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The Skipper Butterflies (Hesperiidae) of Trinidad Part 17, Hesperiinae, Anthoptini and the Remainder of Evans' Genera Group I

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ABSTRACT
Trinidad skipper butterflies (Hesperiidae) of the tribe Anthoptini (genera *Synapte*, *Propapias*, *Anthoptus*, *Corticea*) and the remaining genera of Evans' Genera Group I (*Lento*, *Vinius*) are treated. Details are given of the taxonomy, history, description, identification and biology of the 11 Trinidad species in these genera. Of these, four species, *S. malitiosa pericles* (Möschler), *Anthoptus insignis* (Plötz), *Anthoptus maracanae* (Bell) and *Corticea corticea* (Plötz), occur in Tobago. Adults of all species are illustrated, as are the external female genitalia of *Corticea* spp. The life histories of *S. malitiosa pericles* and *C. corticea* are described and illustrated. In an addendum, *Anatrytone barbara* (Williams and Bell) is a new record for Trinidad, and compared with *Anthoptus epictetus* (Fabricius) and *V. tryhana* (Kaye).

Key words: Trinidad, Tobago, Hesperiidae, *Synapte, Propapias, Anthoptus, Corticea, Lento, Vinius, Anatrytone,* life history, food plant.

INTRODUCTION

This is part of a continuing treatment of the skipper butterflies (Hesperiidae) of Trinidad which has appeared in *Living World* since 1981 (Cock 1981). Skipper butterfly are found throughout the world with many species recorded from all continents except Antarctica. They are most diverse in the Neotropical Region, where 2365 species are recorded (Mielke 2004). Of these, 273 have been recorded from Trinidad and 49 (and eight possible records) from Tobago (Cock 1982) although more than 300 species are now known from Trinidad. Butterfly collectors have tended to neglect skippers, because compared to most other butterflies they are often small, brown, difficult to spread and difficult to identify – or as two young Trinidad butterfly collectors put it to C. Brooke Worth, "they are too hard" (Worth 1967). Thus, they are not covered in Barcant's (1970) "Field Guide to the Butterflies of Trinidad and Tobago", and the only recent identification guide available has been that of Evans (1951, 1952, 1953, 1955) covering the entire American Hesperiidae based on keys with simplified diagrams of the male genitalia, but no pictures of adult butterflies. There are earlier illustrated works, many of which, including Godman and Salvin (1879-1901) and Draudt (1921-1924), are available now on the internet at sites such as the Biodiversity Heritage Library (2009). There are internet websites with photos of skipper butterflies, e.g. Janzen and Hallwachs (2009), Warren *et al*. (2010). Some museums, such as the Zoological Museum of the University of Copenhagen (ZMUC 2009), are making pictures of their type material available on the internet. Thus, it is now easier than ever before to identify species of this family.

Evans recognised the skipper subfamilies Pyrrhopyginae (Evans 1951), Pyrginae (1952, 1953) and Hesperiinae (1955) from Trinidad. In the most recent treatment of the higher classification of the family based on adult morphology and molecular data, Warren *et al*. (2008, 2009) recognised the subfamilies Eudaminae, Pyrginae, Heteroptinae and Hesperiinae from the Neotropical Region including Trinidad. The former subfamily Pyrrhopyginae (Evans 1951, Cock 1981) is now treated as a tribe in the Pyrginae: Pyrrhopygini. The new subfamily Eudaminae was formerly considered as part of Pyrginae and treated as such in my earlier papers, which cover Eudaminae, Pyrginae, Heteroptinae and part of Hesperiinae already.

Evans (1955) divided the Hesperiinae into seven genera Groups I, J, K, L, M, N and O (the earlier letters covering the other subfamilies). Warren *et al*. (2008, 2009) recognised several tribes of Hesperiinae, of which Calpodini, Anthoptini, Moncini, and Hesperiini are present in Trinidad, but several genera are currently not allocated to a tribe (*incertae sedis*). These only partly align with Evans' genera groups. In my earlier papers I have covered Evans' Hesperiinae genera Groups K, L, M, N and O, as well as part of Group J (Cock 2009), which include all Calpodini and Hesperiini and part of Moncini. In this paper, I cover Evans' genera Group I and some species of Group J, which corresponds with Anthoptini and some species of Moncini. I intend to cover the remaining species of Moncini in three more papers covering (1) the distinctive, easily identified species not already covered, (2) the brown species with pale spots, and (3) the plain brown species.

Thus, Evans (1955) divided the Hesperiinae into a series of genera Groups, of which Groups I and J are

relevant here. Groups I and J were separated mainly for convenience into those with tawny markings (Group I) and those without (Group J). Here, I cover the recently established tribe Anthoptini (Warren *et al*. 2009) which overlaps substantially with Evans' Group I, together with those species now in Moncini which Evans (1955) treated in his Group I. I do this for the same reason that Evans did – convenience. With this part, I shall have treated all the tawny species of Hesperiinae from Trinidad.

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 2009 and earlier papers). Plant names have been checked against Tropicos (2009) and shelter terminology follows Greeney and Jones (2003). The museum abbreviations are given in the acknowledgements at the end of the paper.

HESPERIINAE, TRIBE ANTHOPTINI

135. I2/1 *Synapte silius* (Latreille 1824)

Fig. 1.

This is a monotypic species (Evans 1955, Mielke 2004), widespread from Mexico (Warren *et al*. 2010) south to Argentina (Evans 1955). There is significant geographic variation amongst the specimens in the NHM, and Trinidad males are similar to those from the Guyanas rather than from Venezuela. Even so, there is no exact match amongst the limited NHM material from these areas to the Trinidad males that I have seen.

Longstaff (1912) reported this species from Ariapeta *[sic]* Road during his visit to Trinidad in April 1907, but Kaye (1940) considered this record to apply to what is now known as *S. malitiosa pericles* (treated below). Kaye (1940, no. 435b) recorded *S. silius* from Trinidad as *Cymaenes lunata* (Plötz), based on an A. Hall specimen collected in Trinidad, x-xii.,1920. *Cymaenes lunata* is a synonym of *S. silius* (Evans 1955). I have not located a specimen with this data in the NHM (which contains many of A. Hall's Hesperiidae) or the BM (which contains the remainder of A. Hall's Hesperiidae). However, there is a male in MGCL collected at Siparia, 19.xi.1920 by W.J. Kaye himself (A. Warren, pers. comm. 2009). It seems likely that this is the specimen that Kaye saw and recorded, but there was some confusion over the labelling or recording of it. There is also a record of a female from Port of Spain, 12.vii.1937, collected by W.T.M. Forbes and P.P. Babiy (Williams and Bell 1931) but I have not seen this specimen.

Longstaff (1908) lists a capture of this species at Cocoa Wattie, Tobago (as *Cymaenes silius*), and Sheldon (1936) repeats this record. Given Kaye's view above that Longstaff's Trinidad record of *S. silius* referred to *S. malitiosa pericles*, and that while there are specimens of *S. malitiosa pericles* in the NHM from Tobago, there are none of *S. silius*, it seems likely that Longstaff's record from Tobago is also referable to *C. malitiosa pericles*.

I have only seen males of *S. silius* from Trinidad (Fig. 1). Above ground colour dark brown with dull orange-brown hairs; UPF with orange-brown spots in lower cell (variable, but at least adjacent to the spot in space 2), and spaces 2-4, and sometimes 7-11; basal half of costa, and much of spaces 1A and 1B dull orange-brown. UPH with costa to space 5 and upper half of cell dark brown, extending narrowly around margin for the rest of UPH; remainder dull orange-brown with veins dark. Antennae: shaft dark; club pale ventrally at base; pale anterior to base of apiculus; apiculus chestnut brown. UNS of head pale yellow-brown, darker distally on palps; UNS of thorax and legs brown; UNS of abdomen brown with the distal margin of each segment pale. UNF brown; broad orange-brown area from costa to vein 2, veins dark; space 1B paler below spot in space 2. UNH dark brown with chestnut tint; very faintly striated; fringe brown. F male 14-15 mm. Illustrations in Godman and Salvin (1879-1901, ♂, UPS, UNS and genitalia, plate 103, nos. 4-6), Lewis (1973, as *S. lunata*, plate 87, no. 14, UNS), Canals (2003, p. 102, ♂, ♀).

S. Alston-Smith (pers. comm. 2010) has collected females in Trinidad and tells me that the orange spots on the UPF of the male are almost absent in the female, but can just be made out. In general, NHM specimens of populations from other parts of the range show the females to have more rounded wings and to be significantly duller,

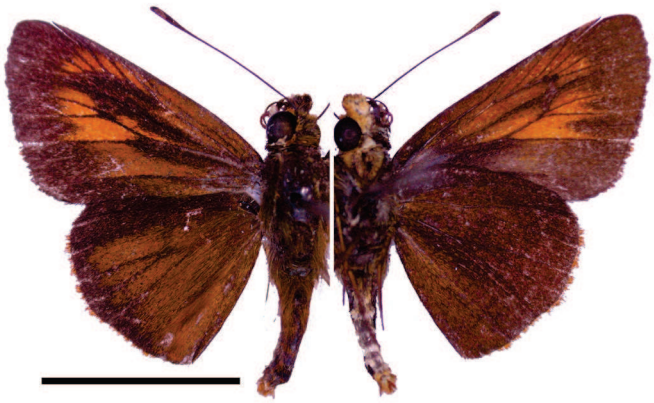


Fig. 1. Adult ♂ *Synapte silius*, Inniss Field, 2.x.1994.

with reduced or very reduced orange markings.

The chestnut tinted dark brown UNH combined with variable orange-brown spotting UPF characterise this species. The UNS, especially UNH, of *S. malitiosa* is much

paler and the striation UNH clear.

This is an uncommon species in Trinidad, mostly restricted to forested areas in the south (Penal Rock Road, 21.xi.1931, N. Lamont, UWI; Inniss Field, 2.x.1994, 17.v.1999) and south-west (Parrylands, 13.ii.1980,S. Alston-Smith, SAS; Siparia, 19.xi.1920, W.J. Kaye, MGCL), but also from Caparo (ix.2005, ix.2006, S. Alston-Smith, SAS). They are primarily found along forest tracks and keep low to the ground (S. Alston-Smith, pers. comm. 2010). In Inniss Field in May 1999, I saw what I assume were two males of this species "fighting" about 30 cm off the ground – but only captured one of them.

Janzen and Hallwachs (2009) have reared this species from eight species of grass in Costa Rica, but the great majority were on *Pharus* spp., especially *Pharus mezii* Prod., so it is likely that *Pharus* spp. are also the food plants in Trinidad.

Biezanko (1963) records that the caterpillars live on gerivá, *Arecastrum romanzoffianum* (Cham.) Becc. (= *Syagrus romanzoffiana*) (Arecaceae) presumably in Rio Grande do Sul, Brazil. This South American palm only occurs in Trinidad as an exotic species (Comeau *et al*. 2003). This food plant has been repeated in several publications relating to Brazil and Paraguay and listed in Beccaloni *et al*. (2008). Brown (1992) lists *S. silius* as feeding "em coquinho [gerivá, *Arecastrum romanzoffianum* or similar] e coqueiro [coconut, *Cocos nucifera* L.] (Palmae)".

These disparate food plant records – grasses and palms – appear to imply a significant difference in food plants from the extremes of the range of this species, but it may be that more than one species is involved or that Biezanko's material was misidentified. Confirmation of any palms as hosts would be valuable.

The caterpillar of *S. silius* illustrated by Janzen and Hallwachs (2009) is similar to the first form of *S. malitiosa pericles* considered below (Fig. 5), but the dark stripe along the epicranial and adfrontal sutures is much stronger, the adfrontal area is also dark, the vertex is strongly russet, and there is a pale orange patch from the stemmata to the adfrontal suture.

136. I2/2 *Synapte malitiosa pericles* (Möschler 1878)
Figs. 2-8.

Evans (1955) and Mielke (2004) treat this species as having six subspecies, of which the oldest is *malitiosa* Herrich-Schäffer described from Cuba, but also present in Jamaica (Brown and Heineman 1972, Smith *et al*. 1994). Subspecies *pericles* Möschler was described from Colombia, and is found from there East to the Guyanas (Evans 1955). Subspecies *pecta* Evans occurs in Central America, and has been treated as a separate species by some authors.

Crowfoot (1893, no. 189) first recorded this species from Trinidad, under the name *Pamphila malitiosa*. Kaye (1914) picks up this record from Crowfoot in the additions to his 1904 catalogue, as *Cymaenes malitiosa*. In the same publication, Kaye adds *Cymaenes pericles* to the Trinidad list, based on a G.E. Tryhane specimen from St. Ann's Valley, not realising that they are the same species. In his 1921 catalogue, Kaye (1921), adds no further information regarding *C. pericles* (no. 435), but comments that *C. malitiosa* (no. 434) has not been recorded since Crowfoot. Later, Kaye (1940) treats *pericles* as a subspecies of "the widely spread *silius*" and notes that Longstaff (1912) recorded it as *silius*. In current usage, *pericles* is a subspecies of *malitiosa*, and *silius* is a separate valid species (above). Although it is possible that Longstaff's record could have been the true *silius*, it seems more likely that Kaye is correct and Longstaff's record is *S. malitiosa pericles*.

Sheldon (1936) lists this species from Tobago as *Cymaenes pericles*, stating that it is not uncommon at Speyside.

No sexual dimorphism (Fig. 2). UPS dark brown with dull orange-brown markings; the cell spot UPF is usually present. Antennae dark above, pale at base of club; apiculus dark brown; shaft chequered below, more extensively pale at base of club, and pale on posterior margin of apiculus. Head pale ventrally, labial palps dark distally on segment 2 and segment 3 dark; thorax pale ventrally, legs brown; abdomen pale ventrally. UNS wings brown, with a chestnut tint in fresh specimens; UNF with orange-brown markings, and blackish in space 1A, 1B and lower cell; the extent of the diffuse pale orange-brown marking in space 1B variable. UNH yellow-brown, darker at margin, with a more or less strong chestnut tint except in spaces 1A-1C. The finely striate markings of the UNH are distinctive, and should serve to identify this species in the field (Fig. 3). F male and female 15.0-15.5 mm. Illustrations of adult

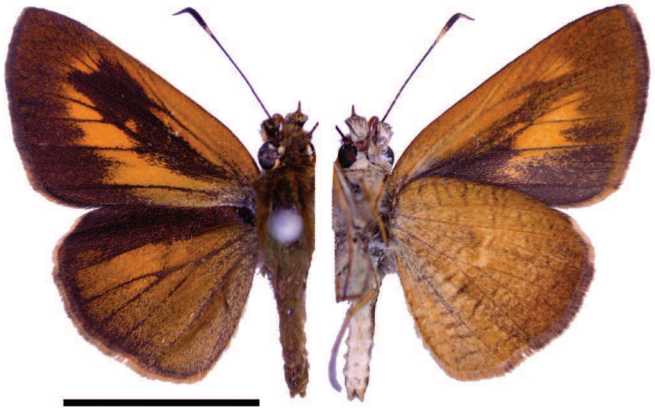


Fig. 2. Adult ♂ *Synapte malitiosa pericles*, Mt. Tabor, 13.i.2004.

ssp. *malitiosa* in Williams (1931, plate 28, no. 10 ♂, Fig. 12 ♂ genitalia), Brown and Heineman (1972, plate 10, no. 8), Riley (1975, plate 23, no. 11, ♂), Smith *et al*. (1994, plate 30, no.6, ♂, ♀).

Fig. 3. Newly emerged adult ♀ *Synapte malitiosa pericles* collected as caterpillar on *Setaria barbata*, St. Benedict's, 7.x.1995 (MJWC 95/39).

I have records of 24 ♂ and 18 ♀ from Trinidad, which show that this species is widespread in mostly lowland areas throughout the island, usually associated with disturbed forest and suburban situations. Only a few records extend to any altitude, e.g. Morne Catherine 31.iii.1982, St. Benedict's (see rearing records below). There are 6 ♂ and 3 ♀ from Tobago in the NHM, two from Speyside, the others without locality.

Kendall (1976) reared ssp. *pecta* Evans from caterpillars collected on *Panicum maximum* Jacq. (Poaceae) in Mexico, and Janzen and Hallwachs (2009) have reared it (as *S. pecta*) from four species of grass, including *Setaria palmifolia* (J. König) Stapf (= *S. paniculifera* (Steud.) E. Fourn.) and *Panicum maximum* (= *Megathyrsus maximus*), in Costa Rica. Fernández (2001) reports *P. fasciculatum* Sw. and *P. maximum* as food plants of ssp. *malitiosa* in Cuba.

I have found no food plant records for ssp. *pericles*, except that I have reared this ssp. on three occasions (93/20, 93/36, 93/39) from caterpillars collected at St. Benedict's on *Setaria barbata* (Lam.) Kunth (Poaceae) (Beccaloni *et al*. 2008), an introduced grass, native to tropical Africa and Asia (Hitchcock 1936). This skipper probably also uses other soft grasses in Trinidad with a leaf large enough to make shelters, although it is not amongst the species that I have reared from *P. maximum*.

A third instar caterpillar (95/36) was collected in an apical leaf roll made with one or two major cuts at the base from the edge of the lamina to the midrib. Because of the extensive feeding basal to the shelter, it was not clear whether one or two major cuts were made to form the shelter. A fourth instar caterpillar (93/20) was collected in a two-cut shelter with the cuts made from the same edge of the lamina, about 40 mm apart, and the lid folded over onto the leaf UPS (Fig. 4). There was extensive feeding from both sides of the leaf, basal and distal to the shelter.

Fig. 4. Empty leaf shelters on *Setaria barbata*, St. Benedict's, 6.x.1995, similar to those made by *Synapte malitiosa pericles* and assumed to be this species: above with the midrib bare on both sides; below, on one side only.

A fifth instar caterpillar was collected with no associated leaf shelter on *S. barbata* on 7.x.1995 (95/39), and pupated 13.x.1995. When collected, it measured 21mm (Fig. 5). Head rounded triangular, slightly indent at epicranial notch; ground colour off-white; posterior margin dark brown, broader ventrally; a dark brown stripe from epicranial notch over apex, laterally to stemmata and mouthparts, tinged russet near epicranial notch; sutures of the face all dark, the epicranial suture russet near epicranial notch; a broad grey-green stripe from just below epicranial notch, parallel and close to epicranial and adfrontal sutures. T1 a very narrow black dorsal plate, unpigmented at dorsum. Body dull translucent grey-green; dorsal line defined by a broad diffuse yellowish subdorsal stripe comprising closely packed white dots; a narrower, diffuse, whitish dorsolateral stripe; a whitish ventrolateral line obscures the tracheal line; anal plate rounded with a few white setae.Spiracles pale, inconspicuous. Legs and prolegs concolorous. Wax glands developed on 9.x.1995 ventrally, on posterior margin of A3-A6 and anterior margin of A4-

A7; laterally these are visible as a small patch behind each proleg. The caterpillar of *S. malitiosa pecta* illustrated by Janzen and Hallwachs (2009) resembles this caterpillar (95/39), except that the dark lines of the epicranial and adfrontal sutures are heavier, the russet colouring at the vertex is stronger, and the area around the mouthparts is infused with russet.

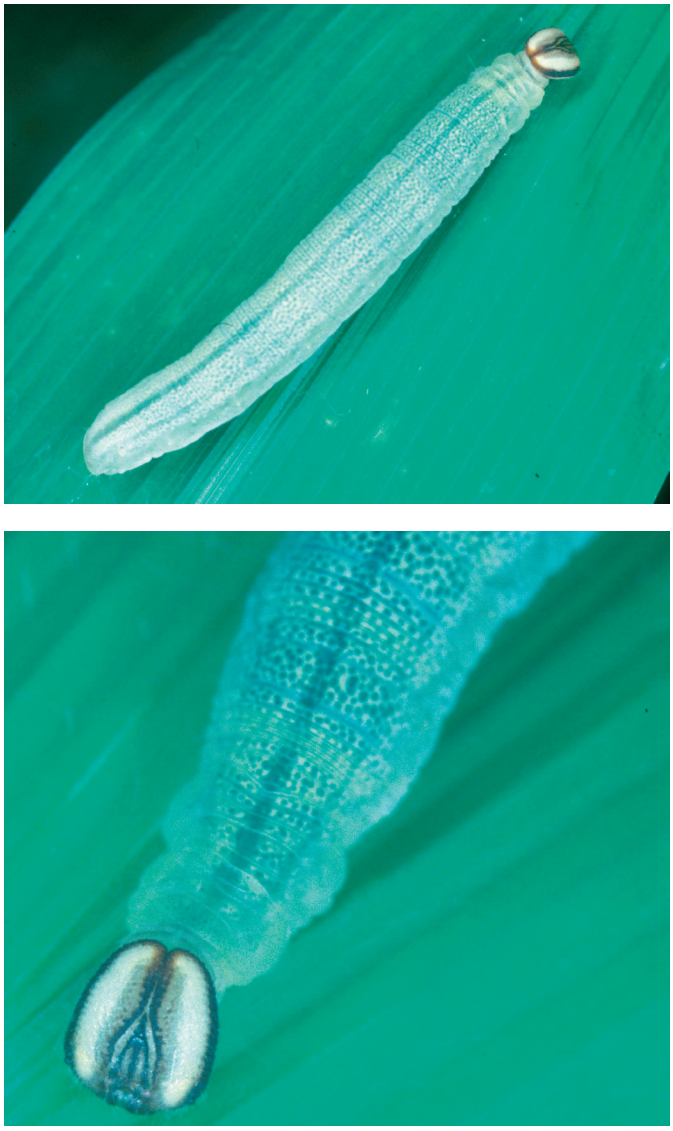


Fig. 5. Fifth instar caterpillar of ♀ *Synapte malitiosa pericles* with pale head, collected on *Setaria barbata*, St. Benedict's, 7.x.1995, 21 mm, (MJWC 95/39). Above, dorsolateral view; below, detail of head.

Two other caterpillars collected 13.x.1993 as a fourth instar (93/20) and 6.x.1995 (95/36) as a third instar differed in the final instar, having the head dark, except for a short white oblique streak each side just below the apices (Fig. 6). The adults of these two caterpillars were both male. The gonads were orange in male caterpillar 93/20, and visible from the beginning of the fourth instar. In these two individuals, the fourth instar (Fig. 7) was similar to the fifth instar. The third instar caterpillar (95/36) measured 6 mm when collected two days before moult; it had a black, shiny head, rounded triangular, flattened at the epicranial notch.

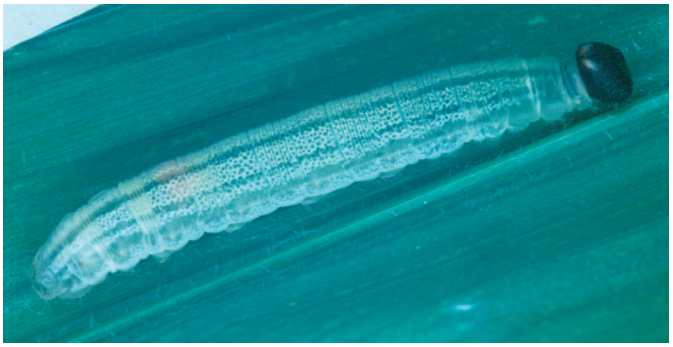


Fig. 6. Fifth instar caterpillar of ♂ *Synapte malitiosa pericles* with dark head, collected on *Setaria barbata*, St. Benedict's, 6.x.1995, photo 17.x, 21 mm, (MJWC 95/36).

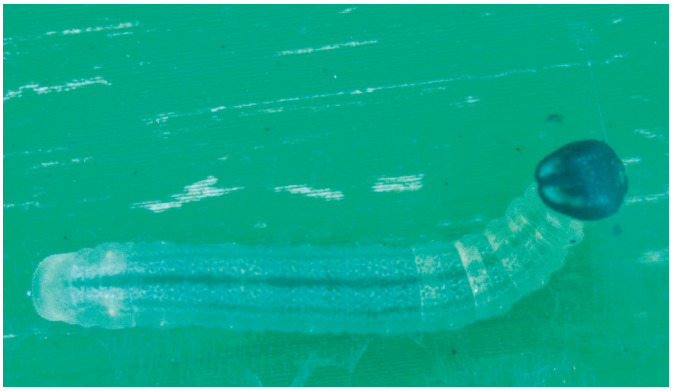


Fig. 7. Fourth instar caterpillar of *Synapte malitiosa pericles* collected on *Setaria barbata*, St. Benedict's, 13.x.1993, 12 mm, (MJWC 93/20).

The fact that the two male caterpillars had dark heads in the final instar (Fig. 6) while the caterpillar with a pale head with dark markings (Fig. 5) was female may be due to individual variation, sexual dimorphism or possibly a cryptic species pair. Further observations are needed to elucidate this.

In captivity, the pupa was formed in a leaf roll shelter and emerged after nine days. The shelter was lined with white waxy powder, but this did not occur on the pupa, except where caught on the setae. Pupa 16 mm (Fig. 8); elongate; short (1 mm) upturned blunt frontal spike, black distally; proboscis sheath reaches 5 mm beyond wing cases or as far as cremaster tip; colour white, abdomen yellowish when young; spiracle T1 light brown; long, pale, erect setae dorsally on head and thorax, which hold a silk girdle in place.

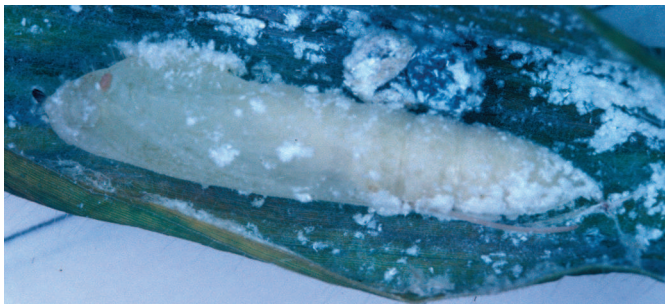


Fig. 8. Pupa of *Synapte malitiosa pericles*, collected as caterpillar on *Setaria barbata*, St. Benedict's, 6.x.1995, photo 28.x, 19 mm, (MJWC 95/36).

173. J36/10 *Propapias sipariana* (Kaye 1925)

Fig. 9.

Kaye (1925) described *Cymaenes sipariana* from a F.W. Jackson specimen collected at Siparia, 2.iv.1922. This specimen (Fig. 9) is now in MGCL. Later, Kaye comments that it is an obscure looking species without any markings (Kaye 1940), but it is of interest that in placing it in the genus *Cymaenes*, in which he also places *Synapte silius* and *S. malitiosa*, he correctly anticipates the grouping of these species in Anthoptini. Based on Kaye's description, Evans (1955) incorrectly treated *sipariana* as a synonym of *Thargella caura*. The true *sipariana* appears in Evans (1955) and Cock (1982) as *Papias proximus* Bell, which was described from Peru (holotype) and Trinidad (Bell 1934).

Mielke (1992) transferred *proximus* to the new genus *Propapias* Mielke. Mielke and Casagrande (2002) established the correct identity of *sipariana*, based on examination of the type, and hence established the synonymy followed here. Nicolay (1980) described this species as *Synapte infusco* from Panama, but Mielke and Casagrande (2002) synonymised it with *P. sipariana*. In addition to Panama, Trinidad and Peru, *P. sipariana* also occurs in Guyana, Venezuela (Evans 1955), Surinam (De Jong 1983), Rondônia, Brazil (Emmel and Austin 1990), São Paulo, Brazil (Mielke and Casagrande 1998), Misiones, Argentina (Núñez Bustos 2008) and Ecuador (Murray 2000).

Since I am unfamiliar with this species, I have adapted Bell's (1934) description of *proximus*, using the terminology which I have applied in this series. Male. The stigma lies along the lower side of vein 1. UPS both wings brown, immaculate. Fringes a little paler. UPF with a narrow, indistinct stigma below vein 1 toward the base. UNS a little paler than above. UNF in the apical, outer, and inner marginal areas paler than the rest of the wing. There is a purplish suffusion on both wings, which is more prominent on UNH. Body brown. Tegulae, shoulder-covers, collar, head, and palpi above brown with yellowish hairs intermixed. Beneath, the palpi and pectus are yellowish intermixed with brown. Thorax beneath yellowish gray. Abdomen beneath sordid whitish with a central brown stripe. Legs brown, paler interiorly. Female. Similar to the male; wings more rounded, without the stigma. F male 38-40 mm, female 42 mm. Bell (1934) illustrated the male genitalia and Mielke (1992) illustrated the stigma. Nicolay (1980) illustrated the adult male and female and male genitalia when he described the synonym *Synapte infusco* from Panama.

Fig. 9. Adult ♀ *Propapias sipariana*, Siparia, 2.iv.1922, F.W. Jackson (holotype of *sipariana* in MGCL).

This is a larger species than other plain brown Hesperiinae in Trinidad, and its size, together with the purple suffusion UNS, should serve to identify it.

This generally rare species seems to be restricted to the south of Trinidad. In addition to the type of *P. sipariana* from Siparia, the type series of *proximus* collected by A.S. Pinkus in Trinidad includes specimens from Tabaquite and Palo Seco - Erin (Bell 1934). Having failed to collect this species myself, and having found no Trinidad specimens in NHM, UWI, NMS or HEC, I consider it rare. In Rondônia, Brazil, Austin *et al*. (1993) reported one male out of several hundred Hesperiidae feeding at bird droppings associated with swarms of army ant, *Eciton burchelli* (Westwood). I have located no food plant records or information on the life history.

138. I6/1 *Anthoptus epictetus* (Fabricius 1793)

Figs. 10-12.

This monotypic species is found from Mexico to Argentina and seems to be common throughout this range (Evans 1955).

It was first recorded from Trinidad by Crowfoot (1893, no. 183) as *Pamphila epictetus*. Kaye (1904, no. 272) quotes this record, using the combination *Padraona epictetus*. In his catalogue (Kaye 1921), he adds that it is fairly common and generally distributed.

Evans (1955) states that the female is plain brown above and below, with yellow palpi as in the male, but lists only two females in the NHM, compared to 446 males, of which 36 are from Trinidad. D'Almeida (1961) seems to have been unaware of Evans' statement regarding the female, and comes to the same conclusion, and designates an allotype and four para-allotypes from Rio de Janeiro, two of which were taken *in copulo*. As D'Almeida (1961) points out, earlier authors had treated the female as being similar to the male, but he suggested that these were misidentifications. De Jong (1983) reports one female and 14 males from Surinam, but states that the female has similar markings to the male "except for a yellow stripe on the upper side of the hindwing from base to termen covering vein1B." Janzen and Hallwachs (2009) illustrate reared males and females from Costa Rica – the latter are uniformly dark brown above.

Strong sexual dimorphism. Male (Fig. 10). UPS dark brown with orange-brown markings; dull orange-brown in spaces 1A and 1B UPF; conspicuous orange-brown hairs, particularly in spaces 1A-2 UPH and on thorax. The external margin of the orange-brown spot UPH is usually fairly smooth (Fig. 10), but occasionally the orange is extended along the veins towards the margin (Fig. 11). Antennal shaft chequered orange-brown and dark brown; club extensively pale orange-brown below; apiculus dark brown. Head and thorax orange-brown ventrally; legs orange-brown; abdomen pale ventrally with a weak darker ventral line. UNS orange-brown; dull orange-brown in space 1B UNH; black on dorsum of UNF to lower half of cell and space 2 at margin. F ♂ 11-12 mm. Illustrations in ZMUC (2009, ♂, type UPS and UNS), Draudt (1921-1924, ♂ as *mys* Hübner, a synonym, plate 183d), Godman and Salvin (1879-1901, ♂, UPS, UNS and genitalia, plate 101, nos. 44-46), D'Almeida (1961), Lewis (1973, plate 80, no. 25), Canals (2003, p. 105); Steinhauser (1991) illustrates the genitalia.

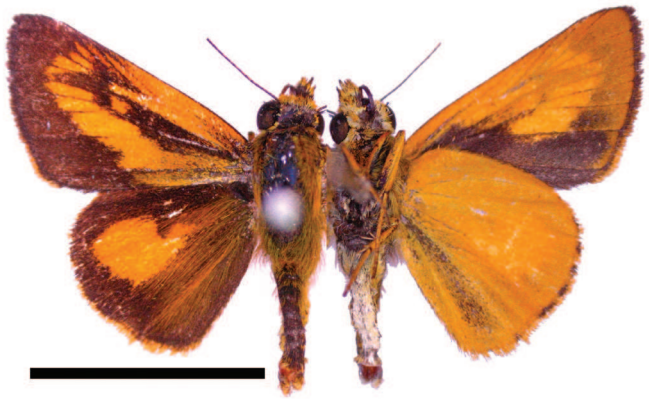


Fig. 10. Adult ♂ *Anthoptus epictetus*, Las Lomas, Spanish Farm, 17.xii.1980.

Fig. 11. Adult ♂ *Anthoptus epictetus*, Parrylands, 13.ix.1980.

The male is distinctive and easily recognised. *Vinius e. exilis* is superficially similar, but lacks the distal cell spot, has a cell spot UPH, a hair tuft UPH and dark spots UNS. *Vinius tryhana* is also similar, but the orange-brown discal band UPF is not interrupted in space 5, but is distinctly interrupted along vein 2 and in spaces 9-10; the dorsum UPH is yellow and the UPH has a strong hair tuft.

Female (Fig. 12). UPS brown, not as dark as male; fringe brown or pale brown. UPF diffuse dull dark orange-brown spots in spaces 1B (usually), 2, 3, and sometimes 6 and 7. UPH with a diffuse dull dark orange-brown discal band in spaces 2-5. Body brown above; pale orange-brown scales around eyes; brown hairs on thorax. Antennal shaft weakly chequered with pale brown on dark brown; club pale ventrally; apiculus dark brown. Head pale brown ventrally, with orange-brown on distal part of palpus segment 2; palpus segment 3 dark; body dark brown; legs pale brown; abdomen pale ventrally with a dark ventral line. UNS wings brown with a tint of orange; margin narrowly dark and fringe brown. UNF blackish in dorsal half; trace of paler spots in spaces 2 and 3. UNH brown with a tint of orange; space 1A and adjacent ½ of space 1B with grey tint; vein 1B yellow distally. F ♀ 10-12. Illustration in D'Almeida (1961), Steinhauser (1991) illustrates the genitalia.

The female is normally reported to be plain brown without markings (Evans 1955, D'Almeida 1961, Janzen and Hallwachs 2009) but De Jong (1983) reports a single female from Surinam similar to the male. The female described and illustrated here differs from Evans' and D'Almeida's treatment inasmuch as there are weak spots UPF, and a faint discal band UPH. The identity of the female shown in Fig. 12 was confirmed by dissection and comparison with Steinhauser (1991).

At first sight the female looks undistinguished, but only one other Trinidad species has the combination of

brown UPS with indistinct UPF spots, and plain UNS (apart from the vein 1B UNH yellow). The female of *Corticea corticea* (Plötz) is sometimes obscurely marked in this way, but is normally larger (F 13-13.5 mm), the UNS is paler brown, all veins are slightly paler, and the fringe is pale brown. However, the possibility of females of *A. epictetus* with a plain brown UPF as described or illustrated by Evans (1955), D'Almeida (1961) and Janzen and Hallwachs (2009) should not be forgotten, and such females would not be so easily separated from other small plain brown species (see discussion under *A. insignis*).

Fig. 12. Adult ♀ *Anthoptus epictetus*, Blanchisseuse-Paria Bay track, 22.i.1980.

Records of 74 ♂ and 12 ♀ show that the species is common throughout Trinidad in lowland situations associated with forest margins and secondary forest. Females are not rare, but have been collected less often than males, and the numbers are biased by the preponderance of males in the NHM collection. Dates of capture show that it flies throughout the year, except at the beginning of the rainy season (May-June), and is most common in the dry season from December to March: January (9), February (7), March (11), April (2), July (2), August (2), September (4), October (3), November (5), December (8).

Kendall (1976) reared this species from a caterpillar collected on *Bambusa vulgaris* Schrad. ex J.C. Wendl. (Poaceae) in Mexico. In Costa Rica, Janzen and Hallwachs (2009) have reared *A. epictetus* on ten species of grass and two sedges, with no obvious preferred choice. It probably uses a range of grasses and sedges in Trinidad.

The caterpillars shown by Janzen and Hallwachs (2009, e.g. 05-SRNP-33321) are rather similar in appearance to those of *Corticea corticea* illustrated below – so much so that they might be considered congeneric.

157. J26/9 *Anthoptus insignis* (Plötz 1882)
Figs. 13-14.

For many years this species has been known as *Nastra insignis*, following Evans (1955) who placed it in his genera Group J. It is widespread and often common from Mexico to Southern Brazil (Evans 1955). Steinhauser (1991) transferred it from *Nastra* Evans to *Anthoptus* Bell (Evans Group I), commenting that the male and female genitalia of *insignis* are very similar to those of *A. epictetus*.

Godman and Salvin (1879-1901) illustrate the adult genitalia of this species misidentified as *Mnasitheus simplicissima* (Herrich-Schäffer), but this is actually a different species, not found in Trinidad (Evans 1955). Because of this misidentification, Kaye's (1914; 1921, no. 417) and Draudt's (1921-1924) records of *M. simplicissima* from Trinidad are considered to be *A. insignis* (Cock 1982). Kaye cited a specimen he collected in the Botanical Gardens, June 1901. I have not located a specimen with this data, but there is a male *A. insignis* in the NHM (acquisition 1906) that Kaye collected from Trinidad (no locality given), which may well be this specimen. There are also three specimens from Kaye's collection in MGCL labelled "*Mnasitheus simplicissima*" in his writing (A.D. Warren, pers. comm. 2010). Two have been dissected by S.R. Steinhauser; one is *A. insignis* (Trinidad, 15.xi.1920, W.J. Kaye) and the other is *M. chrysophrys* (Mabille) (Trinidad, vi.1898, W.J. Kaye). The third (Trinidad, A. Hall), which has not been dissected, is probably also *M. chrysophrys*. Clearly Kaye included *A. insignis* in his concept of *M. simplicissima*, but since he did not dissect his material, he did not reliably identify the plain brown species from Trinidad.

Sheldon (1936) reports *M. simplicissima* as common at Speyside, based on his captures and those of A. Hall. As for Kaye's records of this species from Trinidad, this is a misidentification for *A. insignis*, and there are specimens from Tobago in the NHM (Evans 1955) as well as a pair which I collected (Charlotteville - Speyside Ridge, 15.v.1982) which support this conclusion.

Sexes similar but the wings are more rounded in the female (Figs. 13 and 14). UPS and UNS plain brown. Antennae dark above; shaft chequered below; club extensively pale ventrally; apiculus dark brown. Head brown with some yellow-brown scales dorsally; ventrally, heavy yellow-brown scaling on head and palpus; palpus segment 3 dark. Thorax brown, with light yellow-brown scaling on anterior portion dorsally, and heavy light yellow-brown scaling on anterior portion ventrally; femora brown with pale scales; tibia brown on anterior side and pale white-brown on posterior side; remainder of legs pale brown. Abdomen brown ventrally; an indistinct double pale ventral line; the distal margin of each segment pale. F male 10-11 mm; female 11-12 mm. Illustrations in Godman and Salvin (1879-1901, ♂, venation and genitalia, plate

100, nos. 28-29). Steinhauser (1991) illustrates the male and female genitalia – the former of a specimen from Trinidad.

This is one of several plain brown species of Hesperiinae found in Trinidad, and a clear diagnosis is not simple. The details of colouring of the body and legs may help. The female of *Anthoptus epictetus* is similar in size, but the ground colour is a paler brown and in Trinidad it always has diffuse UPS markings (see above). The female of *A. maracanae* is also plain brown, but it is a distinctly larger butterfly (see below). *Mnasicles hicetaon* (Godman) is only slightly larger, but the male has a clear three-part brand across the UPF, and the UNS is grey-brown. *Eprius velada velada* (Godman) is similar in size, but has a distinct purple sheen UNS. *Methionopsis ina* (Plötz) is slightly larger, has a concave margin H, a purple sheen UNH, and is pale in area 1B UNF. *Sodalia sodalis* (Butler) is larger, has more rounded wings, a dark chestnut tone UNS, and at least indistinct markings UNH. *Thargella caura caura* (Plötz) is larger, has more rounded wings, and UNF is pale on dorsum, extending into space 2. *Mnasitheus chrysophrys* (Mabille) is a similar size, but usually has a trace of apical spots UPF, a purple sheen UNS and indistinct markings UNH. *Papias phaeomelas* (Hübner) is a larger species and has faint spots UNF and sometimes UNH. It is also likely that there are several other plain brown species of Hesperiinae still to be identified from Trinidad, so all identification of small plain brown skippers must be done with caution.

Fig. 13. Adult ♂ *Anthoptus insignis*, Arima-Blanchisseuse Road, milestone 9 ¼, 8.x.1994.

Fig. 14. Adult ♀ *Anthoptus insignis*, Mt. Tabor, 1,000 ft., 1.i.1982.

I have accumulated records of 47 ♂ and 52 ♀ from Trinidad, but have not been able to re-examine all these critically for this account. However, it seems clear that this is a common and widespread species, found in suburban areas, disturbed areas, and forest throughout the island, except perhaps on the higher parts of the Northern Range. There are many more records from the north than other parts of the island. This is not necessarily an artefact of collectors and collecting localities – it does seem to be less common in the south of the island. It flies throughout the year, but has been caught most commonly in the early dry season from December to February: January (10), February (7), April (3), May (2), June (1), July (2), August (3), September (3), October (4), November (1), December (9).

Janzen and Hallwachs (2009) have reared this species on several species of grass, but *Paspalum* spp., especially *P. nutans* Lam. seem to be preferred. Similar food plants can be expected in Trinidad. The caterpillar (Janzen and Hallwachs 2009, 06-SRNP-45174) is similar to that of *C. corticea* (below) but the head markings are more distinct and a more intense brown. Like *C. corticea* and *A. epictetus*, it has dark lateral marks on the anal segment.

139. I6/2 *Anthoptus maracanae* (Bell 1934)

Figs. 15-16.

Potanthus maracanae Bell was described from Maracas Bay and other localities in Trinidad (Bell 1934). Kaye (1940, no. 427a) includes it in his additions to the 1921 Trinidad catalogue as *Padraona maracanae*, based on the type locality. Evans (1955) treated it as a subspecies of *calcarea* Schaus, which Cock (1982) followed. However, Mielke and Casagrande (2002) established the correct identity of *calcarea* Schaus, which belongs in the genus *Molo* Godman. Accordingly, *A. maracanae* is now considered monotypic (Mielke 2004) and it is found from Panama to the Amazons (Evans 1955).

Evans (1955) lists a male from Tobago in the NHM. This specimen is a male collected 1-4.ii.1931 by Capt. A. K. Totton, and remains the only record from the island.

Bell (1934) illustrates the male genitalia, and provides a detailed description of both sexes. Strong sexual dimorphism. Male (Fig. 15). UPS dark brown with yellow-brown markings. UNF yellow; dorsum of UNF black, extending to most of cell, all of space 1B and submarginally

in space 2; fringe darker. UNH yellow; space 1B speckled with black; marginal speckling each side of vein 2; margin narrowly dark; fringe yellow. F male 14 mm. The male is similar to that of *A. epictetus*, but is significantly larger, and the lower cell spot is absent.

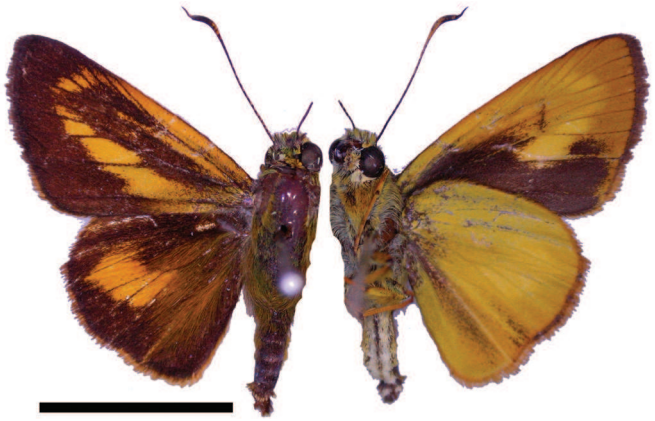


Fig. 15. Adult ♂ *Anthoptus maracanae*, Sangre Grande, 25.i.1980.

Female (Fig. 16). UPS plain brown; UNS brown but of a paler shade; UNH margin of space 1B UNH and distal portion of vein 2 paler. UNS of head pale; UNS thorax brown; UNS abdomen brown, subventrally a pale patch on posterior margin each segment. F female 15 mm. Although larger than most, the plain brown female might be confused with several species, but see comparison with similar species under *A. insignis* above.

Fig. 16. Adult ♀ *Anthoptus maracanae*, Curepe, MV light trap, 7.viii.1982.

The type series of 10 ♂ and 14 ♀ collected by A.S. Pinkus in Trinidad includes specimens from the Maracas Bay (type locality), Port of Spain Botanical Gardens, Fondes Amandes Road, Cascade Mountain Road, Brasso, and Palo Seco - Erin (Bell 1934). I have records of a further 9 ♂ and 8 ♀ from Caparo, Curepe, Grande Riviere, Arima-Blanchisseuse Road summit, Sangre Grande, St. Ann's, St. Ann's Valley and Toco. It thus seems to be a widespread but occasional species, which could turn up anywhere. However, in my experience it is a rare species, and I have only caught two specimens (Figs. 15 and 16). The relatively large number of records from the 1930s (33) suggest it used to be much more common at that time.

I have found no information on the life history or food plants, and there is none in Mielke (2005) or Beccaloni *et al*. (2008).

140. I7/2 *Corticea corticea* (Plötz 1883)

Figs. 17-22.

Corticea corticea was described from Venezuela, and is found commonly from Mexico to Paraguay (Evans 1955).

Godman and Salvin (1879-1901) illustrate *Megistias epiberus* Mabille, and state that this species occurs in Trinidad. Evans (1955) identifies Godman and Salvin's illustrations as *C. corticea*, whereas Mielke (2005) treats them as *C. l. lysias*. Mabille's *epiberus* is a synonym of *C. l. lysias* (Evans 1955, Mielke 2004). In Cock (1982), I followed Evans' treatment, not least since I was not aware of the existence of *C. l. lysias* in Trinidad at that time (see below). Since the material from Trinidad in the NHM of this vintage, which Godman would have examined, includes specimens of *C. corticea*, but not of *C. l. lysias*, I continue to interpret the Godman and Salvin record, and its subsequent citing by Kaye (1904, no. 266; 1921, no. 424) as referring to *C. corticea*.

Sheldon (1936) reports *Megistias epiberus* as common at Speyside, based on his captures and those of A. Hall. However, he also records this species mis-spelt as *Megistias cortica*, based on an A. Hall specimen from Speyside and a G.B. Longstaff specimen from Cocoa Wattie. Subsequently, Sheldon (1938) corrects the spelling of *corticea*, and adds a record of his from Scarborough. There are no other Sheldon species of this general appearance in the NHM, so it is possible that the use of *epiberus* and *corticea* by Sheldon represents the male and female of *C. corticea*.

Slight sexual dimorphism. Male (Fig. 17). UPF brown with orange-brown spots and diffuse orange-brown scales and hairs particularly over the basal half of UPF; costa varies from plain brown to extensively orange-brown; fringe brown, paler at tornus. UPH brown; heavily covered with orange-brown hairs on dorsal half, and orange-brown scaling except in space 7 and costa; fringe orange-brown. Antennae dark dorsally; chequered with orange-brown ventrally, broadly orange-brown at base of club; apiculus brown. UPS head brown with orange-brown scales around eyes; UPS thorax and abdomen brown, with

orange-brown hairs. UNS head pale brown, labial palp segment 2 orange-brown, segment 3 dark; UNS thorax pale brown, legs orange-brown; UNS abdomen pale with a narrow dark ventral line. UNF orange-brown on costa and apex, blackish brown on dorsum and tornus; diffuse pale patch in space 1B, pale orange-brown spots in spaces 2 and 3; fringe dull orange-brown, pale at tornus. UNH orange-brown, veins paler; spaces 1A, 1B and dorsal half of 1C speckled with dark scales; anterior half of space 1C brighter; fringe orange-brown. F male 11-13 mm.

Fig. 17. Adult ♂ *Corticea corticea*, Nariva Swamp, Manzanilla - Mayaro Road, 46 milestone track, 5.ii.1980.

Female (Fig. 18) similar to male but wings more rounded; UPS markings dull orange-brown; UNS dull orange-brown; anterior half of space 1C not brighter; antennae more extensively orange-brown. The female shown in Fig. 18 has relatively strong contrasting UPF markings, but others are more obscurely marked and when worn, the markings may hardly show at all. Thus, one female from the dry area at Crown Point, Tobago has reduced dull orange-brown markings and is significantly smaller (Fig. 19). Other females that I have seen from Tobago, collected by John Morrall, are similar to those from Trinidad. F female 12-13.5 mm; Tobago female (Fig. 19) 11 mm. Illustration of ssp. *noctis* (Plötz) in Canals (2003, p. 106, ?♀).

Fig. 18. Adult ♀ *Corticea corticea*, Cumberland Hill, 2.ii.1994.

Fig. 19. Adult ♀ *Corticea corticea*, Tobago, Crown Point, 9.i.1982.

Mielke (1969) illustrates adults and genitalia of both sexes; the ostium bursae of the female are variable. I have examined the external part of the ostium bursae of Trinidad and Tobago specimens. These were partially visible in most specimens without any manipulation, but clearly visible when the ventral scales on the abdomen tip were removed using a fine brush. In this limited sample of Trinidad specimens, I found variation comparable to that shown by Mielke (1969). The ventral process was either divided or flat ended, but at most only slightly spatulate, whereas in the single female of *C. l. lysias* examined, it is clearly spatulate. The ventral process of specimens of *C. lysias potex* illustrated by Mielke (1969) are wider at the apex and would be spatulate, except they are broadly indent at the apex. Further material is needed to evaluate this apparent difference between *C. l. lysias* and *C. l. potex*.

Although the wing markings are superficially indistinct and variable, this is a reasonably distinctive species in Trinidad. The combination of UPF orange-tawny markings and orange-brown underside is not found in other species. When in doubt, details of the antennae, legs and abdomen should help, as may the externally visible female genitalia.

This is a common and widespread species in Trinidad, found from sea level to the ridge-tops of the Northern Range, in swamps, agricultural areas, suburban areas, disturbed areas and forest edges. I have records of 38 ♂ and 23 ♀ from Trinidad, from all months except the beginning of the rainy season (May, June): January (7), February (13), March (8), April (1), July (2), August (5), September (4), October (6), November (2), December (1).

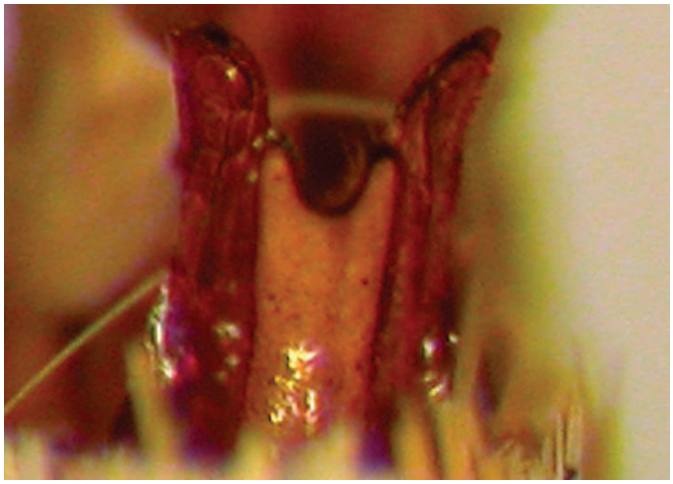
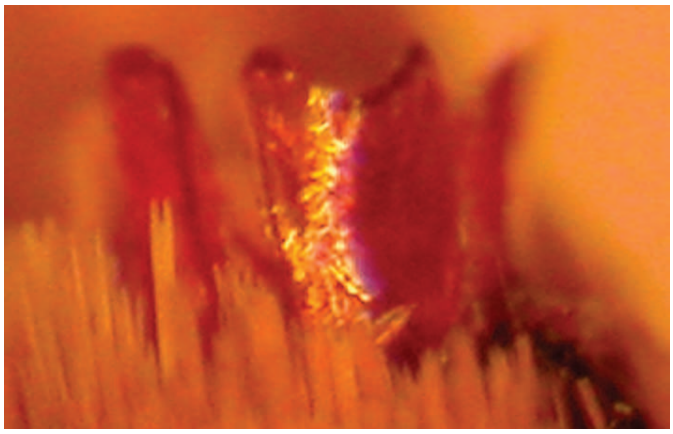
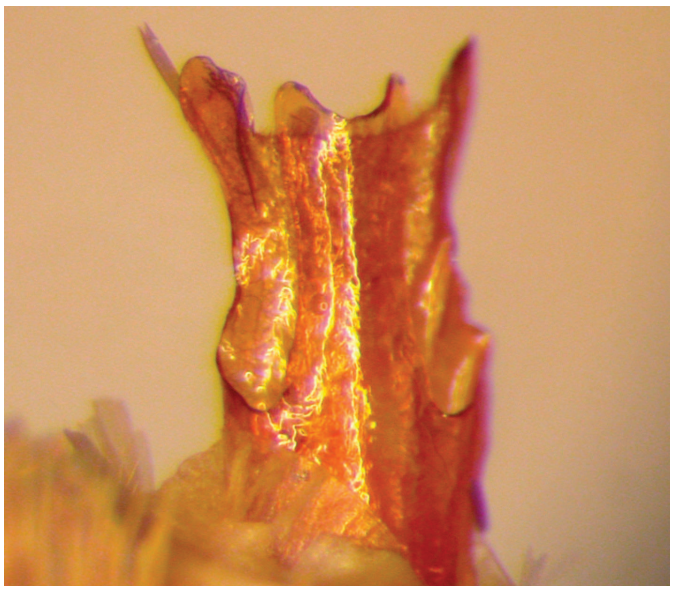


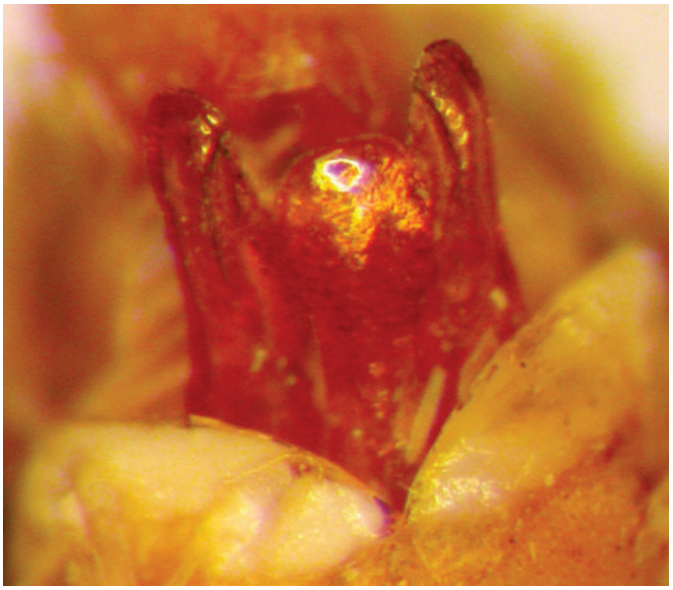
Fig. 20(a). External part of ostium bursae of *Corticea corticea*, Cumberland Hill, 2.ii.1994.



(b). External part of ostium bursae of *Corticea corticea*, Curepe, 27.iii.1982.



(c). External part of ostium bursae of *Corticea corticea*, caterpillar collected on *Paspalum fasciculatum*, Curepe, iii.1982 (F.D. Bennett).



(d). External part of ostium bursae of *Corticea corticea*, Tobago, Crown Point, 9.i.1982.

I have records of 9 ♂ 6 ♀ from Tobago, but the only localities are Crown Point and Rockley Bay. Probably it is as widespread in diverse habitats as for Trinidad.

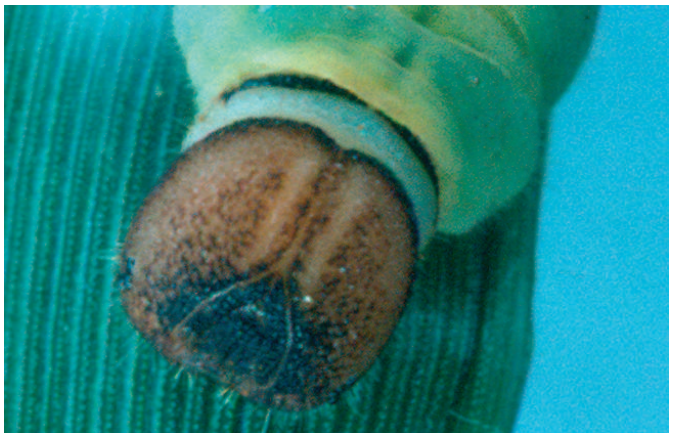
Moss (1949) reared this species from sugarcane (*Saccharum officinarum* L.; Poaceae) at Belém, Brazil but recorded no details. There are eight emerged pupae in the NHM from Moss' collection over this name, one labelled sugarcane; they match the pupa described below. There is a similar record by Box (1953) from Guyana. Janzen and Hallwachs (2009) have reared it from more than 20 grass species, of which the most commonly used is *Paspalum virgatum* L. I first reared this species in March 1982 from a caterpillar which Fred Bennett, former Director of the International Institute of Biological Control, found on *P. fasciculatum* Willd. ex Flüggé at Curepe (82/29D). I did not record details, but considered that the caterpillar matched caterpillars which I had collected at Macoya Gardens on *P. virgatum* (82/35C) and at Golden Grove on sugarcane (82/40B), both on 21.i.1982, but failed to rear. Subsequently, I reared *C. corticea* from a caterpillar collected on *Panicum maximum* at Point Gourde, 26.ii.1994 (94/8). I collected what appeared to be the identical caterpillar on *Paspalum conjugata* P.J. Bergius on the summit of Cumberland Hill, 27.ii.1994 (94/20), but it died as a pupa – the same as that described and illustrated below. Thus, as in Costa Rica, *C. corticea* can be expected to be found on a variety of grasses in Trinidad, both native (e.g. *Paspalum virgatum*) and introduced (e.g. *S. officinarum*, *Panicum maximum*), including some of economic importance.

The following description is based on the 1994 collection at Point Gourde (94/8). A fourth instar caterpillar was found in a shelter made by rolling the distal part of a leaf of *P. maximum* with feeding basal to this. In contrast,

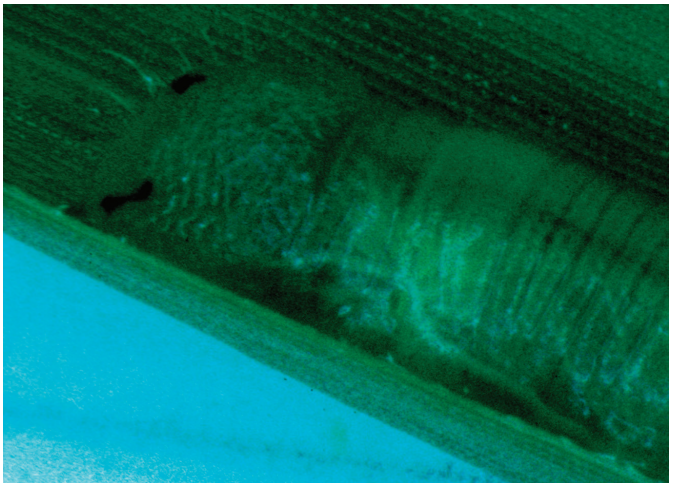
the caterpillar collected on *Paspalum conjugata* (94/20) made its shelter in the rolled basal portion of a single leaf, resting with its head distal to the leaf base. The fourth instar caterpillar of 94/8, about five days before moulting, measured 16 mm. Head rounded, 1.4 x 1.4 mm, light translucent brown; sutures brown; broad diffuse brown stripe down epicranium near epicranial suture; narrow brown line each side of epicranial suture and exterior of adfrontals; posterior margin narrowly dark. T1 with narrow dark dorsal plate. Body dull translucent green. Anal plate with oblong black mark each side on posterolateral margin.

Soon after moulting, the fifth instar caterpillar (Fig. 21) measured 25 mm. Head rounded, 2.4 x 2.3 mm wide x high, light translucent brown; matt, weakly rugose; diffuse brown stripe down epicranium near epicranial suture; narrow brown line each side of epicranial suture and exterior of adfrontals; posterior margin narrowly dark; stemmata dark. T1 and body as instar 4. Anal plate 2.0 x 2.0 mm; robust; rounded and strongly chitinised posteriorly with strong erect pale hairs; narrow, black, sub-marginal lines, 0.4 x 0.1 mm, near posterior margin, almost parallel but diverging posteriorly.

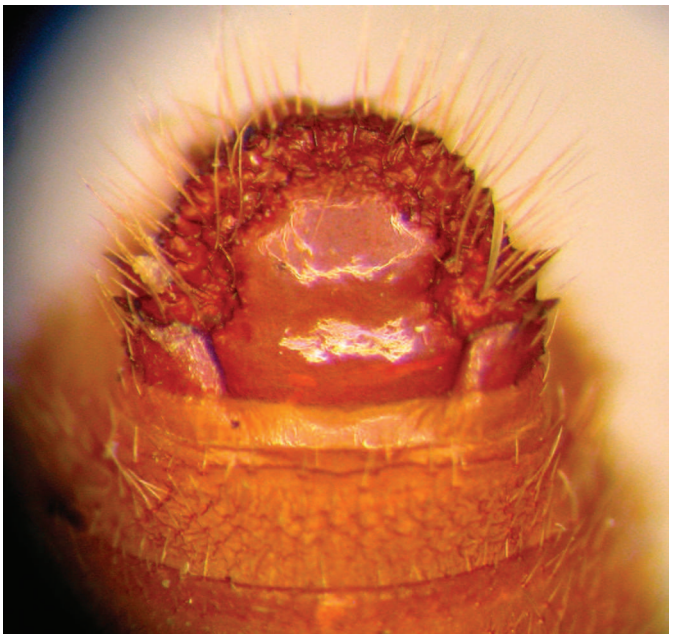
Fig. 21(a). Fifth instar caterpillar of *Corticea corticea*, dorsal view, collected on *Paspalum conjugata*, Cumberland Hill, 27.ii.1994, photo 28.ii, pupa 6.iii, 25 mm.



(b). Fifth instar caterpillar of *Corticea corticea*, detail of head, same data.



(c). Fifth instar caterpillar of *Corticea corticea*, detail of anal plate, collected on *Panicum maximum*, Point Gourde, 26.ii.1994, photo 6.iii.



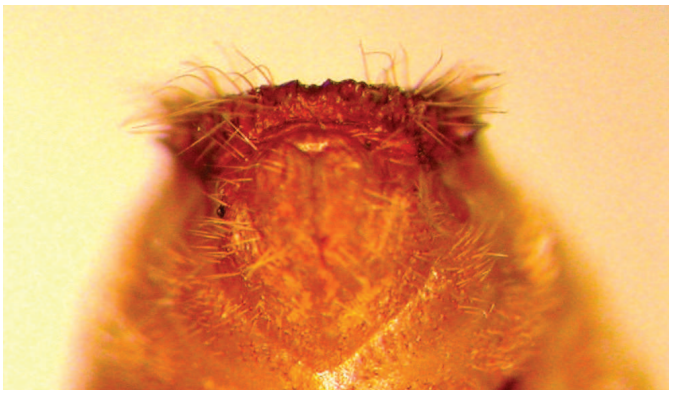


Fig. 22. Detail of emerged female pupa of *Corticea corticea*, collected as caterpillar on *Paspalum* sp. Penal, 29.viii.1982, (adult 13.ix.1982). Top, dorsoposterior view; below, ventroposterior view.

The female pupa emerged after 13-15 days. Pupa 14 mm (small) to 18 mm; cylindrical, rounded at ends; no frontal spike; proboscis sheath extends c. 2 mm beyond wing cases; head brown, with pale erect hairs; thorax and abdomen light brown, with short pale sessile hairs, below pale with green tint when recently formed; spiracles pale brown, inconspicuous. There is an interesting modification of the posterior end: a heavily chitinised dorsal plate, sloping towards posterior margin (Fig. 22); the lateral and posterior margins robust and crenulated, with erect hairs; at the anterior angle two robust posterolateral spikes. I have not noticed similar structures on pupae of other Hesperiinae, or seen any report on their purpose. Given that the pupa is notably cylindrical, it seems likely that this grass feeder pupates in a tightly rolled grass leaf shelter. I suggest that this posterior plate can be used to prevent access by parasitoids or small predators which may enter the pupal shelter at the posterior end. Not only is it heavily chitinised and therefore difficult for small predators to attack, but the posterolateral spikes at the side could be used to crush an intruder against the side of the shelter.

140a. I7/4 *Corticea lysias lysias* (Plötz 1883)
Figs. 23-25.

Evans (1955) treats *C. lysias* as having four subspecies, but reports no specimens from Trinidad in the NHM. Subspecies *lysias* was described from Panama, and hitherto has only been reported from Central America, whereas subspecies *potex* Evans is found from the Guianas (type locality French Guiana) to southern Brazil and Bolivia. Other subspecies are found in Ecuador, Peru and Brazil (Evans 1955, Mielke 1969). No subspecies have been reported from Colombia and Venezuela, but there are specimens of *C. l. lysias* in MGCL from Colombia (A.D. Warren, pers. comm. 2009) and this new record of *C. l. lysias* from Trinidad suggests that this subspecies will be found to occur in Venezuela as well.

Godman and Salvin (1879-1901) give *Megistias epiberus* Mabille as a Trinidad species. Although *M. epiberus* is a synonym of *C. l. lysias*, as explained above under *C. corticea*, I interpret this record and its reiterations by Kaye (1904, 1921) as *C. corticea*.

Up until now, *C. l. lysias* has not been confirmed as a Trinidad species. My identification of this species is based on Evans' (1955) key, a comparison with the photographs of pinned adults in Warren *et al*. (2010), and a comparison of the male genitalia with those poorly illustrated by Evans (1955), and illustrated in detail by Mielke (1969, Figs. 60-71) for *C. l. potex* from Brazil.

Modest sexual dimorphism. Male (Fig. 23). UPS brown with diffuse dull orange-brown markings. UNS dull orange tinted brown with dull orange-brown markings. Antennae, and ventral surface of head, thorax and abdomen, similar to *C. c. corticea*. F male 13 mm. There are no females of *C. l. lysias* in the NHM collection with which to compare. A provisionally identified female (Fig. 24) is similar to the male, but F markings are less bright, and UNH lacks the discal band. The female shown on the Butterflies of America website (Warren *et al*. 2010) lacks markings UPS, but does have a weak yellow-orange discal bar UNH across spaces 3-5. Illustrations in Godman and Salvin (1879-1901, ♂, UPS, UNS and genitalia, plate 101, nos. 16-18).

Superficially this looks like a dark version of *C. c. corticea* with reduced markings, however, the discal band UPH and UNH should distinguish *C. l. lysias* from that species.

I have seen just two male specimens from Trinidad: a male from Waller's Field, 7.iv.1982 (Fig. 23), and a second male without locality data which S. Alston-Smith gave to me. I have also associated a female specimen from Point Gourde, 12.vii.1997 (Figs. 24 and 25), with an element of doubt since the UNH barely shows a trace of a discal band. The external part of the female ostium bursae is shown in Fig. 25, and discussed under *C. corticea* above. S. Alston-Smith (pers. comm. 2010) has found it as a very localised butterfly in Grande Riviere (several specimens) and Inniss Field (once), only on the wing from 0700 h to about 0800 h or 0830 h. This seems to be a rare species on the island, but this may reflect the unusual flight time. Currently it has been recorded only from lowland localities.

Janzen and Hallwachs (2009) have reared this species on ten species of grass in Costa Rica, of which it was found most commonly on *Paspalum virgatum*. I have found no other information on the early stages of this species (Mielke 2005, Beccaloni *et al*. 2008).

Fig. 23. Adult ♂ *Corticea lysias lysias*, Waller's Field, 7.iv.1982.

Fig. 24. Adult ♀ *Corticea lysias lysias*, Point Gourde, 12.vii.1997.

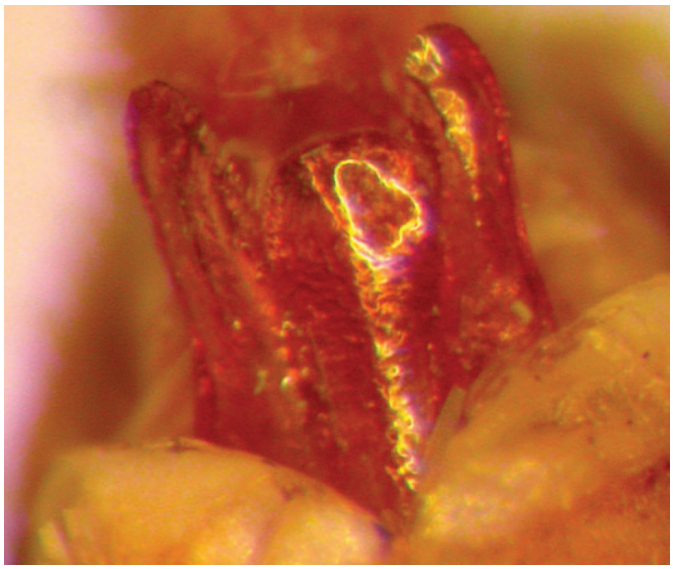


Fig. 25. External part of ostium bursae of *Corticea l. lysias,* Point Gourde, 12.vii.1997.

Hesperiinae, tribe Moncini (part)

The following species belong to the tribe Moncini, which I partially covered for Trinidad in Cock (2009). They are treated here as they make up the balance of Evans' Group I, and include the remaining species with tawny markings.

137. I3/2 *Lento xanthina* (Mabille 1891)

Fig. 26.

This species was described from Venezuela, and is recorded from Panama, Colombia (Evans 1955), Costa Rica (Janzen and Hallwachs 2009) and Rondônia, Brazil (series in MGCL; A.D. Warren, pers. comm. 2010). Judging by the small number of specimens reported in the NHM by Evans (1955), this is a generally uncommon species. It was first recorded from Trinidad by Cock (1982) based on several captures from the higher parts of the Northern Range.

No sexual dimorphism (Fig. 26). UPS dark brown with orange-brown markings, infused with dark scales in space 1A UPH. UNF costa and apex yellow-brown, remainder blackish with yellow-brown discal band, paler in space 1B; narrowly dark at margin; fringe dull brown, paler at tornus. Antennae dark; chequered with yellow on shaft; club dark, yellow basally underneath; apiculus dark brown. Body brown above; distal margin of abdomen segments narrowly yellow. Body whitish below; palpi missing on my specimens; legs mostly pale and yellow-brown; abdomen basal 2/3 with a very narrow black ventral line interrupted distally on each segment; similar line ventrolaterally extended length of abdomen. UNH brown with yellow veins; narrowly dark at margin; fringe yellow-brown. F male 11.5 mm; female 12 mm. This species does not seem to have been previously illustrated in print, but Janzen and Hallwachs (2009) include photos of a pinned male reared in Costa Rica and Warren *et al*. (2010) show a pair from Panama. The markings and wing shape are distinctive amongst Trinidad skippers.

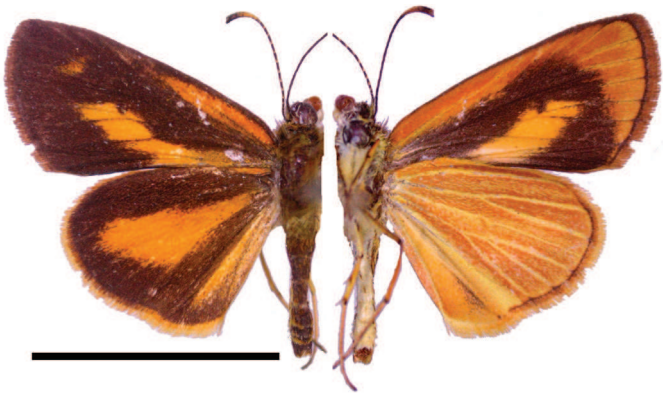


Fig. 26. Adult ♂ *Lento xanthina*, Lalaja Ridge, ¼ mile north of Lalaja South Road, 5.iii.1979.

Apart from a pair which I captured in San Miguel Valley, above St. Benedict's at c. 1600 ft., 29.vii.1978, all records are from the ridge-tops around the Arima Valley (5 ♂, 4 ♀). Flight is weak and low in or at the edge of forest, including disturbed forest.

Janzen and Hallwachs (2009) have twice reared this species from *Rhipidocladum racemiflorum* (Steud.) McClure (Poaceae), a vine-like bamboo, but I have found no further information on the life history. *Rhipidocladum racemiflorum* is not reported from Trinidad by Hitchcock (1936), but GBIF (2009) includes two specimens from Trinidad, one collected in "Caparo woods" in 1915. At least two other species of *Rhipidocladum* are reported from Trinidad, albeit placed in the genus *Arthrostylidium* (Hitchcock 1936, Tropicos 2009). The Trinidad species are mainly or all species of mountain forests (Hitchcock

1936), which matches the limited distribution of *L. xanthina* in the island.

141. I10/3 *Vinius exilis exilis* (Plötz 1883)
Figs. 27-28.

Vinius exilis exilis was described from California, but this is an error, perhaps for Santa Catharina, Brazil (Evans 1955). It occurs in two subspecies: *phellus* Mabille described from Malaysia, but only known from French Guiana and the nominate *exilis* recorded from Trinidad and from the Amazon to southern Brazil (Evans 1955, Mielke 2004). Evans (1955) lists a single female specimen from Trinidad in the NHM (Fig. 28). This is the first and only record of this species from the island.

Sexual dimorphism (Figs. 27 and 28) similar to that shown by *V. t. tryhana* below, showing differences in wing shape and male secondary sexual characters (hair tuft and brands). UPS dark brown with orange markings; UPF fringe brown, orange in space 1; UPH fringe orange. UNF pale yellow-brown at apex; black on dorsum, disc and base of costa; margin narrowly dark; fringe dull orange-brown. UNH grey in spaces 1A-1B, remainder pale orange-brown, with discal, submarginal and marginal dark spots, the latter extending basally in spaces 1C-7; margin narrowly orange-brown; fringe dull orange-brown. Illustrations in Lewis (1973, p. 88, no. 28) and Godman and Salvin (1879-1901, ♂ UPS, UNS, venation, brand and ♂ genitalia, plate 101, nos. 38-41, as *V. arignote* Godman, a synonym).

In both sexes, the distinct UNH spots will separate *V. e. exilis* from others of similar appearance UPS. The male is superficially similar to the male of *A. epictetus*, especially when the latter has a crenulated outer margin to the orange discal spot UPH (Fig. 11). However, in addition to the dark spots UNS, stigma UPF and hair tuft UPH, *V. e. exilis* has orange streaks in basal part of cell UPF, no outer cell spot UPF, the discal orange band indented on the basal margin at vein 2, and a distinct cell spot UPH.

Fig. 27. Adult ♂ *Vinius exilis exilis*, Amazonas, Brazil (specimen in NHM).

Fig. 28. Adult ♀ *Vinius exilis exilis*, St. Anns' [*sic*] Valley (specimen in NHM).

With just a single record from St. Ann's Valley dating to early last century (Fig. 28), the status of this species in Trinidad needs confirmation. Given that, apart from this specimen, *V. e. exilis* is only known from the Amazon and further south in Brazil, it is quite possible that the Trinidad specimen is mislabelled. The specimen was originally from the Rothschild collection, and bears a simple label "St. Anns' [*sic*] Valley, Trinidad", which I have seen on many typical Trinidad species. I have found no food plant records or information on life history for this species (Mielke 2005, Beccaloni *et al*. 2008).

142. I10/4 *Vinius tryhana tryhana* (Kaye 1914)
Figs. 29-30.

Kaye (1914) described and illustrated this species from Trinidad, as *Padraona tryhana*, based on a specimen from St. Ann's Valley collected by G.E. Tryhane. Kaye (1921, no. 428) adds no further information or records.

There are further records of ssp. *tryhana* from Guyana (Evans 1955), Surinam (De Jong 1983), Colombia (Williams and Bell 1934), Ecuador (Williams and Hayward 1944), and Peru (Robbins *et al*. 1996). *Padraona sophistes* Dyar, described from Mexico is considered a synonym (Williams and Bell 1934, Evans 1955, Mielke 2004). Evans (1955) describes a second subspecies, *istria*, from southern Brazil.

Sexual dimorphism significant due to the wing shape, pattern UPH, and the hair tufts and stigma in males. Male (Fig. 29). UPS wings dark brown with orange markings, yellow-brown in space 1A UPH; UPF with two grey-brown brands above and below vein 2 where the dark basal area extends into the orange discal bar. UPH with a tawny hair tuft at base of cell, and a conspicuous erect one near base of vein 1B with the hairs tawny basally and dark distally. UPF fringe brown, orange in spaces 1B and 2; UPH fringe orange. Antennae dark above; shaft chequered with pale orange-brown below; UNS and anterior side of club pale orange-brown; apiculus chestnut. UPS body dark brown

with orange-brown hairs and scales; UNS body pale orange-brown, paler on abdomen; legs with femora dark internally, orange-brown externally; remaining segments orange-brown and pale orange-brown. UNS wings dull orange-brown; UNF broadly black on dorsum, extending to space 3 distal to the orange band, and to space 5 basal to it. UNH spaces 1B-1C yellow-brown; dark dots at end of veins 2-4. UNS fringe dull orange-brown. Female similar (Fig. 30), but H much less extended; and orange-brown colouring generally duller; UPH the orange colouring extends completely to the dorsum in the male, whereas in the female, spaces 1A-1C are dark, with vein 1B orange-brown; UPF the female lacks the lower cell spot found in the male, but this may not be a consistent pattern; UNH the distal part of space 1B shaded with black scaling. F male 11-13.5 mm; female 12-13 mm. Illustrations in Kaye (1914, plate 30, no. 4, ♂), Lewis (1973, plate 88, no. 29, ♂). Williams and Bell (1934) illustrate the male genitalia.

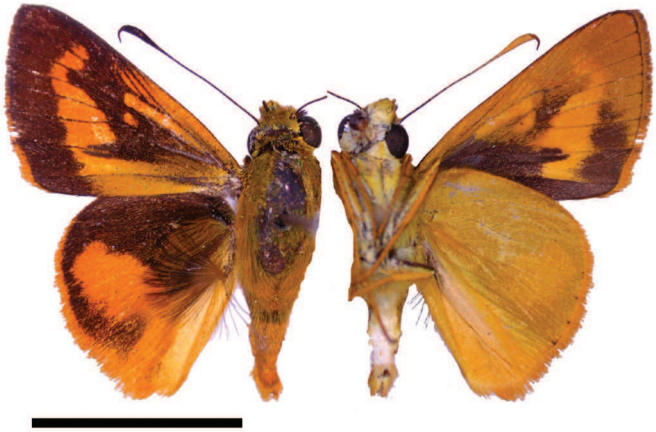


Fig. 29. Adult ♂ *Vinius tryhana*, Arima-Blanchisseuse Road, milestone 10 ¼, 9.iii.1980.

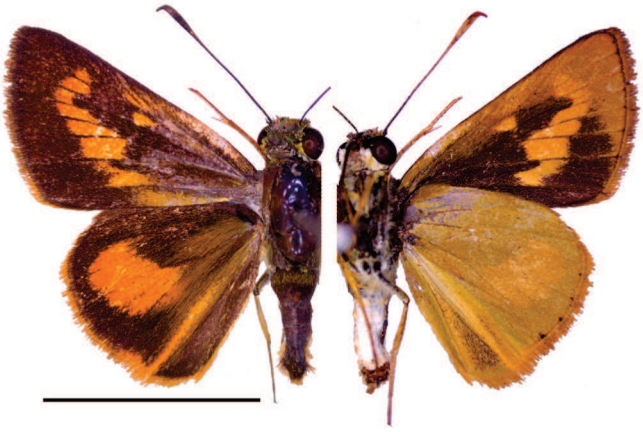


Fig. 30. Adult ♀ *Vinius tryhana*, Andrew's Trace, 8.x.1994.

The orange and dark brown markings mean that this species is only likely to be confused with male *Anthoptus* spp., and *Vinius e. exilis*. The dark basal indentation in the UPF discal band along vein 2, and the hair tufts UPH distinguish male *V. tryhana* from the *Anthoptus* spp. males, and the dark markings UNS in *V. e. exilis* should separate that species. The possibility of *A. epictetus* females which resemble the males (above, De Jong 1983) means that female *V. tryhana* should be carefully checked: *V. tryhana* females have a basal indentation on the discal band on vein 2, and lack the break in the discal orange band in space 5.

This conspicuous species seems to be most common on the ridge-tops of the Northern Range, with a few records from the foothills extending into central Trinidad, but I have no records from the south of the island. The last instar caterpillar and pupa are shown on the Butterflies of America website (Warren *et al*. 2010), found on an unidentified bamboo in Mexico (J.P. Brock).

DISCUSSION

The early stages of *Anthoptus* and *Corticea* are similar, confirming the close affinity of these genera (Warren *et al*. 2009), although whether the distinctive plate noted for the pupa of *C. corticea* is also found in *Anthoptus* needs to be checked. In contrast, the early stages of *Synapte malitiosa pericles* resemble those of species of Moncini (Cock 2009, unpublished). Since Warren *et al*. (2009) were not able to include details of the early stages in their analysis of the classification of Hesperiidae, apart from dividing the food plants into Monocotyledons and Dicotyledons, it may be anticipated that more information on the early stages will throw further light on the classification of the Hesperiidae, including those species which cannot currently be attributed to tribes.

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The specimens of *Vinius exilis* (Figs. 27 and 28) are in the NHM, and the specimen of *Propapias sipariana* (Fig. 9) is in MGCL. I thank Andy Warren who checked the MGCL for historical specimens and Scott Alston-Smith for adding information based on his observations.

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ADDENDUM

The following species was drawn to my attention during the finalisation of this paper, and included here because of its similarity to *Anthoptus epictetus* and *Vinius tryhana*, although it belongs to a different group of Hesperiinae.

Anatrytone barbara (Williams and Bell 1931)

This species was described from the Sint Barbara Plantation in Surinam (Williams and Bell 1931) from a pair taken *in copula*. Evans (1955) treated it as a synonym of what he incorrectly treated as *Mellana clavus* Erichson, which is actually *Anatrytone mella* (Godman) (Burns 1994, Cock 2007). Things became more confused as Evans (1955) then described this species anew as *Mellana villa* Evans, but Mielke (1973) established that *barbara* is a valid species and *villa* is a synonym of *barbara*. Burns (1994) transferred *barbara* to the genus *Anatrytone*. It is found from Colombia, through Ecuador, Venezuela, and the Guianas, to Peru and Brazil (Burns 1994), but it has not previously been recorded from Trinidad.

There is a specimen in MGCL from the W.J. Kaye collection collected Arima Distr., i-iii.1932 by A. Hall, which had been identified as *Vinius tryhana* (A.D. Warren, pers. comm. 2010). This is the only record that I know from Trinidad, and is an addition to the Trinidad list, although other specimens may be misidentified in Trinidad collections. This species falls within Evans' genera Group M, which I have already treated for Trinidad (Cock 2007), and so I add details here as it can be confused with two of the species treated above. The following descriptions are adapted from the original (Williams and Bell 1931).

Male. UPS brown, with orange-yellow markings as follows: the lower part of the costa of the UPF orange, lighter yellow subapical patch, and oblique band from beyond the cell to the inner margin about one-fourth the width of the wing. UNH has a broad discal yellow-orange patch, somewhat removed from the base and separated from the outer and inner margins by the brown basal colour; the patches on both wings cut by brown on the veins. Fringes of UPF brown, of UPH brown and at the anal angle and inner margin strongly orange-yellow. UNS yellow, of a lighter tone than above. UNF with brown at the base extending in a ray below the cell, and with a brown line at the end of the cell; a brown patch at the inner angle, and the inner margin brown. UNH yellow, immaculate. Body above with brown, orange, and greenish hairs, below lighter yellow. Head with orange collar and tufts; palpi orange-yellow tipped with brown; antennae brown, ringed, the club reddish. F 25 mm. Illustrations in Williams and Bell (1931) and Lewis (1973, ♂ plate 83, no. 34 as *Mellana villa*). The male genitalia are illustrated by Williams and Bell (1931), and the male and female genitalia by Burns (1994).

Female. Dark olive brown UPS, the orange markings of the male present on UPF very much reduced; UPH the disc shows a patch of lighter scales and olive hairs only. The fringes UPF and UPH lighter in contrast with the brown ground colour of the wings light greenish yellow. UNF with the brown areas of the male more extended and in addition a brown line on the outer margin and the fringes cut with brown. UNH immaculate except for some darkening on the inner margin, a dark line on the outer margin and the fringes cut with brown. F 29 mm. Illustration in Williams and Bell (1931).

The male of this species might be confused with male *Anthoptus epictetus* and female *V. tryhana* (the conspicuous hair tuft UPH in the male of *V. tryhana* should readily serve to separate that sex). Judging from the description, the brown veins across the orange spot UPH in the male of *Anatrytone barbara* should distinguish it from both the male of *Anthoptus epictetus* and the female of *V. tryhana*, in which the veins match the orange spot.

The food plants and early stages seem to be unknown (Mielke 2005, Beccaloni *et al*. 2008).

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