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The Skipper Butterflies (Hesperiidae) of Trinidad Part 18, Hesperiinae, Moncini: Eight Genera of Relatively Distinctive Species: *Callimormus*, *Eutocus*, *Artines*, *Flaccilla*, *Phanes*, *Monca*, *Vehilius* and *Parphorus*

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The Skipper Butterflies (Hesperiidae) of Trinidad
Part 18, Hesperiinae, Moncini: Eight Genera of Relatively Distinctive Species: *Callimormus*, *Eutocus*, *Artines*, *Flaccilla*, *Phanes*, *Monca*, *Vehilius* and *Parphorus*

Matthew J. W. Cock

c/o CABI Europe - Switzerland, Rue des Grillons 1, CH-2800 Delémont, Switzerland.
m.cock@cabi.org

ABSTRACT

Trinidad and Tobago skipper butterflies (Hesperiidae) of the tribe Moncini (genera *Callimormus*, *Eutocus*, *Artines*, *Flaccilla*, *Phanes*, *Monca*, *Vehilius* and *Parphorus*) are treated and the adults illustrated. Details are given of the taxonomy, history, identification and biology of the 19 Trinidad species in these genera. Of these, three species occur in Tobago, and *C. juventus* Scudder is reported from Tobago but not Trinidad. *Vehilius celeus celeus* (Mabille) is a new record for Trinidad. The single record of *P. decora* (Herrich-Schäffer) from Tobago is shown to be based on a misidentified specimen of *C. juventus*. Partial life histories of *F. aecas* (Stoll), *V. s. stictomenes* (Butler), *P. s. storax* (Mabille) and *P. decora* are described and illustrated for *F. aecas* and *P. storax*. *Monca crispinus* (Plötz) **stat. rev.** is recognised as a valid species, not a subspecies of *M. telata* (Herrich-Schäffer).

Key words: Trinidad, Tobago, Hesperiidae, *Callimormus*, *Eutocus*, *Artines*, *Flaccilla*, *Phanes*, *Monca*, *Vehilius*, *Parphorus*, life history, food plant.

INTRODUCTION

This paper is the third in my series on Trinidad Hesperiidae to deal with members of the tribe Moncini, subfamily Hesperiinae. Cock (2010) gave a general introduction to this tribe, and Cock (2009) dealt with the genera *Vettius*, *Turesis*, *Thoon*, *Justinia*, *Eutychide*, *Onophas*, *Naevolus*. As explained in Cock (2010), this part covers the distinctive, relatively easily identified species of Moncini not already covered. Part 19 will cover the brown species with pale spots and part 20 the plain brown species.

In this part I have included reference to the original description of all the Trinidad species treated. Up until now this has not been practical because I had not been able to check the original literature, and it was not useful to quote since almost none was available in Trinidad and Tobago. Today, virtually all these are available through the internet, thanks to the efforts of groups such as the Biodiversity Heritage Library, Goettingen University and the Smithsonian Institution.

With *Living World* moving to full colour production, it no longer seems necessary to include a colour description of the adult butterflies, as has been my practice hitherto. Equally, it is not necessary to include references to published illustrations, unless they add to those which I provide. However, I do include references to published illustrations of the male and female genitalia when they are available.

In this paper, all specimens illustrated are in the author's collection unless indicated otherwise. Similarly, any specimens referred to without attributing a collector or collection, were collected by the author and are in either the author's collection or the collection of CABI, Curepe, Trinidad. Other conventions and abbreviations follow earlier parts of this series (Cock 2010 and earlier papers). Plant names have been checked against Tropicos (2010). The museum abbreviations are given in the acknowledgements at the end of the paper.

Species with veins of UNH and apex UNF pale or yellow

In this paper, nine of the eleven Trinidad species characterised by pale or yellow veins on the UNH and apical area of the UNF are treated: *Callimormus alsimo* (Möschler), *C. juventus* Scudder, *Eutocus vetulus vetulus* (Mabille), *Vehilius stictomenes stictomenes* (Butler), *V. celeus celeus* (Mabille), *V. vetula* (Mabille), *V. seriatus seriatus* (Mabille), *Parphorus storax storax* (Mabille) and *P. decora* (Herrich-Schäffer). Two similar species, *Saturnus saturnus saturnus* (Fabricius) and female *S. reticulata reticulata* (Plötz), were treated in Cock (2006). Several other species which have the UNH veins only slightly paler than the ground colour will be treated in the next part in this series.

Of these 11 species, *C. alsimo*, *P. storax*, *P. decora* and *S. saturnus* have no spots in the spaces between the veins, UNH. *Callimormus alsimo* (Figs. 1-2) has only a trace of discal spots F and is darker than the other species. *Parphorus storax* is smaller, and although the female has no spots F (Fig. 45), the male does, at least UPF (Fig. 44); the yellow veins are more heavily marked than in *C. alsimo* and more extensive UNF. *Parphorus decora* and *S. saturnus* both have yellow spots F, but *S. saturnus* has a spot in space 1B UNF (Cock 2006, Figs. 1-2), which *P. decora* does not have (Figs. 50-51); the yellow veins on

the UNS of *P. decora* are also more heavily marked.

The remaining species, *C. juventus*, *E. vetulus*, *V. stictomenes*, *V. celeus*, *V. seriatus*, *V. vetula*, and female *S. reticulata*, have spots in the spaces between the veins UNH. In *E. vetulus* these spots are pale blueish, not white or yellow. In *C. juventus*, *V. vetula* and *V. seriatus* the UNS has a strong purple sheen. In *C. juventus* (Figs. 3-4) and *V. vetula* (Fig. 31) the spots are small; the former has yellow spots F, but the latter doesn't. *Vehilius seriatus* is distinctive because the pale yellow spots (some in spaces, some on veins) are connected to the margin by a pale yellow line (Figs. 32-33).

The remaining three species do not have a purple sheen UNS. *Saturnus reticulata* is larger (Cock 2006, Fig. 8), the spots UNH are short streaks and the veins are weakly yellow. *Vehilius celeus* and *V. stictomenes* both have long streaks in the spaces UNH, those of *V. celeus* yellower and those of *V. stictomenes* whiter; UPH, the spots are stronger in *V. celeus* (Fig. 30), which also has spots in spaces 4 and 5 F which are not present in *V. stictomenes* (Figs. 24-25).

Callimormus Scudder 1872

A genus of about nine species, which Evans (1955) characterises by the antennae just over half as long as the costa, shaft usually chequered yellow, yellow under base of club, club slender, obtuse at thickest point to long apiculus, tip pointed; nudum of ten segments entirely on apiculus; palpi cylindrical: third segment long, slender, acicular (Figs. 1, 7); mid tibiae generally with a few long spines; small species: F 10-12 mm; wings rounded: H vein lA = vein 8; male UPF with brands: typically against cell between veins 2 and 3, and under vein 2; typically with yellow discal spots UPF and UNH with yellow veins; the genitalia indicate a compact genus.

Vehilius spp. (below) are similar in appearance, but *Callimormus* spp. are quite easy to distinguish by the relatively long, slender third segment of the palpi.

J2/2 *Callimormus alsimo* (Möschler 1883)

Figs. 1-2.

Möschler (1883) described and illustrated this species from Surinam. Godman (1901 in Godman 1899-1901, plate 103, Figs. 32-33) illustrates the UNS and male genitalia as *C. filata* (Plötz), which is a synonym (Evans 1955; Mielke 2004); Burns (1990) reproduces the figure of the male genitalia. Evans (1955) lists specimens from Panama to south Brazil, but the only place from which there is a long series in the NHM is Trinidad (22♂, 6♀). Kaye (1914, 1921, no. 439) records this species from Trinidad as *C. filata* based on a specimen from St. Ann's Valley collected by G.E. Tryhane.

Identification is discussed above with other species with UNH and apex UNF veins pale or yellow.

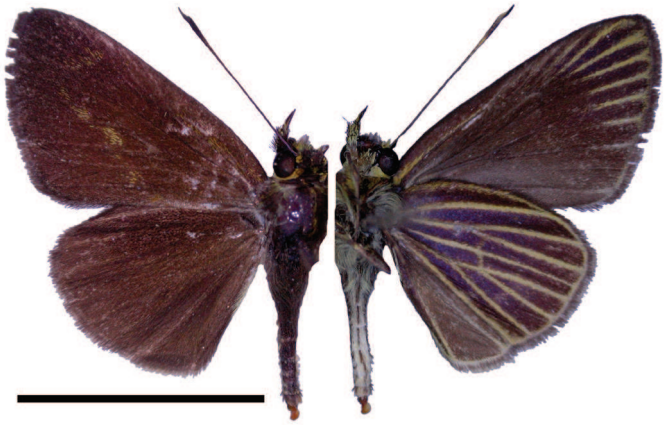

Fig. 1. Adult ♂ *Callimormus alsimo,* Morne Catherine, 24.iii.1982. Scale bar = 1cm.

Fig. 2. Adult ♀ *Callimormus alsimo,* Morne Catherine, 31.iii.1982. Scale bar = 1cm.

I have records of 38 specimens from Trinidad which show that this species is found primarily in the Northern Range, from Morne Catherine to Guanapo Valley, at altitudes from near sea level to about 1,600 ft. (490 m) in San Miguel Valley behind Mt. St. Benedict (♂ 29.vii.1978). Just one record from the south of the island (Parrylands, ♀ 13.ii.1980) shows that although it may be found, it is not common. Most records are from the dry season, January to March.

The life history and food plants have not been reported (Mielke 2005; Beccaloni *et al*. 2008).

J2/6 *Callimormus juventus* Scudder 1872

Figs. 3-4.

Scudder (1872) described *C. juventus* from Panama, and placed it in his new genus *Callimormus*; his female type can be seen at Harvard College (2010). Godman (1901 in Godman 1899-1901, plate 103, Figs. 28-31) illustrates the UPS, UNS, venation and male genitalia;

Burns (1990) reproduces the figure of the male genitalia. Hayward (1950, plate xiii.11) also illustrates the male genitalia. It is found from Mexico to Argentina, including Venezuela and Surinam (Evans 1955), but although it has been recorded from Tobago, it is not known from Trinidad (as yet). It would seem worthwhile to keep an eye out for this species in the north-west of Trinidad and on the Bocas Islands.

Fig. 3. Adult ♂ *Callimormus juventus*, Speyside, Tobago, ii.1922, A. Hall; specimen in BM.

Fig. 4. Adult ♂ *Callimormus juventus*, Tobago, W.G. Sheldon bequest; specimen in NHM. Scale bar = 1cm.

Sheldon (1936) records this species from Tobago as "*C. juventa* Latr." based on an A. Hall specimen from Speyside. This could be either the specimen in the BM, shown as Fig. 3, or that in the NHM, both collected by A. Hall, Speyside, ii.1932. W.G. Sheldon subsequently captured specimens himself (♂ and ♀ now in the NHM), but did not publish this. One of Sheldon's specimens was misidentified by Evans (1955) as *Parphorus decora* (see under that species below).

Janzen and Hallwachs (2010) have reared this species from grasses four times, but the only grass species identified is *Acroceras zizanioides*. They also illustrate the final instar caterpillar.

J2/7 *Callimormus corades* (C. Felder [1863])
Figs. 5-7.

This species is reported from Colombia, Brazil (type locality "Rio", i.e. Rio de Janeiro) and Argentina (Evans 1955), as well as Surinam (Williams and Bell 1931; Dinther 1960; De Jong 1983). The illustrations of the adult and male genitalia by Godman (1901 in Godman 1899-1901, plate 103, Fig. 37) are of *C. saturnus* (Herrich-Schäffer) (Evans 1955; Mielke 2005). Bell (1941a) illustrates the male genitalia of *C. igarapus* Bell, which is a synonym of *C. corades* (Mielke 2004), and Hayward (1950, plate xiii.9) also illustrates the male genitalia.

Hence, although Crowfoot (1893) and Kaye (1914, 1921, no. 440) recorded this species from Trinidad, I assume that these records follow Godman (1901 in Godman 1899-1901) and actually refer to the common *C. saturnus* (below). Similarly, Longstaff's (1908, 1912) and Sheldon's (1936) records of *C. corades* from Tobago are considered to refer to *C. saturnus*.

Fig. 5. Adult ♂ *Callimormus corades*, Debe, 28.viii.1982. Scale bar = 1cm.

Fig. 6. Adult ♀ *Callimormus corades*, Arena Forest Reserve, forest track, 23.iii.1982. Scale in mm.

Fig. 7. *Callimormus corades*, South Oropouche, Mon Desir, 16.xii.2009 (photo, Tarran P. Maharaj).

In spite of the early misidentifications of *C. corades* from Trinidad, it is a true Trinidad species which I now correctly record from the island for the first time: Arena Forest Reserve (♂,♀ 23.iii.1980, MJWC), Debe (♂ 28.viii.1982, MJWC), South Oropouche, Mon Desir, 16.xii.2009 (photo, T.P. Maharaj, Fig. 7). S. Alston-Smith (pers. comm. 2011) has a further four specimens, all from the south of the island.

This small species can be recognised by its grey tone UNS, the faint, pale discal band UNH, pale veins near the margin UNH, and the diffuse yellow spots UPH. It might be confused with *C. saturnus* which is browner, and does not have pale veins UNH. *Vehilius inca* (Scudder) is superficially similar, but the UPF spots are white, not yellow, and there is no UNH discal band.

This is an uncommon species in Trinidad, although easily overlooked. It is difficult to generalise about habitats, but it seems to be associated with roadsides in secondary forest areas.

Dinther (1960) lists several Hesperiidae, including *C. corades*, that feed on rice in Surinam, but do not cause economic damage. This record is repeated by Remillet (1998), which is the source of its inclusion in Beccaloni *et al*. (2008).

J2/8 *Callimormus saturnus* (Herrich-Schäffer 1869 in Herrich-Schäffer 1867-1871)

Figs. 8-10.

This common and widespread species is reported from Mexico to Paraguay, and was described from Venezuela (Evans 1955; Scott 1986). The illustrations of the adult and male genitalia by Godman (1901 in Godman 1899-1901, plate 103, Fig. 37) as *C. corades* are actually of *C. saturnus* (Evans 1955; Mielke 2005).

As indicated under the last species, Trinidad records of *C. saturnus* incorrectly use the name *C. corades.* Crowfoot (1893) first recorded this species from Trinidad (as *Pamphila corades*), and Kaye (1914, 1921, no. 440) included it based on a G.E. Tryhane specimen from St. Ann's Valley. There are no specimens of *C. corades* from Trinidad in the NHM, but many specimens of *C. saturnus*, including 8♂ and 5♀ from St. Anns' [sic] Valley.

There are no specimens of *C. corades* or *C. saturnus* from Tobago in the NHM, but there is a female *C. saturnus* from Speyside (ii.1932, A. Hall) in BM (misidentified as *Cymaenes tripunctus* (Herrich-Schäffer)), which is in line with Sheldon's (1936) comment regarding *C. corades*: "Speyside, not uncommon around hotel (A.H. and W.G.S.)".

Fig. 8. Adult ♂ *Callimormus saturnus*, Maracas Valley, Ortinola Estate, 18.i.1982. Scale bar = 1cm.

Fig. 9. Adult ♀ *Callimormus saturnus*, Mt. St. Benedict, 15.i.1988. Scale bar = 1cm.

This common small species can be recognised by the yellow spots UPF, and especially the distinct pale brown discal band UNH. The large quadrate yellow spot in space 2 UPF, especially in males, can also be helpful.

This is a common species in Trinidad – I have 74 records from throughout the island from sea level to 2,300

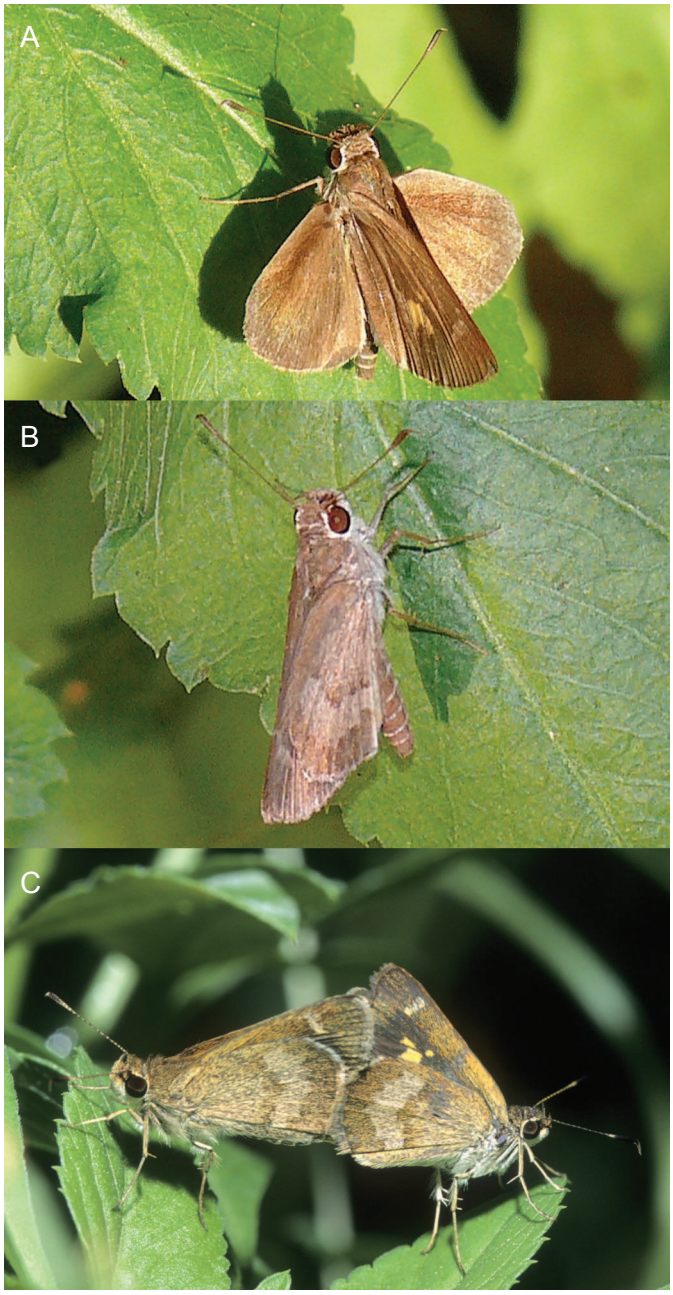

Fig. 10. Adults of *Callimormus saturnus*. **A**, basking, South Oropouche, Mon Desir, 7.ii.2010 (photo, Tarran P. Maharaj); **B**, same individual as A, under side (photo, Tarran P. Maharaj); **C**, mating pair, in secondary rainforest on top of Mt. St. Benedict during the 2nd week of July 2002 (photo, Bryan Reynolds, www.botwf.org).

ft. (700 m, Morne Bleu Textel, ♂ 16.i.1988), primarily in disturbed situations such as roadsides. It is also present on Chacachacare Island (Rusts Bay, ♂ 15.i.1980) (Cock 1981) and widespread in Tobago (Crown Point, Bloody Bay, Speyside, Charlotteville-Speyside Ridge).

Janzen and Hallwachs (2010) have reared this species ten times from five different grasses, of which *Panicum trichoides* and *Paspalum notatum* are the only ones recorded more than once. They do not illustrate the early stages.

Eutocus Godman 1900 in Godman 1899-1901

This genus of seven species is similar to *Callimormus* (Evans 1955) with an angled brand over the origin of vein 2, but no brand below that vein; mid tibiae smooth; mostly small, male F 10-12 mm; inconspicuous or no markings UPF. The male genitalia are not of the *Callimormus* type and vary a good deal with the species, so probably more than one genus is involved.

J3/1 *Eutocus facilis* (Plötz)

I defer treatment of this small plain brown species until a later part of this series, so that the plain brown species can be treated together.

J3/4 *Eutocus vetulus vetulus* (Mabille 1883)

Figs. 11-12.

Evans (1955), and hence Cock (1982), treated this taxon as *vinda* Evans 1955, a subspecies of *E. matildae* (Hayward). However, Evans (1955) had misidentified *vetulus* Mabille as a species of *Vehilius* (see *V. seriatus* below), and Mielke and Casagrande (2002) established that *vetulus* Mabille 1883 (as opposed to *vetulus* Mabille 1878) is actually a senior synonym of *vinda* Evans. Hence, *Eutocus vetulus vetulus* is the nominate subspecies described from Brazil and found from Panama to east Bolivia, including Trinidad (Evans 1955) and Suriname (De Jong 1983), and *matildae* is now a subspecies of *E. vetulus*.

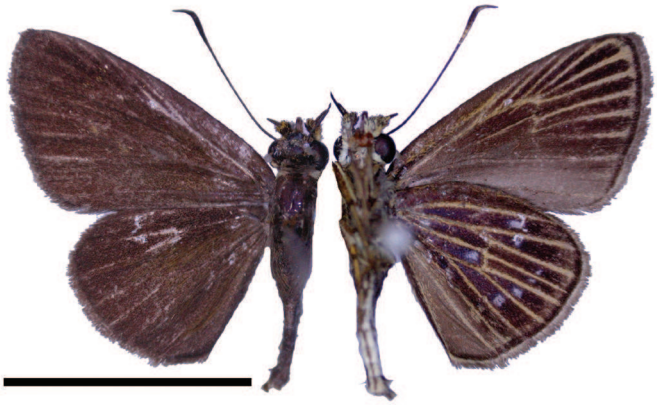

Fig. 11. Adult ♂ *Eutocus vetulus vetulus*, Arena Forest Reserve, 23.iii.1980. Scale bar = 1cm.

The genitalia do not seem to have been illustrated for this subspecies (Mielke 2005). Evans (1955) includes a diagram of the male genitalia of ssp. *matildae*, and Hayward (1950, plate xi.7) also shows this species, although

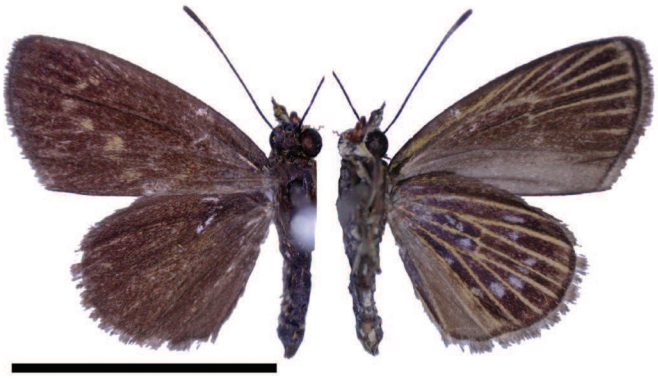

Fig. 12. Adult ♀ *Eutocus vetulus vetulus*, Upper Guanapo Valley, 23.i.1988. Scale bar = 1cm.

the two illustrations do not obviously belong to the same species.

This species is easily separated from other species with UNH and apex UNF veins pale or yellow, by the blue tone to the spots in UNH spaces.

Although Evans lists just one female from Trinidad in the NHM, there are two, one collected by W.J. Kaye from "Trinidad" (1906-10), and the other by F. Birch from Caparo, probably in the first decade of the twentieth century. I have three more records: Arena Forest Reserve (♂ 23.iii.1980), Brasso (♀ 11.x.1993) and Upper Guanapo Valley (♀ 23.i.1988), and S. Alston-Smith (pers. comm. 2011) has two more from Chatham (in forest, ♂ viii.2006), and Moruga East (in bamboo near the bridge on the old road for Moruga Bouffe, ♂ xii.2006). Thus, this species is widespread at low altitudes, normally in forest situations.

There seem to be no records of the life history or food plants (Mielke 2005; Beccaloni *et al*. 2008).

Artines Godman 1901 in Godman 1899-1901

Godman established this genus with *aepitus* (Geyer) as the type species, but the species which he treated as *aepitus* was actually *A. aquilina* (Plötz), so that is the type species for the genus, not *aepitus*. There are at least seven species in this genus, but only one from Trinidad, which is easily recognised.

J12/1 *Artines aepitus* (Geyer [1832] in Hübner [1832]-[1833])

Fig. 13.

This species was incorrectly said to be from Java when it was described (Geyer [1832]), but it actually occurs from Panama to Brazil (Evans 1955). Godman (1901 in Godman 1899-1901) did not know *aepitus*, and described this species anew as *A. atizies* Godman, from Panama, Venezuela, Trinidad, Guyana (holotype) and Brazil. Godman (1901 in Godman 1899-1901, plate 103, Figs. 49-50) illustrates the UNS and male genitalia as *A. atizies*.

Hence, it was under the name *A. atizies* that Kaye (1904) included this species in his first catalogue based on "Two specimens in St. Ann's Valley in July 1898 (W. J. Kaye)" and adds that it "is very conspicuous on the wing and flies in damp, dark places". Later, he states that it is "fairly frequent, and not at all rare" (Kaye 1921, no. 441). The latter comment is reflected in the NHM collection which contains 39 males and 19 females of this species from Trinidad, but no more than ten each from any other location (Evans 1955).

The sexes are similar and the male has no brand UPF. The UNH markings should not be confused with any other Trinidad species, although the two *Phanes* spp. (below) have similar colouring UNH.

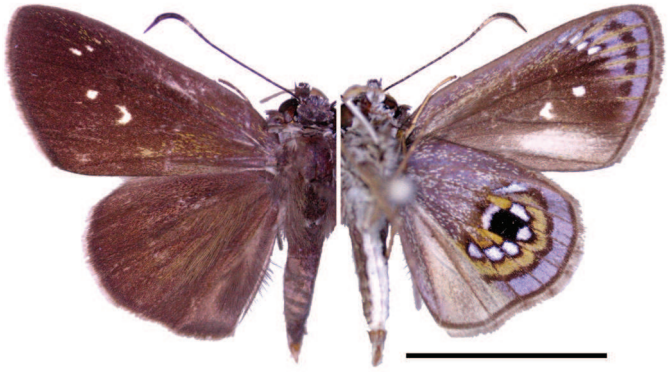

Fig. 13. Adult ♂ *Artines aepitus*, Mt. Tabor, 1,200 ft. (365 m), 27.xii.1979. Scale bar = 1cm.

Of the 67 records from Trinidad that I have of this species, 13 have no locality beyond Trinidad, and the great majority of the remainder are from the foothills of the Northern Range, from Morne Catherine to Arima Valley. The highest elevation of which I have a record is 1500 ft. (Morne Catherine, ♂ 28.i.1980). The only records from outside the Northern Range are from Spanish Farm, Las Lomas (♀ 31.viii.1980; ♀ 17.xii.1980) and Caparo (♂, 4♀ in NHM). At this time I have no records from the Central Range or the south of the island. The collection localities all seem to be forested areas, with no records from open or suburban areas.

Neither Mielke (2005) nor Beccaloni *et al*. (2008) list any records of the life history or food plants.

Flaccilla Godman 1901 in Godman 1899-1901

Godman (1901 in Godman 1899-1901) established the monotypic genus *Flaccilla* for the distinctive species *aecas* (Stoll). Hemming (1939) considered *Flaccilla* a

homonym and introduced *Aecas* Hemming to replace it, and this is the genus used by Evans (1955) and Cock (1982). However, Hemming (1967) reinstated *Flaccilla*, sinking *Aecas* as a synonym, so that *Flaccilla* is used again for this species (Mielke 2004).

J13 *Flaccilla aecas* (Stoll 1781 in Cramer 1780-1782) Figs. 14-18.

This species was described from Surinam (Stoll 1781) and occurs from Guatemala to south Brazil (Evans 1955). Kaye (1914) mis-spelt the genus as *Flacilla* when he added *F. aecas* to the Trinidad list, and as *Flacilia* in his catalogue (Kaye 1921, no. 433).

Godman (1901 in Godman 1899-1901, plate 102, Figs. 39-40) illustrates the male forewing venation and genitalia. The male UPF has long, narrow brands, against the cell between veins 2 and 3, over and under vein 2 and over vein 1. Otherwise the sexes are similar. The purple-blue iridescence UNS should distinguish this species from any others in Trinidad.

I have 34 records of this species from Trinidad. Although most records are from the Northern Range, from Morne Catherine to Morne Bleu, there are also records from central and south Trinidad. The localities are mostly at lower altitudes, but several were taken above 2,000 ft. (610 m), one at 2,500 ft. (760 m), between Morne Bleu and the Textel Installation (♀ 6.ii.1981). Most records are from forested areas, including disturbed forests (e.g., Wallerfield, ♀ 29.ii.1980), but one male was captured in the mercury vapour light trap in my garden in Curepe (11.ii.1980). It flies throughout the year, although more captures have been made between September and March.

Steinhauser (1975) reports rearing this species on "bamboo" in Colombia. I have found final or penultimate instar caterpillars of *F. aecas* on *Bambusa vulgaris* on at least three occasions (93/5, Mt. St. Benedict, 11.x.1993; 94/46, Rio Claro-Guayaguayare, between milestones 4½ and 5½, 1.x.1994; 95/46, Point Gourde, 8.x.1995), but the last was parasitized, and neither of the first two emerged

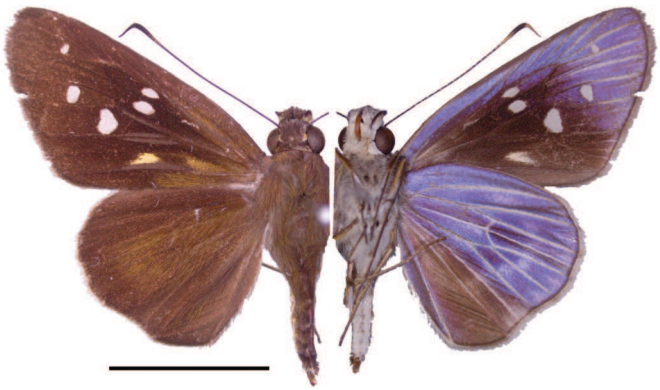

Fig. 14. Adult ♂ *Flaccilla aecas*, Curepe, MVL trap, 11.ii.1980. Scale bar = 1cm.

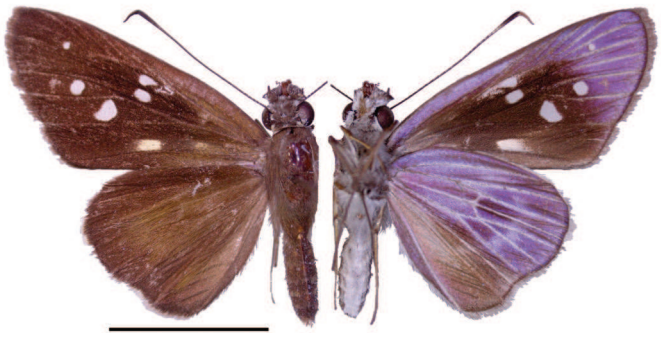

Fig. 15. Adult ♀ *Flaccilla aecas*, St. Ann's Ridge, 30.i.1979. Scale bar = 1cm.

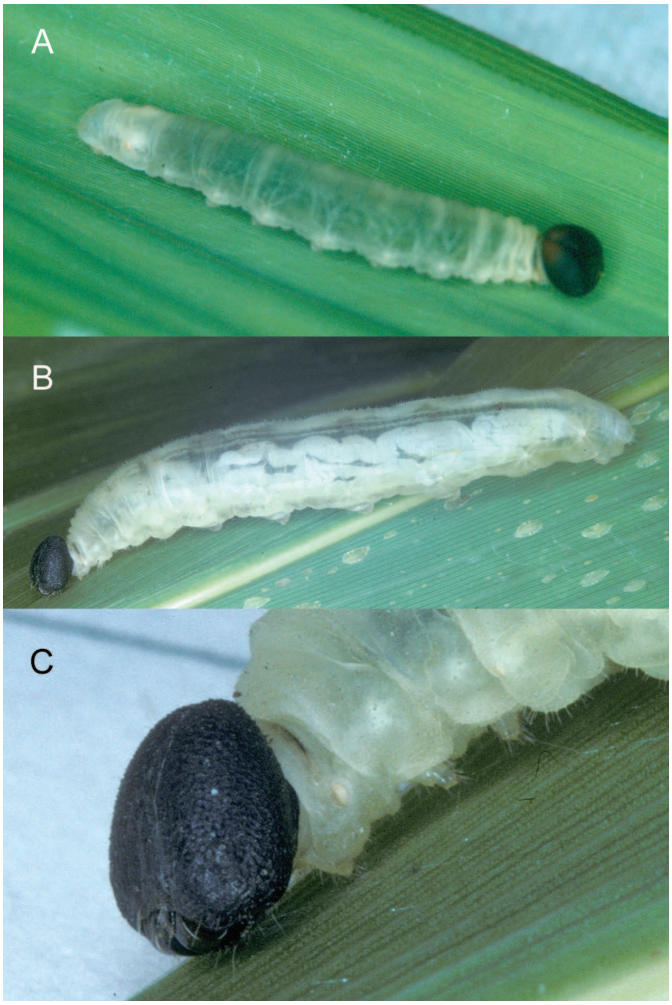

Fig. 16. Instar 5 caterpillars of *Flaccilla aecas* collected on *Bambusa vulgaris*. **A**, collected 1.x.1994 as instar 5, Rio Claro-Guayaguayare, between milestones 4½ and 5½, photo 4.x.94, pupated 1.x.1994, Ref. 94/46; **B**, collected 8.x.1995 as instar 5, Point Gourde, photo 8.x.1995, pupated 14.x.1995, 29 mm, Ref. 95/46; **C**, close up of anterior portion, anterolateral view, details as B.

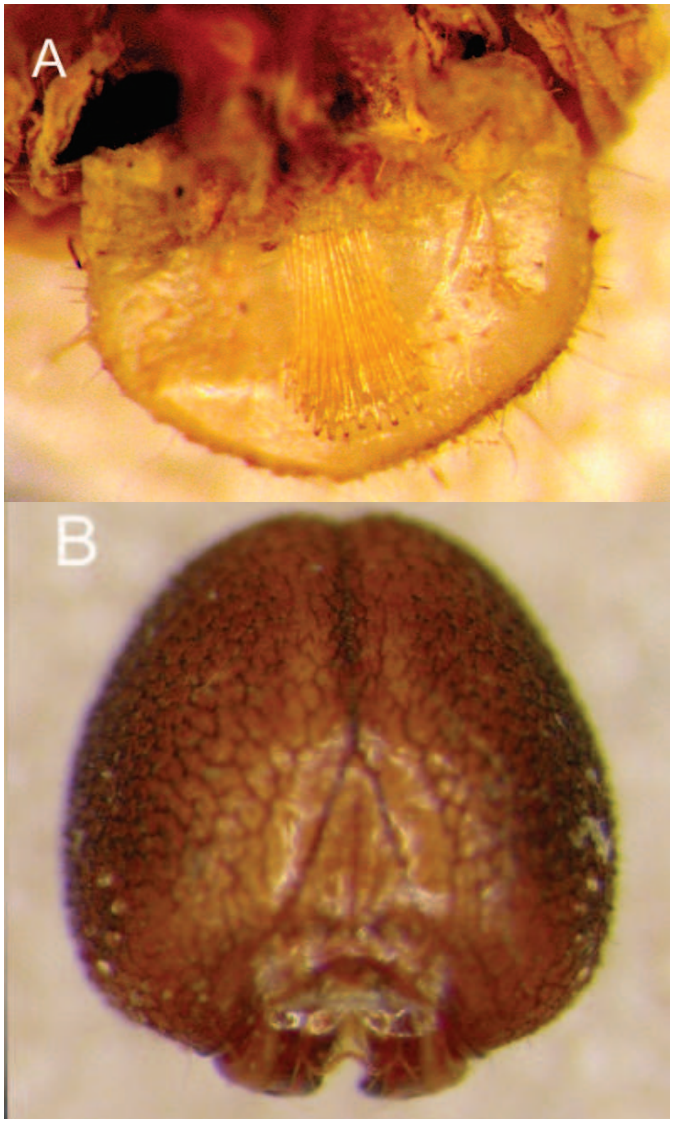

Fig. 17. Details of caterpillars of *Flaccilla aecas* collected 11.x.1993 on *Bambusa vulgaris*, Mt. St. Benedict, Ref. 93/5. **A**, anal comb and anal plate of cast instar 5 skin, ventral view; **B**, head capsule of instar 4, frontal view.

properly. I have also observed a female flying around *B. vulgaris* showing what appeared to be oviposition behaviour (Arima-Blanchisseuse Road, milestone 9¾, 1600 h, 17.i.2004). Since *B. vulgaris* is exotic, presumably *F. aecas* also feeds on one or more indigenous bamboos.

The later leaf shelters are made by folding over the distal part of a leaf along the midrib, and feeding basally to this from both leaf margins to the midrib, leaving the midrib bare for up to 7 cm. The bared midrib bends, so that the distal portion with the shelter is pendulous. The caterpillar may also feed on the leaf distal to the shelter, and for the pupal chamber, the edges of the leaf forming the shelter are eaten to make a narrower, tighter shelter. Shelter 94/46 contained a near mature caterpillar and was made on a 34 cm leaf; the basal leaf for 11.5 cm on one side and 14.5 cm on the other was intact, the midrib was then bare by feeding for 7 cm, and the shelter beyond this was 12.5 cm long.

An instar 4 caterpillar had the head rounded triangular (i.e. wider nearer the base than the apex – cf. Fig. 17B), rugose, dark brown. The final instar caterpillar (95/46) grows to 30 mm or more; head rounded triangular, slightly indent at vertex; rugose; matt black, dark brown below apices each side of epicranial suture and at the base of the clypeus. T1 with a very narrow, dark, dorsal plate, pale at dorsum. Body matt translucent dark dull green; dorsal vessel visible as a double pale line; convoluted white fat bodies obvious, at least in some individuals. Spiracles pale, inconspicuous; legs concolorous.

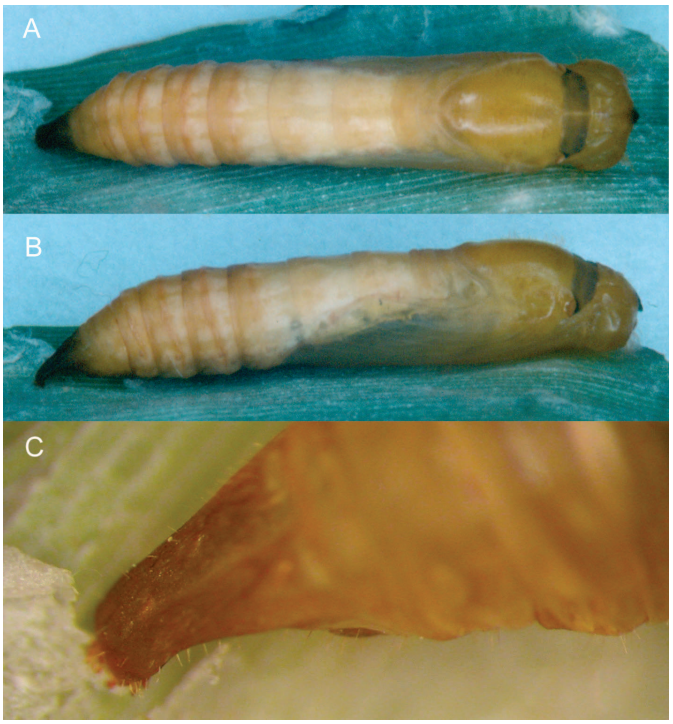

Fig. 18. Pupa of *Flaccilla aecas*, collected 11.x.1993 as caterpillar on *Bambusa vulgaris*, Mt. St. Benedict, 15 mm, Ref. 93/5. **A**, dorsal view; **B**, lateral view; **C**, dorsolateral view of cremaster.

The pupa (Fig. 18) is slender, 15 mm long; the frontal projection is a short, downward-directed, dark protuberance; ventrally, between eyes, two small bumps; proboscis sheath extends 3-4 mm beyond wing cases; pupa light brown, paler on abdomen; spiracle T1 slightly darker; a broad, blackish line across collar between spiracles T1; other spiracles concolorous.

There are three emerged pupae and one parasitized pupa from Moss' collection over this name in the NHM. The three emerged pupae match the pupa described here, but the parasitized one has a strong frontal spike and is

clearly a different species. By implication, the ichneumonid adult associated with this material is from the parasitized pupa, and so would be incorrectly associated with *F. aecas*.

I obtained a tachinid from the pupa of one field collected caterpillar (Point Gourde, 8.x.1995, 95/46). A single tachinid larva came out of the pupa three days after formation, formed a puparium, but failed to emerge.

Phanes Godman 1901 in Godman 1899-1901

Godman (1901 in Godman 1899-1901) originally proposed the genus *Phanes* as *Phanis*, but when that was shown to be a homonym, he amended it to *Phanes* (Godman 1901 in Godman 1899-1901, supplement, p. 741). Nevertheless, this change has been overlooked by some authors and *Phanis* appears in the literature. *Phanes* was established for *justinianus* Latreille, incorrectly considered to be synonymous with *aletes* (Geyer) at that time. The true *justinianus* is also a Trinidad species, now placed in the genus *Justinia* Evans (Evans 1955; Mielke 2004; Cock 2009).

Males have a small sagittate brand over the origin vein 2 UPF. Evans (1955) treats seven species in this genus of which two occur in Trinidad and are distinctive and easily recognised.

J23/1 *Phanes aletes* (Geyer [1832] in Hübner [1832]-[1833])

Fig. 19.

Phanes aletes is found from Mexico to south Brazil (Evans 1955). Godman (1900 in Godman 1899-1901, plate 99, Figs. 24-27) illustrates the UPS, UNS and male venation and genitalia as *P. justinianus*. According to Evans (1955), Hayward's (1950, plate ix.13) illustration of the male genitalia is actually of *P. almoda* (Hewitson) (see below under *P. almoda*).

Kaye (1904, 1921, no. 405) recorded this species from Trinidad as "*Phanis justinianus*" referring to "a single specimen in July 1898 (W.J. Kaye)", and citing *aletes* as a synonym, leaving no doubt as to the species intended.

Apart from the male brand, the sexes are similar and distinguished from *P. almoda* by the larger yellow patch mid UNH.

Although I have 24 records of this species, I would consider it to be only an occasional species in Trinidad, perhaps collected more frequently because of its distinctively coloured UNS. Most records are from the Northern Range, from St. Ann's (many old records) to Arima Valley, mostly below 1,000 ft. (300 m). Apart from one record from Spanish Farm, Las Lomas (♂ 13.xi.1981), I have no records from central and south Trinidad. It is a forest species that flies throughout the year.

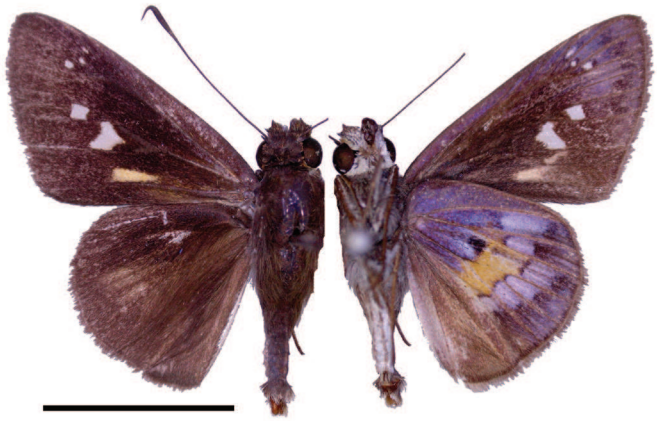

Fig. 19. Adult ♂ *Phanes aletes*, San Miguel Valley, old cacao estate, 17.x.1979. Scale bar = 1cm.

Moss (1949) reared this skipper "from *Carex* and various grasses", but he did not illustrate the early stages and there are none from his collection in the NHM. Janzen and Hallwachs (2010) include six rearing records from four grass species; three of these were from *Lasiacis ruscifolia*. They do not illustrate the early stages.

J23/2 *Phanes almoda* (Hewitson 1866)

Fig. 20.

This species is found from Trinidad and the Guyanas to Peru and south Brazil (Evans 1955). Kaye (1904, 1921, no. 406) writes: "A single specimen taken with the previous species [i.e. *P. aletes*] (W.J. Kaye). These two species may prove to be one variable one. More material is necessary or life histories are wanted to decide." In this, Kaye is incorrect as the two are separate valid species, even though the life histories are not yet known.

As for *P. aletes*, the sexes are similar apart from the male brand. In the Trinidad fauna, the two *Phanes* spp. might only be confused with each other, and the small

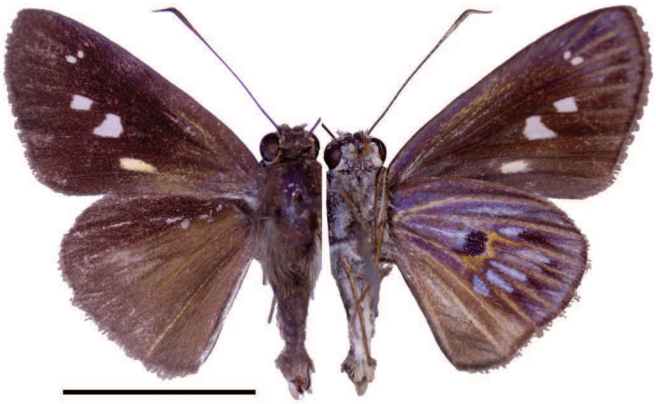

Fig. 20. Adult ♂ *Phanes almoda*, Point Gourde, 16.x.1993. Scale bar = 1cm.

yellow patch mid UNH distinguishes *P. almoda*. Williams and Bell (1931, Fig. 26) illustrate the male genitalia, which are similar to those of *P. aletes* as illustrated by Godman (1900 in Godman 1899-1901) as *justinianus*. Hayward's (1950, plate ix.13) figure of the male genitalia of *P. aletes* is actually *P. almoda* according to Evans (1955), but this only fits if the valve shown by Hayward is the left valve (looking from above with head to the front) exterior view, rather than the right valve interior view. The male genitalia that Hayward (1950) illustrates as *P. almoda* do not seem to be of this species.

All except one of the 22 records of this species that I have are from the forested foothills of the Northern Range, from Point Gourde to Maracas Valley. S. Alston-Smith (pers. comm. 2011) has a specimen from Caltoo Trace, Nariva Swamp. In my experience this is an uncommon species – I personally only caught two males.

The life history and food plants have not been reported (Mielke 2005; Beccaloni *et al*. 2008).

Monca Evans 1955

Evans (1955) established this genus for four small skippers characterised by the presence F of an apical spot in space 9 and a spot mid-costa in space 10 (more obvious UNF), and by a broad central and discal pale area UNH. There are no secondary sexual characters.

J25/1 *Monca telata telata* (Herrich-Schäffer 1869 in Herrich-Schäffer 1867-1871)

Figs. 21-23.

The nominate subspecies is found in northern South America from Colombia to the Guyanas and the Amazon; a second subspecies, *crispinus* Plötz is found in Central America, and a third, *penda* Evans in Bolivia (Evans 1955; Mielke 2004). Subspecies *crispinus* is the senior synonym for the Central American subspecies of *M. telata* hitherto known as *M. telata tyrtaeus* (Plötz) (Mielke and Casagrande 2002; Mielke 2004). Recently, several authors and websites have treated *crispinus* as a valid species, but I have not traced a publication to formally establish this. The two taxa occur sympatrically in the Tikal National Park area of Guatemala (Austin *et al*. 1996) and in Belize (A.D. Warren, pers. comm. 2011), a strong indication that they are separate species that do not interbreed. Bell's (1941b) treatment of the two taxa, showing the radical differences in the male genitalia, particularly the claspers, indicates that the two should be treated as separate species: *M. crispinus* **stat. rev.** and *M. telata*. Evans (1955) compares the male genitalia of ssp. *penda* with those of ssp. *telata* noting that there are differences, although not as striking as those between sspp. *crispinus* and *telata*. Hence, I consider *penda* should continue to be treated as a subspecies of *telata* pending further study. In addition to the male genitalia illustrations in Bell (1941b), Hayward (1950, plate xi.3) illustrates the male genitalia, whereas Godman (1901 in Godman 1899-

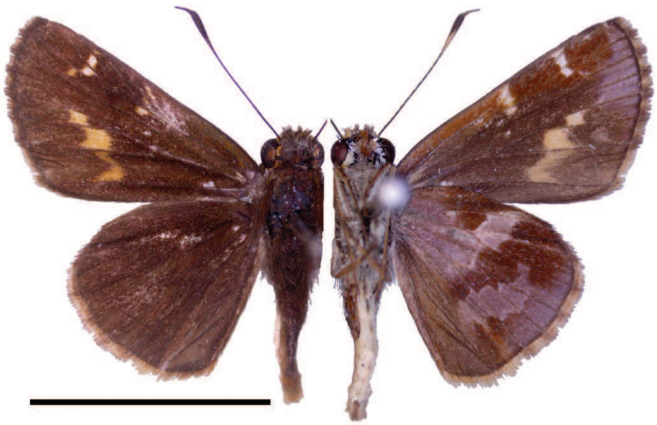

Fig. 21. Adult ♂ *Monca telata telata*, Point Gourde, 16.x.1993. Scale bar = 1cm.

Fig. 22. Adult ♀ *Monca telata telata*, Curepe, at *Bidens* flowers, 9.xi.1980. Scale bar = 1cm.

Fig. 23. Adult *Monca telata telata*, Point Gourde, 16.x.1993.

1901, plate 101.15) illustrates the male genitalia of *M. crispinus* as *Megistias telata*.

"Two specimens from the Maraval Valley (C.W. Ellacombe)" are the basis of the inclusion of this species in Kaye's (1904) first Trinidad catalogue under the name *Megistias telata*. This treatment is repeated in Kaye (1921, no. 423), although in the meantime, Longstaff (1912) had recorded a capture in April 1907 on the Ariapeta [sic] Road (Ariapita Road, Port of Spain). Sheldon (1936) records this species from Tobago based on a W.J. Kaye specimen from Bacolet.

The pale central and discal areas UNH give this species a distinctive appearance, which is apparent in the field (Fig. 23). This is not a very common species in Trinidad, although the 12 records I have show that it is widespread at low to medium altitudes in forested areas including secondary forest. S. Alston-Smith (pers. comm. 2011) has a further seven specimens from similar locations. Of the three Tobago specimens I have seen, only one has a locality. My record of a female from Crown Point (16.v.1981) suggests that it is also found in open disturbed habitats.

As for many of the species treated here, the life history and food plants have not been reported (Mielke 2005; Beccaloni *et al*. 2008). However there are records for the Central American species. McGuire and Rickard (1974) records *Paspalum* spp. as "local" food plants of "*Monca telata tyrtaeus*" (i.e. *M. crispinus*) in their checklist of the butterflies of Bentsen-Rio Grande State Valley Park, Texas. Scott (1986) gives the same food plant. In Costa Rica, Janzen and Hallwachs (2010) have reared "*Monca tyrtaeus*" (i.e. *M. crispinus*) a dozen times from five species of grass, including *Oryza latifolia*.

Vehilius Godman 1900 in Godman 1899-1901

Evans (1955) considers this genus structurally the same as *Cymaenes* (to be treated in part 19), i.e. antennae rather > half costa; club ¼ shaft; nudum 3/8; palpi slender, third segment short, conical, protruding; mid tibiae with a few spines; no secondary sexual characters. It differs in that the veins UNH and apex UNF are more or less pale.

J28/1 *Vehilius stictomenes stictomenes* (Butler 1877)

Figs. 24-27.

Vehilius stictomenes is a common species found from Mexico to Paraguay; subspecies *stictomenes* (TL Obydos, Amazons) is found throughout most of South America, whereas ssp. *illudens* Mabille replaces it in Central America, and a third subspecies, *madra* Evans is restricted to western Ecuador (Evans 1955). Godman (1900 in Godman 1899-1901, plate 100, Figs. 47-49) illustrates the UPS, UNS and male genitalia as *V. venosus* (Plötz), which is a synonym (Evans 1955; Mielke 2004), and this accounts for the use of the name *venosus* in some of the Trinidad literature.

For *V. stictomenes*, Kaye (1904, 1921, no. 419) wrote "One specimen in June 1898 (W.J. Kaye). Doubtless a common species." He duplicated this record when he reported the synonym *V. venosus*, citing a specimen captured by G.B. Longstaff in Maraval in April 1907 (Kaye 1914, Kaye 1921, no. 421), although the actual record is of a pair captured 19.xii.1906 (Longstaff 1912).

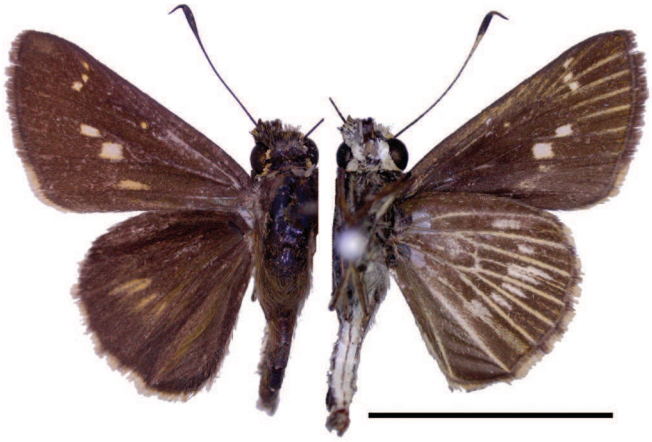

Fig. 24. Adult ♂ *Vehilius stictomenes stictomenes*, Arima-Blanchisseuse Road, milestone 9¾, Textel Road, 8.x.1994. Scale bar = 1cm.

Fig. 25. Adult ♀ *Vehilius stictomenes stictomenes*, Inniss Field, 17.v.1999. Scale bar = 1cm.

There is a single male from Tobago in the NHM captured 1-4.ii.1931, at Old Grange Tower by Capt. A.K. Totton, which was included in the listings in Evans (1955).

Identification is discussed above with other species with UNH and apex UNF veins pale or yellow.

This species is common and widespread in Trinidad. I have 61 records from forest edges and roadsides in both the north and south of the island, ranging up to 2,000

ft. (610 m) at the top of the Arima Valley. Captures are throughout the year, but October and January to March have the highest numbers of captures.

Fig. 26. Adult *Vehilius stictomenes stictomenes*, South Oropouche, Mon Desir, 9.ii.2010; photo, Tarran P. Maharaj.

Fig. 27. Adult *Vehilius stictomenes stictomenes*, South Oropouche, Mon Desir, 6.ii.2010; photo, Tarran P. Maharaj.

This species has been reported as bred from grasses (Moss 1949). Beccaloni *et al*. (2008) also include personal communications of records of *Paspalum notatum* in Brazil (A. Freitas) and *P. virgatum* in Trinidad (M.J.W. Cock). I collected a caterpillar on this grass at Macoya Gardens, 21.i.1982. It pupated 26.i.1982 and a male emerged 3.ii.1982. The caterpillar head was rounded; scattered pale, inconspicuous hairs; colour pale brown with darker bands speckled with pale, along the epicranial and adfrontal sutures, parallel and close to epicranial suture, laterally from vertex to stemmata, and on the ventral half of the lateral posterior margin; a dark spot in centre of face on frons; frontal sutures narrowly brown; faint brown line down middle of frons; black surrounding stemmata. The pupa measured 20 mm; stout frontal spike; proboscis extending to end of wings; green, paler below; abdomen with darker dorsal line and pair of yellow subdorsal lines each side. The emerged pupa was translucent and fragile, and collapsed after the butterfly emerged.

J28/2 *Vehilius inca* (Scudder 1872)
Figs. 28-29.

Like the last species, *V. inca* is common, found from Mexico to Paraguay, but unlike the last, no subspecies are recognised (Evans 1955; Mielke 2004). Godman (1900 in Godman 1899-1901, plate 101, Figs. 6-7) describes as new and illustrates the UNS and male genitalia of *Megistias labdacus* Godman, which is a synonym of *V. inca* (Evans 1955; Mielke 2004). Hayward (1950, plate xi.2) also illustrates the male genitalia as *Lerodea labdacus*, but his figure of the male genitalia of *Lerodea mocoreta* Hayward (plate xii.4) are of different species, in spite of *mocoreta* being treated as a synonym of *V. inca* by Mielke (2004). Hayward (plate x.4) also illustrates the male genitalia of *Vehilius stictomenes simplex* Jörgensen, a synonym of *V. inca* according to Evans (1955) and Mielke (2004), but the genitalia illustrated are clearly similar to *V. stictomenes* and not to *V. inca*. If Hayward (1950) has correctly associated the genitalia with *V. simplex*, then it is a synonym or subspecies of *V. stictomenes*.

Fig. 28. Adult ♂ *Vehilius inca*, Arima-Blanchisseuse Road, milestone 9¾, Textel Road, 5.x.1979. Scale bar = 1cm.

Kaye (1904) described a new species, *Vehilius subplanus*, from Trinidad taken "In June 1898". It is a synonym of *V. inca* (Evans 1955; Mielke 2004) and the type is in MGCL (A.D. Warren, pers. comm.). This information is repeated in Kaye (1921, no. 420). Kaye duplicat-

ed this record when he added *Megistias labdacus* to the Trinidad list based on a G.E. Tryhane specimen from St. Ann's Valley (Kaye 1914, 1921, no. 422).

This is a rather undistinguished small skipper. The white spots UPF variably from space 1B to 7, and plain UNH without a discal band, although sometimes with slightly pale veins, should serve to distinguish it from other small species.

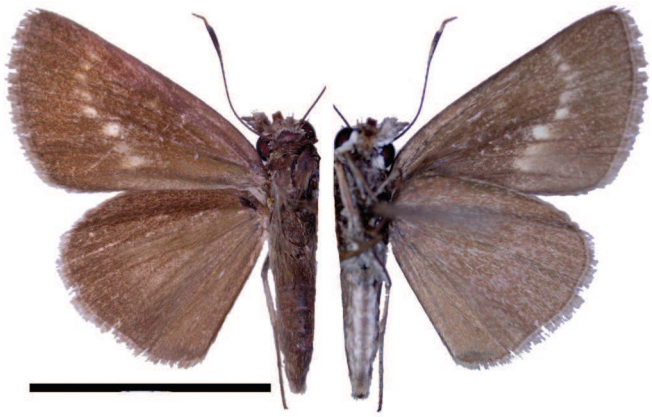

Fig. 29. Adult ♀ *Vehilius inca*, Piarco, 21.ix.1982. Scale bar = 1cm.

Although this species is not as common as the last, I have 31 records showing it to be equally widespread and occurring in similar habitats. Again captures are throughout the year, but with peak captures in October and January to March.

This skipper is a grass feeder – from a caterpillar collected on "grass" in Mexico, Kendall (1976) reared a specimen on *Panicum maximum*.

J28/4 *Vehilius celeus celeus* (Mabille 1891)
Fig. 30.

This species was described from Pará, Brazil (Mabille 1891; Mielke and Casagrande 2002), but misidentified by Evans (1955). Thus, Mielke and Casagrande (2002) examined the type of *V. celeus* and showed that it is the same as the species treated by Evans (1955) as *V. almoneus* Schaus. There are two further subspecies found in southern Brazil (Mielke 2004, 2005), which were described after Evans (1955) completed his work. Evans (1955) lists specimens of "*V. almoneus*" from the Guyanas, Amazon (Manaus and Belem (Pará)) and Bolivia (Santa Cruz), so the records from Bolivia may well refer to one of the new subspecies. This is a new island record from Trinidad, based on captures by Scott Alston-Smith on roadside flowers in Grande Ravine.

The identification of the different species with UNH and apex UNF veins pale or yellow is discussed above – the spots in spaces 4 and 5 F, and UPH markings make

Fig. 30. Adult ♀ *Vehilius celeus*, Trinidad, S. Alston-Smith. Scale bar = 1cm.

this species distinctive. Lindsey (1925) illustrates the male genitalia.

Dinther (1960) lists this species is a minor pest of rice in Suriname and includes a drawing of an adult which confirms that he has applied the name correctly. Remillet (1988) repeats this information and is in turn cited by Beccaloni *et al*. (2008).

J28/6 *Vehilius vetula* (Mabille 1878)
Fig. 31.

Vehilius vetula (Mabille 1878) – not to be confused with *Eutocus vetulus* (Mabille 1883), which Evans misidentified as a species of *Vehilius* (see *V. seriatus* below) – was described from Pará (Belem) Brazil, and is found from Panama to the Amazon. Cock (1982) added this species to the Trinidad list based on a single female taken in the Parrylands Oilfield (26.iii.1980; Fig. 31). More recently, S. Alston-Smith (pers. comm. 2011) has captured five specimens: three from Inniss Field (xii.2006, i.2007) and two from Rock River Road (ii.2007), all taken on roadside flowers in the early morning, 0700-0800 h.

Fig. 31. Adult ♀ *Vehilius vetula*, Parrylands, 26.iii.1980. Scale in mm.

Williams and Bell (1931) illustrate the male genitalia of *forbesi* Williams and Bell, a synonym that they described from Guyana. De Jong (1983) also illustrates the male genitalia of a Suriname specimen.

The life history and food plants have not been reported (Mielke 2005; Beccaloni *et al*. 2008).

J28/7 *Vehilius seriatus seriatus* (Mabille 1891)
Figs. 32-34.

Mielke and Casagrande (2002) established that *vetulus* Mabille 1883 (as opposed to *vetula* Mabille 1878 above) was misidentified by Evans (1955). Accordingly, the senior name for the species which Evans (1955) treated as *vetulus* Mabille 1883 is *seriatus* Mabille 1891 (and the subspecies that Evans treated as *vetulus* Mabille 1883, represented by one female from Nicaragua in the NHM is apparently left without a name). *Vehilius seriatus* is uncommon, the nominate subspecies known from Colombia, Venezuela (Evans 1955) and Surinam (De Jong 1983), with a second subspecies, *danius* (Bell 1941a) from south Brazil (Evans 1955; Mielke 2004).

Fig. 32. Adult ♂ *Vehilius seriatus seriatus*, Morne Bleu Textel Installation, 20.i.1981. Scale bar = 1cm.

The male genitalia of ssp. *seriatus* do not seem to have been illustrated, although by implication they are similar to those of the other subspecies in Evans (1955). Evans (1955) includes a diagram of his "ssp. *vetulus*", and Bell (1941a) illustrates the male genitalia of ssp. *danius* from Santa Catharina, Brazil.

Material of this species in the NHM is limited; there are only eight specimens of ssp. *seriatus* from Colombia and Venezuela. Trinidad material has the UNS pale veins and dashes in the spaces quite a lot more pronounced that the NHM specimens. The identity of the Trinidad material merits further study if the type of *seriatus* can be located for comparison. The most likely collection to house the type is the Muséum National d'Histoire Naturelle, Paris, but it could not be located there (J. Pierre, pers. comm. 2010). I illustrate here the male genitalia of a Trinidad specimen. The lateral view is similar to that of ssp. *danius* (Bell 1941a, Fig. 8). The uncus is more deeply divided than indicated in Evans' (1955) diagram of his "*vetulus* Mabille 1883".

Fig. 33. Adult ♀ *Vehilius seriatus seriatus*, Arima-Blanchisseuse Road, milestone 9¾, 27.xi.1980. Scale bar = 1cm.

The strong pale yellow spots UNH and the lines connecting them to the margin make this species distinctive compared to other species with UNH and apex UNF veins pale or yellow, as discussed above.

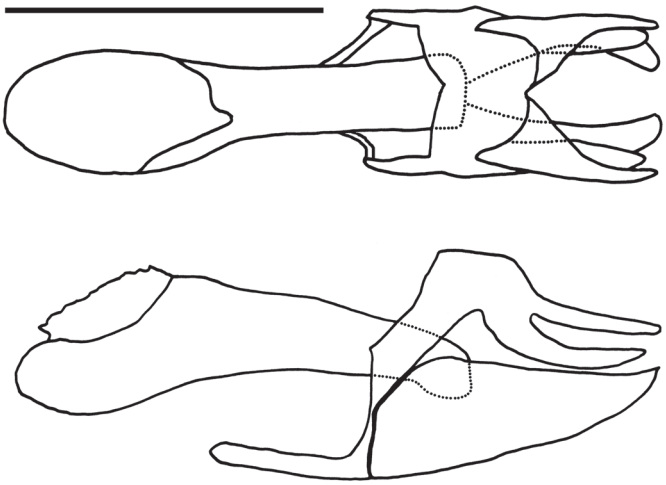

Fig. 34. Male genitalia of *Vehilius seriatus seriatus*, Morne Bleu Textel Installation, 20.i.1981 (Fig. 32); above, dorsal view; below, lateral view. Scale bar = 1mm.

This species is localised on the higher parts of the Northern Range and apart from one capture at 1,600 ft. (490 m) in San Miguel Valley behind Mt. St. Benedict (♂ 29.vii.1978), my dozen captures are from the ridges around the Arima Valley (Las Lapas Trace, Andrew's Trace, Lalaja Ridge, and the ridge from the Textel Installation to Morne Bleu.

The life history and food plants have not been re-

ported (Mielke 2005; Beccaloni *et al*. 2008).

Remella Hemming 1939

This genus was first established as *Perimeles* Godman for the species *remus* (Fabricius). It was an unavailable homonym and so was replaced by Hemming (1939) with *Remella*. Evans (1955) treated *Remella* as a synonym of *Moeris* Godman in which he placed a dozen species. However, Burns (1990) divided the genus based on the male genitalia and resurrected the genus *Remella* for *remus*, the type species of the genus. Mielke (2004) added four species to the genus to make five altogether, of which two similar species occur in Trinidad.

J33/1 *Remella remus* (Fabricius 1798)

Figs. 35-38.

Until quite recently, this species was known as *Moeris remus*, based on Evans' (1955) treatment – e.g. Cock (1982). *Remella remus* was described from French Guiana and is widespread from Mexico to Paraguay.

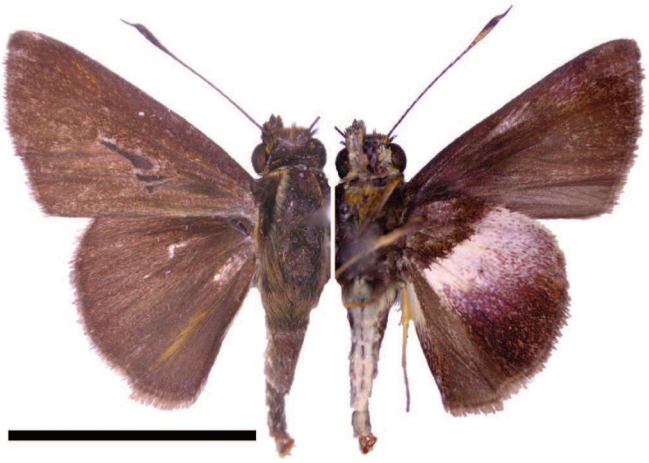

Fig. 35. Adult ♂ *Remella remus*, Arima-Blanchisseuse Road, milestone 8, 8.ix.1979. Scale bar = 1cm.

Fig. 36. Adult ♀ *Remella remus*, lower Morne Catherine, 17.i.1988. Scale bar = 1cm.

Fig. 37. Adult *Remella remus* at *Bidens pilosa* flower, Palo Seco, 7.x.1995.

Fig. 38. Adult ♂ *Remella remus*, Mt. St. Benedict, 2.x.1994.

This species was first recorded from Trinidad by Crowfoot (1893) under the name *Pamphila remus*. Longstaff (1912) adds a record as *Perimeles remus* from Ariapeta [sic] Road, Port of Spain, in April 1907, which Kaye (1914) refers to. Later, Kaye adds that it was "fairly common in the hills round Port of Spain, Nov. 1920 (W.J.K.)" (Kaye 1921, no. 401)

Godman (1900 in Godman 1899-1901, plate 99, Figs. 1-3) illustrates the UNS, male venation and genitalia; Burns (1990) reproduces the figure of the male genitalia. Hayward (1950, plate viii.3) also illustrates the male genitalia.

The two *Remella* spp. found in Trinidad have the UNH reddish purple with a characteristic pale to white

band UNH, sharply defined basally but diffuse distally, usually with a dark spot in the band (Figs. 35-36, 39-40). They cannot be mistaken for any other Trinidad species. The males are easily separated as *R. remus* has a strong three part stigma (Fig. 35), whereas *R. vopiscus* (Herrich-Schäffer) has none (Fig. 39). The female of *R. remus* (Fig. 36) is similar to the male of *R. vopiscus*, but the female of *R. vopiscus* (Fig. 40) seems to generally have the white band UNH reduced and sullied, but this may merit further study.

Beebe (1951) includes this species in his treatment of migrating butterflies at Portochuelo Pass, Rancho Grande, northern Venezuela. However, since this is based on a single record of a species that cannot be identified in flight, it is just as likely, if not more likely, to have been local movement by species resident in the vicinity.

Forty records from Trinidad show that this is quite a common species at forest edges and roadsides throughout the island, to at least 2,000 ft. (610 m, Arima-Blanchisseuse Road, Andrew's Trace, ♂ 9.iv.1980). I have noted one capture of a male in the clearing at the summit of Mt. Tabor at 1,860 ft. (565 m) between 0930 and 1030 h, 13.i.2004, and another of a female at *Eupatorium* flowers (Rio Claro-Guayaguayare Road, milestone 4-5, 17.ix.1978). Months of capture are spread through the year, with peaks in February to April and September.

The life history and food plants have not been reported (Mielke 2005; Beccaloni *et al*. 2008).

J33/4 *Remella vopiscus* (Herrich-Schäffer 1869 in Herrich-Schäffer 1867-1871)

Figs. 39-40.

Although Burns (1990) removed *remus* from *Moeris* and placed it in *Remella* (see last species), he did not consider the other species in *Moeris.* Of these, *vopiscus* Herrich-Schäffer is very similar in appearance to *remus* and the genitalia appear congeneric, although *vopiscus* lacks the male brand of *remus* (Evans 1955), and so Mielke (2004) placed *vopiscus* in *Remella*. This species was described from Venezuela and is found from Mexico to the Amazon (Evans 1955). Although Evans (1955) recognised two subspecies, these are now considered separate species (Mielke 2004). Apart from Evans' (1955) diagram, the genitalia do not seem to have been illustrated (Mielke 2005).

Kaye (1921) did not distinguish *R. vopiscus* from *R. remus*, so Evans' (1955) listing of eight males and three females from Trinidad was the first record of this species from the island.

See under *R. remus* (above) for the separation of these two species.

Just 20 records show that this species is less common

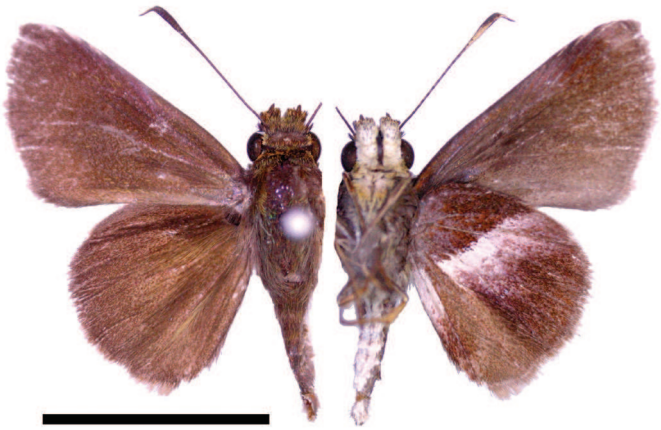

Fig. 39. Adult ♂ *Remella vopiscus*, Curepe, feeding on bird dropping, 17.viii.1980. Scale bar = 1cm.

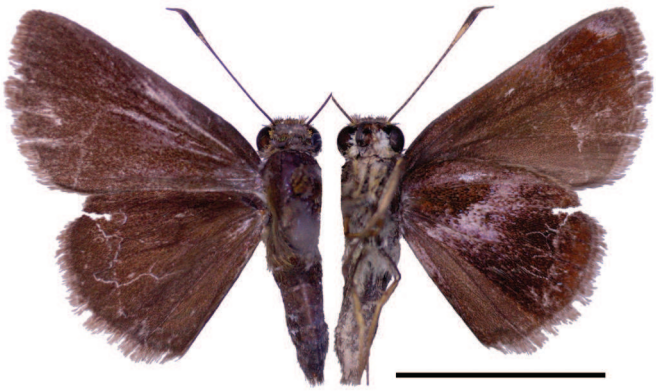

Fig. 40. Adult ♀ *Remella vopiscus*, Point Gourde, 12.vii.1997. Scale bar = 1cm.

than the last. Furthermore, although *R. vopiscus* is widespread, all localities are at low altitude and the capture localities suggest that it is more associated with disturbed habitats and suburban situations than the last. The principle months of capture are January and August to November, suggesting that this is not a dry season species. I have noted a male feeding at flowers of *Bidens pilosa* (Curepe, 9.xi.1980) and caught one male in my mercury vapour light trap in Curepe (23-28.xi.1980). I have also observed a male feeding from a bird dropping on a leaf, moistening the dropping with liquid from its anus and then sucking up the resultant liquid (Curepe, 17.viii.1980).

The life history and food plants have not been reported (Mielke 2005; Beccaloni *et al*. 2008).

***Moeris* Godman 1900 in Godman 1899-1901**

This genus was established by Godman (1900 in Godman 1899-1901) for the species *striga* (Geyer). As stated above under *Remella*, Evans (1955) treated the genus in a broader sense (see also Cock 1982), but following Burns' (1990) reinstatement of *Remella*, now there are only five

species in the genus *Moeris* (Mielke 2004) of which one easily recognised species occurs in Trinidad.

[*Moeris stollmeyeri* (Bell)]

Moeris stollmeyeri (species no. 167 in Cock 1982) is now treated as a synonym of *Mnasicles hicetaon* Godman (species no. 148 in Cock 1982). Mielke and Casagrande (2002) established this synonymy based on an examination of the type of *stollmeyeri*. *Mnasicles hicetaon* will be dealt with in part 20 of this series.

J33/10 *Moeris striga strada* Evans 1955

Figs. 41-43.

Moeris striga is found from Mexico to Argentina in four subspecies (Mielke 2004), but subspecies *strada*, which was described from Trinidad, is restricted to Trinidad and Venezuela (Evans 1955). The Central American subspecies is *stroma* Evans, while ssp. *menopis* Schaus occurs in southern South America. Kaye (1904, 1921, no. 412) includes this species as *M. striga*, citing "two ♂ and 1 ♀ in June 1901 (W.J. Kaye)."

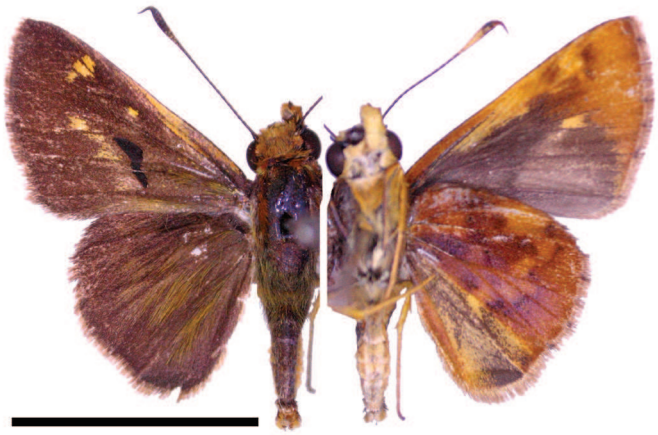

Fig. 41. Adult ♂ *Moeris striga strada*, Trinity Hills, summit of Morne Derrick, 4.iv.1982. Scale bar = 1cm.

The genitalia of ssp. *strada* have not been illustrated (Mielke 2005), although Godman (1900 in Godman 1899-1901, plate 100, Figs. 1-2) illustrates the venation and male genitalia of ssp. *stroma* (as *striga*), and Hayward (1950, plate ix.2) illustrates the male genitalia of ssp. *menopis* (as *Phlebodes silvicultrix* Hayward, a synonym from Argentina).

As Kaye (1904) points out, *M. striga strada* is "easily recognized by the well-marked underside."

This is another quite common species with over 40 records predominantly from the Northern Range, from Point Gourde and Morne Catherine as far east as Lalaja Ridge. The only records from outside the Northern Range are from Wallerfield (♀ 7.iv.1982), Palo Seco (♀ 7.x.1995) and the heights of the Trinity Hills (♂ 4.iv.1982, ♂ 29.xii.1981). At least half the records which include a locality are from ridges or hilltops, suggesting this is typical habitat for this species. Captures are spread through the year, with small peaks in April and September. It also occurs on Chacachacare Island (near summit, ♂ on *Eupatorium* flowers, 7.i.1982) (Cock 1984).

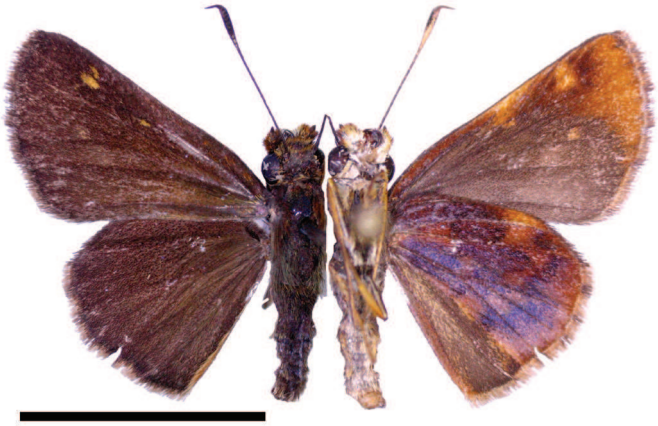

Fig. 42. Adult ♀ *Moeris striga strada*, Palo Seco Oilfield, 7.x.1995. Scale bar = 1cm.

Fig. 43. Adult ♀ *Moeris striga strada*, Palo Seco Oilfield, 7.x.1995.

Although the early stages of ssp. *strada* have not been reported (Mielke 2005; Beccaloni *et al*. 2008), there are observations for ssp. *stroma*. Thus, Steinhauser (1975) reports oviposition on grass in El Salvador, and Janzen and Hallwachs (2010) have reared it in Costa Rica from caterpillars on *Lasiacis procerrima* and *L. sorghoidea*, but do not include pictures of the early stages.

***Parphorus* Godman 1900 in Godman 1899-1901**

Godman established this genus, with *storax* as the type species. Evans (1955) characterises it: "Antennae

rather longer than half costa: club ¼ shaft: nudum 3/8. Palpi second segment quadrate, hairy: third short. Mid tibiae with a few spines, which may be short or long or obsolete. F vein 2 mid vein 3 and base. Below, with more or less well-defined pale veins. Male UPF with a brand or stigma."

J34/1 *Parphorus storax storax* (Mabille 1891)
Figs. 44-49.

The nominate subspecies is found from Mexico (Warren 2000) to south Brazil (type locality Panama) (Evans 1955) and Argentina (Hayward 1950), but there is a second subspecies, *sorra* Evans, found in Ecuador and part of Venezuela. In the addenda to Kaye (1914) and in Kaye (1921, no. 425), *P. storax* is recorded from the Botanical Gardens, Jan. 3, 1913 (K. St. A. Rogers).

Godman (1900 in Godman 1899-1901, plate 101, Figs. 22-25) illustrates the UPS, UNS, male venation and genitalia and Hayward (1950 plate x.12) also illustrates the male genitalia. Identification is discussed above with other species with UNH and apex UNF veins pale or yellow. *Parphorus storax* is smaller than the other Trinidad species with these markings.

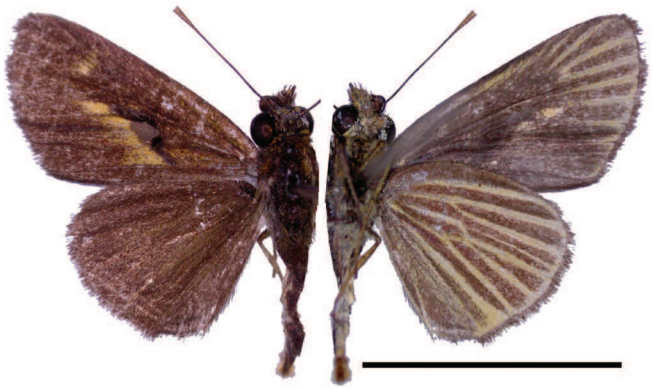

Fig. 44. Adult ♂ *Parphorus storax storax*, Arena Forest, near Parrotts Ride, 8.x.1994. Scale bar = 1cm.

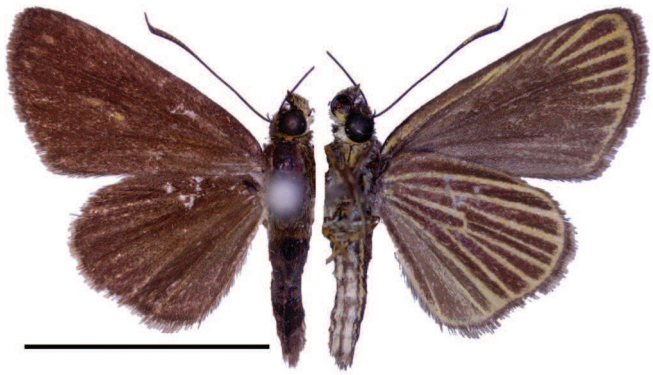

Fig. 45. Adult ♀ *Parphorus storax storax*, Arima-Blanchisseuse Road, Andrew's Trace, 17.ix.1980. Scale bar = 1cm.

This is an occasional species in Trinidad with 20 records available to me. These include some lowland forest sites, but most are from higher forested areas, particularly in the Northern Range, from Morne Catherine to the Upper Guanapo Valley, and up to 2,600 ft. (790 m) on El Tucuche (2♂ 9.i.1980). Males occur in twos and threes in sunlit patches in forest (El Tucuche, 2♂ 9.i.198; Arima-Blanchisseuse Road, Andrew's Trace, 2♂ 17.iii.1982; Mt. Harris, 2♂ 25.iii.2003; Mt. Tamana, summit ridge, 2♂ 13.vii.1997), but it doesn't normally come out of the forest, e.g. to flowers.

I have reared this species from caterpillars on *Olyra latifolia* and *Orthoclada laxa*, as described below. Janzen and Hallwachs (2010) have reared it seven times from four different grasses including *Olyra latifolia*. They illustrate the final instar caterpillar, which is similar to those shown in Fig. 48, but their material has white subdorsal and lateral stripes, and the head has the sutures narrowly dark and the band from vertex to stemmata narrower.

The shelter made by a fifth instar caterpillar on *Orthoclada laxa* (Mt. Harris, 03/228B) was on a leaf 120 mm long; the basal 50 mm were intact; notches were cut from the margin to the midrib at this point, one on each side, the midrib being bared for another 20 mm; the distal part of the leaf was folded along the midrib, with the shelter lid being folded under the other half.

The pupal shelter on *Orthoclada laxa* (Mt. Harris, 03/228A) was on a leaf of 135 mm, of which the basal 35 mm were intact; the leaf was eaten distally to this leaving the midrib bare for 15 mm; distally, the leaf on one side was eaten from the margin to leave a width of about 10

Fig. 46. Leaf shelters of *Parphorus storax storax* on *Olyra latifolia*, Mt. Tabor, 12.i.2004, 04/13. Arrows: 1, first shelter (could be of another species); 2, shelters; 3, feeding damage.

mm which was rolled under the other half to make the pupal shelter.

An instar 4 caterpillar collected on *Olyra latifolia* (Mt. Tabor, 04/13B) had a black head, narrow black plate on T1 and the body dull translucent green (Fig. 47).

Fig. 47. Instar 4 caterpillar of *Parphorus storax storax* collected 12.i.2004 on *Olyra latifolia*, Mt. Tabor, 12.i.2004, 16 mm, Ref. 04/13a.

A week before pupation, the fifth instar caterpillar measured 23 mm (Fig. 48). Head small, rounded, but wider nearer base than apex, slightly indent at vertex; pale green-brown with dense, sharply defined black markings: upper part of epicranial suture (all epicranial suture and upper part of adfrontal sutures in caterpillar on *Olyra latifolia*, Mt. Tabor, 04/13A, Fig. 48C); lower

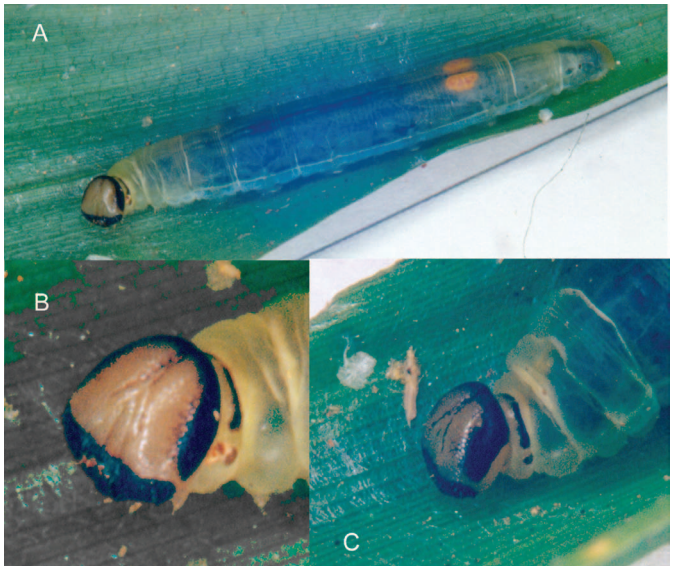

Fig. 48. Instar 5 caterpillars of *Parphorus storax storax*. **A**, dorsolateral view, collected 25.iii.2003 on *Orthoclada laxa*, Mt. Harris, 23 mm, Ref. 03/228B; **B**, detail of head, anterolateral view, as A; **C**, detail of head, anterodorsolateral view, collected 12.i.2004 on *Olyra latifolia*, Mt. Tabor, 12.i.2004, pupated 23.i.2004, photographed 12.i.2004; 19 mm, Ref. 04/13A.

1/5 of face, extending to the stemmata laterally; a broad stripe from vertex over apices to stemmata, stopping short of black area on ventral part of head. T1 concolorous; a narrow, black, shiny plate on dorsal margin. Body dull dark translucent green; darker dorsal line more apparent on A6-A8; tracheal line visible; gonads in A5 pale brown (orange in specimen collected on *Olyra latifolia* on Mt. Tabor, 04/13A). Spiracles T1, A8 dark; remainder pale; all inconspicuous. Legs concolorous. No wax glands.

There was no white waxy powder on the pupa or inside the pupal leaf shelter, nor was there a silk girdle. The pupal skin was transparent so that the colouring reflected the contents and changed over time. Pupa 14-15 mm; eyes slightly bulbous; proboscis sheath extends at least two segments beyond the wing cases or up to the base of the cremaster and is brown beyond the end of the wing cases and black at apex; frontal protuberance distinctive, T-shaped: on a short black dorso-ventrally flattened stalk a bulbous cross piece, about twice as wide as projection; at the base of the stalk, the black marking extends dorsolaterally in a variable bulge, so that in anterodorsal view there may appear to be a four-lobed black marking (Fig. 49). Head, thorax, appendages transparent pale yellowish brown; a brown stripe down middle of eye; abdomen transparent pale green; a subventral spot on each of the first three or four segments beyond the wing cases. Spira-

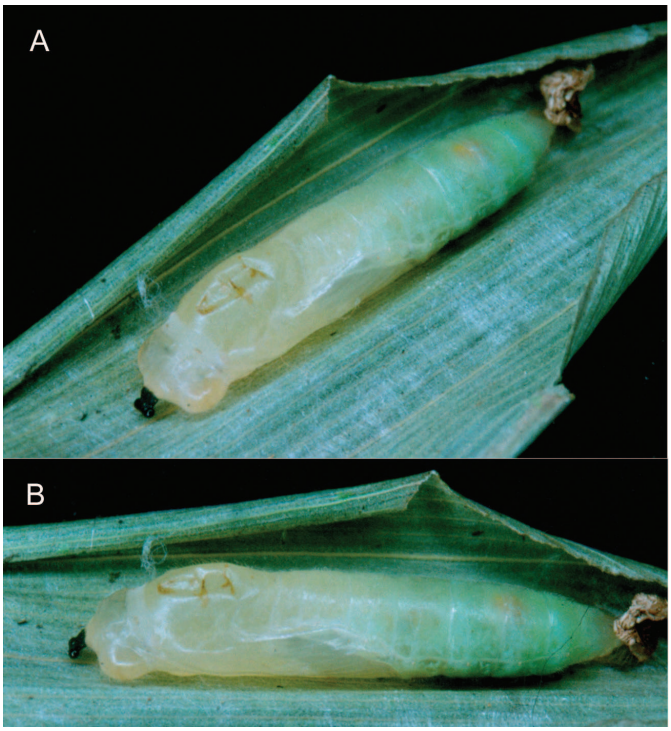

Fig. 49. Pupa of *Parphorus storax storax* collected 12.i.2004 on *Olyra latifolia*, Mt. Tabor, 12.i.2004, pupated 23.i.2004, photographed 27.i.2004, 14 mm, Ref. 04/13A. **A**, anterodorsolateral view; **B**, dorsolateral view.

cles inconspicuous; tracheal line visible; cremaster has a dark submarginal line dorsally.

There are two emerged pupae and one associated final instar head capsule in the NHM over this name which are likely to be from Moss' collection, although not included in Moss (1949). The head capsule is brown, darker basally. The pupae are flimsy and have collapsed; the frontal spike is either absent or missing from these specimens.

J34/2 *Parphorus decora* (Herrich-Schäffer 1869 in Herrich-Schäffer 1867-1871)

Figs. 50-51.

This species is widespread from Mexico to Argentina (Hayward 1934; Evans 1955; De Jong 1983). Kaye (1904) included this species as *Vorates decora* (*Vorates* is a synonym of *Parphorus*) in his first catalogue, based on "A single specimen taken in May 1898 at Tabaquite (W. J. Kaye)". Later, he adds "seen in several small collections" and "fairly common at Siparia on *Eupatorium* (W. J. Kaye)" (Kaye 1921, no. 426).

Sheldon (1936, 1938) did not record this species from Tobago, but Evans (1955) lists a female in the NHM from Tobago (Cock 1982). I have examined this specimen and conclude that Evans made an unusual error for him, since the specimen is a female *C. juventus*. Accordingly, *P. decora* should no longer be considered a Tobago species.

Godman (1901 in Godman 1899-1901, plate 101, Figs. 26-29) illustrates the UPS, UNS, male venation and genitalia as *Vorates decorus*. Hayward (1950, plate x.5) illustrates the male genitalia as *Vorates substriata* Hayward, a synonym.

The separation of this species from other species with UNH and apex UNF veins pale or yellow is discussed above. The combination of no spots in the UNH spaces and no spot in space 1B UNF is distinctive.

The majority of the 33 specimens that I have seen were from the Northern Range, from Scotland Bay east to Lalaja Ridge, and up to around 2,000 ft. (610 m, Arima-Blanchisseuse Road, Andrew's Trace, Lalaja Ridge). Scattered records from Caparo (♂ in NHM), Las Lomas, Spanish Farm (♀ 16.i.1982) and Inniss Field (♂ 16.i.2004) suggest this species could turn up throughout the island. The typical habitat is in forested areas and it doesn't normally come to flowers outside the forest. Captures are most frequent in January, but also occur through the year.

Kendall (1976) reports rearing this species in Mexico from a caterpillar and two pupae collected on a grass, *Lasiacis* sp. (?*ruscifolia*). In Brazil (Belem), Moss (1949) twice reared this species "from a caterpillar found in a tight roll of a leaf of ground bamboo", i.e. *Olyra* sp.; he notes that the head of the caterpillar has four white marks, but does not illustrate the early stages. Janzen and Hallwachs (2010) have reared this species nearly 1,000 times, from perhaps more than 20 species of grasses, of which *Olyra latifolia* constitutes more than 80%. I identified my material (below) which I did not rear to adult, from their photos of the caterpillars and pupae.

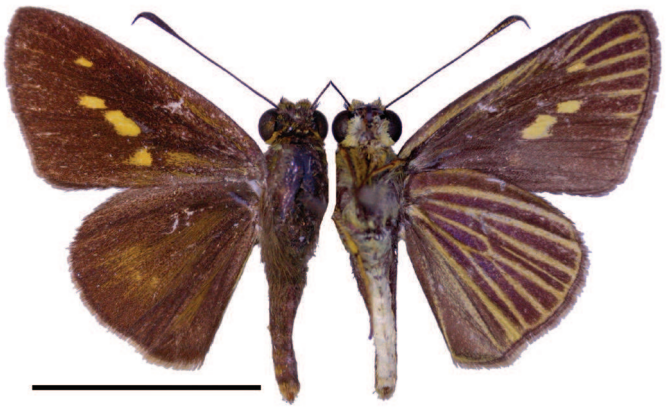

Fig. 50. Adult ♂ *Parphorus decora*, Lalaja Ridge, 15.xi.1980. Scale bar = 1cm.

Fig. 51. Adult ♀ *Parphorus decora*, Arima-Blanchisseuse Road, Andrew's Trace, 27.xi.1980. Scale bar = 1cm.

I collected a caterpillar (94/42) and dead pupa (94/43) on *Olyra* sp. on the path behind St. Benet's Hall, Mt. St. Benedict, 1.x.1994. The former was collected in the penultimate instar and died in the final instar, while the latter was parasitized.

The penultimate instar caterpillar was in a shelter made by folding a long flap upwards from the side of one of the terminal leaves; there was extensive feeding from the opposite margin. Similarly the pupa was in a shelter made by rolling a terminal leaf upwards.

The penultimate instar caterpillar measured 20 mm three days before moulting. The head was black, rounded; T1 with a narrow black dorsal plate; body translucent dull green. The final instar caterpillar had the head

rounded, slightly wider basally; light brown; diffusely brown between apices; broad, heavy black band from stemmata to stemmata across bottom of face; T1 a narrow black plate across posterior margin; body dull translucent green; diffuse pale dorsolateral line; white lateral line through spiracles; spiracle T1 light brown, others pale, inconspicuous; all legs concolorous. The head capsule was a good match to that associated with the dead pupa (94/43).

The pupa measured 20 mm; a short, black T-shaped frontal projection; proboscis extends three abdominal segments beyond wing cases; a dark dorsolateral line on head, bulbous at each end. One to two weeks after collection, 61 chalcidoid parasitoids emerged from the pupa.

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The specimens of *C. juventus* shown in Figs. 3 and 4 are in the BM and NHM respectively. I thank Tarran P. Maharaj for allowing me to use several of his photographs of adult butterflies, Bryan Reynolds (www.botwf.org) who provided his photograph shown in Fig. 10C, Andy Warren who checked the MGCL for historical specimens, Jacques Pierre who unsuccessfully checked in the Muséum National d'Histoire Naturelle for the type of *Vehilius seriatus* and Scott Alston-Smith for adding information based on his observations.

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