's Bay (Fig. 54) is the first record for Tobago.



Fig. 54. Female *Perissopteryx trinidadicola*, Englishman's Bay, at light, 4 July 2022, M. Gibson (iNaturalist observation 124817506); F 15 mm.

***Phrygonis privignaria* (Guenée, [1858]) (Ennominae)**

This is an occasional species in Trinidad (Kaye and Lamont 1927) mostly recorded in forested areas. Material from Trinidad was identified by comparison with the NHMUK series and from Scoble (1994). Photographs on the Main Ridge of Tobago by RND (Fig. 55) and SMT (3 December 2022, iNaturalist observation 143906878) are the first records from the island.



Fig. 55. *Phrygonis privignaria*, Main Ridge, at light, 10 June 2022, R. Deo (iNaturalist observation 121320308); F 16 mm.

***Ptychamalia perlata perlata* (Warren, 1900)**

Warren (1900) described this species from Trinidad, where it is an occasional and widespread species. AW's photograph of a female at Black Rock (Fig. 56) is the first observation from Tobago. A female from Trinidad with heavier, clearer markings (Fig. 57) is shown to facilitate recognition. The male is usually more lightly marked, but the submarginal line running to close to the tornus is a distinctive feature.

***Semaepus caecaria* Hübner, [1823]**

Kaye and Lamont (1927) recorded this species from Trinidad as *S. punctata* (Stoll) (TL Surinam). Stoll's name is an unavailable homonym, for which Hübner (1816–[1826]) provided the replacement name *S. caecaria*. We are not aware of any type material for Stoll's species, but his figure shows a strongly spotted individual rather like Fig 58, but lacking the discal circles. In contrast, Hübner (1816–[1826], Fig. 327) illustrated what is probably a different species with no spotting and wavy transverse discal lines. However, it is Stoll's definition that has precedence and must be applied to Hübner's name. Warren (1906) described *Heterophyla grisea* Warren from Trinidad: a grey-brown form with no dark spotting. Prout (1932–1938) considered *S. caecaria* to be a very variable species, found from Central America to Argentina, of which *grisea* is one of several forms. There do not seem to have been any alterations to Prout's interpretation since then, and so we follow his treatment here. This is an



Fig. 56. Female *Ptychamalia perlata*, Black Rock, 3 December 2022, A. Wheeler (iNaturalist observation 143613634, 143671555); F 9 mm.



Fig. 57. Female *Ptychamalia perlata*, Trinidad, Palo Seco, 25 June 2018, davisgunn (iNaturalist observation 36172252); F 9 mm. ©, under CC-BY-NC.



Fig. 58. Female(?) *Semaepus caecaria*, Englishman's Bay, at light, 18 July 2022, M. Gibson (iNaturalist observation 126891679); F 14 mm.

occasional and widespread species in Trinidad (Arima Valley, Caparo, Curepe, Inniss Field, Maraval, Mt. Tamana, South Oropouche, in MJWC, NHMUK, iNaturalist). Based on limited material in MJWC, the relatively plain forms seem

to be males and the spotted forms females. MG's photo is the first from Tobago, and is of the form resembling Stoll's original concept, being quite heavily spotted.

LASIOCAMPIDAE

Euglyphis melancholica Butler, 1878 (Poeciloscini)

Ongoing studies suggest that it may be more accurate to refer to this species as *Euglyphis melancholica* complex pending revision of the group. However, since it was recorded from Trinidad by Kaye and Lamont (1927) as *melancholica*, we use this name on a provisional basis for Tobago. MJWC compared Lamont's specimens with those he collected and the holotype (NHMUK, ♂ Brazil, Amazon). This is an uncommon species from forested areas in Trinidad. MK photographed a male at Englishman's Bay (Fig. 59).



Fig. 59. Male *Euglyphis melancholica*, Englishman's Bay, at light, 25 November 2021, M. Kelly; F 16 mm.

LIMACODIDAE

Natada sp. nr. *pucara* (Dognin, 1893)

The identity of this species is currently under study for a planned treatment of the Limacodidae for Trinidad and Tobago (M.J.W. Cock and M.E. Epstein, unpublished). It closely resembles *Natada pucara*, but we currently believe it is a separate species. The only known female from Trinidad is considerably larger than the males (F 23 mm vs. 13 mm). This is an occasional species in Trinidad in diverse habitats, but AED's photo (Fig. 60) is the first from Tobago.

MEGALOPYGIDAE

Megalopyge xanthopasa (Sepp, 1828)

Cock (2017b) listed this species from Tobago under two different names: *Megalopyge pellita* (Felder) and *M. xanthopasa xanthopasa* (Sepp). The former was described from French Guiana and the latter from Suriname. Becker (1995) treats the two as distinct species. It appears that only one species occurs in Trinidad and Tobago, and although it

seems possible that the two names are synonyms, that is not addressed here. The name *M. xanthopasa* is now used for Trinidad and Tobago material, based on a comparison with the NHMUK series, which includes material from Trinidad.



Fig. 60. Male *Natada* sp. nr. *pucara*, Englishman's Bay, at light, 29 November 2022, A. Deacon (iNaturalist observation 143320860); F 13 mm.

NOCTUIDAE

Condica mobilis (Walker, [1857]) (Condicinae)

Kaye and Lamont (1927) did not report this species from Trinidad, although there are specimens in Lamont's collection in NMS and UWIZM. The latter are misidentified as *Perigea apameoides* Guenée, which is a synonym of *C. sutor* (Guenée) (Poole 1989), a species that Kaye and Lamont (1927) did report, referring to a correctly identified specimen now in NMS (Palmiste, 21 April 1921, N. Lamont). This is a common and widespread species in Trinidad, and its presence in Tobago is no surprise, although RND's image



Fig. 61. *Condica mobilis*, Arnos Vale, 11.206 -60.751, at light, 11 June 2022 R. Deo (iNaturalist observation 121453306); F 13 mm.

of a specimen in poor condition at Arnos Vale (Fig. 61) is the first we have seen from the island. An image of a fresher individual from Trinidad is included to facilitate



Fig. 62. *Condica mobilis*, South Oropouche, at light, 3 January 2022, T.P. Maharaj (iNaturalist observation 104320259); ©, under CC-BY-NC.

identification (Fig. 62).

***Elaphria hypophaea* (Hampson, 1920) (Noctuidae)**

This is a replacement name for *Monodes hyposcota* Hampson (Hampson 1909, 1920). Kaye and Lamont (1927) recorded a Trinidad specimen of this species from Caigual (22 August 1917, A. Lickfold); MJWC examined this specimen in OUMNH. Lamont and Callan (1950) then recorded it incorrectly as *A. grata* Hübner, a similar North American species, referring to a specimen from Palmiste (22 February 1938, N. Lamont); this specimen was examined in RSM. Both voucher specimens are considered to be *E. hypophaea*. This is a common species in disturbed and suburban areas of Trinidad. Since it also occurs in the Lesser Antilles (Hampson 1909), it was expected to occur in Tobago. RND photographed one at light on the Main Ridge (Fig. 63).



Fig. 63. *Elaphria hypophaea*, Main Ridge, at light, 10 June 2022, R. Deo (iNaturalist observation 121326693); F 11 mm.

***Gonodes trapezoides* (Herrich-Schäffer, 1868) (Noctuidae)**

This species was first recorded from Trinidad as *Gonodes liquida* (Möschler) by Lamont and Callan (1950) based on a Lamont specimen from Palmiste (15 December 1933). MJWC examined this specimen in NMS, and identified it and others from Curepe and Parrylands as this species by comparison with the NHMUK series. However, Becker (2002) demonstrated that *G. liquida* is actually a synonym of *G. trapezoides*, so this name should now be used. Rachael Williams-Littzen photographed the first record for Tobago near Black Rock (Fig. 64), and AED photographed a further individual at Englishman's Bay, 3 December 2022 (iNaturalist observation 143615146).



Fig. 64. *Gonodes trapezoides*, Buccoo to Black Rock, 25 November 2022, R. Williams-Littzen (iNaturalist observation 142874571); F 12 mm; ©, under CC-BY-NC.

***Hemicephalis characteria* Stoll, 1790 (Condicinae)**

This species has not previously been reported from Trinidad or Tobago, but MJWC has a male from Curepe (4 January 1980), which he identified by comparison with the NHMUK series. RND found a dead specimen at Arnos Vale (Fig. 65).



Fig. 65. *Hemicephalis characteria*, Arnos Vale, 11 June 2022, R. Deo (iNaturalist observation 121327010); F 17 mm.

***Spodoptera cosmiodes* (Walker, 1858) (Noctuidae)**[*Spodoptera latifascia* (Walker, 1856)]

Late last century, Silvain and Lalanne-Cassou (1997) showed that *C. cosmiodes* is a valid species rather than a synonym of *S. latifascia*, which until then was considered to be a single species found throughout most of the Americas. In his world review of *Spodoptera*, Pogue (2002) documented that *S. latifascia* occurs in North America south to Costa Rica, and through the Caribbean to Grenada, while *S. cosmiodes* occurs in South America, including Trinidad, and north to Costa Rica. Cock (2017b) overlooked this when compiling his preliminary checklist of moths of Tobago, and listed this species as *S. latifascia* based on the earlier interpretation. However, based on the known distribution of the two species, it is more likely that *S. cosmiodes* would be the species in Tobago, and this was confirmed by dissection of the genitalia of the male specimen that Cock (2017b) reported in MJWC. Thus, pending further observations, we consider that *S. cosmiodes* is a Tobago species whereas *S. latifascia* is not.

***Tripudia ochrocraspis* (Hampson, 1910) (Cobubathinae)**

This species is here newly recorded from both Trinidad and Tobago. MJWC identified Trinidad specimens from Curepe (♀ 23–31 April 1982) and Arima Valley, Simla (♀ 28 January 1981; ♂ 28 March 1982) by comparison with the type (NHMUK, Mexico). Based on these, he identified ravensroost's photograph at Englishman's Bay (Fig. 66) as this species.



Fig. 66. *Tripudia ochrocraspis*, Englishman's Bay, 3 December 2022, ravensroost33 (iNaturalist observation 143604374); F mm; © under CC-BY-NC.

NOLIDAE***Neostictoptera nigropuncta* Druce, 1900 (Collomeninae)**

This is a new record for both Trinidad and Tobago. MJWC identified a male specimen from Morne Bleu, Textel Installation (29 March 1979) by comparison with the type (NHMUK, ♀, Colombia) and NHMUK series. Based on this specimen he identified MG's photo from Englishman's Bay (Fig. 67).



Fig. 67. *Neostictoptera nigropuncta*, Englishman's Bay, at light, 3 July 2022, M. Gibson (iNaturalist observation 124669073); F 15 mm.

***Nola perluta* Draudt, 1918 (Nolinae)**

MJWC identified this species from Trinidad (♀ Arima Valley, Simla, MVL, 15 February 1981, ♀ 7 August 1981; ♂ Lalaja Ridge, MVL, 3 September 1982) by comparison with the NHMUK series. However, the type (♂, NHMUK, Colombia) lacks the distinctive forewing spot present in most of the NHMUK series and the Trinidad material, so this identification may need revision. The same species was photographed at Englishman's Bay by MG (Fig. 68).



Fig. 68. *Nola perluta*, Englishman's Bay, at light, 2 July 2022, M. Gibson photo (iNaturalist observation 124491350); F 6 mm.

***Nola cereella* (Bosc, [1800]) (Nolinae)**

This species was previously known as *Nola sorghiella* Riley, under which name it was reported as a minor pest of sorghum and other grasses in the USA (Reinhard 1937, Hobbs *et al.* 1979). However, Miller and Becker (1989) made *sorghiella* a synonym of *cereella*, which they placed

in the genus *Nola*. There have been no previous records of this species from Trinidad or Tobago. MJWC collected a Trinidad specimen at Curepe, 2 September 1978, which he identified by comparison with the NHMUK series, and AED



Fig. 69. *Nola cereella*, Englishman's Bay, 3 December 2022, A. Deacon (iNaturalist observation 143615149); F 6 mm. photographed one at Englishman's Bay (Fig. 69).

NOTODONTIDAE

Disphragis onerosa (Schaus, 1905) (Heterocampinae)

Cock (2021a) treats this species from Trinidad, but RND's photo of a male at light on the Tobago Main Ridge (Fig. 70) is the first record from the island.



Fig. 70. Male *Disphragis onerosa*, Main Ridge, at light, 10 June 2022, R. Deo (iNaturalist observation 121325409); F 21–22 mm.

Heorta consociata (Schaus, 1905) (Heterocampinae)

See Cock (2021a) regarding this species and its identification in Trinidad. RND's photograph from Tobago Main Ridge (Fig. 71) is the first Tobago record. It is more clearly marked than the specimens illustrated in Cock (2021a).



Fig. 71. Male *Heorta consociata*, Main Ridge, at light, 10 June 2022, R. Deo (iNaturalist observation 121326318); F 14 mm.

NYMPHALIDAE

Colobura dirce dirce (Linnaeus, 1758) (Nymphalinae)

There have been unconfirmed reports of this species occurring in Tobago for several years, but the photograph by wildlife_tobago (Fig. 72) is the first confirmation that we have seen. This butterfly, known as the zebra, is common and widespread in Trinidad, and frequently observed at rest on tree trunks or feeding on fallen fruit. There is a second very similar species, *C. annulata* Willmott, Constantino & J. Hall also present in Trinidad, which has not yet been recorded from Tobago (Willmott *et al.* 2001, Cock 2005, Cock 2014). Both species feed on bois canot, *Cecropia peltata* L. (Urticaceae), as caterpillars (Willmott *et al.* 2001, Cock 2005).



Fig. 72. *Colobura dirce*, Mason Hall, Corbin Local Wildlife, 24 October 2022, wildlife_tobago (iNaturalist observation 139924618); F 31 mm; ©, under CC-BY-NC.

Dynamine agacles (Dalman, 1823) ssp. *core* Rober, 1915 (Biblidinae)

John Morrall caught four specimens of this small butterfly at

Lowlands, Tobago on 28 June 2022 and saw several more. Voucher specimens are in his collection. This is a widespread, but occasional species in Trinidad.

PYRALIDAE

Carthara abrupta (Zeller, 1881) (Epipaschiinae)

Lamont and Callan (1950) recorded this species from Trinidad (as *Stericta abrupta*). It is an occasional but widespread species in Trinidad, and specimens were identified by comparison with the NHMUK series. The first records from Tobago are MG's photos from Englishman's Bay on 14 and 22 July 2022 (Fig. 73).



Fig. 73. *Carthara abrupta*, Englishman's Bay, at light, 22 July 2022, M. Gibson (iNaturalist observation 127435997); F 14–16 mm.

Incarcha aporalis Dyar, 1910 (Epipaschiinae)

Trinidad specimens from Curepe (♂ 2 February 1979) and Inness Field (♀ 17 May 1999) were identified by comparison with the NHMUK series of *I. argentilinea* (Druce), a synonym of *I. aporalis* (TL French Guiana). They represent a new record for Trinidad, and MG's photograph from Tobago (Fig. 74) is the first for that island.

Ramphidium pselaphialis (Ragonot 1891)

This species is known from Trinidad (Kaye and Lamont 1927), where it has been reared from stems of black sage, *Varronia curassavica* Jacq. (Cordiaceae) (Donald 1945, F.J. Simmonds unpublished observations, specimens in UWIZM).



Fig. 74. Male *Incarcha aporalis*, above Englishman's Bay, at light, 12 July 2021, M. Gibson (iNaturalist observation 126044693); F 9 mm.

Trinidad specimens were identified by comparison with the NHMUK and USNM series. A photo of a male at Cuffie River Nature Retreat by faraazabdool (Fig. 75) is the first record from Tobago. The female is slightly larger and green, as shown in RND's photograph from Trinidad (Fig. 76).



Fig. 75. Male *Ramphidium pselaphialis*, Cuffie River Nature Retreat, 19 September 2022, faraazabdool (iNaturalist observation 135738073); F 21–25 mm; ©, under CC-BY-NC.



Fig. 76. Female *Ramphidium pselaphialis*, Trinidad, Wa Samaki Ecosystems, 20 June 2021, R. Deo (iNaturalist observation 83776957); F 26–27 mm.

***Trachylepidia fructicassiella* Ragonot, 1887 (Galleriinae)**

This is an Old World species that is now widespread in the Americas. It was first described from Egypt (Cairo, from pods of *Cassia*), Lebanon (Beirut), and India/Pakistan (Punjab) (Ragonot 1887). It was subsequently described again as *Aganactesis indecora* Dyar from Trinidad based on a quarantine interception of *Cassia* pods in California (Dyar 1921), but later made a synonym of *T. fructicassiella* (Hodges *et al.* 1983). Last century this species was in use at the Commonwealth Institute of Biological Control (CIBC, Curepe, now CABI) and Caroni Research Station as a laboratory host for rearing parasitoids of sugar cane stem borers (*Diatraea* spp., Crambidae), since caterpillars were readily obtained from the fallen seed pods of exotic *Cassia* spp. (Fabaceae) such as *C. moschata* Benth., *C. javanica* L., *C. grandis* L. f. and *C. fistula* L. (Bennett and Simmonds 1966, Bennett 1969, Cock 1984). MJWC was therefore familiar with this species, which he originally identified by comparison with reference material in the CIBC collection (now in UWIZM). It has not previously been reported from Tobago, so AW's photo (Fig. 77) is the first record.

***Xantippe olivalis* Dyar, 1914 (Chrysauginae)**

Cock (2017c) recorded this species from the Five Islands and Trinidad, identified by comparison with the NHMUK series. It seems to be a local and uncommon species in Trinidad, but probably easily overlooked due to its small size. AED's photo from Englishman's Bay (Fig. 78) is the first Tobago record.



Fig. 77. Male *Trachylepidia fructicassiella*, Black Rock, 21 July 2022, A. Wheeler (iNaturalist observation 127233902); F 10 mm.



Fig. 78. *Xantippe olivalis*, Englishman's Bay, 9 December 2022, A. Deacon (iNaturalist observation 144046065); F 5.5 mm.

SPHINGIDAE

***Erinnyis oenotrus* (Cramer, 1780) (Macroglossinae)**

This is a fairly common species in Trinidad (Cock 2018), but not previously recorded from Tobago, and it does not seem to be present in the Lesser Antilles (Schreiber 1978). Photographs by AW at Black Rock (Fig. 79) and AED (Englishman's Bay, 30 November 2022, iNaturalist observation 143469849) are the first records from Tobago.

***Xylophanes loelia* (Druce, 1878) (Macroglossinae)**

This is an occasional species in Trinidad (Cock 2018), but has not been formally recorded from Tobago hitherto. However, Steve Nanz photographed one at Cuffie River Nature Resort, 27 March 2015 (Fig. 80), and Sheri L. Williamson photographed another at the same location, 9 December 2022 (iNaturalist observation 144014747).



Fig. 79. Female *Erinyis oenotrus*, Mt Irvine Bay, 28 July 2022, A. Wheeler (iNaturalist observation 128465373); F 39 mm.



Fig. 80. *Xylophanes loelia*, Cuffie River Nature Resort, 27 March 2015, S. Nanz; F 32 mm; © with permission.

TORTRICIDAE

Saphenista multistrigata (Walsingham, 1914) (Tortricinae)

This is the only species of *Saphenista* known from Trinidad, where under the name *Phalonidia multistrigata* the larvae are known to feed in the flower heads of various Asteraceae, including *Chromolaena odorata* (L.) R.M. King & H. Rob. (Cruttwell 1974), *Mikania micrantha* Kunth (Cock 1982), and *Neurolaena lobata* (L.) Cass. (MJWC unpublished). This material was identified by the late John D. Bradley (CABI) and confirmed by MJWC by comparison with the type (NHMUK, ♂ Mexico) and NHMUK series. Provisionally, we assume that Mark Hulme's photograph of a *Saphenista* sp. at light at Bloody Bay (Fig. 81) is also this species, but specimens are needed for confirmation, and given the type locality is Mexico, further research based on genitalia and DNA barcodes would be needed to confirm this identification for Trinidad and Tobago.



Fig. 81. *Saphenista multistrigata*, Bloody Bay, at light, 23 December 2022, M. Hulme (iNaturalist observation 145114909); F 3 mm; ©, under CC-BY-NC.

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REFERENCES

- Barbut, J.** 2009. Description de trois nouvelles espèces du genre *Epidromia* Guenée, 1852 (Lepidoptera, Noctuidae, Catocalinae). *Bulletin de la Société entomologique de France*, 114(2): 163-166.
- Becker, V.O.** 1995. 73. Megalopygidae. p. 118-122. In: **Heppner, J.B.**, ed. Checklist: Part 2 Hyblaeoidea – Pyraloidea – Tortricoidea. Atlas of Neotropical Lepidoptera. Gainesville, Florida: Scientific Publishers.

- Becker, V.O.** 2001. The identity of *Hemeroblemma lienaris* Hübner and a review of the Neotropical moths of the *pannosa*-complex of *Epidromia* Guenée. *Revista Brasileira de Zoologia*, 18: 961-964.
- Becker, V.O.** 2002. The Noctuoidea (Lepidoptera) from Cuba described by Herrich-Schäffer and Gundlach in the Gundlach Collection, Havana. *Revista Brasileira de Zoologia*, 19(2): 349-391.
- Becker, V.O.** 2022. A review of the Neotropical moths of the genus *Trosia* Hübner and allies (Megalopygidae: Trosiinae). *Tropical Lepidoptera Research*, 32(Supplement 2): 1-23.
- Becker, V.O.** and **Miller, S.E.** 2002. The large moths of Guana Island, British Virgin Islands: a survey of efficient colonizers (Sphingidae, Notodontidae, Noctuidae, Arctiidae, Geometridae, Hyblaeidae, Cossidae). *Journal of the Lepidopterists' Society*, 56, 9-44: 191-192.
- Bennett, F.D.** 1969. Tachinid flies as biological control agents for sugar cane moth borers. p. 117-148. In: **Williams, J.R., Metcalfe, J.R., Mungomery, R.W.** and **Mathes, R.**, eds. *Pests of Sugar Cane*. Amsterdam: Elsevier.
- Bennett, F.D.** and **Simmonds, F.J.** 1966. Alternative laboratory hosts for tachinid parasites of *Diatraea*. Proceedings of the 1966 meeting of British West Indies Sugar Technologists, Georgetown, Guyana, 17th-21st October, 1966. British West Indies Sugar Association (Incorporated), Bridgetown, Barbados, Vol.1, pp. 311-313.
- Cock, M.J.W.** 1982. Potential biological control agents for *Mikania micrantha* HBK from the Neotropical Region. *Tropical Pest Management*, 28: 242-254.
- Cock, M.J.W.** 2003. On the number of species of moths (Lepidoptera) in Trinidad and Tobago. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club*, 2003: 49-58.
- Cock, M.J.W.** (Ed) [Contributors: **Bennett, F.D.**, **Cock, M.J.W.**, **Hughes, I.W.**, **Simmonds, F.J.** and **Yaseen, M.**] 1985. A review of biological control of pests in the Commonwealth Caribbean and Bermuda up to 1982. Technical Communication No. 9, Commonwealth Institute of Biological Control. Farnham Royal, UK: Commonwealth Agricultural Bureaux, 218 p.
- Cock, M.J.W.** 2005. There are two species of zebra butterfly (*Colobura* spp. Nymphalidae) in Trinidad, but only one has striped caterpillars. *The Field Naturalist, Quarterly Bulletin of the Trinidad and Tobago Field Naturalists' Club*, 2005(1): 14-15.
- Cock, M.J.W.** 2014. An updated and annotated checklist of the larger butterflies (Papilionoidea) of Trinidad, West Indies: Papilionidae, Pieridae and Nymphalidae. *Insecta Mundi*, 0353: 1-41.
- Cock, M.J.W.** 2017a. The butterflies (Papilionoidea) of Tobago, West Indies: An updated and annotated checklist. *Insecta Mundi*, 0539: 1-38.
- Cock, M.J.W.** 2017b. A preliminary catalogue of the moths (Lepidoptera except Papilionoidea) of Tobago, West Indies. *Insecta Mundi*, 0585: 1-58.
- Cock, M.J.W.** 2017c. Moths (Lepidoptera) from the Five Islands, Trinidad and Tobago, including new country records. *Living World, Journal of the Trinidad & Tobago Field Naturalists' Club*, 2017: 21-25.
- Cock, M.J.W.** 2018. Hawk-moths (Sphingidae) of Trinidad, West Indies: an illustrated and annotated catalogue. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club*, 2018: 10-81.
- Cock, M.J.W.** 2021a. The prominent moths (Lepidoptera, Notodontidae) of Trinidad and Tobago. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club*, 2021: 1-102, Appendix 1-50.
- Cock, M.J.W.** 2021b. New records of butterflies and moths (Lepidoptera) from Tobago, West Indies. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club*, 2021: 103-109.
- Cock, M.J.W.** and **Kelly, M.** 2020. Forty-five new records of moths (Lepidoptera) from Tobago, West Indies, increase the total species known to 400. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club*, 2020: 48-63.
- Cock, M.J.W.** and **Laguerre, M.** 2022. Taxonomic changes in the Neotropical wasp moths, *Euchromiina* and *Ctenuchina* (Lepidoptera, Erebidae, Arctiinae, Arctiini) relating to the fauna of Trinidad & Tobago, with descriptions of new species. *Zootaxa*, 5222(2): 101-132.
- Cock, M.J.W.** and **Laguerre, M.** 2023. *Euchromiina* wasp moths (Lepidoptera, Erebidae, Arctiinae, Arctiini) of Trinidad and Tobago. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club*, 2023: 1-83, Appendix 58 p.
- Cock, M.J.W.**, **Kelly, M.**, **Deacon, A.** and **Gibson, M.** 2022. New records and identifications of butterflies and moths (Lepidoptera) from Tobago, West Indies. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club*, 2022: 12-29.
- Cruttwell, R.E.** 1974. Insects and mites attacking *Eupatorium odoratum* in the neotropics. 4. An annotated list of the insects and mites recorded from *Eupatorium odoratum* L., with a key to the types of damage found in Trinidad. *Technical Bulletin of the Commonwealth Institute of Biological Control*, 17: 98-125.
- Deo, R.N.**, **Ali, H.** and **Cock, M.J.W.** 2020. Night walks generate unexpected new observations of moths (Lepidoptera) from Trinidad, West Indies. *Living World, Journal of the Trinidad and Tobago Field Naturalists' Club*, 2020: 72-79.
- Dickel, T.S.** 1991. New records of noctuid moths from Florida (Lepidoptera: Noctuidae). *Tropical Lepidoptera*, 2(1): 53-58.
- Donald, R.G.** 1945. The insects of "black sage" (*Cordia*

- macrostachya*) in Trinidad. Associateship of the Imperial College of Tropical Agriculture thesis, Imperial College of Tropical Agriculture, St. Augustine, Trinidad. 45 p., 3 pl.
- Druce, H.** 1881-1900. Insecta. Lepidoptera-Heterocera. Biologia Centrali-Americana. London: The Editors. Vol. I. (Text.) xxxii, 490 p.; Vol II. (Text), 622 p.; Vol III (Plates), 101 pl.
- Dyar, H.G.** 1921. New forms of American moths (Lepidoptera). *Insecutor Inscitiae Menstruus*, 9-10: 59-68.
- Franclemont, J.G.** 1949. A new moth on coconut from Cuba, with descriptions of new genera for related species (Lepidoptera, Phalaenidae). *Proceedings of the Entomological Society of Washington*, 51(6): 279-285.
- Guenée, A.** 1852. Noctuérites. Tome III. In Boisduval, [J.A.] & Guenée, [A.] Histoire naturelle des Insectes; Spécies général des Lépidoptères. Tome Septième. Paris: Roret. 514 p.
- Hampson, G.F.** 1909. Catalogue of the Lepidoptera Phalaenae in the British Museum. Vol VIII. Catalogue of the Noctuidae in the collection of the British Museum. London: Trustees of the British Museum. xiv, 583 p.
- Hampson, G.H.** 1913. Catalogue of the Noctuidae in the collection of the British Museum. London: British Museum (Natural History). 626 p.
- Hampson, G.F.** 1920. On new genera and species of Lepidoptera Phalaenae, with the characters of two new families. *Novitates Zoologicae*, 26(2): 253-282.
- Hampson, G.H.** 1926. Descriptions of new genera and species of Lepidoptera Phalaenae of the subfamily Noctuinae (Noctuidae) in the British Museum (Natural History). Volume XII. London: British Museum (Natural History). 641 p.
- Hebert, P.D.N., Cywinska, A., Ball, S.L. and deWaard, J.R.** 2003. Biological identifications through DNA barcodes. *Proceedings of the Royal Society (London), Series B Biological Sciences*, 270: 313-321.
- Hobbs, J.R., Teetes, G.L., Johnson, J.W. and Wuensche, A.L.** 1979. Management tactics for the sorghum webworm in sorghum. *Journal of Economic Entomology*, 72(3): 362-366.
- Hodges, R.W., Dominick, T., Davis, D.R., Ferguson, D.C., Franclemont, J.G., Munroe, E.G. and Powell, J.A.** 1983. Check List of the Lepidoptera of America North of Mexico. London: E.W. Classey Ltd and The Wedge Entomological Research Foundation. xxiv, 284 p.
- Hopp, W.** 1934-1935. 16. Family: Megalopygidae. p. 1071-1101, pl. 160-164. In: Seitz, A., ed. 1913-1939. II. Division: The Macrolepidoptera of the American Region. 6. Volume The American Bombyces and Sphinges. Stuttgart: Alfred Kernan.
- Hübner, J.** 1816-[1826]. Anzeiger der im Verzeichnisse bekannter Schmetterlinge Angenommenen benennungen ihrer Horden, Rotten, Stämme, Familien, Vereine und Gattungen. J. Hübner, Augsburg, Germany, (1) 1-16 (1816); (2-8) 17-128 (1819); 72 pp. ([1826]).
- Kaye, W.J.** 1901. A preliminary catalogue of the Lepidoptera Heterocera of Trinidad. *Transactions of the Entomological Society of London*, 1901(2): 115-158, 2 pl.
- Kaye, W.J. and Lamont, N.** 1927. A catalogue of the Trinidad Lepidoptera Heterocera (moths). *Memoirs of the Department of Agriculture, Trinidad and Tobago*, 3: 144 p.
- Krüger, M. and Scoble, M.J.** 1992. Neotropical red-brown Ennominae in the genera *Thysanopyga* Herrich-Schäffer and *Perissopteryx* Warren (Lepidoptera: Geometridae). *Bulletin of The Natural History Museum, Entomology Series*, 61(2): 77-148.
- Lafontaine, J.D. and Dickel, T.S.** 2008. Review of the genus *Epidromia* in North America (Lepidoptera: Noctuidae: Catocalinae). *Lepidoptera Novae*, 1(3-4): 109-115.
- Lamont, N. and Callan, E.McC.** 1950. Moths new to Trinidad, B.W.I. *Zoologica*, 35: 197-207.
- Landry, B., Bilat, J., Hayden, J., Solis, M.A., Lees, D.C., Alvarez, N., Léger, T. and Gauthier, J.** 2023. The identity of *Argyria lacteella* (Fabricius, 1794) (Lepidoptera, Pyraloidea, Crambinae), synonyms, and related species using morphology and DNA capture in type specimens. *Zookeys*, 1146: 1-42.
- Laurence, G.A.** 1974. Insect pests of Trinidad forest trees. *Journal of the Agricultural Society of Trinidad and Tobago*, 74(2): 160-172.
- Longstaff, G.B.** 1912. Butterfly-hunting in many lands. Notes of a field naturalist. London: Longmans, Green & Co. 728 p.
- Nakahara, L.M., Burkhart, R.M. and Funasaki, G.Y.** 1992. Review and status of biological control of *Clidemia* in Hawai'i. p. 452-465. In: Stone, C.P., Smith, C.W. and Tunison, J.T., eds. Alien plant invasions in native ecosystems of Hawaii: Management and research. Cooperative National Park Resource Study Unit. Honolulu: University of Hawai'i Press.
- Pitkin, L.M.** 1996. Neotropical emerald moths: a review of the genera (Lepidoptera: Geometridae, Geometrinae). *Zoological Journal of the Linnean Society*, 118: 309-440.
- Pogue, M.G.** 2002. A world revision of the genus *Spodoptera* Guenée (Lepidoptera: Noctuidae). *Memoirs of the American Entomological Society*, 43: 202 p.
- Pogue, M.G.** 2012. The Aventiinae, Boletobiinae, Eublemminae, Pangraptinae, Phytometrinae, and Scolecocampinae (Lepidoptera: Noctuoidea: Erebidae) of Great Smoky Mountains National Park, U.S.A. *Zootaxa*, 3153: 1-31.
- Poole, R. W.** 1989. Noctuidae. Lepidopterorum Catalogus. (New Series, edited by J.B. Heppner, Fasc. 118, 3 vols). Leiden, Netherlands: E.J. Brill. 1314 p.
- Prout, L.B.** 1932-1938. 3. Subfamily: Sterrhinae. p. 72-144, pl. 9-17. In: Seitz, A., ed. 1931-1938. The Macrolepidoptera

of the World. A systematic description of the hitherto known Macrolepidoptera in collaboration with well-known specialists. Vol. 8 The American Geometridae [incomplete]. Stuttgart: Alfred Kernen.

Ragonot, E.-L. 1887. Diagnoses d'espèces nouvelles de Phycitidae d'Europe et des pays limitrophes. *Annales de la Société entomologique de France*, 6^e series, 7(3): 225-260, pl. 10. [plate not seen]

Ratnasingham, S. and **Hebert, P.D.N.** 2013 A DNA-based registry for all animal species: the Barcode Index Number (BIN) System. *PLoS ONE* 8(8): e66213. doi:10.1371/journal.pone.0066213

Reinhard, H.J. 1937. Sorghum webworm studies in Texas. *Journal of Economic Entomology*, 30: 869-872.

Schaus, W. 1901. New species of Noctuidae from Tropical America. [Part.] *Annals and Magazine of Natural History*, Seventh Series, 8(44): 77-99.

Schreiber, H. 1978. Dispersal centres of Sphingidae (Lepidoptera). *Biogeographica*, Volume 10. The Hague, Dr W. Junk Publishers, 195 pp.

Scoble, M.J. 1994. A taxonomic revision of the genera *Phrygionis* Hübner and *Pityeja* Walker (Geometridae: Ennominae, Palyadini). *Zoological Journal of the Linnean Society*, 111: 99-160.

Scoble, M.J. 1999. Geometrid moths of the world a catalogue

(Lepidoptera, Geometridae). Collingwood, Australia: CSIRO Publishing, and Stenstrup, Denmark: Apollo Books. xxv + 1016 p., index 129 p.

Silvain, J.-F. and **Lalanne-Cassou, B.** 1997. Distinction entre *Spodoptera latifascia* (Walker) et *Spodoptera cosmioides* (Walker), bona species (Lepidoptera, Noctuidae). *Revue Française d'Entomologie* (Nouvelle série), 19: 95-97.

Starr, C.K. 2009. Trinidad and Tobago. p. 926-929. In: **Gillespie, R.** and **Clague, D.**, eds. The Encyclopedia of Islands. Berkeley, California: University of California Press.

Todd, E.L. 1959. The fruit-piercing moths of the genus *Gonodonta* Hübner (Lepidoptera, Noctuidae). *Technical Bulletin, United States Department of Agriculture*, 1201: 52 p, 12 plates.

Warren, W. 1900. New genera and species of American Drepanulidae, Thyrididae, Epiplemidae and Geometridae. *Novitates Zoologicae*, 7(2): 117-225.

Warren, W. 1906. Descriptions of new genera and species of South American geometrid moths. *Proceedings of the United States National Museum*, 30(1456): 399-557.

Willmott, K.R., **Constantino, L.M.** and **Hall, J.P.W.** 2001. A review of *Colobura* (Lepidoptera: Nymphalidae) with comments on larval and adult ecology and description of a sibling species. *Annals of the Entomological Society of America*, 94: 185-196.