Elf moths (Lepidoptera Euteliidae) of Trinidad & Tobago

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ABSTRACT
Information and images are summarized for five genera and 12 species recorded from Trinidad, of which one genus and three species also occur in Tobago. Five species are newly recorded from Trinidad. More taxonomic investigation is needed regarding the *Marathyssa ablatrix* (Guenée) complex. *Paectes devincta* (Walker) is only known from an image taken on Chacachacare Island. As yet, no Euteliidae from Trinidad & Tobago have been DNA barcoded, but when sequences become available, this is expected to raise more taxonomic questions.

Key Words: Euteliinae, *Marathyssa*, *Nagara*, *Paectes*, Stictopterinae, checklist, inventory, new records, DNA barcodes, iNaturalist

INTRODUCTION

Euteliidae is a small family of somewhat undistinguished noctuoid moths. van Nieukirken *et al*. (2011) estimated Euteliidae to comprise 29 genera and 520 species. Here I treat five genera and 12 species from Trinidad (Fig. 1), of which one genus and three species also occur in Tobago. Five species are newly recorded from Trinidad. Wagner *et al*. (2012) coined the name 'elves' for Euteliidae, referring to the relatively small size compared to other Noctuoids and the way the caterpillar "prolegs curl upward in much the same way as elfin boots in many renderings".

As currently constituted, Euteliidae comprises two subfamilies, Euteliinae and Stictopterinae, both of which occur in Trinidad & Tobago. Until quite recently, these two subfamilies have been treated as subfamilies of Noctuidae, families in their own right or as subfamilies of Erebidae (Fibiger & Lafontaine 2005, Lafontaine & Fibiger 2006, Mitchell *et al*. 2006). However, Zahiri *et al*. (2011) reinstated Euteliidae as a family and placed Stictopterinae as a subfamily. Euteliidae is now considered to group with Erebidae, Nolidae and Noctuidae as the quadrifine Noctuoidea (Zahiri *et al*. 2013, Regier *et al*. 2016). Zahiri *et al*. (2023) provided a new analysis of relationships within the family, confirmed the two subfamilies Euteliinae and Stictopterinae, and made some taxonomic changes (see under *Marathyssa*).

Euteliinae most commonly feed on lactiferous Anacardiaceae (Janzen & Hallwachs 2022) and in the Old World also on Burseraceae, Dipterocarpaceae, Moraceae and Hamamelidaceae (Holloway 1985, Powell *et al*. 1998), while Stictopterinae are associated primarily with Calophyllaceae and Clusiaceae (Janzen & Hallwachs 2022), and in the Old World on Dipterocarpaceae as well (Holloway 1985, Powell

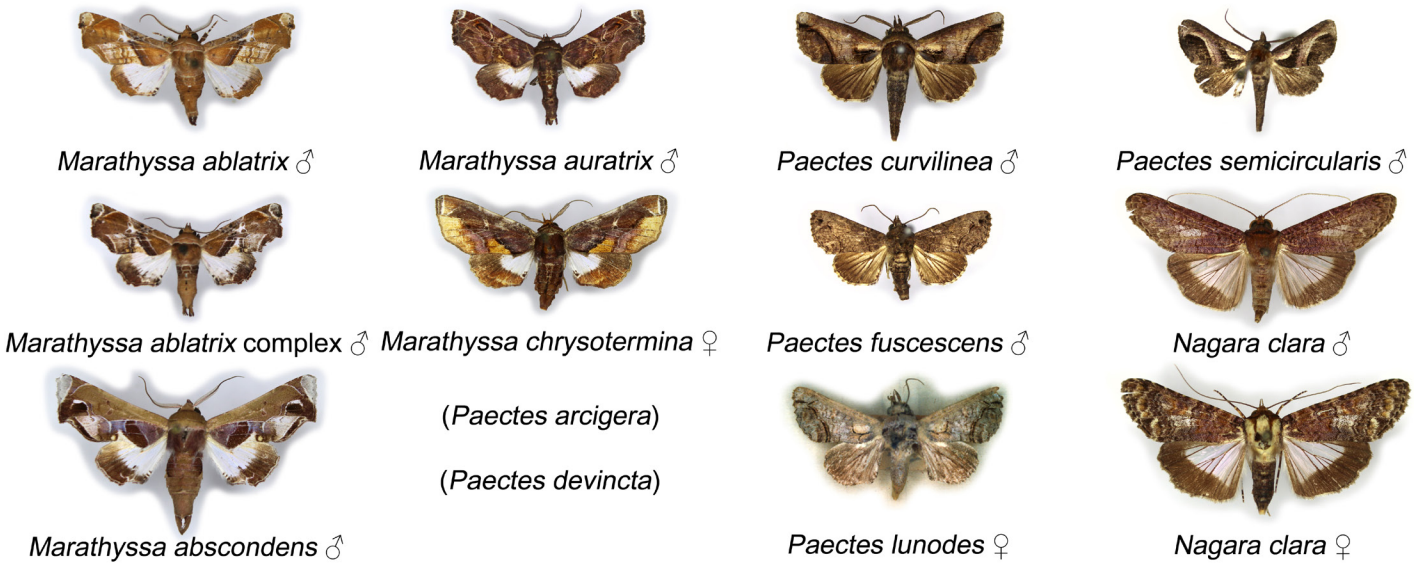

Fig. 1. Euteliidae of Trinidad & Tobago (two species missing as indicated). Life size; see species figures for details.

et al. 1998). No reports on the life history of members of this family have been found from Trinidad & Tobago, but indications of the food plants are given where known from Janzen and Hallwachs (2022).

The reader is referred to the lengthy introductions in Cock (2021a) and Cock and Laguerre (2023) regarding the approach and layout used here. Some reiteration and additional comments on the use of genetic data and tools are warranted. DNA barcoding based on sequences of a defined section of the CO1 mitochondrial gene (Hebert *et al.* 2003) provides a tool that can be used to help clarify the status of different populations of taxa in the future, based on the increasing numbers of publicly available DNA barcodes in BOLD (Barcode of Life Database, http://www.boldsystems.org/) and GenBank (http://www.ncbi.nlm.nih.gov/genbank). Barcode Index Numbers (BINs) (Ratnasingham and Hebert 2013) have been introduced to provide a permanent numbering system for clusters of similar barcodes (haplotypes) normally separated from others by at least 2% base pairs substituted, which in a high percentage of cases correspond to known taxonomic species and can also help flag species complexes or clusters needing taxonomic research (Ratnasingham and Hebert 2013, Miller *et al.* 2016). For example, Zahiri *et al*. (2014) compared BINs with current taxonomic treatment of 1,541 species of Canadian Noctuoidea (99.1% of the known total), and found that DNA barcodes unambiguously discriminated 90% of the noctuoid species recognized through prior taxonomic study. They found high agreement between taxonomic names and sequence clusters delineated by the BIN system with 1,082 species (70%) assigned to a unique BIN. However, they also found BINs that contained more than one species, and species that occurred as more than one BIN. BINs are a strong proxy for species, but still need to be interpreted in light of other taxonomic and biological information.

MJWC checked all Trinidad genera of Euteliidae against BOLD in 2022 and constructed BOLD TaxonID Trees using public DNA barcodes in BOLD (and others shared with him by project managers) and the standard BOLD function for the genera thus far recognized from Trinidad. In many cases, there were very few DNA barcodes from South America, but often a large sample from Costa Rica based on the work of Dan Janzen and Winnie Hallwachs' inventory programme (Janzen and Hallwachs 2022). It was quite common to find that one phenotypic species in Costa Rica comprised more than one BIN in BOLD, and when DNA barcodes were available from South America, they did not necessarily match those from Costa Rica and appeared as different BINs.

Only one species of Euteliidae recorded from Trinidad was described from the island: *Paectes semicircularis*. Some were described from the Guianas or Venezuela, both of which have a high affinity with the Trinidad Lepidoptera fauna (e.g. Cock and Robbins 2016), and so these names are likely to be reliable for Trinidad. On the other hand, many Euteliidae recorded from Trinidad, but described from further south, e.g. southern Brazil or from Central America could well prove to be part of a species complex, for which the current name will not be applied to the Trinidad population in the future. Interpretation of these differences needs intensive museum work, including dissection of the genitalia and careful study of type material. Many types have yet to be dissected, which means this cannot yet be done. The BOLD database does not have adequate coverage yet to fully address these questions, so there would be value to building up a library of DNA barcodes for the Trinidad & Tobago fauna, which in due course can help solve some of these questions, resolve which species (and BINs) occur in Trinidad & Tobago, and as the technology becomes more accessible, facilitate rapid identification. For taxa that have been described from Trinidad, characterisation by their DNA barcodes will be an important contribution, to stabilise and define the use of these names.

In preparing this work, I consulted the following collections:

MJWC	the private research collection of M.J.W. Cock, UK;
NHMUK	Natural History Museum, London, UK;
NMS	National Museum of Scotland, Edinburgh, UK;
OUMNH	Oxford University Museum of Natural History, Oxford, UK;
USNM	National Museum of Natural History (formerly United States National Museum), Washington DC, USA;
UWIZM	University of the West Indies Zoology Museum, St. Augustine, Trinidad & Tobago.

FAMILY EUTELIIDAE GROTE, 1882
Subfamily Euteliinae Grote, 1882

Marathyssa Walker, 1865

Type species: *Marathyssa basalis* Walker, 1865; type locality not given [North America]. The Trinidad species of this genus were placed in *Eutelia* Hübner, [1823] (type species: *Eutelia adulatrix* Hübner, TL Europe), which was considered a pantropical genus of more than 100 species, including one Nearctic and 17 Neotropical (Poole 1989, Barbut and Lalanne-Cassou 2005). Zahiri *et al*. (2023) showed that *Eutelia* was polyphyletic, and transferred all the American species to *Marathyssa*.

Adults of *Marathyssa* habitually rest with their abdomen twisted to one side, e.g. Fig. 4, an uncommon habit in other groups, but also seen for example in *Phiditia cuprea* (Kaye) (Phiditiidae) (Cock 2021b, Fig. 14).

***Marathyssa ablatrix* (Guenée, 1852)**

Figs. 2–5.

OD: Guenée (1852): *Penicillaria ablatrix*, TL unknown [Neotropical].

TT: *Eutelia ablatrix* (Guenée): Lamont & Callan (1950), Cock (2017)

Historical notes. Lamont & Callan (1950) recorded a specimen from Palmiste, 27.iv.1926 (N.L.). This specimen is in RSM and matches material in MJWC compared with the NHMUK series. Cock (2017) recorded this species from Tobago.

Taxonomic issues. Public DNA barcodes in BOLD of material identified as *Eutelia ablatix* are in two BINs: BOLD:AAC0412 from French Guiana, Costa Rica and Guatemala, and BOLD:AAC0411 from Dominican Republic, Cuba, Jamaica and Costa Rica. As *M. ablatrix*

Fig. 2. Male *Marathyssa ablatrix*, Curepe, MVL,29.v.1979.

Fig. 3. Female *Marathyssa ablatrix*, Brigand Hill, MVL light, 28.iii.2003.

Fig. 4. Male *Marathyssa ablatrix*, Tobago, Englishman's Bay, at light, 2.vii.2022, M. Gibson (iNaturalist observation 124491079); ©, with permission.

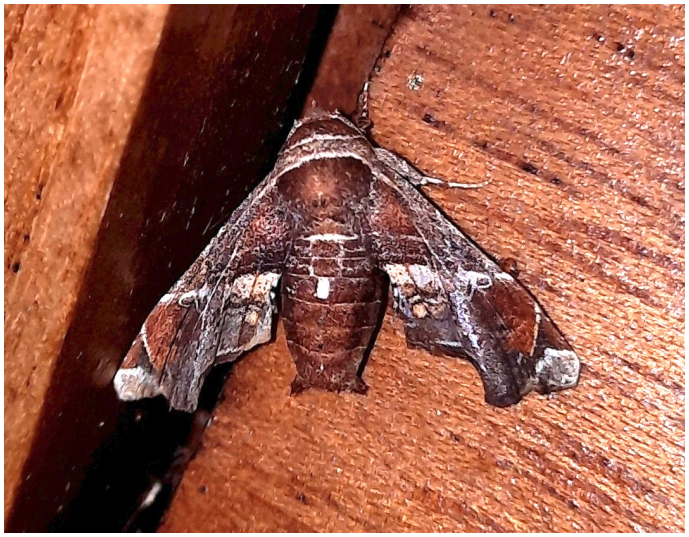

Fig. 5. Female *Marathyssa ablatrix*, Tobago, Arnos Vale, at light, 12.vi.2022, R. Deo (iNaturalist observation 121386112); ©, with permission.

was described from a single male of unknown origin (Guenée 1852, p. 303), further research will be needed to assess whether the name can be applied to one of these BINs. In preparing this account, I realised that I had two species under this name from Trinidad. The first of these I treat provisionally as *M. ablatrix*; it is close to, perhaps the same as, BOLD:AAC0411, so DNA barcodes from Trinidad would be helpful. In the second species present in Trinidad, the male is darker than the male of Trinidad *M. ablatrix*, and with serrate rather than bipectinate antennae. This species is treated below as *M. ablatrix* complex. Both BOLD:AAC0412 and BOLD:AAC0411 have bipectinate antennae, so neither can be this second species.

Identification. The separation of the two species treated here as part of a *M. ablatrix* complex is discussed below under *M. ablatrix* complex.

Biology in Trinidad. Unknown

Status in Trinidad and Tobago. An occasional and widespread species in both Trinidad and Tobago.

Brigand Hill, lighthouse security MVL lights: 2♀ 28.iii.2003 (M.J.W. Cock) [MJWC] (Fig. 3)

Curepe: ♂ vi.1979 (M.J.W. Cock) [NHMUK, TL-478]

Curepe, MVL: ♀ 12.v.1979 (M.J.W. Cock) [MJWC, TL-414]; ♂ 29.v.1979 (M.J.W. Cock) [MJWC, TL-478] (Fig. 2); ♂ 14-21.iii.1982 (M.J.W. Cock) [UWIZM CABI.3521]

Palmiste: ♀ 27.iv.1926 [N. Lamont] [RSM]; ♀ 25.iv.1948 [N. Lamont] [UWIZM.2013.13.1329, as *Eutelia auratrix*]

Nr. St. Augustine: ♀ 24.ix.1924 (W.C. Lester-Smith) [OUMNH]

Toco, at light: ♀ 3.vi.1978 (M.J.W. Cock) [NHMUK, TL-414]

TOBAGO, Arnos Vale, 11.206 -60.751, at light: ♀ 12.vi.2022 (R. Deo photo) [iNaturalist observation 121386112] (Fig. 5)

TOBAGO, Englishman's Bay, at light: ♀ 1.vii.2022 (M. Gibson photo) [iNaturalist observation 124323607]; ♂ 2.vii.2022 (M. Gibson photo) [iNaturalist observation 124491079] (Fig. 4); ♂ 8.iv.2023 (A. Deacon photo) [iNaturalist observation 154045226]

TOBAGO, Nr. Speyside, MVL: ♀ 14-17.v.1982 (M.J.W. Cock) [MJWC]

***Marathyssa ablatrix* (Guenée, 1852) complex**

Figs. 6–7.

Historical notes. I have only recently separated Trinidad material of *M. ablatrix* into two species. The species I treat as *M. ablatrix* (above) has bipectinate antennae in the male, as shown by Hampson (1912, Fig. 13) in his treatment of *M. ablatrix*, whereas the species treated here as '*M. ablatrix* complex' has serrate antennae in the male.

Taxonomic issues. I have yet to review the known species to see if this taxon has already been described. Furthermore, the sequences in BOLD indicate there is greater diversity in this group than currently recognised as named species.

Identification. The male can easily be separated from the male of *M. ablatrix* by its serrate rather than bipectinate antennae. Further, the male of *M. ablatrix* has a distinctly orange tone to its forewing markings, whereas that of *M. ablatrix* complex is darker, more like the females of both species. There are other less obvious differences in the markings, of which perhaps the most useful is in the orange-brown or brown pre-apical area of the dorsal forewing, which has two angled lines through it in *M. ablatrix* (Figs. 2–3), but none in *M. ablatrix* complex (Figs. 6–7). Based on this character I have associated females with the two different males.

Biology in Trinidad. Unknown.

Status in Trinidad. Just two records from Trinidad, but this species could easily be overlooked for *M. ablatrix*.

Curepe, BLT: ♂ 21-28.ii.1982 (F.D. Bennett) [MJWC] (Fig. 6)

Palmiste: ♀ 25.v.1947 [N. Lamont] [UWIZM. 2013.13.1328, as *Eutelia auratrix*] (Fig. 7)

Fig. 6. Male *Marathyssa ablatrix* complex, Curepe, BLT, 21-28.ii.1982 (F.D. Bennett).

Fig. 7. Female *Marathyssa ablatrix* complex, Palmiste, 25.v.1947 [N. Lamont] [UWIZM.2013.13.1328]; © UWIZM, with permission.

***Marathyssa abscondens* (Walker, 1858)**

Figs. 8–10.

OD: Walker (1858): *Penicillaria abscondens*, TL Colombia.

TT: *Eutelia abscondens* (Walker); Lamont & Callan (1950), Cock *et al*. (2022)

Historical notes. A specimen from Golden Grove, 20.vii.1923, was the basis for Lamont and Callan (1950) adding this species to the Trinidad list. This specimen is in RSM and matches one collected by the author and compared with the NHMUK series.

Taxonomic issues. DNA barcodes in BOLD of material from Costa Rica and Peru identified as *M. abscondens* form BIN BOLD:AAE5738. Barbut and Lalanne-Cassou (2005) illustrate the male genitalia.

Identification. This is the largest member of the genus in Trinidad. It can be further recognised by the forewing markings, such as the continuous brown area from the forewing base to short of apex, the dark dome-shaped marking on mid-termen, outlines with white on three sides, etc. Sexes similar, but male has antennae clearly bipectinate in basal half.

Biology in Trinidad. Unknown.

Status in Trinidad and Tobago. A rare but widespread species, present on both islands.

Golden Grove: ♂ 20.vii.1923 [N. Lamont] [RSM]

Morne Bleu, Textel Installation, at light: ♂ 11.x.1978 (M.J.W. Cock) [MJWC] (Fig. 8)

Toco, 10.826 -60.933: ♂ 8.vi.2022 (R. Deo photo)

Fig. 8. Male *Marathyssa abscondens*, Morne Bleu, Textel Installation, at light, 11.x.1978.

Fig. 9. Male *Marathyssa abscondens*, Toco, 8.vi.2022, R. Deo (iNaturalist observation 120804044); ©, with permision.

Fig. 10. Female *Marathyssa abscondens*, Tobago, Englishman's Bay, at light, 1.vii.2022 (M. Gibson photo) [iNaturalist observation 124324151]; ©, with permission.

[iNaturalist observation 120804044] (Fig. 9)
TOBAGO, Englishman's Bay, at light: ♀ 1.vii.2022 (M. Gibson photo) [iNaturalist observation 124324151] (Fig. 10); ♀ 9.iv.2023 (A. Deacon photo) [iNaturalist observation 154217861]

***Marathyssa auratrix* (Walker, 1858)**

Figs. 11–14.

OD: Walker (1858): *Penicillaria auratrix*, TL Brazil.

TT: *Eutelia auratrix* (Walker): Kaye & Lamont (1927), Cock *et al*. (2022)

Historical notes. Specimens from Palmiste, vii.1915, 7.ix.1917 (N.L.) are the basis for Kaye & Lamont (1927) recording this species from Trinidad; both specimens are now in RSM. They match material in MJWC which was identified by comparison with the type (NHMUK, ♂ Amazons) and NHMUK series.

Taxonomic issues. DNA barcodes in BOLD identified as *M. auratrix* fall into three BINs: BOLD:AAC7973 from Mexico, and BOLD:AAC7974 and BOLD:AAC7975, both from French Guiana. As *M. auratrix* was described from Brazil, the first of these is unlikely to be the true *M. auratrix*, but one of the other two may well be. DNA barcodes from Trinidad may link the local population to one of these BINs.

Identification. The projection of the forewing margin, matching the species above should help to recognise this as a *Marathyssa* species. Five specimens identified as this species in Lamont collection in UWIZM comprise three *M. auratrix* and two *M. ablatrix*. *Marathyssa auratrix* is the only *Marathyssa* species in Trinidad with basically dark wings with rather obscure markings in narrow, paler lines. Males have strongly bipectinate antennae, whereas those of females are simple.

Biology in Trinidad. Unknown.

Status in Trinidad. A fairly common and widespread species in both Trinidad and Tobago.

Arima Valley, Asa Wright Nature Centre: ? 6.xii.2013 (P. Prior photo) [iNaturalist 1788420, 5429978]
Arima Valley, Simla, MVL: ♂ 22.iii.1981 (M.J.W. Cock) [UWIZM CABI.4406]; ♀ (no abdomen) 10.v.1981 (M.J.W. Cock) [UWIZM CABI.4408]; ♀ 30.vii.1981 (M.J.W. Cock) [MJWC]; ♀ (no head) 18.x.1982 (M.J.W. Cock) [MJWC]
Caparo: ♂ xi.1905 (S.M. Klages) [NHM]
Concord, 10.235 -61.486: ♀ 26.viii.2021 (sheneller photo) [iNaturalist observation 92624995] (Fig. 14)

Fig. 11. Male *Marathyssa auratrix*, Curepe, MVL, 5-11.x.1981.

Fig. 12. Female *Marathyssa auratrix*, Morne Bleu, Textel Installation, at light, 10.vii.1978.

Fig. 13. Male *Marathyssa auratrix*, Tobago, Englishman's Bay, at light, 16.vii.2022, M. Gibson (iNaturalist observation 126620056); ©, with permission.

Fig. 14. Female *Marathyssa auratrix*, Concord, 26.viii.2021, sheneller (iNaturalist observation 92624995); ©, under CC-BY-NC.

Curepe, MVL: ♀ 23-31.x.1980 (M.J.W. Cock) [UWIZM CABI.4407]; ♂ 5-11.x.1981 (M.J.W. Cock) [MJWC] (Fig. 11); 12-18.x.1981 (M.J.W. Cock) [MJWC]
Morne Bleu, Textel Installation, at light: ♀ 10.vii.1978 (M.J.W. Cock) [MJWC] (Fig. 12)
Palmiste: ♀ (no abdomen) vii.1915 [RSM]; ♂ 7.ix.1917 [N. Lamont] [RSM]; ♀ 24.xi.1927 [N. Lamont] [RSM]; ♂ (broken, no head, no abdomen) 9.xii.1929 [N. Lamont] [UWIZM.2013.13.1326]; ♀ 8.iii.1948 [N. Lamont] [UWIZM.2013.13.1325]; ♀ 9.ix.1948 [N. Lamont] [UWIZM.2013.13.1327]
Parrylands Oilfield, MVL: ♂ 25.vii.1981 (M.J.W. Cock) [MJWC]
Port of Spain, Caparo Valley: ♀ xii.1896 (Dr Rendall) [NHM]
Talparo, at light: ♂ 1.ix.2020 (K. Sookdeo photo, moths 90)
TOBAGO, Black Rock, 11.197 -60.788: ♂ 28.xii.2021 (figtree photo) [iNaturalist observation 103911366]
TOBAGO: Englishman's Bay, at light: ♂ 16.vii.2022 (M. Gibson photo) [iNaturalist observation 126620056] (Fig. 13)

***Marathyssa chrysotermina* Hampson, 1905**

Fig. 15.

OD: Hampson (1905): *Eutelia chrysotermina*, TL French Guiana.

Historical notes. This is a species not previously recorded from Trinidad. It was identified by comparison with type (NHMUK, ♂ French Guiana) and NHMUK series.

Taxonomic issues. Two BINs in BOLD are attributed to the *M. chrysotermina* complex from Costa Rica. One of these may be the true *M. chrysotermina* described from French Guiana. The name *M. chrysotermina* is likely to be appropriate for the Trinidad population based on the type locality.

Identification. This is a distinctive species in Trinidad,

Fig. 15. Female *Marathyssa chrysotermina*, Caura Valley, nr. Caura, MVL, 24.ix.1978.

with the forewing margin extensively yellow-brown, an orange marking on the forewing dorsum, and the base of the hindwing intensely white.
Biology in Trinidad. Unknown.
Status in Trinidad. Just one record from Caura Valley. Caura Valley, nr. Caura, MVL: ♀ 24.ix.1978 (M.J.W. Cock) [MJWC] (Fig. 15)

***Paectes* Hübner 1818**
Type species: *Paectes pygmaea* Hübner, TL USA, Georgia. This is a genus of 57 species, of which 43 are from the New World (Poole, 1989, Barbut and Lalanne-Cassou 2005). Pogue (2013) noted 12 North America species and 40 Neotropical (two in both regions). Much of the genus still need revision. Species of *Paectes* habitually rest with the abdomen curled upwards at an angle to the substrate, sometimes even at right angles, a habit also seen in some Nolidae. Unfortunately, the photos of living adults included here do not show any individuals 'at rest' in this position.

***Paectes arcigera* (Guenée, 1853)**
OD: Guenée 1853: *Ingura arcigera*, TL St. Thomas & Dominica.
TT: *Paectes arcigera* (Guenée): Pogue (2013)
Historical notes. Pogue (2013) treats this species as occurring from Puerto Rico to Trinidad, the latter based on a Trinidad female collected by A. Busck in USNM, which I have not seen.
Taxonomic issues. Pogue (2013) treats at least two other species of this complex that might occur in Trinidad: *P. nana* (Walker) (Florida through the Greater Antilles, except for Puerto Rico, Mexico to Costa Rica, Venezuela, Colombia, and northern Ecuador), and *P. tumida* Pogue (Colombia and Guyana, Suriname, and French Guiana). As this complex can only reliably be separated by examination of the genitalia, it is unfortunate that the single Trinidad specimen has not been examined in this way.
Identification. Like *P. fuscescens*, *P. arcigera* has a dark subterminal spot just below the forewing apex, and there is an irregular post medial line from the dorsum just short of the tornus, to the costa short of the apex, with the section basal to the subterminal spot clearly marked in black. However, *P. arcigera* has the irregular submedial line strongly angled basally in a spike above the dorsum, and the area on the costal side of this spike distinctly paler, whereas *P. fuscescens* has a complete more or less straight irregular submedial line, and no paler area. Further the male of *P. arcigera* has the antennae very strongly bipectinate to two-thirds, whereas those of *P. fuscescens* are simple (Fig. 10). Worn female specimens might prove difficult to allocate to species without dissection or checking barcodes.
Biology in Trinidad. Unknown.
Status in Trinidad. Just the one published record of a female in USNM (Pogue 2013). I have not seen this species from Trinidad or Tobago.
Trinidad: ♀ (A. Busck) [USNM] (Pogue 2013; not seen)

***Paectes curvilinea* Schaus, 1911**
Figs. 16–17.
OD: Schaus (1911): *Paectes curvilinea*, TL Costa Rica.
Historical notes. Material from MJWC was identified by comparison with the type (USNM, ♂ Costa Rica) and NHMUK series.
Taxonomic issues. There are no public DNA barcodes in BOLD identified as this species.
Identification. The curved line from two-thirds on dorsum to three-quarters on termen separates this species from other Trinidad *Paectes* species, apart from *P. lunodes* and *P. semicircularis*, the last named being much smaller. In *P. curvilinea* the curved line is continuously smooth, whereas in *P. lunodes* there is a slight step at vein 4 (M_3). The sexes are similar apart from the strongly bipectinate antennae of the male.
Biology in Trinidad. Unknown.

Fig. 16. Male *Paectes curvilinea*, Valencia Forest, MVL, iv.1980.

Fig. 17. Female *Paectes curvilinea*, Hollis Reservoir, at light, 13.xii.1978.

Status in Trinidad. An uncommon species from forested areas.

Arima Blanchisseuse Road, milestone 9.75, MVL: ♂ 21.ix.1982 (M.J.W. Cock) [MJWC]
Hollis Reservoir, at light: ♀ 13.xii.1978 (M.J.W. Cock) [MJWC] (Fig. 17)
Morne Bleu, Textel Installation, at light: ♂ 17.x.1979 (M.J.W. Cock) [NHMUK, TL962]
Valencia Forest, MVL: ♂ iv.1980 (M.J.W. Cock) [MJWC] (Fig. 16)

***Paectes devincta* (Walker, 1858)**

Fig. 18.

OD: Walker (1858): *Abrostola devincta*, TL Venezuela.

Historical notes. A photograph from Chacachacare Island is the only record from Trinidad & Tobago. It was identified by comparison with material from Costa Rica illustrated in BOLD:ABY4649, mostly identified by Daniel H. Janzen.

Taxonomic issues. BOLD:ABY4649 contains material from Mexico and Costa Rica, consistently identified as *P. devincta*. I have not examined the type (NHMUK, ♀ Venezuela) to compare with this material, and the use of this name must be considered provisional. Confirmation of this record with specimens from Chacachacare Island or elsewhere in Trinidad & Tobago would be desirable.

Identification. This species can be recognised by the russet colouring on the dorsal head and thorax, and over the postmedial irregular double narrow line, and the area distal to this (Fig. 18). Males have very broadly bipectinate antennae.

Biology in Trinidad. Unknown, but in Costa Rica this species feeds on Myrtaceae, including guava (*Psidium guajava*) (Janzen and Hallwachs 2022).

Status in Trinidad. One photographic record from Chacachacare Island by Rainer Deo.

CHACACHACARE ISLAND, Old Leprosy Hospital, at light: ♀ 9.vii.2022 (R. Deo photo) [iNaturalist observation 125719912] (Fig. 18)

Fig. 18. Female *Paectes devincta*, Chacachacare Island, Old Leprosy Hospital, at light, 9.vii.2022, R. Deo (iNaturalist observation 125719912); ©, with permission.

***Paectes fuscescens* (Walker, 1855)**

Figs. 19–20.

OD: Walker (1855): *Edema fuscescens*, TL Honduras.

Historical notes. This is a new record from Trinidad. Specimens were identified by comparison with the NHMUK series.

Taxonomic issues. There are no public DNA barcodes in BOLD identified as this species. Given that this species was described from Honduras, it may well be that South American material will be found to be a separate species, so the use of this name for Trinidad shouldbe considered provisional pending further revisionary work.

Identification. This is a rather undistinguished species. In common with *P. arcigera*, *P. fuscescens* has a dark subterminal spot just below apex of the forewing, and there is an irregular post medial line from the dorsum just short of the tornus, to the costa short of the apex, with the section basal to the subterminal spot clearly marked in black. However, where *P. fuscescens* has a complete more or less straight irregular submedial line, *P. arcigera* has this line

Fig. 19. Male *Paectes fuscescens*, Curepe, MVL, 31.xii.1979.

Fig. 20. Female *Paectes fuscescens*, St Benedict's, Pax Guest House, at light, 10-16.vii.1996.

strongly angled basally in a spike above the dorsum, and the area on the costal side of this spike distinctly paler. The male of *P. arcigera* has the antennae very strongly bipectinate to two-thirds, whereas those of *P. fuscescens* are simple (Fig. 19). Worn female specimens might prove difficult to allocate to species without dissection or checking barcodes.

Biology in Trinidad. Unknown, but in Costa Rica, this species feeds on Anacardiaceae, particularly *Anacardium* spp. and *Tapirira mexicana*, and less often on *Protium* spp. (Burseraceae) (Janzen and Hallwachs 2022).

Status in Trinidad. An uncommon species mostly from forested areas

Arima Valley, Simla, MVL: ♀ 18.x.1982 (M.J.W. Cock) [MJWC]

Curepe, MVL: ? 26.viii.1978 (M.J.W. Cock) [NHMUK, TL-855]; ♂ 31.xii.1979 (M.J.W. Cock) [MJWC, TL-855] (Fig. 19)

Morne Bleu, Textel Installation, at light: ♀ 29.iii.1979 (M.J.W. Cock) [MJWC]

St Benedict's, Pax Guest House, at light: ♀ 10-16. vii.1996 (M.J.W. Cock) [MJWC] (Fig. 20)

***Paectes lunodes* (Guenée, 1852)**

Fig. 21.

OD: Guenée (1852): *Ingura lunodes*, TL French Guiana.

TT: *Paectes lunodes* (Guenée): Hampson (1912), Kaye & Lamont (1927)

Historical notes. Hampson (1912) and Kaye & Lamont (1927) recorded a specimen of *P. lunodes* from Caparo, x.1904 (F. Birch) in NHMUK. This specimen has not been located, although it may be amongst the museum's supplementary material. If Birch's specimen can be located, this record can be checked, but there seems no reason to doubt Hampson's identification. I have examined the type of *P. lunodes* (NHMUK, ♂ French Guiana) and have identified a specimen from Palmiste in UWIZM by comparison.

Taxonomic issues. Hampson (1912) treats *P. lunodes* as present in small numbers from USA (Florida) and throughout the Neotropics. Sequences of material in BOLD identified as *P. lunodes* falls into three clustered BINs: BOLD:AAX1890 (USA, Florida – as *P. hercules*, Costa Rica – as *Paectes* sp., Brazil, Rio Grande do Sul – as *P. lunodes*), BOLD:AAC2512 (Mexico, Costa Rica, Peru and Mexico) and BOLD:ACI4119 (Jamaica). Troubridge (2020) described *P. hercules* Troubridge based on females from Key Largo, Florida, referring it to BOLD:AAX1890, and treating *P. lunodes* as BOLD:AAC2512. Given the French Guiana type locality, it seems most appropriate to treat *P. lunodes*, including the Trinidad record, as BOLD:AAC2512, but further research is needed

Identification. *Paectes lunodes* resembles *P. curvilinea*, except that there is a slight step in the curved forewing line of *P. lunodes* at vein 4 (M_3) not seen in *P. curvilinea*.

Biology in Trinidad. Unknown, but in Costa Rica this species feeds on Lauraceae, especially *Mespilodaphne veraguensis* (Janzen and Hallwachs 2022).

Fig. 21. Female *Paectes lunodes*, Palmiste, 4 November 1946, [N. Lamont] [UWIZM.2013.13.1331].

Status in Trinidad. Just two records from Caparo (1904) and Palmiste (1946).

Caparo: ♂ x. 1904 (F. Birch) [NHMUK] (Hampson 1912, Kaye and Lamont 1927; not seen)

Palmiste: ♀ 4.xi.1946 [N. Lamont] [UWIZM.2013.13.1331, as *Paectes ? abrostoloides* Guen.] (Fig. 21)

***Paectes semicircularis* Hampson, 1912**

Figs. 22–24.

OD: Hampson (1912): *Paectes semicircularis*, TL Trinidad.

TT: *Paectes semicircularis* Hampson: Hampson (1912), Kaye & Lamont (1927)

Historical notes. Hampson (1912) described this species from Trinidad based on two females from Caparo (as Cuparo) supposedly collected by Kaye. However, Kaye & Lamont (1927) refer to the type in NHMUK being from Caparo, x.1904 (F. Birch). The two types are labelled x.1904 without collector, but from other specimens we know that although

Fig. 22. Male *Paectes semicircularis*, Curepe, MVL, 8-14.iii.1982.

Fig. 23. Female *Paectes semicircularis*, Parrylands Oilfield, MVL, 13.xi.1980.

Fig. 24. Male *Paectes semicircularis*, Brasso Seco, by night, 26.ii.2022, R. Deo (iNaturalist observation 107635126); © with permision.

W.J. Kaye did not collect at Caparo or in October 1904, F. Birch did, and so we accept Kaye & Lamont's (1927) information. Recent material in MJWC was identified by comparison with the type and NHMUK series

Taxonomic issues. No public DNA barcodes in BOLD.

Identification. A distinctive small species.

Biology in Trinidad. Unknown.

Status in Trinidad. An uncommon species from scattered localities.

Arima Valley, Verdant Vale: ♂ 20.ix.2022 (S. Tran photo) [iNaturalist observation 135755707]

Brasso Seco, by night: ♂ 26.ii.2022 (R. Deo photo) [iNaturalist observation 107635126] (Fig. 24)

Brasso Seco, at light: ♀ 22.iv.2023 (A. Deacon photo) [iNaturalist observation 156337191]

Caparo: ♀ (holotype) x.1904 [NHM] (photo); ♀ (paratype) x.1904 [NHM]; ? i.1906, S.M. Klages [NHM]

Curepe, MVL: ♂ 8-14.iii.1982 (M.J.W. Cock) [MJWC] (Fig. 22)

Parrylands Oilfield, MVL: ♀ 13.xi.1980 (M.J.W. Cock) [MJWC] (Fig. 23)

Subfamily Stictopterinae Hampson, 1894

Type genus *Stictoptera* Guenée, 1852 (type species *Stictoptera cucullioides* Guenée, 1852, TL Indonesia, Java. This is predominantly an Old World subfamily of ten genera. Most genera and species are found in South East Asia, no species are Nearctic, and the four species of *Nagara* are restricted to the Neotropics.

***Nagara* Walker [1866] (1865)**

Type species: *Nagara phryganealis* Walker, TL, Jamaica, a synonym of *P. vitrea* Guenée, 1852, TL Jamaica. This is a neotropical genus of four species, one of which occurs in Trinidad.

***Nagara clara* (Stoll, 1782)**

Figs. 25–30.

OD: Stoll (1782): *Phalaena Noctua clara*, TL not given, [South America].

TT: *Stictoptera clara* (Stoll): Kaye & Lamont (1927)

Historical notes. Kaye & Lamont (1927) recorded this species (as *Stictoptera clara* Cramer) from Palmiste, 23.xii.1921 (N.L.). This specimen, a male, was examined in RMS. This identification was confirmed by comparison with the NHMUK series.

Taxonomic issues. DNA barcode sequences in BOLD of material identified as *N. clara* from French Guiana and Costa Rica form BIN BOLD:AAB8763. There seems no reason not to apply this name also to Trinidad material.

Identification. The long pointed forewings, particularly of the males, make this species distinctive in Trinidad. Note *N. vitrea* (Guenée, 1852) (TL Jamaica; BIN BOLD:AAB1825) is very similar, but does not seem to occur in South America (Hampson 1912). There is moderate individual variation. Males (Figs. 25–26, 29) have longer, more pointed forewings and females (Figs. 27–28, 30) have more clearly defined and contrasting forewing wing markings.

Biology. No information from Trinidad. Janzen & Hallwachs (2022) document the food plants of *N. vitrea* as *Clusia cylindrica* (Clusiaceae) and *Calophyllum brasiliense* (Calophyllaceae) in Costa Rica, and include images of the plain green caterpillar.

Status in Trinidad. An occasional species, mostly in forested areas.

Brasso Seco: ♀ 14.iii.2015 (K. Sookdeo photo, moths 66)

Brasso Seco, 10.74 -61.26, by night: ♀ 24.vii.2021 (R. Deo photo) [iNaturalist observation 88706059]; ♂ 25.vii.2021 (R. Deo photo) [iNaturalist observation 88668086] (Fig. 29)

Brasso Seco, 10.76 -61.25, by night: ♀ 16.v.2021 (R. Deo photo) [iNaturalist observation 79101604] (Fig. 30)

Brigand Hill, lighthouse security MVL lights: ♂ 17.i.2004 (M.J.W. Cock) [MJWC]

Cumaca Road, 4.6.miles, MVL: ♂ 18.vii.1981 (M.J.W. Cock) [MJWC] (Fig. 25)

Curepe, MVL: ♀ 6-11.i.1981 (M.J.W. Cock) [UWIZM CABI.3649]

Nr. Matura, off Edwards Trace, 10.13 -61.26: ♂ 30.viii.2019 (S. Manchouk photo) [iNaturalist observation 33717149]

Morne Bleu, Textel Installation, at light: ♀ 10.vii.1978 (M.J.W. Cock) [UWIZM CABI.3648]; ♂ 17.vii.1978 (M.J.W. Cock) [MJWC] (Fig. 26); ♀ 10.viii.1978 (M.J.W. Cock) [MJWC] (Fig. 28); ♀ , ?♀ 20.ix.1978 (M.J.W. Cock) [MJWC, TL-417; ?♀ NHMUK, TL-417] (Fig. 27); ♀ 29.iii.1979 (M.J.W. Cock) [UWIZM CABI.3520]

Fig. 25. Male *Nagara clara*, Cumaca Road, 4.6.miles, MVL, 18.vii.1981.

Fig. 26. Male *Nagara clara*, Morne Bleu, Textel Installation, at light, 17.vii.1978.

Fig. 27. Female *Nagara clara*, Morne Bleu, Textel Installation, at light, 20.ix.1978.

Fig. 28. Female *Nagara clara*, Morne Bleu, Textel Installation, at light, 10.viii.1978.

Fig. 29. Male *Nagara clara*, Brasso Seco, by night, 25.vii.2021, R. Deo (iNaturalist observation 88668086); ©, with permission.

Fig. 30. Female *Nagara clara*, Brasso Seco, by night, 16.v.2021, R. Deo (iNaturalist observation 79101604); ©, with permission.

Palmiste: ♂ 23.xii.1921 [N. Lamont] [RSM]; ♂ 23.iv.1926 [N. Lamont] [UWIZM.2013.13.1330]
St Benedict's: ♀ 19.x.1979 (M.J.W. Cock) [UWIZM CABI.3647]
[Trinidad]: ♀ [N. Lamont] [RSM]

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