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The Skipper Butterflies (Hesperiidae) of Trinidad. Part 13, Hesperinae, Genera Group K

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ABSTRACT

Details are given of the taxonomy, history, description, identification and biology of the 12 genera and 22 Trinidad and Tobago species of Genera Group K of the Hesperidae (Lepidoptera). The female of *Enosis blotta* Evans is described for the first time. *Enosis achelous achelous* (Plötz) and *Damas clavus* (Herrich-Shäffer) are new records for Trinidad, and *Perichares deceptus fulvimargo* (Butler) is removed from the Trinidad list. *Moeros moeros* Möschler, known from Trinidad only from the holotype of its synonym *Argon casca* Bell, needs confirmation as a Trinidad species. One species, *E. blotta* Evans, has only been recorded from Trinidad and is a possible endemic. All 22 species are illustrated as adults, and the early stages are illustrated for *Ebusus ebusus ebusus* (Stoll), *Argon lota* (Hewitson), *Talides sergestus* (Cramer), *Talides sinois* (Hübner), *Telles arcalaus* (Stoll), *Cobalus virbius virbius* (Cramer), *Perichares philetus* (Gmelin), and *Orses cynisca* (Swainson). Three genera and three species also occur in Tobago; *Talides sergestus* was previously recorded from Tobago as *T. sinois*.

INTRODUCTION

Genera Group K (Evans 1955) is characterised by the broad “quadrantic” palpi, the inner side of the second segment longer than the side against the head, seen from above; the third segment usually a short, stout nipple. Antennae generally not constricted before the apiculus: nudum 10-16 segments, portion on club shorter than the long apiculus. Mid tibiae generally spined. Males generally with brands or a stigma UPF. Pronounced sexual dimorphism in some genera, especially *Carystus* and *Carystoides*.

Evans (1955) recognised 33 genera and 114 species of Group K from the Neotropical Region. Twelve genera and 22 species occur in Trinidad, while just three species of three different genera are recorded from Tobago. *Enosis achelous achelous* (Plötz) and *Damas clavus* (Herrich-Shäffer) are new records for Trinidad. *Talides sergestus* (Cramer) was previously erroneously recorded from Tobago as *T. sinois* (Hübner).

The known food plants of Group K are all Monocotyledons, a mixture of grasses, palms, and some Epigynae such as Musaceae and Heliconiaceae.

All specimens illustrated are in the author’s collection unless indicated otherwise. The following abbreviations are used to indicate other collections: AME – Allyn Museum of Entomology, Florida (now in the McGuire Center for Lepidoptera and Biodiversity, Gainesville, Florida); HEC – Hope Entomological Collections, Oxford University Museum; NHM – The Natural History Museum, (formerly British Museum (Natural History)); NMS – National Museums of Scotland (formerly Royal Scottish Museum); SAS – Mr. Scott Alston-Smith private collection; UWI – University of the West Indies, St. Augustine. In each figure of pinned adults, the UPS is shown on the left and the UNS on the right. The scale at the bottom of most figures of pinned specimens is in mm.

Enosis Mabille 1889

Four species of this genus are recorded from Trinidad; all seem quite uncommon. All are predominantly brown with reduced or no white hyaline spots, and the UNH plain brown with or without a few pale spots in spaces 2-6. Of those genera with this general appearance in Trinidad, *Enosis* are relatively large, and only superficially comparable to some species of *Cynea*, *Eutyche* and *Euphyes*. Males of *Enosis* spp. in particular should be quite easy

to recognise because of the three part, curved, narrow stigma, from the base of space 2, below vein 2 and above vein 1. Females are most easily identified by associating them with their respective males, and that for *E. blotta* is described here for the first time. *Cynea* (Group L) has a brand on vein 1 only; *Eutyche* (Group J) is larger, with more extensive white hyaline markings, and has a V-shaped brand at the base of space 2 and long brands under vein 2 and over vein 1; *Euphyes* (Group M) males lack the white hyaline spots altogether, and have a broad, straight brand from vein 3 to vein 1, interrupted at vein 2.

Of the four Trinidad species of *Enosis*, *E. achelous achelous* is most readily distinguished because it has no white hyaline markings F or spots UNH, and the UNS of the abdomen is pale. Its relatively large size, together with the strongly pointed F in the male should distinguish it from other plain brown species in Trinidad. *Enosis angularis* (Möschler) can be distinguished by the relatively truncate F, more rounded termen and broader wings. *Enosis blotta* Evans and *E. immaculata demon* Evans are rather similar: the males both have the F pointed as in *E. achelous*, and both have white hyaline markings in spaces 3, 6 and 7 F, and variable spotting UNH. *Enosis blotta*, however, has a dense, dark hair tuft in space 1B UPH, and a small yellow steak in space 1C UNH, neither character appearing in *E. immaculata*.

S. Alston-Smith (pers. comm.) considers all members of the genus to normally fly very close to the ground, so that they are easily overlooked. He suggests this behaviour may be associated with the use of short grasses as food plants.

196. K4/6 *Enosis blotta* Evans 1955

Figs. 1-2.

This species has only been recorded from Trinidad, and may be endemic. Evans (1955) described it from Trinidad on the basis of two males in the NHM, both collected at St. Ann’s by A. Hall, the type i-iii.1932, and the other xi-xii.1931 (Evans (1955) gives the type data as St. Ann, iii.1932). There is another male *E. blotta* in A. Hall’s collection in the Booth Museum taken in Arima District, i-iii.1932, labeled as *Metiscus atheas* (see discussion under next species). There are two more of A. Hall’s specimens of this species in W. J. Kaye’s collection in AME: a male from Maupertuis, 1939, and a male from St. Ann’s, i-iii.1932. The female has not hitherto been recorded.

Male UPS brown with a small, rounded white hyaline spot near the base of space 3, dots in spaces 6 and 7 (may be reduced to a trace), and sometimes a trace in 8. The type also has a small upper spot in space 2, which extends across space 2 UNF. UPH, a strong, dark brown hair-tuft along vein 1B covers much of space 1B to 3/4. UNH with a slight purple wash; dots in spaces 2 and 3, and weaker dots in spaces 5 and 6; a small yellow streak in space 1C close to vein 1B. The cilia H and space 2 F are paler than the ground colour. F male 17 mm.

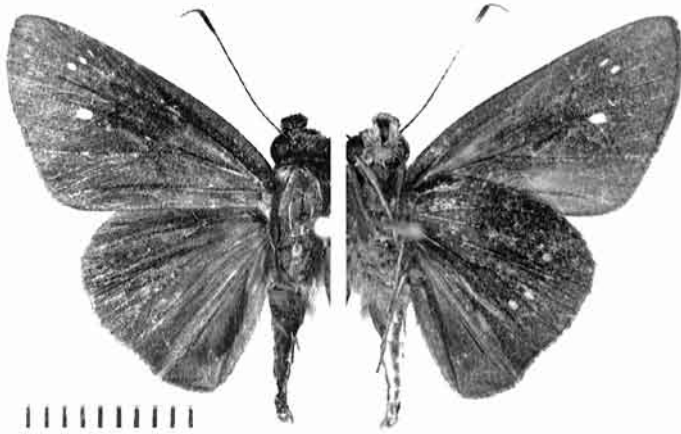


Fig. 1. *Enosis blotta* male, Morne Catharine, 12.ii.1980.

Female similar to male, but F less produced, and F a white hyaline spot in space 2 and a dot above vein 1 in line; UNF the distal half of space 1B pale. F female 16 mm.



Fig. 2. *Enosis blotta* female, Parrylands, 10.iii.1980.

This is an occasional species in Trinidad. Records of captures from Morne Catharine, Maracas Valley, Manzanilla Cocal, Maupertuis (A. Hall), Parrylands and Chatham (SAS) give no clear pattern of distribution. Six out of my seven records, and three of Hall's four specimens, were captured during the dry season (January – April), suggesting this species may be relatively more common then.

Life history and food plants apparently unknown.

197. K4/8 *Enosis immaculata demon* Evans 1955

Figs. 3-4.

Evans (1955) treats two subspecies: *immaculata* Hewitson, described from Colombia, and found from Mexico to Peru, and *demon* Evans, described from the Amazon, and found in Trinidad,

the Guyanas and at the mouth of the Amazon.

Kaye (1921) records *Metiscus atheas* Godman from Trinidad on the basis of a G. E. Tryhane specimen taken in St. Ann's Valley and at that time in the H. J. Adams collection. Evans (1955) treats *atheas* as a synonym of *Enosis achelous* (see next species). In Cock (1982b), I assumed that this record of *E. atheas* represented a misidentification for *E. immaculata demon*, which was undescribed when Kaye wrote. The Adams collection is now part of the NHM collection, and this includes a male *E. immaculata demon* from St. Anne's Valley [sic!]. I conclude that this is most probably the G. E. Tryhane specimen on the basis of which Kaye misidentified this species from Trinidad. However, there is a specimen of *E. blotta* in coll. A. Hall (Booth Museum) labelled *M. atheas*, so there was confusion over this genus amongst Trinidad collectors at that time.

Male as *E. blotta* except the hair tuft is much reduced and paler, and there is no yellow streak in space 1C UNH. F male 17-18 mm. I have not seen females from Trinidad, but illustrate one from Brazil (coll. NHM); it is plain brown with white hyaline spots.

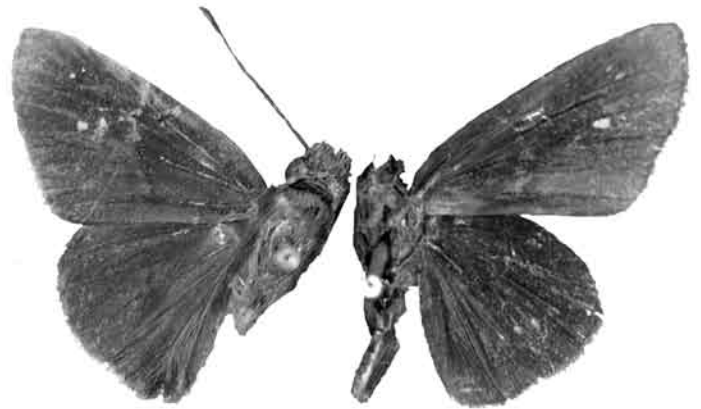


Fig. 3. *Enosis immaculata demon* male. Left UPS, St. Ann's Valley (specimen in NHM; note that the wings are not lying flat, and therefore look foreshortened); right UNS, Trinidad (specimen in NHM).



Fig. 4. *Enosis immaculata demon* female, Amazonas, Brazil (specimens in NHM).

There are two more males of this species in the NHM (Fig. 3): St. Ann's (i.1936 A. Hall) and one from the Saunders collection just labeled Trinidad. I have not taken this species, and the female seems not to have been captured from the island. I conclude it is an uncommon species, perhaps restricted to the north-west of the

island.

Moss (1949) does not include this species, but there is reared material of his in the NHM. The cast L5 head capsule is oval, narrower dorsally; it is covered with white waxy powder, but appears to be brown, paler adjacent to epicranial suture. The emerged pupa is pale translucent brown; the frontal spike is a small nub, bent downwards. The pupal shelter is formed in what appears to be a palm leaflet. There is similar material in AME from Ecuador (No. CH-18 A.C. Allyn): the emerged pupa is transparent, with the frontal spike a small nub, and the proboscis sheath not reaching the cremaster; the cast L5 head capsule is light brown, with a darker lateral stripe, the posterior margin narrowly dark, the clypeal sutures darker, and a narrow line down the centre of the clypeus.

197a. *Enosis achelous achelous* (Plötz 1882)

Fig. 5.

This species occurs from Mexico to Ecuador (TL Chiriqui, Panama). Evans (1955) lists *atheas* Godman (TL Mexico) as a synonym. This is a new island record for Trinidad, based on a male captured by S. Alston-Smith on Morne Catharine, iii.1986 (Fig. 5), a photo of which I compared with the NHM collection. S. Alston-Smith (pers. comm.) has subsequently collected this species from Bush Bush (male x.1999) and Chatham (male iv. 2002).

Wings plain brown UPS and UNS; costa and distal half UNF and all UNH with a ferruginous tint; abdomen UNS pale, with a brown central line. Evans (1955) notes that there may be spots in spaces 3 and 6 UNF and space 3 UNH, but these are not apparent in the single Trinidad male that I have examined. Some female specimens in the NHM also have a larger spot in space 2 F.



Fig. 5. *Enosis achelous achelous* male, Morne Catharine, iii.1986, S. Alston-Smith (specimen in SAS).

Life history and food plants apparently unknown.

198. K4/10 *Enosis angularis* (Möschler 1876)

Figs. 6-7.

Evans treated *angularis* as having two subspecies, *angularis* Möschler described from Suriname and reported from the Guyanas, Brazil, Peru and Bolivia, and *infuscata* Plötz described from Brazil, but occurring in Costa Rica, Venezuela and Ecuador (Evans 1955). However, Mielke (2004) treats *infuscata* as a synonym of *Papias subcostulata* (Herrich-Schäffer), and therefore *E. angularis* is monotypic.

Kaye (1940) records a specimen which he captured at Maracas, 24.xi.1920, as *Papias infuscata* (Plötz), which as noted above Evans (1955) treated as a second subspecies of *E. angularis*. There are no Trinidad specimens in the NHM. I have not located Kaye's specimen and there are no specimens of *E. angularis* from Kaye's collection in AME, so his specimen could well refer to another species.

Male UPS and UNS brown; F a small round white hyaline spot in space 3 and the trace of a dot in space 6; margin UNH slightly paler. Female similar, but with a narrow spot in space 2 parallel to the cell, and a very small spot in space 3 UNH. F male 16.5 mm, female 17 mm.

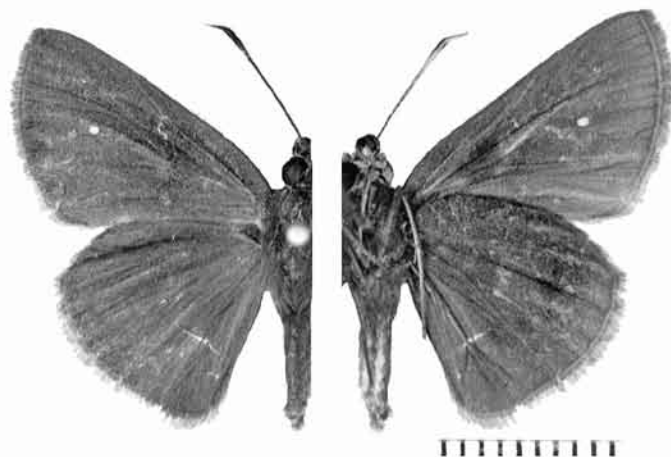


Fig. 6. *Enosis angularis* male, Nariva Swamp, milestone 46 1/4 track, 5.ii.1980.

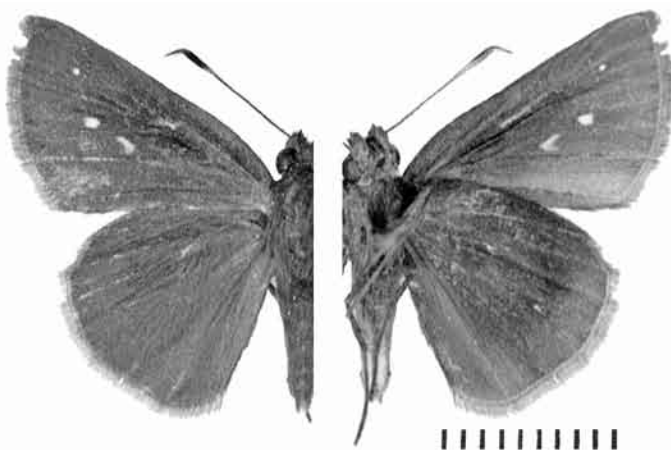


Fig. 7. *Enosis angularis* female, Las Lomas, Spanish Farm, 23.iii.1980.

This is an occasional species in Trinidad. The places of capture (Maracas, Nariva Swamp, Las Lomas, Palmiste) suggest a lowland distribution, and the months of capture (February – May) suggest a dry season flight period.

Janzen and Hallwachs (2001) have reared this species regularly from *Oryza latifolia* (Poaceae). They illustrate a yellowish larva; narrow dark dorsal plate on T1; rounded triangular head, indent at the vertex, shiny and rugose, brown with the lateral margins dark brown. The pupa is light brown, the spiracle T1 brown, and with a distinctive, short, dark, blunt, downward-pointed frontal spike. The life history and food plants have not been recorded from

Trinidad.

199. K6 *Ebusus ebusus ebusus* (Stoll 1780)

Figs. 8-10.

This distinctive species is the only member of its genus; it was described from Suriname, and occurs from Trinidad south to Peru and Bolivia (Evans 1955). Miller (1985) reviewed the genus and described a new subspecies from Mexico.

This species was first recorded from Trinidad by Crowfoot (1893) as *Entheus ebusus*. Kaye (1921) adds a record from Morne Diablo, 4.i.1916 by Sir Norman Lamont, treating the species as *Phanus ebusus*. In Kaye (1940), he treats it as *Carystus ebusus* and adds records from Tabaquite (14.i.1921, W. J. Kaye) and Fondes Amandes (male 17.v.1922, F. W. Jackson); these specimens are in Kaye's collection in AME, but the former is dated 18.i.1921 and the latter 17.iii.1922. Evans (1955) resolved the problem of the generic placement of this species by erecting the new genus *Ebusus* specifically for this distinctive species.

This large species, with extensive white markings UPH and UNH, can be mistaken for no other Trinidad skipper. As shown, the white markings are more extensive in the female. F male 20 mm, female 22 mm. Illustration in Lewis (1973, Plate 82.39, UNS).



Fig. 8. *Ebusus ebusus ebusus* male, Parrylands, 16.x.1980 in cop.

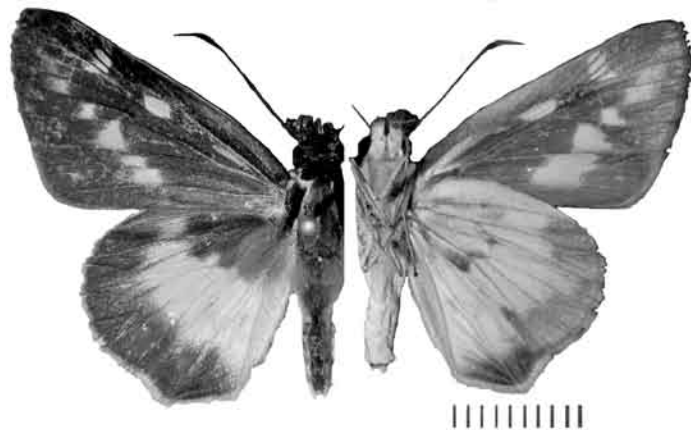


Fig. 9. *Ebusus ebusus ebusus* female, Parrylands, 16.x.1980 in cop.

This is not a common species, but probably collected disproportionately because of its large size and distinctive

colouring. In addition to the published records above from Morne Diablo, Tabaquite and Fondes Amandes, I have scattered records from Moreau, Parrylands, Palo Seco - Siparia Road and Rio Claro in the south, Sangre Grande and Tabaquite in central Trinidad, and Arima District, Fondes Amandes (200 ft.), "N. Hills", "Northern Mountains", Port of Spain and St. George's in the north. These records suggest this is a lowland forest species.

Moss (1949) records this species from assahy and pachiúba palms. The former is probably the species referred to as açai, i.e. *Euterpe oleracea*, while the latter is *Socratea exorrhiza* (Henderson *et al.* 1995). *Euterpe oleracea*, known locally as manac is a likely food plant in Trinidad, but although known from the adjacent mainland, *S. exorrhiza* is not a Trinidad species (Henderson *et al.* 1995; Comeau *et al.* 2003). Moss's illustration of the larval head shows a dark ground colour with the clypeus and three streaks on each epicranium pale. A cast L5 head capsule in the NHM shows that the posterior portion of the head is dark, with a pale sub-dorsal sub-marginal line; the epicranial suture is narrowly dark, and the epicranium has pale sub-dorsal and lateral areas; the lower part of the head is covered with white waxy powder (hence only two of the three pale lines in Moss's plate are evident). The emerged pupa is transparent; the long frontal spike is curved upwards in a semi-circle; the proboscis sheath extends up to 10 mm beyond the cremaster. The pupa and pupal shelter are more or less devoid of white waxy powder.



Fig. 10. *Ebusus ebusus ebusus* ?L5, Parrylands, larva on wild palm, 20.i.1988.

I found a larva of this species on an unidentified palm in Parrylands, i.1988, in the same area that I caught three specimens in 1980; I photographed it (Fig. 10), and S. Alston-Smith subsequently reared it through. S. Alston-Smith (pers. comm.) has since then reared this species from picmoc (*Bactris major*) but I think the original larva was from a different palm.

200. K8 *Argon lota* (Hewitson 1877)

Figs. 11-14.

Evans (1955) described the genus *Argon*, for this species. For many years this species has been known as *Argon argus* (Möschler) (TL Colombia) (e.g. Evans 1955; Cock 1982b). Mielke and Casagrande (2002) examined the type of *lota* Hewitson (no locality data; in the Staudinger collection now in the Humboldt Museum, Berlin) and found it to be a female of the same species. Since Hewitson's name has precedence by one year, it must now be used for this species. Evans (1955) records specimens in the

NHM ranging from Argentina, north to Honduras, and it has been reported as far north as the state of Nayarit, Mexico (Llorente *et al.* 2004).

Kaye (1921 addenda) records two specimens taken by Sir N. Lamont on 17.i and 2.ii.1921 at Palmiste; both specimens are in NMS.

Sexes similar. UPF brown with white lower spot in 1B, white hyaline spots in 2, 3, 6, and sometimes 7; a lower and usually an upper cell spot. UNF apical area violet-grey with submarginal brown spots in spaces 4 and 5, and subapical brown spots in 6-8 around the white hyaline spots when present. UPH brown; UNH violet-grey with pale-edged brown spots in 2, 3 (normally with white pupil), across 4-5 displaced basally, 6 and near upper end cell. The arrangement and colouring of the spots UNH is distinctive in the Trinidad fauna. F male 18 mm, female 19 mm. Illustration in Lewis (1973, Plate 80.35 UNS).

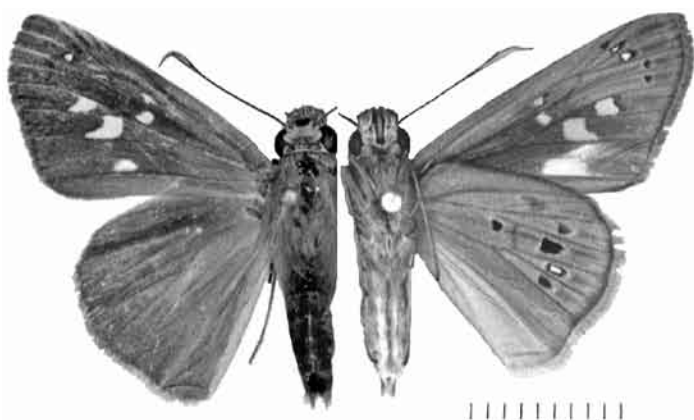


Fig. 11. *Argon lota* female. Left UPS, Curepe, ii.1979; right UNS Point Gourde, larva on coconut, 26.ii.1994, MJWC ref. 94/12.



Fig. 12. *Argon lota* adult female, St. Benedict's, larva on ornamental palm, ?*Chrysalidocarpus areca*, MJWC ref. 93/16B.

This is a widespread, occasional species, which could turn up almost anywhere in Trinidad, but is perhaps more likely to be found in lowland, disturbed habitats.

Moss (1949) reared this species from assahy palm (*Euterpe oleracea*), but gives no details; his preserved early stages (L5 head

capsule, pupae) match those described below. Janzen and Hallwachs (2001) have reared it from *Acrocomia aculeata*, and occasionally from *Bactris guineensis*.

I have reared this species from larvae on coconut (Caura Valley, MJWC ref. 81/23C; Pointe Gourde, MJWC ref. 94/12) and on an ornamental palm (St. Benedict's, MJWC ref. 93/16). The following is a composite of my notes from these rearings.

Pupa 25 mm; slender and elongate; frontal spike of 2.5 - 3 mm, sharply upturned at tip; proboscis sheath extends 2 mm beyond cremaster; light green with a yellow-green dorsal line; faint double white dorsal stripes become apparent on the thorax and abdomen as the pupa develops. No white waxy powder. Pupation in my rearing containers was always off the food plant, raising the possibility that this species does not pupate on the host plant.

The larval shelter is a tube made from a leaflet by pulling the edges together downwards. L5 34 mm; head rounded, about 3 mm high, by 2.5 mm wide towards base; very pale brown covered with white waxy powder, which may mask a paler patch on each side of the face. T1 concolorous with body. Body greenish white; dorsal line paler; loose white waxy powder strongest laterally and in posterior half, but whole body and head covered by the time it is mature; anal plate shield-shaped, with a fringe of long white setae. Legs concolorous. In the mature larva, wax glands develop ventro-laterally on A5-A6.



Fig. 13. *Argon lota* L5, St. Benedict's, larva on ornamental palm, ?*Chrysalidocarpus areca*, MJWC ref. 95/16.

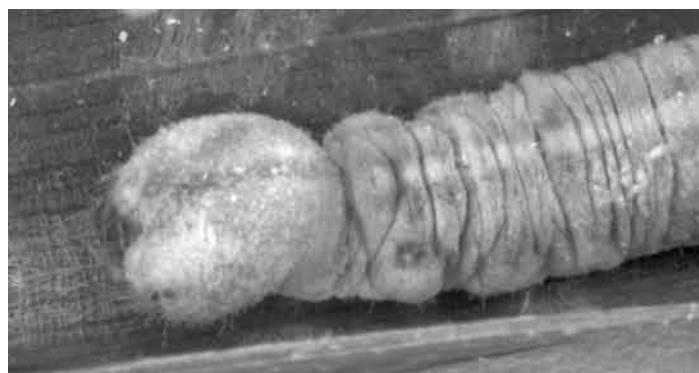


Fig. 14. *Argon lota* L5, detail of head, as Fig. 13.

The head of the newly moulted L4 is light brown with a darker line down the face; subsequently covered with white waxy powder. Note that when newly moulted, the L4 has no white waxy powder, and this is probably true of all instars, the powder being produced anew each instar. L3 head brown, otherwise similar to later instars.

Moss's material in the NHM includes a parasitised pupa and an unidentified pinned ichneumonid.

201. K21 *Moeros moeros* (Möschler 1877)

Fig. 15.

Evans (1955) established the genus *Moeros* for the single species *moeros* Möschler, described from Suriname, and occurring in the Guyanas, Brazil and Bolivia as a rare species. *Argon casca* Bell was described from a Trinidad specimen (Bell 1959), but Mielke (2004) treats it as a synonym of *M. moeros*. As yet, the type of *casca* remains the only known specimen from Trinidad, so confirmation of this as a Trinidad species is desirable.

Male, based on photos of the type of *casca*, Bell (1959) and Evans (1955). UPF brown; apex broadly shining grey according to Evans (1955), but not Bell (1959); lower white spot in space 1B, white hyaline spots in spaces 2 (across width of space, elongated towards margin at lower corner), 3 (in line with spots in 1B and 2), 6-9 (that in space 6 displaced outwards), and a double cell spot, the upper displaced towards the apex, so that the cell spots and the spot in space 1B are in line. UNF repeats UPF markings but the spot in 1B is larger, apex shining violet-grey, and Evans (1955) notes dark spots in spaces 4 and 5, which are not present in the type of *casca*. UPH brown, with end cell darker; margin distinctly sinuate; cilia white. UNH brown with a slight violet suffusion; end of cell spot more pronounced, and although Bell (1959) doesn't mention it, the veins appear darker in the type of *casca*; Evans (1955) notes a small dark spot before end cell and on disc in spaces 2, 3, 4, 5, one or all of which may be absent. Abdomen below whitish with dark central line. F male 22 mm. Illustration in Lewis (1973, as *Moeris moeris*, Plate 83.50, UNS).

Female, based on Evans (1955). Similar to male, but UPF apex not broadly shining grey; spot in space 1B UNF larger; UNH greenish.



Fig. 15. *Argon casca* male UNS, holotype. Cascade Mountain Road, 12.iii.1933 (A. S. Pinkus) (specimen in American Museum of Natural History).

The large size (comparable to female *E. ebusus ebusus*), and arrangement of spots UPF – reminiscent of some females of *Carystus* spp. – should make this species easy to identify in Trinidad. The type of *casca* is labelled “Cascade Mountain Road, St. Anns, Trinidad” – B.W. I., 12.iii.1933, A. S. Pinkus. This species is a puzzle in Trinidad – apparently still only known from the original capture from a well-collected site, why has this distinctive large species never been caught again?

Moss (1949) reared this species from tucumá and murumuru palms. These names are applied to several *Asterocaryum* spp. including *A. aculeatum* for tucumá palm (Henderson *et al.* 1995). *Asterocaryum aculeatum* is the only palm of this genus that occurs

naturally in Trinidad, although it is restricted to the south-west (Comeau *et al.* 2003). Thus, if this skipper is a breeding resident in Trinidad, it is likely to be using palms of another genus in Trinidad. Moss (1949) refers to the pupa having a very long frontal spike, but gives no other details.

***Talides* Hübner 1819**

This genus of six rather similar species (Austin 1998) is represented by two species in Trinidad: *T. sergestus* Cramer and *T. sinois* Hübner. The large size, arrangement of spots F and distinctive UNH of these two species should distinguish them from any other Trinidad skippers. Superficially the two species are rather similar and the differences, particularly in UNS markings, are most easily seen in the figures. In addition, males of *T. sergestus* have the H more rounded than *T. sinois* which, by comparison, has the H extended at the tornus; male *T. sinois* have the F spot in space 2 almost touching the spot in space 3 and the brand is more conspicuous and curved rather than straight in space 2.

There is a third species in the genus, *T. alternata* Bell, which occurs in Venezuela and the Guyanas, and might also turn up in Trinidad. Evans (1955) compares this species to *T. sinois*, but notes that in the male, the spot in space 2 is more basal compared to the spot in space 3, and there are usually additional spots in spaces 1B and 9. However, de Jong (1983) finds these characters and the male genitalia variable, and speculates that just one variable species is involved.

202. K13/1 *Talides sergestus* (Cramer 1775)

Figs. 16-21.

This species was described from Suriname, and is known from Mexico to southern Brazil (Evans 1955). Early illustrations, purportedly of this species, were actually of *T. alternata* (not known from Trinidad) or the species treated next, *T. sinois* (Evans 1955), and so Trinidad records of *T. sergestus* are quite likely to actually refer to *T. sinois*. A. P. L. Guppy specimen from Tunapuna was Kaye's basis for the inclusion of this species in his first catalogue (Kaye 1904, 1921), but there are specimens from “Trinidad” (male, [18] 98, W. J. Kaye, AME; male, 20.xi.1920, W. J. Kaye, AME) and Fondes Amandes (male, 22.iii.1922, F.W. J[ackson], AME) in his collection.

There is a Frank D'Abadie male specimen from Roxborough in the NHM. Sheldon (1938) records *T. sinois* on the Tobago list (as *T. sinon*) almost certainly on the basis of this specimen (see under *T. sinois*). Evans (1955) didn't list this specimen as from Tobago, and so this record of *T. sergestus* from Tobago has not hitherto been correctly published.

Male. UPF brown, the basal half of the costa may be orange-brown when fresh; yellow hyaline spots in spaces 2 (very narrow, wider at lower, dorsum end; close to the base of vein 3), 3, 6-8, and a double cell spot, usually touching. Grey brand in two parts, one section across base of space 2 parallel to cell, the other across space 1B at an angle to the first part and displaced outwards slightly from the basal end of the part in space 2. UNF margin violet from apex to vein 3, widening from apex to reach spot in space 3; costa, costal half of cell, and apical UNF to space vein 4 chestnut, remainder of wing grey-black. UPH brown with a yellow hyaline spot towards base of space 3. UNH spaces 1B and 1C grey-brown; ground colour of remainder dark chestnut; a strong lilac band from 1/3 on vein

1B to apex; a lilac wash on upper part of cell and base of spaces 5 and 6; margin narrowly dark, with a strong lilac sub-marginal band within this, extending as a wash about halfway to the cell. The lilac band UNH and violet apex margin UNF line up when the butterfly is at rest (Fig. 18), creating a single line which may serve to disrupt the shape of the resting butterfly. Body brown above and orange brown below, with palpi and distal part of abdomen palest. F 24 mm. Illustration in Lewis (1973, Plate 87.19, male UNS).

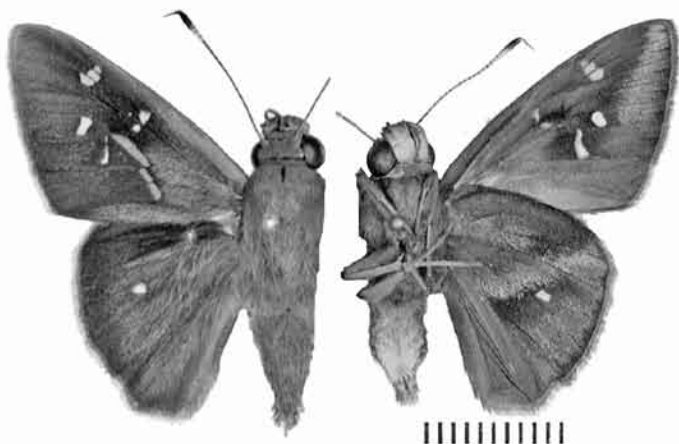


Fig. 16. *Talides sergestus* male. Left UPS, St. Benedict's, larva on ornamental *Heliconia* sp., MJWC ref. 95/34; right UNS, Plum Road, milestone 1/4, larva on *Heliconia* sp. 6.iv.1982, Ref 50B.

Female. UPF brown with yellow hyaline spots in spaces 1B (on vein 1 below inner margin of the spot in space 2), 2 (diagonal across space 2, the upper end very close to the cell spot), 3, 6-8, and a double joined cell spot. UNF as male, but the violet margin paler and extends to the base of the spot in space 3, and the spot in 1B UPF is extensive and pale. UPH as male. UNH similar to male, but the lilac area paler and more strongly and extensively marked, so that the ground colour is pale lilac, with the costal third UNH from base of space 1C to apex, and a short band from 1/3 on vein 1C to vein 4 including around spot in space 3 chestnut. F 23 mm, but this may be a small specimen.

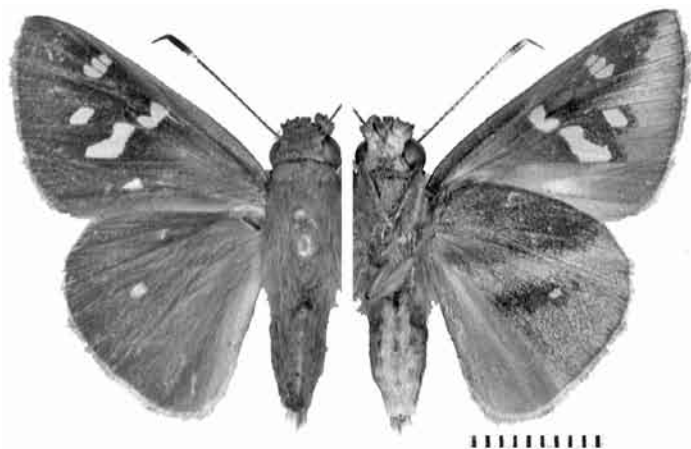


Fig. 17. *Talides sergestus* female, St. Anns, 9.xii.1978.

I think this species normally flies at dusk, or is crepuscular. I have caught three males in my mercury vapour light moth trap in Curepe (20.xi.1978, 16.ix.1979, 17.x.1979) but only rarely encountered it in the field. The larvae are found on *Heliconia* spp., and it probably occurs wherever its food plants occur, including

gardens, disturbed areas and forests. Because of its likely flight times, it is probably more frequently encountered in the north of the island. I have not seen this species come to flowers, but probably this reflects its crepuscular habits.



Fig. 18. *Talides sergestus* adult male, St. Benedict's, larva on ornamental *Heliconia* sp., MJWC ref. 95/34.

Moss (1949) reared this species and the preserved early stages in the NHM (cast L5 head capsules, emerged pupae) match those described below. Moss does not state the food plants, although it might be implied that they are the same as the next species, i.e. *Heliconia* and banana. Certainly, in Costa Rica it is found on *Heliconia latispatha* and banana (Janzen and Hallwachs 2001).

In Trinidad, I have found larvae occasionally on *Heliconia* spp., including an ornamental variety (St. Benedict's, MJWC ref. 95/34), *H. psittacorum* (Windbelt Reserve, MJWC ref. 88/9) and what was probably *H. bihai* (Plum Road, 0.25 milestone, MJWC ref. 82/50B). The following account is based largely on the first of these.

Pupa 38 mm; supported by a simple silk girdle behind A1; relatively plump, elongate posteriorly; short pale frontal spike; proboscis sheath extends 3 mm beyond cremaster; uniform pale green; all spiracles pale, inconspicuous. The area around the pupa is covered with white waxy powder, but not the pupa itself.



Fig. 19. *Talides sergestus* pupa, St. Benedict's, larva on ornamental *Heliconia* sp., MJWC ref. 95/34.

The larval shelters are made by making a long diagonal cut from the leaf margin and folding the distal flap over upwards, or downwards. Feeding is then towards the mid-rib basal to the shelter, or from the margin distal to the shelter.

The L5 grows to 55 mm; head rounded triangular, about 3 x 3 mm, truncate and indented at vertex; dark reddish brown with a broad, black stripe from posterior side of vertex, laterally to the white stemmata; posterior margin narrowly black; apices orange-brown on anterior side; an orange-brown patch anterior to the black lateral stripe, adjacent to the stemmata. T1 concolorous with body. Body smooth; dull translucent green, dorsal line slightly darker, due to presence of pale sub-dorsal subcutaneous fat bodies; white trachea and lateral tracheal line clearly visible; pale ventro-lateral ridge; male gonads conspicuous, pale yellow; anal plate semicircular, with margin whiter; legs and prolegs concolorous. The wax glands are formed ventrally and ventro-laterally in two patches, one on the posterior margin A7 and anterior margin A8, the other on the anterior margin of A9.

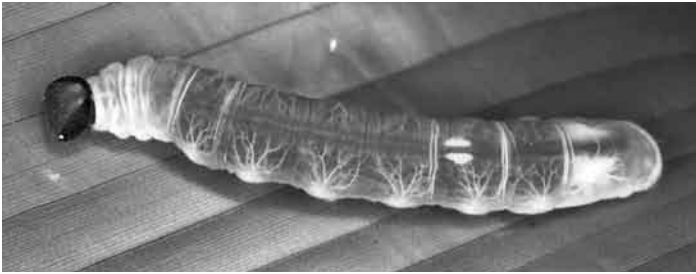


Fig. 20. *Talides sergestus* L5, St. Benedict's, larva on ornamental *Heliconia* sp., MJWC ref. 95/34.

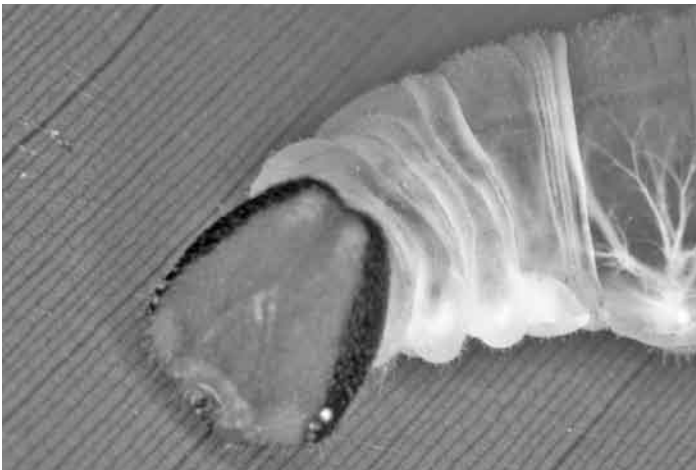


Fig. 21. *Talides sergestus* L5, detail of head, St. Benedict's, larva on ornamental *Heliconia* sp., MJWC ref. 95/34.

The L4, and probably also earlier instars, has a plain dark brown head.

One of two larvae collected at Plum Road (MJWC ref. 82/50B) had five white macrotypic tachinid ova on its head; it subsequently died, and one tachinid larva completed its development in the carcass and pupated externally, but failed to emerge. Another larva from Windbelt Reserve (MJWC ref. 88/9) was parasitised by a gregarious *Apanteles* (s.l.) sp. wasp (Braconidae), which failed to emerge from the resultant cocoons. Wilkinson (1931) described *Apanteles talidicida*, a gregarious parasitoid of larvae of *T. sergestus* on a wild *Heliconia* sp. in Guyana, and subsequently (Wilkinson 1932) reported the same species from Trinidad attacking *Calpodetes ethlius* Stoll (Cock 2003). This is likely to be the same species noted here from *T. sergestus* in Trinidad.

203. K13/2 *Talides sinois* Hübner [1819]

Figs. 22-28.

Evans (1955) treats this species as three subspecies: *cantra* Evans from Mexico to Venezuela, *sinois* from Trinidad, the Guyanas, Amazon, Peru and Bolivia, and *riosa* Evans from southern Brazil. All three are now considered valid species (Austin 1998; Mielke 2004). The name *Talides sinois* (Stoll) is widely used in the literature, but as Evans (1955) points out, it is an unavailable homonym.

Kaye (1921, 1940) does not include this as a Trinidad species. Kaye, like Sheldon and other workers, was confused between the two Trinidad species of *Talides* (Evans 1955). Thus, there is a specimen in his collection from St. Ann's Valley, 400 ft. (male, i.1922, F.W. [Jackson], AME), which he labelled as *Talides sergestus*. Hence, when Evans (1955) listed six males and three females from Trinidad in the NHM, this was the first published record of this species from the island.

Sheldon (1938) adds this species to the Tobago list (as *T. sinois*) on the basis of a specimen taken at Roxborough by Frank D'Abadie. There are no specimens of *T. sinois* from Tobago in the NHM, but there is a male *T. sergestus* collected by Frank D'Abadie from Roxborough, which almost certainly is the specimen to which Sheldon referred. Hence I conclude that *T. sinois* is not known from Tobago.

Male. UPF brown, the basal half of costa dark chestnut; a small yellow spot may be present in space 1B against vein 1; yellow hyaline spots in spaces 2 (close to inner margin of spot in space 3), 3, 6-8 and a double joined cell spot. Brand light grey, in two parts: one in space 2, the upper 1/3 under vein and adjacent cell, the lower 2/3 curved and angled away from cell, in line with the second part, which runs across space 1. UNF margin evenly violet from apex to space 2, not widening as in *T. sergestus*; costa, cell and apical area to space 2 chestnut; remainder grey-black apart from diffuse pale spot in 1B. UPH brown with a round yellow hyaline spot in space 3. UNH space 1B brown; ground colour of remainder chestnut, with an indistinct paler band from 1/3 on vein 1C to base of space 4, running basal to the spot in space 3. Body brown above, orange-brown below, head and abdomen lighter. F 25 mm.

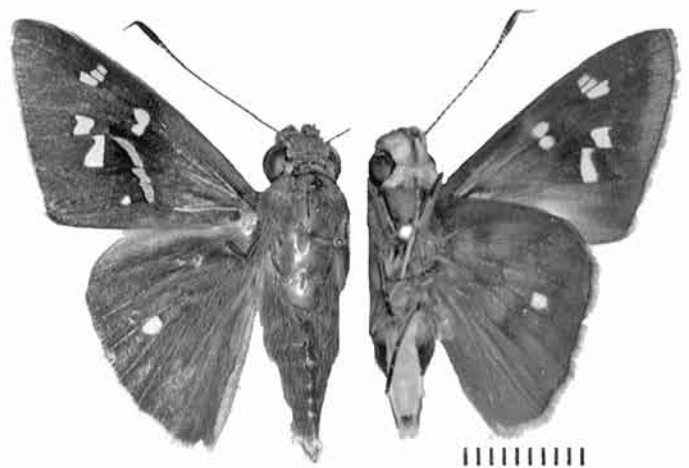


Fig. 22. *Talides sinois* male. Left UPS, Quare Road, 9.iii.1982; right UNS, Port of Spain Hilton, 13.x.1995.

Female. UPS brown, with spots as for *T. sergestus*, but slightly larger. UNF violet margin from apex to space 2, widening slightly

but not reaching spot in space 3; a rectangular lilac area in spaces 4 and 5 from end cell to just over half on vein 4, more sharply defined on distal margin, and separate from marginal band (not present in *T. sergestus*); upper cell, costa and apex to vein 4 otherwise chestnut; remainder of wing grey-black, except for large pale area in spaces 1A and 1B. UNH space 1B pale lilac-grey; ground colour of remainder pale lilac, with costal portion from base of space 1C to before apex suffused with brown; a diffuse brown band (wider than that of *T. sergestus*) from over half on vein 2 to vein 5 includes the yellow hyaline spot in space 3. F 27 mm.

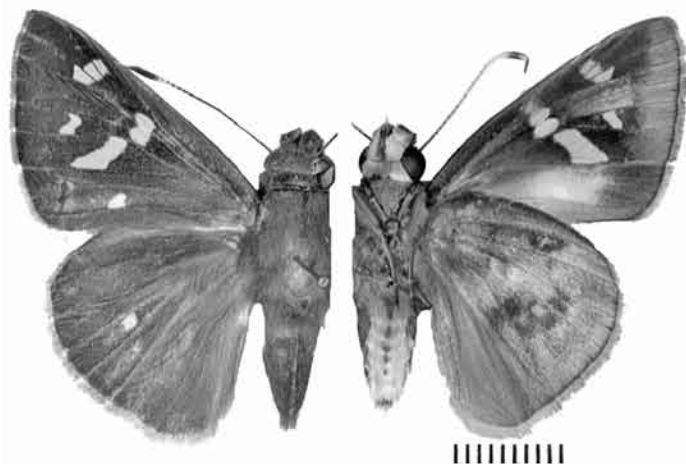


Fig. 23. *Talides sinois* female. Left UPS, Maracas Valley, Ortinola Estate, 11.x.1979; right UNS, El Tucuche, 2600 ft., 11.viii.1979.

This is an occasional species in Trinidad, and is not obviously crepuscular in its habits. Apart from one record near Moruga Bouffe, I have six records from the Northern Range or its foothills. I have a female from 2,600 ft on El Tucuche, showing that it probably occurs at all altitudes. I have not seen this species come to flowers.



Fig. 24. *Talides sinois* adult female, Mt. Tamana, larva on *Heliconia bihai*, MJWC ref. 95/68.

The food plants reported for this species by Moss (1949, as *T. eudega*) are *Heliconia* and banana. Moss's preserved early stages in the NHM (cast L5 head capsules and emerged pupae) match those

described below. Janzen and Hallwachs (2001) found *T. cantra* on *Heliconia* spp. and banana in Costa Rica, but also occasionally on *Calathea insignis* (Marantaceae) and *Canna indica* (Cannaceae).

Like *T. sergestus*, the larvae of *T. sinois* feed on *Heliconia* spp. in Trinidad. I have found larvae on *H. bihai*¹ (Morne Catharine MJWC ref. 82/59B; Mt. Tabor, MJWC ref. 95/10; Parrylands, MJWC ref. 88/7; Trinity Hills, MJWC ref. 82/47B), *H. hirsuta* (behind St. Benedict's, MJWC ref. 94/22) and on an ornamental species (St. Benedict's, MJWC ref. 93/25). In captivity, larvae fed on *Calathea* and banana, and S. Alston-Smith (pers. comm.) has also found and reared this species on banana (Mt. Tamana, x.1999).

The pupa is formed in a leaf fold, with a silken pad for attachment of the cremaster, and a single strand girdle behind the thorax; the surface of the pupal shelter around the pupa is covered with white waxy powder for 15 - 20 mm in all directions. Pupa 49 mm; smooth and elongate but relatively plump; stout, blunt frontal spike of 1.5 - 2 mm, directed upwards at an angle of 30°; proboscis sheath extends 4 mm beyond cremaster; dull green, except frontal spike light brown distally; spiracles pale, inconspicuous; white waxy powder around cremaster and last two abdominal segments, but otherwise absent. As the pupa matures, a row of fine dots becomes apparent on the dorsal anterior edge of each abdomen segment. The pupal cuticle is very thin and transparent, and the development of adult colouring and wing markings can be clearly seen within; the empty pupal cuticle often collapses once the adult emerges.



Fig. 25. *Talides sinois* pupa, Mt. Tamana, larva on *Heliconia bihai*, MJWC ref. 95/68.

L5 37 - 40 mm when mature. Head 4.5 x 3.5 mm high x wide; rounded triangular, truncate and indented at vertex; strongly rugose, shiny; scattered short, pale, inconspicuous setae; light brown; a short yellow-brown to pale brown streak from apex parallel to the epicranial suture; anterior to white stemmata an orange, orange-brown or light brown patch. T1 shiny, concolorous with body. Body dull translucent green; trachea clearly visible; spiracles pale, inconspicuous, except as the centre of a star of visible trachea; legs and prolegs concolorous; anal plate semi-circular, with white submarginal line and a fringe of short pale setae. The wax glands develop as two ventro-lateral patches, one on the posterior margin of A6 and the anterior margin of A7, and the other on the anterior margin of A8.

¹ This is the species I have referred to in earlier papers as *H. wagneriana*. However, the Trinidad species seems to be *H. bihai* L. (Berry and Kress 1991).

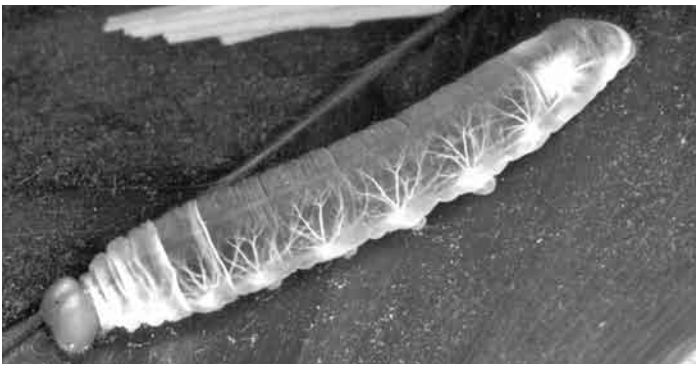


Fig. 26. *Talides sinois* L5, Mt. Tabor, larva on *Heliconia bihai*, MJWC ref. 95/10.



Fig. 27. *Talides sinois* L5, detail of head, Mt. Tamana, larva on *Heliconia bihai*, MJWC ref. 95/68.

L4 28 mm; head 3 x 2.5 mm high x wide; similar to L5, but the intensity of the yellow-brown apex markings and orange-brown markings anterior to the stemmata varies; in some individuals they are fully developed, while in most these areas are comparable with the ground colour, and the head is uniformly dull light brown. The L4 of two larvae of ssp. *cantra* that I reared in Colombia (Chinchiná, MJWC refs. 94/404, 96/101) had the head plain black, but the L5 and pupa matched that described here from Trinidad.

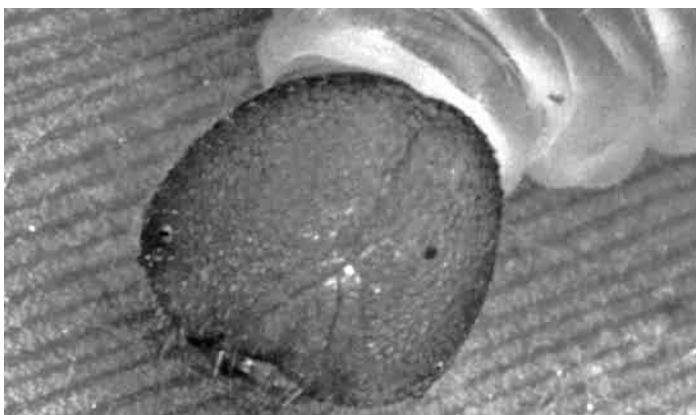


Fig. 28. *Talides sinois* L4, detail of head, Mt. Tabor, larva on *Heliconia bihai*, MJWC ref. 95/10.

L3 14-19 mm; head light brown, sometimes with the apices darker; stemmata and sutures darker; tracheal stars not obvious except on A8. The L3 can make a shelter from a whole small leaf, folding it down on either side of the mid-rib, and feeding from the distal part of the leaf.

L2 9 mm; head black; body translucent grey-green. One L2 was found in a shelter prepared by making a 20 mm oblique cut from edge of lamina, near base of leaf and folding the distal portion under to form a 6 mm wide flap. Another was found in a simple fold from the leaf margin, with the distal part of the small leaf eaten.

Young plants are used for oviposition, e.g. at the three leaf stage; this may be the preferred size of plant.

The larvae are attacked by a tachinid parasitoid, the fly larvae emerging from the host pre-pupa to pupate (e.g. MJWC ref. 82/47B, Trinity Hills). Moss's material in the NHM includes one pinned tachinid adult.

The larvae illustrated by Janzen and Hallwachs (2001) for ssp. *cantra* from Costa Rica differ from those described here from Trinidad. In the Costa Rican material, the head is bright chestnut brown, grading into a red eye spot anterior to the stemmata; there is a strong broad black line down the face, at least as wide as the clypeus, and there may also be a broad black posterior margin to the head. These differences are sufficiently striking to suggest specific differences rather than sub-specific differences.

***Carystus* Hübner 1819**

Three species of this genus are found in Trinidad; *C. jolus* (Stoll) and *C. ploetzi* Mielke and Casagrande are rare and *C. phorcus* (Cramer) is uncommon. The genus can be recognised in Trinidad by the relatively large size (F usually > 20 mm), presence of a double cell spot and a spot in space 4 F, and the pale, usually mottled UNH with dark veins.

204. K18/4 *Carystus jolus* (Stoll 1782)

Figs. 29-30.

This species is known from Trinidad, the Guyanas (TL Suriname) and Brazil (Evans 1955).

Kaye (1940) records a synonym, *C. bursa* (Hewitson), based on a specimen captured 25.iii.1923 at Siparia by Sir Norman Lamont; this specimen, a male, is in NMS (Fig. 29). This seems to be a rare species in Trinidad, and I can add only three more records – a female from St. Ann's (i-iii.1932, A. Hall, NHM; Fig 30), a male captured on the lower Morne Catharine trail, 27.ii.1982 by June and Floyd Preston, and a male collected by S. Alston-Smith at Talparo (iii.2001). There is another male in the Angostura-Barcanto collection (Alston-Smith pers. comm.).

Male. UPF dark brown with white hyaline spots in 2 (large, near base of space, in line with cell spots), 3, 4, 6-8 (spot in space 6 displaced outwards), and a double cell spot (close together, the lower spot only separated from the spot in space 2 by the cubitus vein). UNF brown, apical area distal to cell as far as vein 2 diffuse whitish brown, veins dark; central area of space 1B a large diffuse whitish brown area. UPH dark brown with a very large round white discal spot in spaces 2-6 and end cell. UNH ground colour brown; space 1A white apart from margins; central part of space 1C, basal parts of spaces 2-5 and cell white, with veins dark except end cell and vein 5; spaces 6, 7 and 8 whitish brown with veins dark. Illustration in Lewis (1973, Plate 81.29, male UNS).



Fig. 29. *Carystus jolus* male, Siparia, 25.iii.1923, N. Lamont (specimen in NMS).

Female. UPF dark brown with white spot in space 1B (large, below inner margin of cell spots), 2 (large, inner margin in line with outer margin of cell spots), 3 (large as spot in 1B, midway between spots in spaces 2 and 4), 4-9 in an arc, only spots in 8-9 adjacent, double cell spot (close but not touching). UNF disk brown; basal and central part of costa and apical area from end cell to vein 2 whitish brown, with dark contrasting veins and margin; white spot in space 1B only slightly larger than UPS. UPH dark brown with a very distinctive, clear white streak in end cell and basal parts of spaces 4 and 5. UNH whitish brown with contrasting dark veins and margin; space 1B light brown; white streak with concolorous veins as UPS.

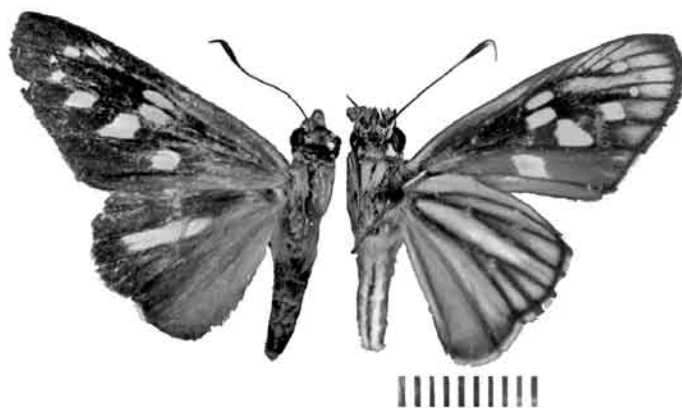


Fig. 30. *Carystus jolus* female. Left UPS, St. Ann's, i-iii.1932, A. Hall (specimen in NHM); right UNS, Brazil (specimen in NHM).

The male lacks the pre-apical white area seen in the other two species of the genus, while the white streak UPH in the female is unique in the Trinidad fauna.

The food plant in Belem is "jacetára palm" (Moss 1949). Three species of *Desmoncus* are known as jacetára or jacitara and recorded from Belem: *D. orthacanthos*, *D. polyacanthus* and *D. phoeniocarpus*, but only the first two are also known from Trinidad (Henderson *et al.* 1995; Comeau *et al.* 2003). Moss (1949) writes that "the pupa is heavily powdered and crossed with web". Moss's preserved early stages of this species in the NHM show that the pupal shelter is lined with a light silk cocoon and white waxy powder. The cast L5 head capsule is covered with white waxy powder, and appears to have a broad dark lateral stripe on a light brown background. The pupa is elongate, with a down-turned

cremaster, and a short straight pointed frontal spike; the proboscis sheath extends well beyond the cremaster.

205. K18/6 *Carystus ploetzi* Mielke and Casagrande 2002

Figs. 31-33.

Evans (1955), and hence Cock (1982b), treat this species as *Carystus senex* (Plötz). However, Mielke and Casagrande (2002) report that based on an examination of the type of *senex*, it is a junior synonym of *Panoquina peraea* (Hewitson). The species known as *C. senex* was undescribed, and so they named it *C. ploetzi* and illustrate the male holotype and female allotype from Pará, Brazil, and Iquitos, Peru, respectively. Evans (1955) reports additional specimens from Trinidad, the Guyanas, Brazil and Peru. Although Cock (1982b) suggested that Kaye's (1940) reference to *C. claudianus* (Latreille) might be in error for *C. senex* (i.e. *C. ploetzi*), I now think it more likely that Kaye applied this name to males only of *C. phorcus phorcus* (see next species account). The records in Evans (1955) are therefore the first published for *C. ploetzi* for Trinidad.

Male. UPS dark brown; white hyaline spots in space 2 (large, against distal half of lower cell spot), 3 (quadrate, midway between spot in space 2 and pale pre-apical area), double cell spot (the upper spot smaller and connected to the lower by a narrow bridge), a very small spot at the end of the cell (not present in type); a white pre-apical patch across spaces 4-8. UPH dark brown; a large round white discal spot in spaces 3-6, but not end cell. UNF costa and apical area beyond end cell to vein 2 pale lilac, veins dark; diffuse white patch from space 4-9, faint in spaces 4-5; disc blackish brown, fading to brown in spaces 1B and 1A. UNH space 1A brown; space 1B light brown; space 1C purple-brown; remainder of UNH pale lilac as apical UNF, veins dark; the white patch UPH shows UNH as only slightly paler than ground colour in spaces 4-6. UNS of abdomen white with dark ventral line.



Fig. 31. *Carystus ploetzi* male, Palmiste, iv.1936, N. Lamont (specimen in NMS).

Female. UPF dark brown; white spot in space 1 (elongate against vein 1, below inner margin of spot in space 2); white hyaline spots in space 2 (large, inner margin in line with outer margin of lower cell spot), 3 (midway between spots in spaces 2 and 4), 4 (small, not always present; not present in allotype), 6-9 (that in space 6 displaced towards margin), and a double, joined cell spot. UNF costa, upper cell and apical area to space 1B pale violet-brown with contrasting dark veins; disk brown; space 1A light brown. UPH brown, darker on margin and costa; indistinct pale suffusion across middle of spaces 4 and 5 (not present in allotype). UNH

ground colour pale violet-brown with contrasting dark veins and margin; spaces 1A, 1B and adjacent half of space 1C light brown with veins only slightly darker. F 22-23 mm.

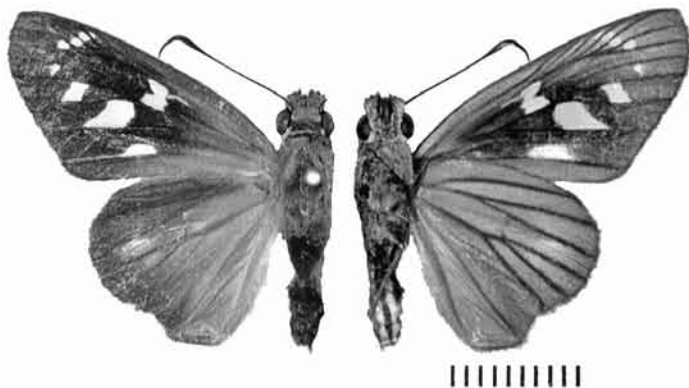


Fig. 32. *Carystus ploetzi* female, Curepe, 17.ii.1980.

The male is close to *C. phorcus*, but the cell spots are separated in that species and the spot in space 2 barely overlaps with the cell spot. The almost unmarked UPH and uniform UNH distinguish the female from the other *Carystus* spp. females.

This is a rare species in Trinidad, with no obvious habitat association. I have records from El Naranja at 2,300 ft. (female 9.i.1980), Curepe (female 17.ii.1980; Fig. 32), Los Bajos (male, SAS), Palmiste (male iv.1936, N. Lamont, NMS; Fig. 31), Inniss Field (3 male, 3 female, SAS), Guapo (female, SAS) and Parrylands (female, SAS).

Moss (1949) reared this species several times from lightly powdered larvae feeding on ground bamboo and palms: jacetéara (rattan), tucumá, caraná, pachiúba and pupúnha palms, i.e. *Desmoncus* sp(p), *Astrocaryum* sp(p), *Mauritia carana*, *Socratea exorrhiza* and *Bactris gasipaes* (Henderson *et al.* 1995). Of these, only *M. carana* and *S. exorrhiza* are not reported from Trinidad (Henderson *et al.* 1995; Comeau *et al.* 2003). Moss's preserved emerged pupae in the NHM are elongate, tapered at the cremaster; the frontal spike is long, tapered and slightly upturned at apex; the proboscis sheath extends beyond the cremaster. The pupal chamber is lightly covered with white waxy powder. Moss's cast L5 head capsules appear to include at least two species; those associated with emerged pupae are covered with white waxy powder, but seem to be light brown in colour with variable dark markings on the epicranium.

S. Alston-Smith (pers. comm.) has reared this species from picmoc (*Bactris major*), and also found a pupa on an unidentified palm (near Moruga Bouffe, 24.iii.2003, MJWC ref. 03/223) on which the following is based.

The pupal shelter was made from a single leaflet, angled at the mid-rib, with the two side of the lamina held open at an angle of about 75° with several stout strands of silk. The cremaster was securely inserted into a crossbar of silk and held by a silk girdle over the thorax. The leaflet under the pupa, and the pupa itself had a light coating of white waxy powder. Pupa 35 mm; elongate, smooth; frontal spike 2.5 mm, pale, tip up-turned; cremaster elongate, 4 mm, pale, with ridges along UPS margin; green with faint pale subdorsal line on A1-5.



Fig. 33. *Carystus ploetzi* pupa, near Moruga Bouffe, larva on unidentified palm, MJWC ref. 03/223).

206. K18/8 *Carystus phorcus phorcus* (Cramer 1777)

Figs. 34-35.

This species comprises two subspecies according to Evans (1955): *phorcus* (Cramer), described from Suriname, and found from Colombia to the Guyanas and the Amazon, and *claudiamus* (Latreille) from southern Brazil and Bolivia.

Kaye (1940) adds this species to the Trinidad list based on a female he captured 12.i.1921 at Palmiste (specimen in AME). He also records captures of males of this species from Palo Seco (iv.1922, O. Latour; specimen in coll. Lamont, NMS) and St. Ann's (R. Dick) as *C. claudiamus* (i.e. the other subspecies of *C. phorcus*). Since males of the two subspecies are similar, this interpretation is more likely than a misidentification for *C. senex* (i.e. *C. ploetzi*) which I suggested in Cock (1982b).

Male. UPS dark brown; white hyaline spots in space 2 (inner margin just overlapping with outer margin of lower cell spot), 3 (quadrate, midway between the spot in space 2 and pre-apical white patch) and double spot in cell (upper spot small, well separated from rounded lower spot); white pre-apical patch across spaces 4-8. UNF brown on disk; costal space and apical area from vein 4 to vein 9 light brown with contrasting dark veins; spaces 1A and 1B light brown with a diffuse pale spot in space 1B, below lower cell spot. UPH brown; a large white discal spot across spaces 3-6. UNH spaces 1A, 1B and adjacent half of space 1C light brown with concolorous veins, except basal half of vein 1A whitish; remainder of space 1C and basal half of spaces 6 and 7 whitish brown with dark veins; remainder of UNH light lilac-brown with dark veins and a diffuse darker band from end cell to 2/3 on vein 7. F 20 mm. Illustration in Lewis (1973, Plate 81.30, male, UNS).

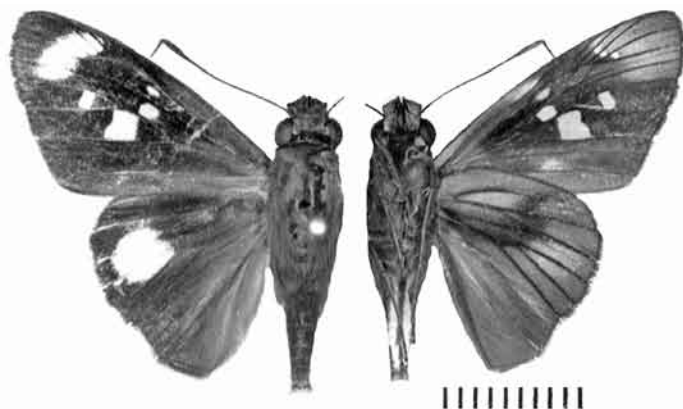


Fig. 34. *Carystus phorcus* male, Nariva Swamp, milestone 46 1/4 track, 5.ii.1980.

Female. UPF dark brown; white suffusion in middle part of space 1A; spot in space 1B (elongate, on vein 1, below lower cell spot); white hyaline spots in 2-4 (in line with spot in space 1B), 6-8 (that in space 6 slightly displaced towards margin), and a double cell spot (comparable in size, well separated from the spot in space 2).

UNF disk brown; costal space whitish brown; apical area from end cell to vein 3 pale lilac-brown with dark veins. UPH dark brown; strong white band across spaces 2-4 with dark veins; pale brown from white band, widening to whole of space 1A. UNH mottled with dark veins: space 1A, basal half of 1B, lower half of basal half of space 1C, a streak in basal half of spaces 2-4, upper half of cell white; remainder of spaces 1B, 1C, lower cell, and basal half of spaces 6 and 7 whitish brown; remainder of spaces 2-7 pale lilac-brown. Cilia white in space 1 F and spaces 1B and 1C H. F 20 mm.

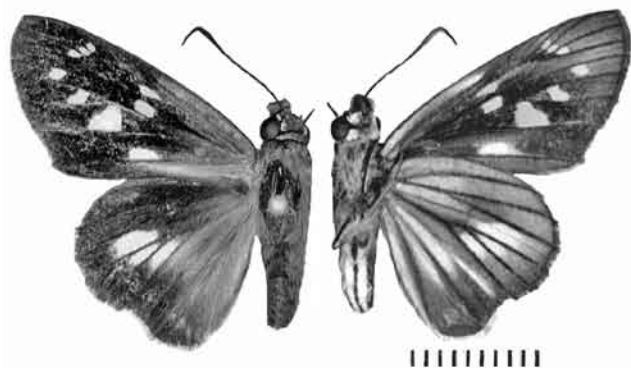


Fig. 35. *Carystus phorcus* female UNS, Andrew's Trace, 27.xi.1980.

The male is very close to that of *C. ploetzi*, but in that species the two cell spots F are linked and partially overlap with the spot in space 2. The evenly spaced spots F, and especially the white band UPH and UNH colouring make the female distinctive.

This species is commoner than the other two members of the genus in Trinidad, but still seems to be infrequently encountered. Many records are from lowland areas: lower Morne Catharine, Maraval, Curepe, Las Lomas, Nariva Swamp (Cock 1982a), Palmiste, Inniss Field, Moreau, Guapo, Parrylands and Rio Claro. However, I also have records from higher locations: North Post, Andrew's Trace, and Lalaja Ridge, showing that it could turn up anywhere.

A specimen that W. G. Sheldon captured at Scarborough is the basis of the inclusion of this species in the Tobago list (Sheldon 1938). This is probably the male labeled Tobago in the NHM, which came from the Sheldon collection.

Assahy palm (*Euterpe oleracea*) is the Belém food plant according to Moss (1949). In Costa Rica, however, it is normally found on *Acrocomia aculeata*, and occasionally on *Bactris guineensis* and *B. major* (Janzen and Hallwachs 2001). The larvae illustrated by Janzen and Hallwachs (2001) are very similar to those of *Argon lota* (above). Moss's preserved emerged pupae (no larval head capsules) in the NHM are similar to those of *C. ploetzi*. In Trinidad, Alston-Smith (pers. comm.) has reared this species from picnoc (*Bactris major*).

207. K19/1 *Telles arcalaus* (Stoll 1782)

Figs. 36-38.

This species is reported from Honduras to the Guyanas (TL Suriname), Amazon and Peru (Evans 1955).

Kaye (1925) described *Thespicus* (sic) *submarmorata* Kaye on the basis of a specimen captured at St. Ann's, 1300 ft, 15.iv.1922 by F.W. Jackson. Subsequently (Kaye 1940), he treats *submarmorata* as a synonym of *Telles arcalaus* and adds records from "Camuto Road, 100 ft." (28.v.1924, C. L. Collenette) and St. Ann's (R. Dick).

Sexes similar. UPF brown; basal half of costa orange-brown, lighter distally; pale yellow spot in space 1B; pale yellow hyaline spots in spaces 2, 3, 6-8, lower cell (basal to spot in space 2) and upper cell (at distal end of cell, above spot in space 2). UNF costa

yellow in central portion and in distal portion extending to space 6; apical part of UNF from end cell to space 4 otherwise chestnut; remainder of UNF black-brown. UPH brown; a row of yellow spots in spaces 2-5, larger yellow spot in space 6 and a diffuse yellow spot in space 7. UNH marked in yellow, brown, whitish brown and chestnut; a white spot on anterior margin of cell under origin of vein 5; yellow spots as UPH. F male 19 mm. Illustration in Lewis (1973, Plate 87.27, UNS).

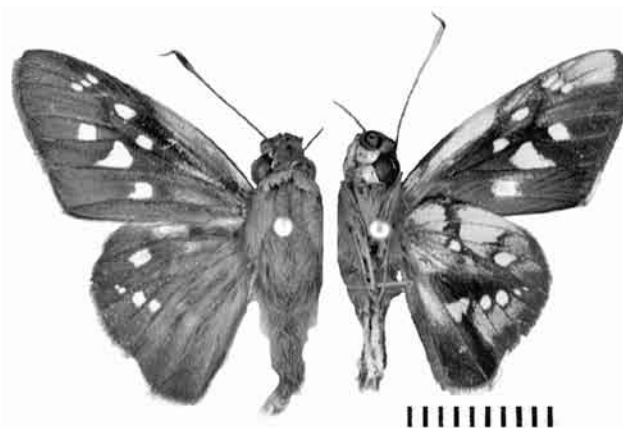


Fig. 36. *Telles arcalaus* male. Left UPS, Morne Catharine, ex larva on *Heliconia hirsuta*, MJWC ref. 94/15; right UNS, Morne Catharine, larva on *Heliconia hirsuta*, 17.i.1988, Ref. 88/3.

This is a very distinctive species due to the unusual arrangement of spots UPF and UPH and the striking and extensive yellow colouring UNS.

I have one specimen from my mercury vapour light moth trap in Curepe (male, 27.ix.1979) suggesting this species may have crepuscular tendencies. Further records from Aripo Savanna (male 12.viii.1979), Los Bajos (SAS), Guanapo Valley (SAS), Guapo (SAS), Maraval (male, ix.1891, NHM), Matura Forest (SAS), North Post (SAS), N. Hills (male, xi.1933-iii.1934, A. Hall, AME), Palmiste (male, 30.xii.1947, female, 23.iv.1949, male, 1.vi.1949, N. Lamont, UWI), Sangre Grande (SAS), and Valencia (SAS) suggest this species may be most frequent in lowland situations. As the larvae do not seem to be so uncommon, I suspect this is a crepuscular species and so, it is seldom encountered.



Fig. 37. *Telles arcalaus* adult male, Morne Catharine, larva on *Heliconia hirsuta*, MJWC ref. 94/15.

There is a specimen in coll. IIBC reared by F. J. Simmonds from *Heliconia psittacorum* (St Augustine, iv.1950). I have twice reared this species from larvae collected on *Heliconia hirsuta* on Morne Catharine (MJWC refs. 88/3, 94/15). In both cases the L5 larvae were found in shelters made from a whole leaf, the basal portion was folded downwards each side of the mid-rib and held with scattered silk strands, while the distal half had been eaten apart from the base of the mid-rib.

Pupa 25-26 mm; held by a single strand girdle running over the front of the thorax, with the attachment points on the substrate level with the back of the thorax; elongate, tapering from thorax to cremaster; frontal spike 1.5 mm, strongly curved upwards for distal half; uniformly light green.

One week before pupation, a L5 larva measured 23 mm; head rounded, wider towards base; slightly indented at vertex; light brown, with dark epicranial suture, and a dark spot around stemmata; entirely covered with white waxy powder. Body also covered with white waxy powder apart from a clear, and therefore darker, dorsal line.



Fig. 38. *Telles arcaulus* L5, Morne Catharine, larva on *Heliconia hirsuta*, MJWC ref. 94/15.

208. K22/1 *Cobalus virbius virbius* (Cramer 1777)

Figs. 39-44.

This widespread species is treated as five subspecies by Evans (1955). Ssp. *virbius* was described from Suriname, and occurs from Panama, through the Amazon Basin to Paraguay; ssp. *fidicula* (Hewitson) is the central American form, ssp. *hersilia* (Plötz) is from southern Brazil, and ssp. *hanta* Evans is based on a single specimen from Pernambuco, east Brazil. Ssp. *quadrum* (Mabille) from Colombia, Ecuador and Venezuela seems to overlap in range with ssp. *virbius*, so may well prove to be a distinct species.

This species was first recorded from Trinidad by Crowfoot (1893) as *Carystus virbius*. It seems likely that Trinidad collectors did not associate the males and females of this sexually dimorphic species, e.g. Lamont's three females in UWI (Cock 1982b) and two in NMS were curated as *Rhinthon cynea* (Hewitson) (= *Cynea cynea*, not a Trinidad species), this species occasionally from *A. aculeata* only.

Male. UPS dark brown; white hyaline spots in spaces 2 (narrow, curved), 3 and a dot in 6. UNF brown, markings as UPF. UPH dark brown, with a broad white submarginal band from space 1B to space 4 or 5, narrower at space 1B, and with a narrow dark brown wedge at the margin in spaces 4 and 5. UNH space 1A and 1B brown; a broad white submarginal band as UPH; remainder of UNH with a strong purple flush. Cilia white in spaces 1B to 4 H. F 16 mm. Illustration in Lewis (1973, Plate 81.49, male UPS).

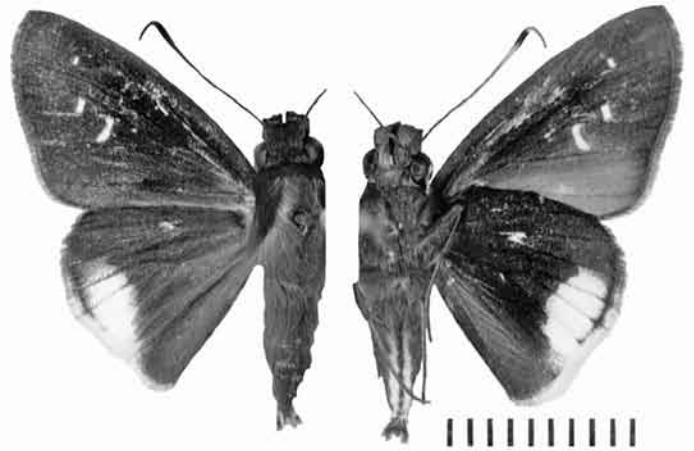


Fig. 39. *Cobalus virbius* male, St. Augustine, larva on *Veitchia merillii*, 1.xii.1999, D. Moore.

Female. UPF brown, with white hyaline spots as male but slightly larger, and extra spot in space 7. UNF brown; spaces 1A and 1B paler; a white spot in space 1B. UPH brown, slightly paler submarginally in space 1C. UNH spaces 1A, 1B and adjoining area of 1C brown-black; remainder of wing with slight purple suffusion; pale suffusion submarginally in space 1B, stronger than UPH. Cilia pale brown in spaces 1B to 2 H. F 17 mm.

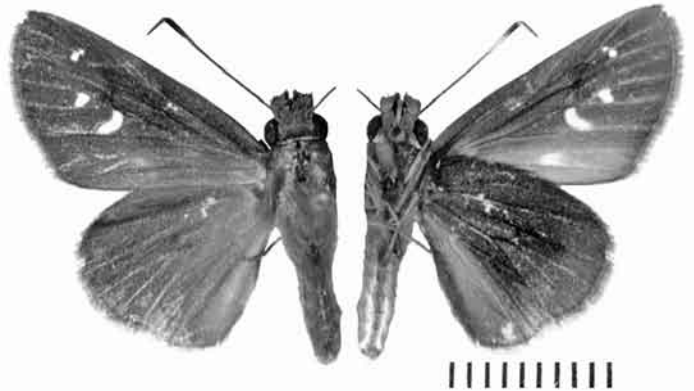


Fig. 40. *Cobalus virbius* female UNS, Curepe, MVL, 1-10.ii.1982.

The male, with its white band UPH and UNH can be mistaken for no other Trinidad species. The female is superficially similar to several other species, especially in Group J, but the distinctive curved spot in space 2, the purple suffusion UNH, the pale submarginal suffusion in space 1B UNH and the pale cilia spaces 1B to 2 H should serve to identify this species in Trinidad.



Fig. 41. *Cobalus virbius* adult male, St. Benedict's, larva on ornamental palm, MJWC ref. 95/38C.

This species is occasionally encountered in both the north and the south of the island. I have one female taken in my mercury vapour light moth trap in Curepe (1-10.ii.1982; Fig. 40), and just one record of a male taken at flowers (eupatorium, Parrylands, 16.x.1980). Normally I have encountered this species in forest areas, usually within the forest itself. However, it must be more widespread than my observations imply, since larvae can be found in disturbed and garden habitats (e.g. St. Augustine, St. Benedict's) where they are associated with ornamental palms.

Moss (1949) often reared this species from assahy palm, *Euterpe oleracea*, and mucujá palm, *Acrocomia aculeata* (Henderson *et al.* 1995); he also found them on "the ornamental Carioca palm from Rio de Janeiro and on another unidentified palm." He refers to the larvae and snouted pupae as elongate and light green with a light dorsal line. The preserved L5 remains in the NHM show the larvae to have a rounded head, narrower and flattened dorsally; the colour is light brown, with a heavy dark line down epicranial suture, across clypeus to mouth parts. In Costa Rica, Janzen and Hallwachs (2001) have reared this species occasionally from *A. aculeata* only.

I have reared this species from larvae collected on a narrow leaved ornamental palm (?*Phoenix* sp., St. Benedict's, MJWC ref. 95/38). The larvae form shelters by rolling the leaflets downwards. It has also been found on Manila palm, *Veitchia merrillii* (St. Augustine, 1.xii.1999, D. Moore, in coll. MJWC) and "forest palms" (S. Alston-Smith pers. comm.).

Pupa 22 mm; elongate and smooth; proboscis sheath extends 6 mm beyond wing cases, and 3 mm short of cremaster tip; pupa green with a thin white dorsal line on abdomen. Thin, straight, frontal spike 1.5 mm; black, at least at the tip, but the whole spike black in some specimens; directed upwards at an angle of 45° to body axis; tip bent back on itself in a tiny hook.



Fig. 42. *Cobalus virbius* pupa, St. Benedict's, larva on ornamental palm, MJWC ref. 95/38C.

L5 28 mm; head triangular in outline, rounded, but flattened dorsally and broadly indented at vertex; scattered, erect, pale setae; head covered with a heavy layer of white waxy powder except for a broad stripe down the centre of the face; under the powder, the head is pale apart from a large dark oval spot laterally on epicranium, the epicranial suture and the dorsal part of the clypeus, which is also dark; in one specimen this dark stripe continues across the clypeus to the mouth parts. T1 concolorous with body. Body greenish white, except for a dull green sub-dorsal line; laterally on A3-A8 a coating of white waxy powder, heavy on A7-A8; a few pale setae laterally on A8-A9; spiracles, legs and prolegs concolorous. The mature larva preparing to pupate becomes translucent with a white dorsal line and heavier white waxy powder.

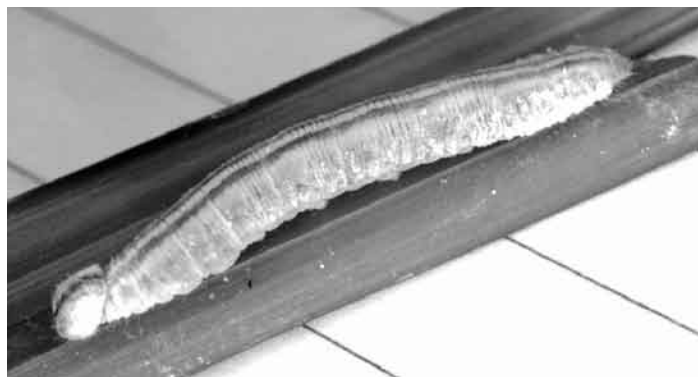


Fig. 43. *Cobalus virbius* L5, St. Benedict's, larva on ornamental palm, MJWC ref. 95/38B.



Fig. 44. *Cobalus virbius* L5, detail of head, St. Benedict's, larva on ornamental palm, MJWC ref. 95/38B.

L4 15 mm; head dark, but paler each side of epicranial suture and in lower half of epicranium; head covered with white waxy powder apart from the clypeus. T1 concolorous with body which is grey-white, lightly covered with white waxy powder; white dorsal line; diffuse white sub-dorsal line. L3 has the head brown, lighter over the clypeus.

208a. K26 *Damas clavus* (Herrich-Shäffer 1869)

Fig. 45-46.

This species was described without type locality, and occurs from southern Brazil to Guatemala (Evans 1955) and Mexico (Warren 2000). It has not previously been recorded from Trinidad. S. Alston-Smith (pers. comm.) has captured male specimens from Fondes Amandes (viii.1979; Fig. 45) and Chatham (ii.2001).

Evans (1955) notes that this is a very variable species, but insufficient Trinidad material is available to assess this. The two Trinidad males are brown UPS; a small yellowish spot in space 1B, yellow hyaline spots in spaces 2 (excavate on outer margin), 3 and 6 (dot) and an elongate spot in lower cell. Evans (1955) notes that the spot in space 1B is often absent and there may be further apical spots in spaces 7-9. There is a broad grey stigma at the base of space 3 alongside the cell, which is thicker basally, and a patch in space 2, below the base of the section in space 3. UNS paler brown, unmarked. In the female the UPF spots are larger and a small spot

may also be present in space 4; UNH a more or less straight row of white spots in spaces 3-5 and an inwardly displaced spot in space 6. F male 24 mm (Evans 1955). Illustration in Lewis (1973, Plate 82.23, female UNS).



Fig. 45. *Damas clavus* male, Fondes Amandes, viii.1979, S. Alston-Smith (specimen in SAS).



Fig. 46. *Damas clavus* female. Left UPS, French Guiana (specimen in NHM); right UNS, Belem, Brazil (specimen in NMH).

The size, arrangement of spots, male stigma, plain brown UNS in the male, and row of spots UNH in the female should serve to identify this species.

Janzen and Hallwachs (2004) have reared this species from two palms: *Astrocaryum alatum* and a *Bactris* sp., but do not illustrate the early stages. Recently, S. Alston-Smith (pers. comm. 2004) found and reared larvae of this species from an unidentified palm at Trinity Hills. He notes that the larva has a brown head, and is green with a yellow lateral stripe, while the pupa is green with a brown stripe. Based on three emerged pupae in the NHM reared by A. M. Moss in Para (Belem, Brazil), the emerged pupal case is about 25 mm long, flimsy and partially collapsed; almost transparent with a brown tint; the frontal spike is long and slender, with the dark tip hooked upwards; a narrow brown stripe runs from the tip of the cremaster to the tip of the frontal spike; the proboscis sheath extends beyond the cremaster for about 20 mm. Moss (1949) did not treat this species.

209. K28/1 *Carystoides basoches* (Latreille [1824])

Figs. 47-48.

This species was described from Brazil, and is recorded by Evans (1955) from Trinidad south to Paraguay. *Carystoides yenna* Evans (1955) was described as a ssp. of *basoches* from French Guiana and the Upper Putumayo and is much more variegated below; it is now treated as a separate species (Mielke 2004). *Carystoides basoches* was first recorded from Trinidad by Kaye (1904), mis-spelt as *C. basochesii*, based on a specimen he took in St. Ann's Valley in July 1901.

Male. UPF brown; white apical patch space 5-7, 2 mm wide; white hyaline spots in space 2 (large, against cubitus to base of vein 3), 3 (large, against cubitus to base of vein 4, almost completely overlapping cell spot) and cell (across width of cell, contiguous with spot in space 3 and only separated by dark vein). UNF costa brown; apical area (vein 2 to space 7) light brown; disk black-brown; vein 1 white; small dark spots in spaces 3-5. UPH brown; white hyaline spots in spaces 3-5 (the spot in space 3 smaller and separated by dark vein, the spots in spaces 4 and 5 joined). UNH light brown, basal area, space 1A and margin spaces 2-7 paler; spaces 1B and 1C black-brown. Antennal club white above. F 23 mm. Illustration in Lewis (1973, Plate 81.27, male UPS).

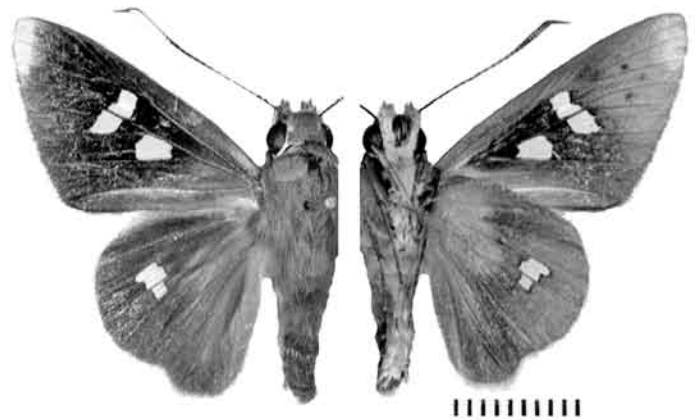


Fig. 47. *Carystoides basoches* male, Curepe, 20.viii.1978.

Female. UPF brown; light yellow spot in lower space 1B; pale yellow hyaline spots in spaces 2 (diamond shaped, the upper angle under the origin of vein 3, and partially overlapping, but separate from spot in cell), 3 (diamond shaped, well separated from spot in space 2), 6-7 (dots, that in space 6 closer to margin), cell (across width of cell, excavate on internal and external margins); no white apical patch. UNF colouring similar to male; dark spots in spaces 4 and 5, the hyaline spots in spaces 6-7 have a dark border; vein 1 concolorous. UPH brown; pale yellow hyaline spots in spaces 4-5 (partially overlapping, that in space 5 closer to margin). Evans (1955) refers to these spots extending into space 3, to distinguish *C. basoches* from *C. noseda*. This does not seem to be the case for females of *C. basoches* from Trinidad. De Jong (1983) comments that of the two females he examined from Suriname only one had a spot in space 3. It may be that Evans intended to refer to males rather than (by implication) both sexes in his key. UNH similar to male but paler; small dark spot in space 3 adjacent to the hyaline spot in space 4. Base of antennal club with a white ring. F 24 mm.

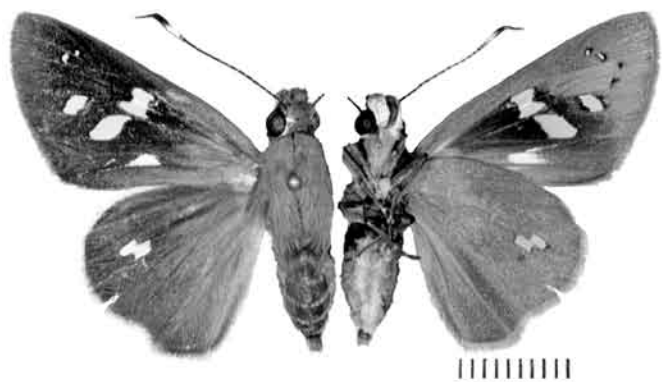


Fig. 48. *Carystoides basoches* female, above St. Benedict's, MVL, 26.v.1981.

The male with its white apical area and arrangement of spots could only be confused with the males of *C. noseda* and *C. sicania*. Whereas the male of *C. basoches* has rectangular white hyaline spots in spaces 3-5 H, in *C. noseda* the hyaline spot H is small, round and restricted to spaces 4-5, while in *C. sicania* the H spot is smaller and near the base of space 3. The female of *C. basoches* has rectangular pale yellow hyaline spots in spaces 4-5 H, and dark spots UNF in spaces 4 and 5, whereas the female of *C. noseda* has a white hyaline spot H which is smaller and circular, in space 5 only, and no dark spots UNF. The female of *C. sicania* has a strong white hyaline spot in space 6 F, and no dark spots UNF in spaces 4 and 5; the spots H are similar to those of *C. basoches*, but there is also a small spot in space 2 UNH.

This species is most frequently encountered when adults of either sex are attracted to light in the early evening; Sir Norman Lamont's collection includes 12 specimens from Palmiste which were probably caught in this way and I have occasional records from my house in Curepe. Other records (Inniss Field, Grande Ravine, Sangre Grande, Siparia, St. Ann's, St. Benedict's) suggest this species is widespread, but perhaps mainly encountered in lowland areas.

The larvae resemble those of *Cobalus* [*virbius*] according to Moss (1949) and he found them on tucumá and pachiúba palms (*Astrocaryum* sp(p). and *Socrates exorrhiza*), as well as a potted ornamental palm. Moss's material included three other *Carystoides* spp. including *C. noseda* and *C. sicania* (W. H. Evans' footnote in Moss 1949), and the early stages in the NHM are separated into these three species, although they are all very similar, and not that similar to *C. virbius*. The cast L5 head capsule is rounded in outline, flattened in front, and light brown. The pupal shelter is formed within a palm leaflet, and protected at each end of the shelter by a series of five distinctive reticulate nets of silk about 3-5 mm apart; the inside of the shelter is lightly covered with white waxy powder. The emerged pupa is smooth, stout, with no frontal spike and the proboscis sheath extends to the cremaster tip; light brown with spiracle T1 brown.

Chamaedorea tepejilote and *C. costaricana* are the regular food plants of this species in Costa Rica (Janzen and Hallwachs 2001), but it has also been reared occasionally from other palms: *Acrocomia aculeata*, *Bactris guineensis*, *B. major* and *Prestoea decurrens*. Janzen and Hallwachs (2001) illustrate two forms of the larva. One has a pale brown head, and a narrow lateral line from the vertex to the reddish mouth parts, and is comparable to

Moss's head capsules in the NHM. The other is darker brown with a heavy lateral line and another running down the centre of the face, with a short branch along the upper part of the adfrontal area. The mature larvae develop a layer of white waxy powder laterally on the head, and on the body, and only at this stage could be said to resemble *Cobalus virbius* (cf. comments in Moss (1949) referred to above).

The early stages have not been recorded in Trinidad, but the larvae can be expected to be found on ornamental and wild palms in lowland situations, probably including urban areas. S. Alston-Smith (pers. comm.) has reared this species in Trinidad from an unidentified palm. He notes that the large larvae of both this species and the next make a shelter by tying one leaflet on top of an adjacent one. The larva then consumes one of the leaflets only.

210. K28/2 *Carystoides noseda* (Hewitson 1866)

Figs. 49-50.

This species is not common in collections, with scattered records from Colombia, Trinidad, Suriname, Amazons (TL), Belém and Minas Geraes (Evans 1955).

Kaye (1921 addenda) lists two of Sir Norman Lamont's specimens from Palmiste taken 14.ii and 30.iv.1921 when he added this species to his catalogue. Neither specimen is in Lamont's UWI or NMS collections, and neither collection contains any material of this species. There is a female in the NHM collected by P. Lechmere Guppy without further data (Fig. 50), and I have a male collected at St. Benedict's (ix.1980) by David J. Hunt – probably at the lights of the Pax Guest House (Fig. 49).

Male. As male *C. basoches*, but smaller, the UNS light brown areas have a violet flush, the white hyaline spots H are smaller, and the spot in space 3 is absent. Evans (1955) states that the white apical patch is 3 mm wide in this species, but my Trinidad male has this patch 2 mm wide, the same as *C. basoches*.

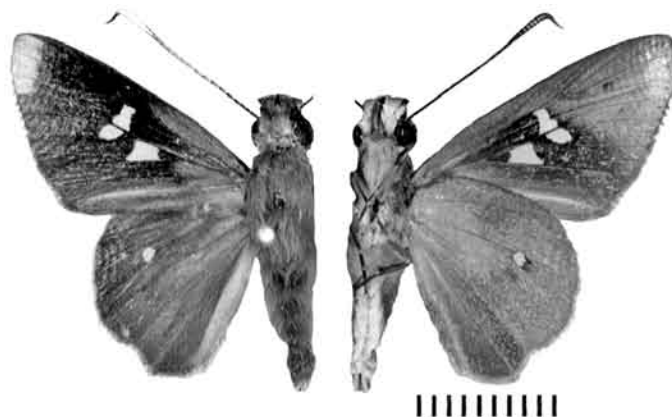


Fig. 49. *Carystoides noseda* male, St. Benedict's, ix.1980, D. J. Hunt.

Female. Similar to female *C. basoches*, but the white hyaline spot H is smaller and circular, in space 5 about one third of the distance from the end of the cell to the margin. The apical area UNF and UNH is paler brown than in *C. basoches*.



Fig. 50. *Carystoides noseda* female, Trinidad, P. Lechmere Guppy (specimen in NHM).

Moss's records of *C. basoches* from palms would seem to include material of this species too (see *C. basoches* above).

211. K28/10 *Carystoides sicania orbis* (Godman 1901)

Figs. 51-52.

The nominate subspecies, *sicania* (Hewitson), is restricted to southern Brazil; ssp. *orbis* was described from Nicaragua but its range is the northern part of South America (Evans 1955).

Evans' (1955) listing of a male in the NHM is the first Trinidad record. This specimen is a male, labelled simply "Trinidad" (Fig. 51).

Male. Similar to *C. basoches* and *C. noseda*, but the hyaline spot H is smaller, and placed at the base of space 3. In addition, F hyaline spots are pale yellow; there is a white hyaline dot near the base of space 6 F in the Trinidad specimen; the F cell spot is almost divided into an upper and lower spot; UNH there is a second spot at the base of space 4; F the cell spot is more or less divided into an upper and lower spot; UPF costa to cell spot and UNF costa to end cell chestnut brown; UNH is strongly diffused with chestnut; and at least in the Trinidad specimen the abdomen UNS is plain white.



Fig. 51. *Carystoides sicania orbis* male, Trinidad (specimen in NHM).

Female similar to *C. basoches* and *C. noseda*, but F hyaline spot 6 well developed, only slightly smaller than that in space 3; very small spot in space 7, basal to that in space 6; F cell spot

almost divided into an upper and lower spot; UNF no dark spots in spaces 4 and 5; UPH with hyaline spot in space 5, adjacent to a white spot in space 4; a dot in space 3 distal to those in spaces 4 and 5; UNH spots as for UPH, but a dot in space 2, just basal to spot in space 3.

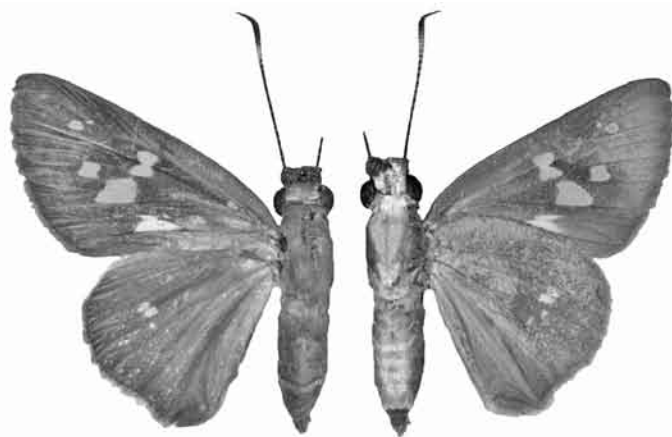


Fig. 52. *Carystoides sicania orbis* female UNS, Sangre Grande, viii.1990, S. Alston-Smith (specimen in SAS).

S. Alston-Smith (pers. comm.) has taken this species at scattered localities in Trinidad: Guanapo (male ix.1987), Mt. Tamana (female v.1993), Sangre Grande (male xii.1988, female viii.1990; Fig. 52), and Sans Souci (male vi.1993). It seems to be a generally scarce species.

As indicated under *C. basoches* (above), Moss's material of "*C. basoches*" reared from palms includes material of *C. sicania*.

212. K28/12 *Carystoides cathaea* (Hewitson 1866)

Figs. 53-54.

The type locality of this species was not recorded, but it is found in the Guyanas and the Amazon Basin (Evans 1955).

Kaye (1921) reports this species from Trinidad based on a specimen taken in Fondes Amandes Valley. I have not seen this specimen, but I have a male taken in the forest near Moruga Bouffe, 23.v.1982 (Fig. 53). S. Alston-Smith (pers. comm.) has specimens from Aripo Savanna (male i.1982) and Sangre Grande (female viii.1989, female vii.1993; Fig. 54). This seems to be a rare species in Trinidad perhaps associated with damp lowland areas, although it may normally be crepuscular, and hence rarely encountered.

Sexes similar, except the male has vein 1 UNF white and the female has a narrow pale spot against vein 1 in space 1B F. UPS brown; margin from vein 2 to apex broadly paler; apical area palest at margin of spaces 4-5; white hyaline spots in spaces 2 (against cubitus and under origin of vein 3, lower external corner elongate), 3 (against cubitus and under origin of vein 3, outer margin excavate), and cell (across cell, lower outer corner meets upper inner corner of spot in space 3, well separated from spot in space 2). UNF costa brown; apical area to vein 2 light brown with lilac flush; spaces 1A and 1B light brown; disk black-brown. UPH brown. UNH with rays of different colours from the base: space 1A light brown with a violet tint; space 1B and lower half of 1C black-brown; upper half of space 1C light brown; cell (except upper margin) and spaces 2-4 brown with violet flush fading to light brown at margin of space 2; upper part of cell, base of space 6 and space 5 whitish brown; remainder of space 6 and space 7 brown with a violet flush. F male

23 mm.

The rayed appearance of the UNH is unique in the Trinidad fauna.

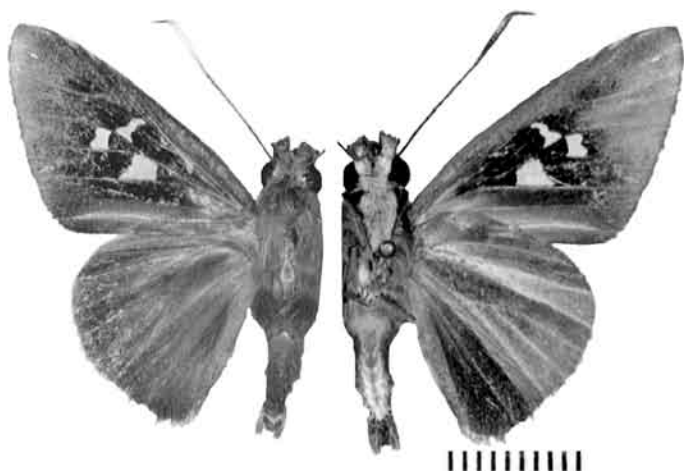


Fig. 53. *Carystoides cathaea* male, Nr Moruga Bouffe, 23.v.1982.

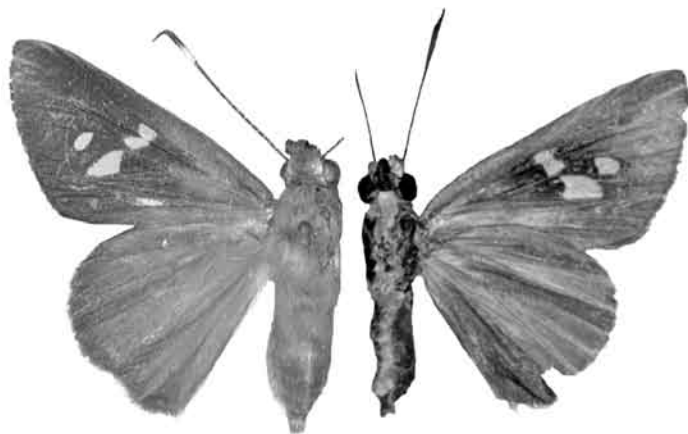


Fig. 54. *Carystoides cathaea* female. Left UPS, Para, Brazil (specimen in NHM); right UNS, Sangre Grande, vii.1993, S. Alston-Smith (specimen in SAS).

Moss (1949) notes the unusual behaviour of this species “haunting the house where it flits to and fro in quest of the most shady spot and then settles for a long while”. Perhaps this too is a crepuscular or nocturnal species, like others of the genus.

Moss (1949) reared this species from four different species of palms. S. Alston-Smith (pers. comm.) has associated this species with picmoc, *Bactris major*, but not reared it.

213. K30/2 *Perichares philetus philetus* (Gmelin [1790]) Figs. 55-61.

Evans (1955) treats *Perichares philetus* as four subspecies: *dolores* (Reakirt) from Mexico (TL) south along the Andean countries to southern Brazil, *philetus* (Gmelin) from the Greater Antilles (TL Jamaica), Guyanas, and Amazon, *aurina* Evans which may be just a variety of *dolores*, occurring from central America to Paraguay, and *limana* Evans based on an isolated population from coastal Peru. This species has also been referred to as *P. coridon* (Fabricius) (sometimes mis-spelt as *corydon*) and *P. phocion* (Fabricius), but both are unavailable homonyms (Evans 1955).

The first Trinidad record was that of Crowfoot (1893) as *Carystus corydon*.

Male. UPS brown; yellow hyaline spots in spaces 2 (narrow at vein 3, wider at vein 2), 3 (quadrate), cell (upper spot a distinctive elongate streak, lower spot small, against the basal end of the upper spot); a yellow spot is also sometimes present in lower space 1B (against vein 1, just distal to brand); broad grey brand, starting under vein 3 close to pointed end of spot in space 2, running to the cubitus and then curving away to vein 2 and straight across to vein 1. UNF brown, the apical area from the end of the cell and vein 4 mottled with light purple; a patch of yellow on the costa extends from the upper cell spot to the costa. UPH brown. UNH space 1A-1B brown; remainder of wing dark brown mottled with purple. Underside of abdomen orange-brown. Cilia pale 1B-6 F and 1B-7 H, with vein ends dark. F 23-24 mm. Illustrations in Brown and Heineman (1972, plate X, male but the brand is not evident), Lewis (1973, plate 85.7, male UNS) and Smart (1976, p.113, fig. 68, male UPS).

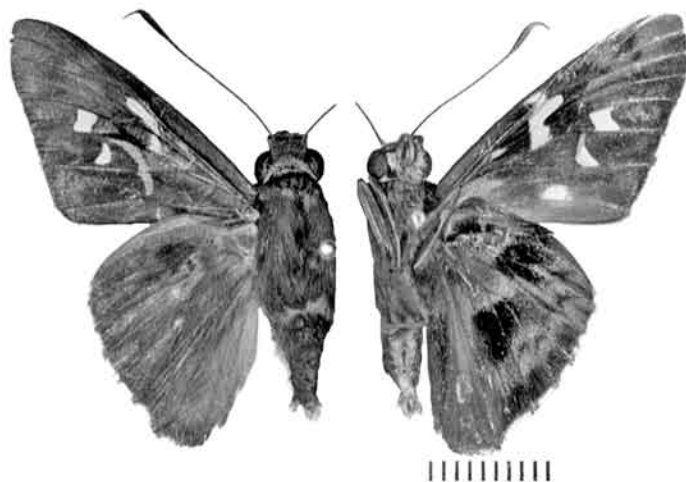


Fig. 55. *Perichares philetus philetus* male, Curepe, 25.ix.1978.

Female similar to male, but UPF the spot in lower space 1B is normally present; there is a spot in upper space 1B, adjacent to the lower external margin of the spot in space 2; the two cell spots are usually joined. In one specimen (Fig. 57), the UPF upper cell spot is reduced to a small dash, and the lower cell spot is absent. F 26-28 mm. Illustration in Smith *et al.* (1994, plate 30.4, female).

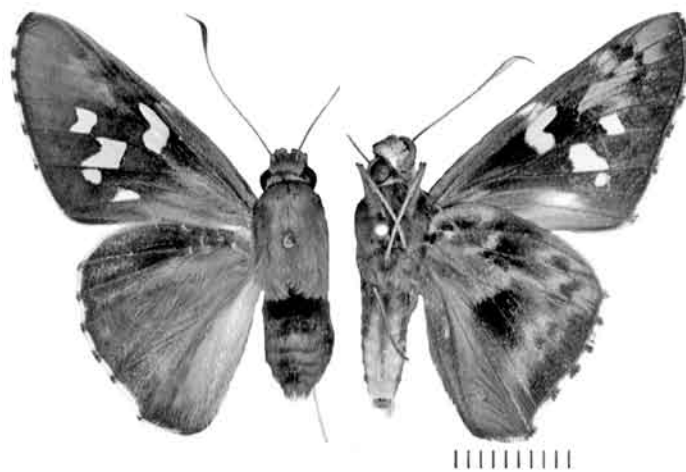


Fig. 56. *Perichares philetus philetus* female. Left UPS, Golden Grove, pupa on maize, xi.1980; right UNS, St. Benedict's, 12.x.1993.



Fig. 57. *Perichares philetus philetus* atypical female with reduced markings, Curepe, MVL 16.ix.1979.

There seems to be some variability in the presence and shape of the F spots in this species, and examination of more material will probably show greater variation than that mentioned here. The mottled purple UNS could only be confused with *P. lotus* below, but the F spotting of both sexes of *P. lotus* is very different.

This is a common and widespread species throughout lowland Trinidad, but does not seem to extend to any great altitude in the Northern Range, i.e. I have no records likely to be from above 1,000 ft. Sheldon (1936) records this species (as *Perichares corydon*) from Tobago citing his capture of a single specimen at Speyside; there is a pair of this species from the Sheldon collection in the NHM.

Brown and Heineman (1972) and Smith *et al.* (1994) both mention that although adults are active throughout the day, they are distinctly more active at dusk and dawn. Panton (1897) records that oviposition occurs “late in the evening”. Since he was able to observe this while walking among some growing canes, the implication is that this was no later than at dusk. As a result of this flight time, adults are occasionally attracted to lights in the early evening. Thus, *P. philetus* used to come to my house lights and to my mercury vapour (MV) light moth trap in Curepe, occasionally but regularly. I have nine records of this behaviour from 1978-79, all from the months August to October, peaking in October, but did not record this behaviour thereafter. In the CABI Bioscience collection there are a further five specimens collected at light trap in Curepe in October 1972 which suggest this may be a consistent flight pattern at this time of year. Smith *et al.* (1994) report that adults occasionally come to flowers; reported nectar sources include coffee (Panton 1897), *Lantana*, *Bidens*, *Cordia* and *Jacquemontia* (Smith *et al.* 1994).

Panton (1897) provides a detailed account of the biology of this species in Jamaica (as *Carystus corydon*), including descriptions of all stages, and larval behaviour. This description has not since been bettered, and Brown and Heineman (1972) reproduce it verbatim. By the final instar the larva measures 53 mm; the head is relatively small, uniform light brown with dark stemmata; the body is described as clouded greenish-yellowish covered with “white downy hairs”, and there is a broad greenish yellow dorsal stripe, which is dark green in the middle. Panton also refers to a “broad chalky-white blotch” on the undersurface of segment 4; this is the

wax gland ventrally on segment A1. The food plants reported by Panton are sugarcane, “indian corn” (i.e. *Zea mays*) and *Panicum maximum*.

There are records of *P. philetus* as a minor pest of sugar cane in Cuba, Haiti, Dominican Republic, Puerto Rico, Trinidad, Venezuela, British Guiana and Argentina (Box 1953). Additional food plant records from two bamboos, *Bambusa vulgaris* and *Cephalostachyum pergracile*, are given in Puerto Rico (1939). Wolcott (1951) adds a few details of the larva (as *Perichares phocion*), highlighting the “broad greenish-yellow dorsal stripe and long white hairs”. Dethier (1942) records finding larvae of this species twice on sugarcane in Cuba, and refers to the larval head as “light yellow to green and unmarked, but covered with dense long colorless hairs”.

In Guyana, *P. philetus* has been reported as a pest of coconut (Bodkin 1916) and sorghum (Sinha 1982). Although the larvae occasionally use jacetára palm (*Desmoncus* sp.) and *Hyospatha elegans* (Arecaceae), it is most commonly found on sugarcane at Belém (Moss 1949). The larva is very light yellow-green, glossy on the dorsal area and with recumbent light setae laterally. The pupa is green with a pair of dorsal lines, a prominent frontal spike and a long proboscis sheath. Smith *et al.* (1994) summarise the published accounts.

In Costa Rica, the larvae normally feed on grasses such as *Panicum maximum*, *Paspalum virgatum*, *Olyra latifolia* and *Rotboellia cochinchinensis*, but also can be found occasionally on palms, *Prestoea decurrens*, *Geonoma interrupta* and *Chamaedorea dammeriana* (Janzen and Hallwachs 2001).

I have reared this species once from a pupa collected on maize (Golden Grove, xi.1980) but did not record any details. S. Alston-Smith (pers. comm.) has reared *P. philetus* from “bull grass” and an unidentified palm in Trinidad. I have found a larva at Innis Field (MJWC ref. 04/23, 16.i.2004) on *Paspalum fasciculatum*, a large swampland grass. I am reasonably confident the larva was of this species, but unfortunately the resultant pupa died due to a fungal infection, so my identification needs confirmation. The fungus was identified by Dr. H.C. Evans as *Paecilomyces reniformis* cf. The following description is based on this specimen.

Pupa 40 mm. Elongate, smooth; setae on eyes except central stripe, proboscis extends 5 mm beyond the wing cases, and 11 mm short of cremaster tip; frontal spike 2.5 mm, stout, blunt, rugose distally, pale brown; cremaster 2.5 mm, slender; pale green with narrow yellow sub-dorsal line; spiracles pale, inconspicuous.

L5 up to 50 mm or more. Head rounded, wider at base, indent at vertex; very pale green, almost white; stemmata black; mandibles dark; head covered with long, erect white setae, directed downwards and forwards. T1 pale green; translucent dorsal plate. Body dorsally and laterally yellowish with a green tint; diffuse yellow sub-dorsal line, more evident at a distance than when viewed close up; below spiracles and ventrally transparent green; body covered with scattered long, erect, white setae; posterior margin of segments T2-A8 with three folds in the cuticle. Legs and prolegs pale concolorous; spiracles white, inconspicuous; anal plate semi-circular. In the mature fifth instar, the wax glands develop as a single transverse patch on the posterior margin of A1 (cf. *Orses cynisca* below).

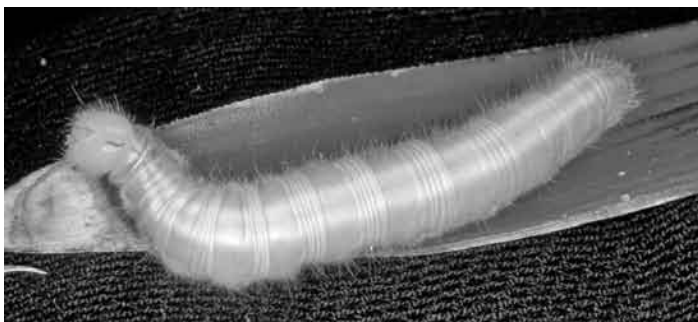


Fig. 58. *Perichares philetes philetes* L5, Inniss Field, larva on *Paspalum fasciculatum*, MJWC ref. 04/23.

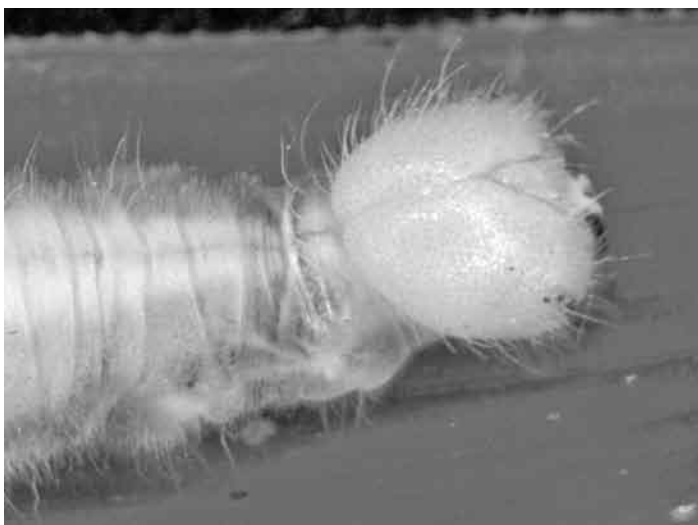


Fig. 59. *Perichares philetes philetes* L5, detail of head, Inniss Field, larva on *Paspalum fasciculatum*, MJWC ref. 04/23.

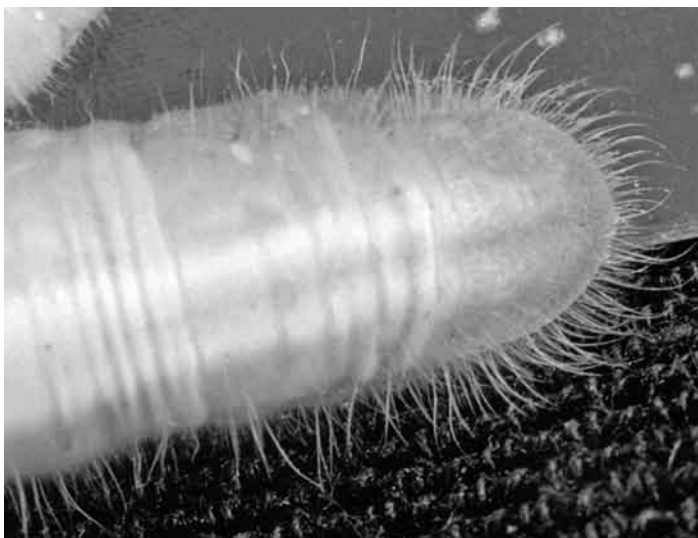


Fig. 60. *Perichares philetes philetes* L5, detail of anal plate, Inniss Field, larva on *Paspalum fasciculatum*, MJWC ref. 04/23.

L4 26 mm, seven days before moult to L5 completed. Head rounded, wider at base, slightly indent at vertex; bone white, mouth

parts dark; face with black speckles on clypeus, and in broad arc on epicranium. Body shiny, light green; sub-dorsal whitish line. Legs black; prolegs pale concolorous; spiracles pale.



Fig. 61. *Perichares philetes philetes* L4, detail of head, Inniss Field, larva on *Paspalum fasciculatum*, MJWC ref. 04/23.

Panton (1897) includes a description of one parasitism event which seems to refer to a gregarious eulophid attacking a young larva, but subsequent entomologists do not mention parasitism.

214. K30/3 *Perichares lotus* (Butler 1870)

Figs. 62-63.

This species is found from Mexico to Paraguay, TL Venezuela (Evans 1955).

Kaye (1904) described this species as *P. heroni* from a Trinidad specimen captured by Lady Broome, naming it after Mr. F. A. Heron of the NHM. Kaye does not mention the sex of his type specimen, but Evans (1955) notes that it is a male and held in the NHM. Thus Kaye and Butler described the two sexes as different species – an understandable error given the strong sexual dimorphism of this species. Subsequently, Kaye (1921) classifies his *P. heroni* as a synonym of *P. lotus*, a treatment also followed by Evans (1955). Curiously, Kaye (1904) also includes records of a male and female of *P. lotus* in his first list, commenting that the male is probably frequently mistaken for *P. corydon* (i.e. *P. philetes*). This information is repeated, together with the description of *P. heroni* under *P. lotus* in his catalogue (Kaye 1921).

Male. UPS brown, body and basal area UPH with green hairs. White hyaline spots in space 3 and across end cell; broad dark grey-black band, starting under vein 3 under inner margin of spot in space 3, running to the cubitus and then curving away to vein 2 and straight across space 1 to vein 1. UNF brown, the apical area mottled with light purple; disk blackish; dorsum pale brown; a yellow mark on the costa adjacent to the cell spot. UNH space 1A and 1B light brown; remainder brown, mottled with light purple. UNS of abdomen light yellow.

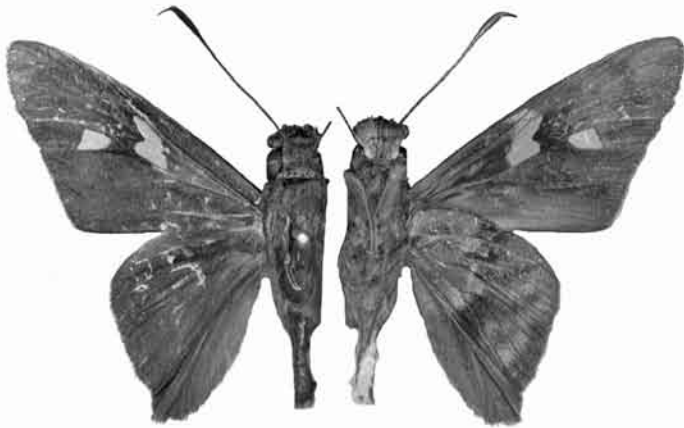


Fig. 62. *Perichares lotus* male, Siparia, x-xii.1920, A. Hall (specimen in NHM).

Female. UPF brown with light green-blue iridescence on thorax and basal part of wings; white hyaline spots in upper space 1B (against vein 2, partially overlapping with the spot in space 2), 2 (large, under basal part of vein 3), 4 (narrow) and cell (across width of cell, in line with spots in spaces 2 and 1B). UPH brown with light green-blue iridescence extending from base of wing to end cell and 2/3 in space 1B. UNF costa light brown with a pale patch extending cell spot to costa; apical portion from end cell and extending into space 3 brown, mottled with light purple; space 1A and distal half of lower 1B light brown; disk black-brown. UNH space 1B and adjacent half of space 1C light brown; remainder brown mottled with violet. F 25 mm. Illustration in Lewis (1973, Plate 85.6, female UPS).

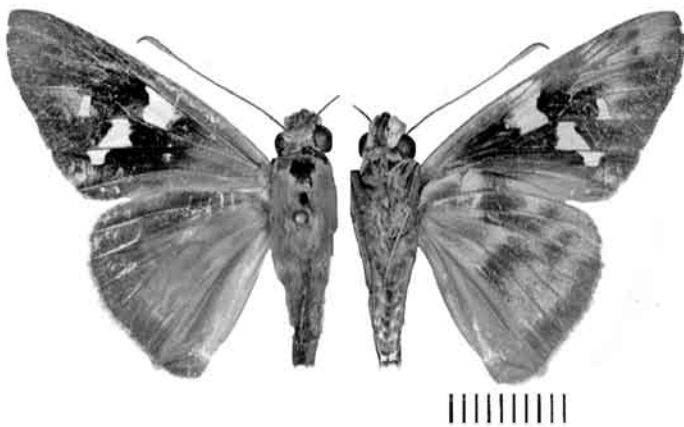


Fig. 63. *Perichares lotus* female, Curepe, 23.1-10.ii.1982, F. D. Bennett.

The mottled underside could only be confused with *P. philetus* above, but the F spots in both male and female are very different in these two species.

This species is much less common than *P. philetus*, and I have only a handful of records. Localities include Arima District (male xii.1931-i.1932, A. Hall, NHM), Caparo (male, NHM), Curepe (female 23.i-10.ii.1982; Fig. 63), Inness Field (male i.1990, SAS; female iii.1985, SAS; female vii.1987, SAS), Maracas Valley, 600 ft. (female xii.1921, F.W. J[ackson], AME), Maraval (female vii.1891, NHM), Moruga West (male xi.1988, SAS), Mt. Tabor (male 16.i.1982, J. and F. Preston), Parrylands (male i.1984, SAS), Siparia (male x-xii.1920, A. Hall, NHM; Fig. 62). My specimen

from Curepe was taken in my MV light trap, suggesting that this species too may have crepuscular habits.

Life history and food plants apparently unknown, but *P. lotus* is likely to feed on broad-leaved grasses.

[215. K30/5 *Perichares deceptus fulvimargo* (Butler 1873)]

Evans (1955) and Mielke (2004) treat this uncommon species under four subspecies: *deceptus* (Butler and Druce) from central America, *drina* Evans from Colombia and Peru, *fulvimargo* from Peru, Ecuador, Colombia and Venezuela (TL), and *luscinia* (Plötz) from southern Brazil. In my 1982 checklist (Cock 1982b) I assumed that the relevant subspecies for Trinidad would be *fulvimargo*.

Kaye (1921) records A. Hall's capture of a specimen of this species in November 1920 as *P. agrippa* Godman, a male synonym of *deceptus* (which was described from the female). There are no specimens of this species from Trinidad in the NHM (Evans 1955), and Kaye's record may be based on a male *P. lotus* collected x-xii.1920 by A. Hall in the Booth Museum.

Based on available evidence, I conclude that *P. deceptus* does not occur in Trinidad, and that it should be removed from the Trinidad list.

216. K31/1 *Orses cynisca* (Swainson 1821)

Figs. 64-71.

This widespread species was described from south Brazil and is known from Mexico to Paraguay (Evans 1955). Crowfoot (1893) included this species as *Carystus cynisca* in the first list of Trinidad butterflies.

Male. UPF brown; yellow hyaline spots in spaces 2 (beyond origin of vein 3, hourglass shaped), 3 (against vein 3, overlapping spot in space 2), and cell (broad spot across width of cell); band grey and conspicuous, from upper inner angle of spot in space 2 to cubitus and then curving down into space 1B, in lower two thirds of space 1B becoming narrow and inconspicuous. Evans (1955) states that the three F spots are conjoined in the male, but in the Trinidad specimen before me, the cell spot is separated from the other two. UPH brown, narrowly yellow in apical part of space 7. UNF brown, with a yellow patch extending the cell spot to the costa. UNH ferruginous brown; narrowly pale yellow margin in spaces 3-7. Femora and tibiae orange; underside of abdomen pale yellow with a dark brown central line. F 24 mm. Illustration in Lewis (1973, Plate 84.27, male UNS).

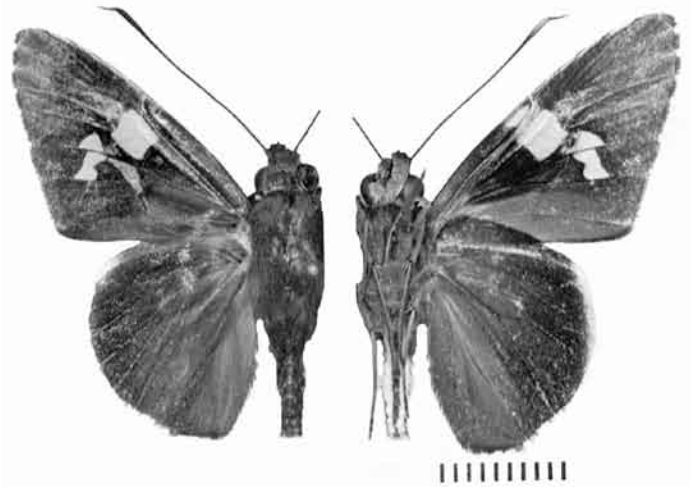


Fig. 64. *Orses cynisca* male, Mt Tabor, 22.xi.1981.

Female. UPF dark brown; white hyaline spots in space 1B, 2 and cell form a band across wing, divided only by dark veins. UPH dark brown; pale yellow marginal patch in spaces 6 and 7; cilia pale yellow in spaces 1C to 7. UNF brown; a pale yellow patch extends from the cell spot to the costa. In the resting position (Fig. 66) this spot aligns with the pale yellow margin UNH. UNH ferruginous brown; a broad pale yellow margin to the wing from space 2 to space 7. Legs and abdomen underside as male. F 25 mm.

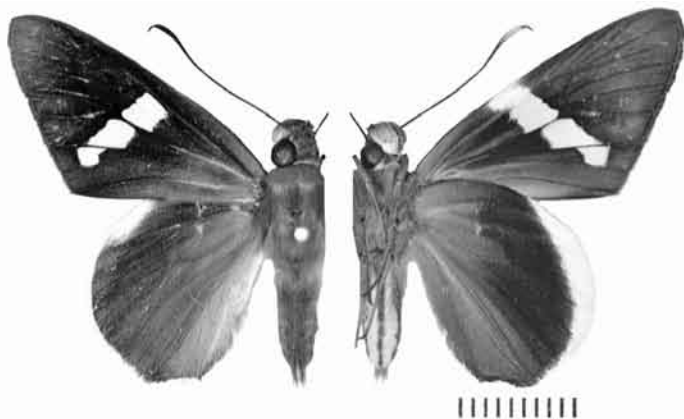


Fig. 65. *Orses cynisca* female, behind St. Benedict's, larva on *Olyra ciliatifolia*, MJWC ref. 94/38.

The male and female UPF markings and the female's broad pale yellow margin UNH are unique in the Trinidad fauna.



Fig. 66. *Orses cynisca* adult female, collected as larva behind St. Benedict's, on *Olyra ciliatifolia*, MJWC ref. 94/38.

This is an occasional and widespread species in Trinidad. Most records are from northern Trinidad where it can be found to at least 1,000 ft. in the Northern Range (Curepe, Las Lomas, Maraval, lower Morne Catharine, Mt. Tabor, Port of Spain, Quare Road, St. Ann's, St. Ann's Valley, St. Benedict's), but there are also records from central Trinidad (Caparo, female, F. Birch, NHM) and south Trinidad (Quinam, male, 27.xi.1916, Sir N. Lamont, NMS).

Moss (1949) reared this species from a larva on ground bamboo, but I cannot identify what plant this refers to, although in view of more recent records, it is likely to be an *Olyra* sp. Janzen and Hallwachs (2001) reared it repeatedly from *Olyra latifolia*, and rarely from *Lasiacis procerrima*, *L. sorghoidea* and *Panicum maximum* (all Poaceae).

I have found larvae once on a sedge, *Scleria latifolia* (Quare Road, MJWC ref. 82/51) and twice on *Olyra* spp.: *O. latifolia* (behind St. Benedict's, MJWC ref. 94/33), and *O. ciliatifolia* (Inniss Field, MJWC ref. 04/29). Twice I have found pupae (with associated feeding) on *O. ciliatifolia* (behind St. Benedict's, MJWC refs. 94/38, 94/44). The larva on *S. latifolia* was an L4 preparing to moult to L5; it had made a shelter by partially turning over one side of a leaf truncated by feeding, and it had spun a thin continuous film of silk so that the larva was entirely protected within this shelter. One field collected pupa was found fully exposed on the basal half of the terminal leaf of *O. ciliatifolia* – the distal half having been eaten.

Pupa 34-39 mm; smooth, slender, elongate; 1.5-2 mm frontal spike, tip dark, down-turned; cremaster slender, pointed; proboscis sheath extends 2 mm beyond cremaster in one specimen and 9 mm beyond wing cases, 6 mm short of cremaster tip in another; covered with inconspicuous short, pale setae on head, thorax apart from appendages, and abdomen; no white waxy powder. The pupal case is transparent and thin; covered with short, pale, erect setae; the colour through the cuticle is green, with a white sub-dorsal line from the front of the thorax to near the base of the cremaster, slightly diffuse on outer edge; a dorso-lateral white line from metathorax to A6. The thin cuticle of the pupa usually collapses after the adult has emerged.



Fig. 67. *Orses cynisca* pupa, behind St. Benedict's, larva on *Olyra ciliatifolia*, MJWC ref. 94/38.

L5 43 mm fully grown. Head wider at base, rounded, strongly indented at vertex; very pale brown, ventral quarter black; covered with short, pale, erect setae. Body shiny green (similar to the leaves of *Olyra ciliatifolia*); covered with short pale setae; spiracles pale, a well marked pale patch around spiracle A8, smaller patches around other spiracles; a diffuse dark spot anterior and dorsal to the white patch around spiracles A8. Legs black; prolegs pale concolorous. The wax glands of the mature larva are restricted to a ventral band on A1; the same character was noted in the larva of *Perichares philetus* above, but not thus far in other genera, confirmed the close relationship of the two genera.

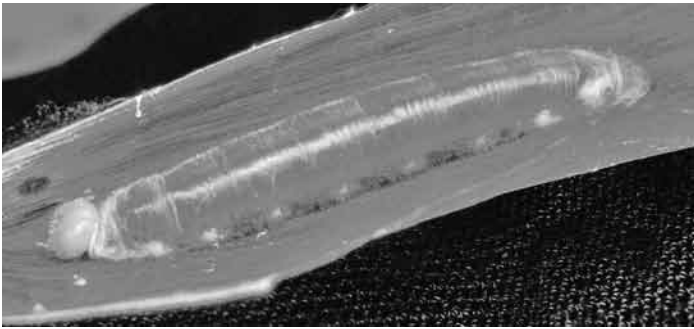


Fig. 68. *Orses cynisca* L5, Inniss Field, larva on *Olyra ciliatifolia*, MJWC ref. 04/29.



Fig. 69. *Orses cynisca* L5, detail of head, Inniss Field, larva on *Olyra ciliatifolia*, MJWC ref. 04/29.

L4 head light translucent brown; posterior margin narrowly dark; a diffuse dark lateral marking from apex almost reaching stemmata; epicranial suture and mouth parts dark; one specimen has a small dash on epicranium close to and parallel to epicranial suture; head covered with long pale setae. T1 with a narrow black dorsal plate. Body dull dark green, with a pale sub-dorsal line; body covered with long pale setae; legs dark.

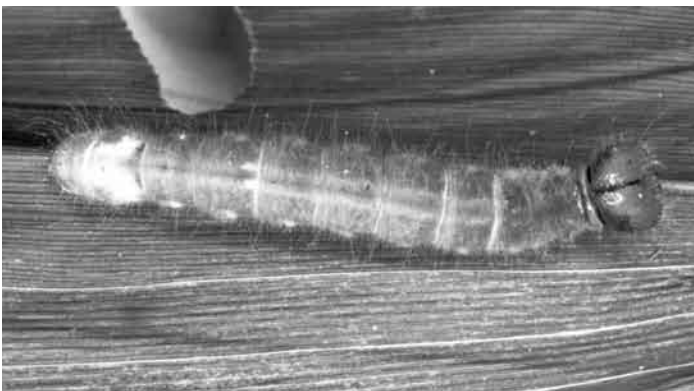


Fig. 70. *Orses cynisca* larva, fourth instar, behind St. Benedict's, larva on *Olyra latifolia*, MJWC ref. 94/33.

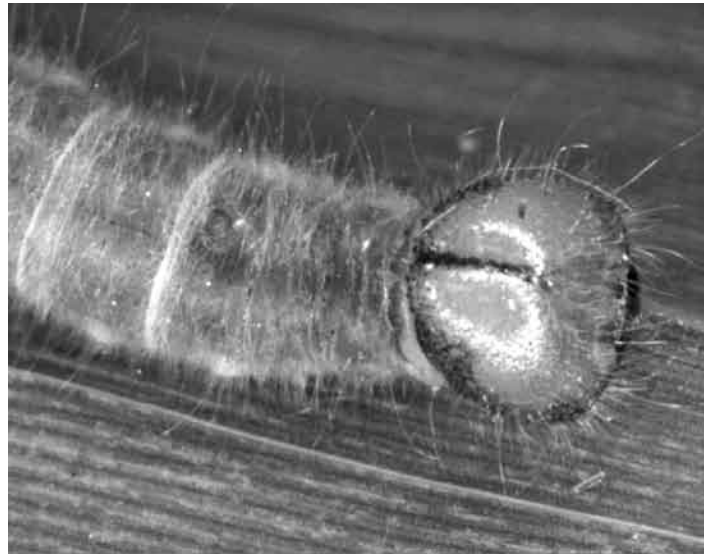


Fig. 71. *Orses cynisca* larva, fourth instar, detail of head, behind St. Benedict's, larva on *Olyra latifolia*, MJWC ref. 94/33.

A tachinid larva emerged from one L5 larva collected as an L4 (behind St. Benedict's, MJWC ref. 94/33), but the resultant puparium failed to emerge. One pupa was found dead in the forest behind St. Benedict's (MJWC ref. 94/44) and had turned black. Subsequently fungus started to grow from the abdomen, and this was identified by Dr. C. Prior as the entomopathogenic fungus *Metarhizium anisopliae* (IIBC No. I94-936).

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The following have very kindly assisted in providing access to the collections in their care: Dr. George McGavin of the Hope Entomological Collections, Oxford University Museum (HEC), Dr. Phillip Ackery of the Natural History Museum (NHM) (formerly British Museum (Natural History)), Dr. Mark Shaw of the National Museums of Scotland (NMS), Mr. Scott Alston-Smith to his private collection (SAS), Professor Julian Kenny and Dr. Gene Pollard of the University of the West Indies, St. Augustine (UWI), Dr. Gerald Legg of the Booth Museum, Brighton, Drs. Lee and Jacqueline Miller of the Allyn Museum of Entomology, Sarasota, Florida (AME). I acknowledge with thanks that several of the species are illustrated with photographs of specimens held in the collections of NHM, SAS and NMS.

I reiterate my thanks to Dr. C. Dennis Adams, Dr. Yasmin Comeau, Mr. Borai Kalloo and Mr. Winston Johnson of the National Herbarium who identified the plants from which I reared Hesperidae in Trinidad. I also thank Dr. Kurt Johnson, who provided the photographs of the type of *Argon casca* Bell from the American Museum of Natural History, Mr. Steve Steinhauer, AME, who identified a picture of *Damas clavus* for me, and Drs. Harry Evans and Chris Prior, who identified entomopathogenic fungi.

Don Sands nagged me into following the rule of the International Code of Zoological Nomenclature which states that when a species is placed in a genus other than that in which it was described, parentheses are placed around the original author's name which follows. I had not followed this rule, anticipating that an application to remove it would be successful, but this was not the case. I have therefore now used Beccaloni *et al.* (2004) to check

the original genus of all species names used and placed parentheses around author's names accordingly.

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