
The Skipper Butterflies (*Hesperiidae*) of Trinidad. Part 4: Pyrginae (second section)

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IN earlier parts of this series I have dealt with seven of the eight species of Pyrrhopyginae (Cock 1981c, but see also Cock 1984a) and the 12 species of Pyrginae belonging to Evans's (1952) genera group B (Cock 1984b). Here I cover the first 35 species of Evans's genera group C, leaving the remaining 16 or so species (*Astraptes*, *Calliades*, *Autochton*, *Cabares*) for a future contribution. The species covered here conveniently include all the tailed skippers from Trinidad, and a key is provided for these at the end of this part.

The recognition of the subfamily Pyrginae, its division into sections 1 and 2, and the division of section 1 into genera groups B, C and D was covered in Cock (1984b). It is sufficient here to repeat that group C is recognised by the third segments of the palpi being parallel in common with group D (Fig 1) and that the forewing veins 6 and 7 are approximate at their origin (Figs 2,3) whereas in group D veins 7 and 8 are approximate. Evans (1952) also states that for group C the wings are held erect in repose, but this is not the case in the genus *Polythrix* in the Trinidad fauna which hold their wings flat. Most species have a costal fold in the male, but this is not consistent in all genera and the presence or absence of this character is indicated in the species accounts below.

Most, but not all, of the larval foodplants of this group belonging to the family Leguminosae. All the young larvae of this group with which I am familiar use a similar type of leaf shelter (Fig. 4), described under *Epargyreus* and subsequently referred to under that name.

In my systematic list of Trinidad Hesperidae (Cock 1982), I recorded 273 species from the island. Since then I have added six species and deleted one (Cock 1984a). In this part I add three species to the Trinidad list (*Epargyreus nutra*, *Urbanus pronta* and *Urbanus esma*) and delete one (*Codatractus melon*) bringing the total for the island to 280, which will doubtless be added to in the future.

Several new abbreviations are introduced in this part as follows:

UPF / UPH = uppersurface of forewing / hindwing
UNF / UNH = undersurface of forewing / hindwing
UPS / UNS = uppersurface / undersurface
F / H = forewing / hindwing

I would like to thank Drs. R.I. Vane-Wright and P.M. Ackery for their help and co-operation at the British Museum (Natural History) (referred to as BMNH in this work), and Dr. G. C. McGavin who arranged the loan of material from the University Museum, Oxford.

20. *Proteides mercurius mercurius* Fabricius 1787

Plate 8

This skipper occurs in the literature as *P. idas* Cramer, and was added to the Trinidad list under this name by Barcant (1970, list no. 604). The nominate subspecies occurs from Mexico to Argentina (Evans 1952) and six subspecies have been described from the Caribbean. Of the two specimens from Tobago in the BMNH, one, a male bequeathed by W.H. Sheldon, is *P. m. mercurius*, and the other a female collected in 1914 by Dr. F.W. Jackson, belongs to the subspecies *P. m. angasi* Godman & Salvin. This subspecies is only otherwise known from Dominica and St Lucia, so the record is unexpected. Furthermore I recently had the opportunity to examine some of the Hesperidae of the University Museum, Oxford, which includes part of Dr. Jackson's collection; amongst this material is a series of specimens labelled "xii.1913 to end iv 1914, Dry S., TRINIDAD, Tobago or Dominica, F W Jackson" which included two *P. mercurius angasi*, two *Epargyreus zestos* Geyer (see next species below) and a selection of other species and subspecies which in combination could have come from only St Lucia or Dominica. In view of their labels I conclude that all came from Dominica. Because of this group of specimens I also conclude that Jackson's specimens of *P. m. angasi* and *E. zestos* labelled Tobago in the BMNH also came from Dominica and Cock (1982) should be amended accordingly.

Ground colour dark brown; white hyaline spots F. Basal quarter UPF and UPH, thorax and head above orange brown; UNS head and anterior femora pale brown, almost white. UNH mottled with white – strongest on disc. Fringe pale except dark at the ends of the veins. The mottled hindwing underside distinguishes *P. mercurius* from the superficially similar large females of the genus *Epargyreus* considered below. *P. m. angasi* differs from *P. m. mercurius* principally in that the under-surface markings are dull reddish brown where they are white

FIGURE LEGENDS

- Fig 1 Dorsal view, head of *Chioides catillus*
Fig 2 Venation, *Urbanus pronta* ♂
Fig 3 F venation *Proteides mercurius* ♂
Fig 4 Schematic drawing of larval shelters of *Epargyreus* type.

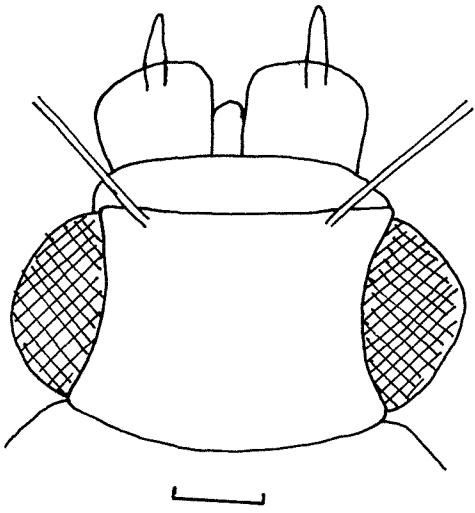


Fig. 1

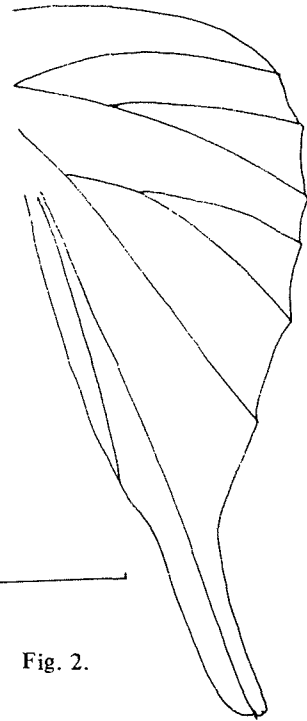
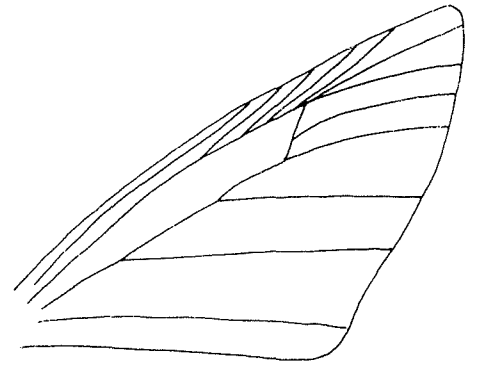


Fig. 2.

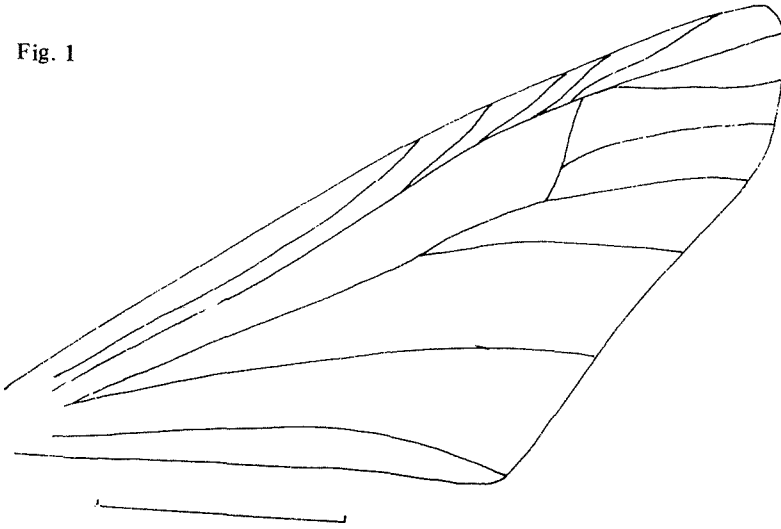


Fig. 3

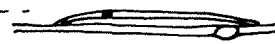
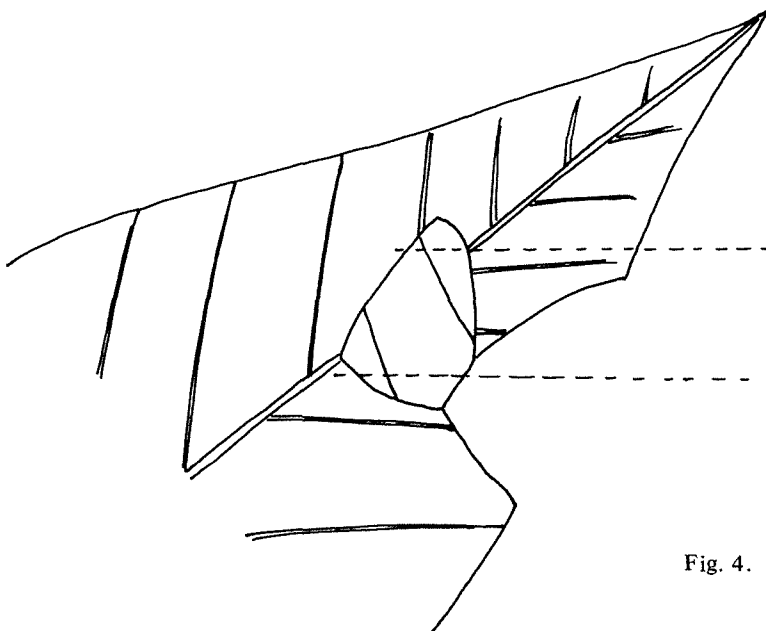


Fig. 4.

in the nominate subspecies. Illustrations in Barcant (1970, Fig 4, No. 6, as *Epargyreus exadeus*), Riley (1975, Plate 21, No. 3), Lewis (1973, Plate 85, No. 35) etc. No costal fold; F ♀ 36 mm.

This large species is always scarce in Trinidad, but probably occurs throughout the island. I have caught specimens at St. Augustine (at flowering legume tree, x. 1979) and Morne Bleu (at light, vii. 1978). The life history is unknown in Trinidad, but Moss (1949) describes the larva in Brazil as very dark olive green with a vermilion lateral stripe, a dark dorsal line, and a large dark brown head with red eye spots. Moss records finding the large larvae on *Muelleria moniliformis* L. f. (Leguminosae) in shelters of cut leaves, which rapidly dry up and discolour. Riley (1975) also records *Derris elliptica*, *Cassia* spp. and other legume trees as hostplants. *M. moniliformis* and the cassia trees are likely hosts for this species in Trinidad.

Epargyreus

This genus is probably the most difficult taxonomically of the family in Trinidad. The genitalia are similar and in at least one species variable, while the wing markings are very similar. Here I follow Evans (1952) and recognise four distinct species from Trinidad although I may have two or three more represented by single female specimens. Until the necessary breeding experiments are done, this genus is unlikely to be satisfactorily resolved and the taxonomy liable to be changed. I hope to look more closely at this genus in the future and would welcome the opportunity to examine more specimens from Trinidad.

The larva of *E. exadeus* and what I believe to be the larva of *E. socus* are described below under each species, but I have also found a larva which I consider to belong to the genus *Epargyreus* on a *Dioclea* sp. (not *guianensis*) at Waller Field (xi. 1981). It was 1.5 cm long and was hidden in a shelter similar to that described for the young larvae of *E. socus* below. The head is black, shiny and slightly chordate, with a pair of small red eye-spots; prothorax black above and red below; mesothorax, metathorax and abdomen dark translucent shiny green with yellow markings — a thin dorso-lateral longitudinal stripe with narrow transverse lines above and a network of thin lines below, and a clear area just below the dorso-lateral line at the anterior of abdominal segments 1-8; abdominal segment 9 tinged orange; prolegs concolorous with body; thoracic legs pinkish red.

None of the *Epargyreus* spp. larvae which I have tried to rear really settled down in captivity and most died before pupation. I would encourage collectors to try and relate larvae of this genus to their foodplants and to the adults and hopefully this will throw light on the relationships of the four or more very similar *Epargyreus* spp. from Trinidad considered below.

[*Epargyreus zestos* Geyer 1832]

Plate 7

This species has never been recorded from Trinidad, but there is a specimen in the BMNH from Tobago (coll. Dr. F.W. Jackson in 1914). The species has a curious distribution, being found from Florida through the Bahamas and Lesser Antilles to Barbados and Tobago (Evans 1952); five specimens from Honduras indicate it also occurs in Central America. In light of the material in the University Museum, Oxford, discussed under *Proteides mercurius* above, I conclude that Jackson's specimen is mis-labelled and this species does not occur in Trinidad or Tobago.

It is a dark brown species with yellow hyaline spots; the hindwing underside has a weak brown bar and no white markings which distinguishes it from other members of the genus from Trinidad. Illustration in Riley (1975, Plate 21, No. 5). The life history is unknown.

21. *Epargyreus socus chota* Evans 1952

Plate 1-4

This species is variable in both appearance and genitalia through its range (Mexico to Argentina) and the status of some of the six subspecies recognised by Evans (1952) is likely to change. I suspect that the series from Trinidad which I am treating under this name may contain more than one species. The type locality for the subspecies is Trinidad and its range extends only to Eastern Venezuela (Evans 1952).

Ground colour dark brown with an overlay of dark rufous hairs at the base UPF, over much of UPH, and on the body; hyaline spots tinged yellow, particularly those of the cell, space 12 and costa. UNS has silvery white markings on UNH, and a dusting of white scales centrally on the margin of both wings; UNS labial palps and head pale brown. Evans (1952, p. 48) gives one of the diagnostic features of the subspecies as "... spot in space 2 completely overlaps the cell spot"; in the series before me it would be more accurate to say that the cell spot is at least half overlapped by the spot in space 2. The illustration of this species in Lewis (1973, Plate 82, No. 48) shows a male of a subspecies other than *chota*, but does indicate the colouring of the species. Costal fold; F ♂ 26-28mm; ♀ 30 mm.

This is the commonest species of the genus in Trinidad, and can be obtained occasionally at flowers and the males on hill-tops. I have seen specimens from Chacachacare Island (Cock 1984a), Scotland Bay, Cumberland Hill, Mt. Tabor, Morne Bleu, Brigand Hill, Moreau and Parrylands, from all times of the year.

I am not aware that the biology of this species has been recorded. I have observed and caught a female ovipositing on *Dioclea guianensis* Benth. (iii. 1980, Parrylands) and I have found larvae of an *Epargyreus* sp. on this vine which I believe were of this species but was unable to rear them. Three larvae were found on *D. guianensis* on the ridge to the North of the transmitting station on Cumberland Hill (x. 1980). The first larval shelter, found adjacent to the egg, is formed by cutting a flap from the edge of the leaf (Fig 4); the basal cut is across one of the leaf-veins resulting in the distal end of the flap being flattened on the leaf, and the basal end being raised to an angular peak. The mature larva shelters between two leaves spun together and has a reddish brown head, slightly chordate with red eye-spots; prothorax concolorous with head; mesothorax, metathorax and abdomen dark translucent green with a network of yellow lines giving a yellow green overall colour; spiracles inconspicuous, brown; a row of small, conspicuous, lateral, black spots above the spiracles on mesothorax, metathorax and abdominal segments 1-7; prolegs pale orange; thoracic legs red. The small larva lacks the red eye-spots on the head, which is darker in colour.

22. *Epargyreus exadeus exadeus* Gramer 1779

Plate 5-6

The nominate subspecies occurs throughout tropical South America but is scarce outside Colombia and Peru; a second subspecies *E. e. cruza* Evans occurs in Central America.

The colouring is similar to that of *E. socus chota*, but the hyaline spots are nearer white in colour than the yellow tinted ones of *E. socus*. The underside markings are variable and cannot be used to separate the two which can however be distinguished by the fact that the spot in space 2 broadly overlaps that of the cell. Costal fold, F ♂ 27 mm, ♀ 29 mm.

I have captured just two specimens of this species: both at flowers of *Austro eupatorium inulifolium* (L.) King & Robinson along the Textel Morne Blue Road at c. 2100 ft in the Northern Range (x. 1979). Three males in the BMNH collection were caught in "St. Ann's" (i-iii. 1932, A. Hall), "St. Georges" (x. 1891, C.W. Ellacombe) and in the "Northern Mountains" (xii. 1938 - i. 1939, A. Hall). I have reared one female of what I believe to be this species (xii. 1981, Curepe), but the specimen is small and the spot in space 2 does not overlap the cell spot, yet the wing proportions and colouring match those of this species. The hostplant was a Caesalpiniaceae tree, perhaps a *Cassia* sp., with multipinnate leaves whose leaflets measured about 3 cm. The larva had spun a pair of terminal leaflets together and its weight caused them to droop. The mature larva measures 3.5 cm; the head is black, rugose and slightly chordate in shape, covered in fine, short, white hairs and with a pair of red eye spots; prothorax black above and red below, with a black lateral spot; mesothorax, metathorax and abdomen dark translucent green with yellow markings — dorso-lateral and

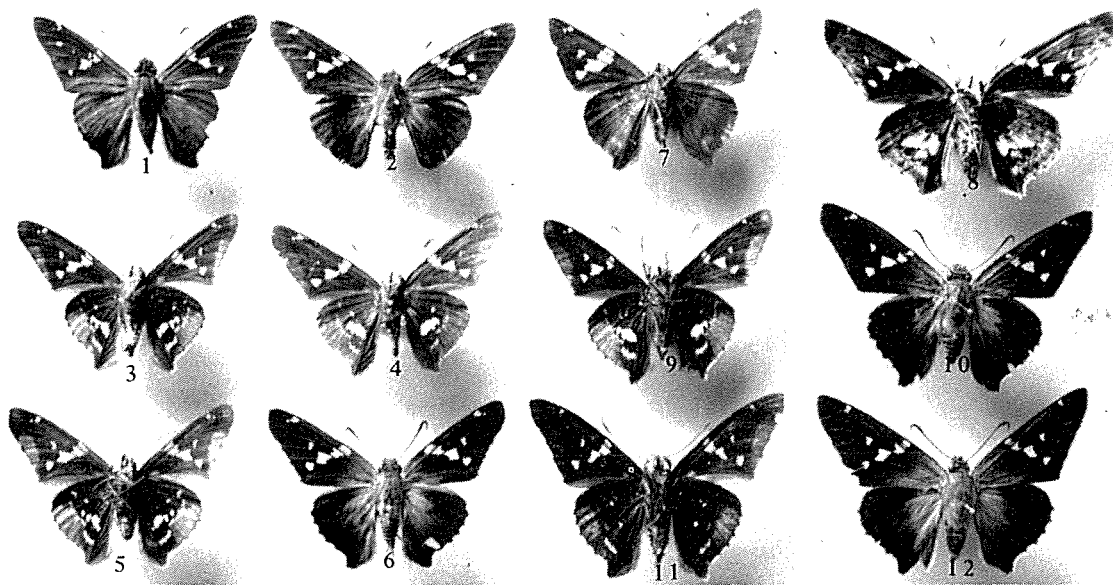
larva did not pupate until 25 days after it was collected, but did not grow much during this time and never really settled down in the rearing container; the adult emerged after 15 days. Moss (1949) describes and illustrates the larva from Brazil which he found on a "wild bean (*Phaseolus* sp.)" and a small forest tree doubtfully identified as *Lecythis paraensis* Hub. He describes the larva as "... a brilliant greenish yellow with a row of small black spots supporting the median line, and another nine oval spots, much larger, marking the sides. The second segment (i.e. prothorax) and the claspers are blood red. The head is large and bifurcated, dark brown and glossy and with big and prominent red eye-spots." Evans has confirmed Moss's identification on specimens in the BMNH, and these two descriptions are basically compatible.

22a. *Epargyreus nutra* Evans 1952

Plate 9-10

This species is described by Evans (1952) from Colombia and Venezuela, and this is the first record from Trinidad.

This species is similar in colour and markings to the last two, but the F hyaline spots are nearer yellow than white in colour; the spot in space 2 UPF does not overlap the cell spot and is nearly triangular in shape. Evans (1952) describes the UNS of the



Plates 1-12. 1, *Epargyreus socus chota* ♂ UPS (Brigand Hill, 17. iv. 1982, MJWC); 2, *E. socus chota* ♂ UNS (Brigand Hill, 21. ix. 1979, MJWC); 3, *E. socus chota* ♀ UPS (Chacachacare Island, 7. i. 1982, MJWC); 4, *E. socus chota* ♀ UNS (Parrylands, ovipositing on *Dioclea guianensis*, 26. iii. 1980, MJWC); 5, *E. exadeus exadeus* ♂ UNS (Arima-Blanchisseuse Textel Road, 5. x. 1979, MJWC); 6, *E. exadeus exadeus* ♀ UPS (Arima-Blanchisseuse Textel Road, 11.

ventro-lateral longitudinal stripes joined by irregular lines and markings, and a few fine transverse markings dorsally, especially on mesothorax and abdominal segment 7, while abdominal segments 8 and 9 are almost entirely yellow dorsally; above the small black spiracles a yellow edged black spot on the mesothorax, metathorax and each of abdominal segments 1 - 8; prolegs and thoracic legs are red. The pupa, formed in the larval shelter, is brown, lightly speckled, with a darker thorax; the proboscis sheath projects 3 mm beyond the wing cases. The

x. 1979, MJWC); 7, *E. zestos* ♀ UNS (Tobago, FW Jackson, specimen in BMNH); 8, *Proteides mercurius mercurius* ♀ UNS (Morne Bleu, at light, 26. vii. 1978, MJWC); 9, *Epargyreus nutra* ♂ UNS (Lalaja Ridge, in cop., 28. v. 1979, MJWC); 10, *E. nutra* ♀ UPS (Lalaja Ridge, in cop., 26. vii. 1978, MJWC); 11, *E. clavicornis tenda* ♂ UNS (Parrylands, 29. i. 1980, JO Boos); 12, *E. clavicornis tenda* ♀ UPS (Parrylands, ovipositing on *Dioclea guianensis*, 26. iii. 1980, MJWC).

palpi as chestnut brown, but although the UNS of the palpi of my male specimen are a light chestnut brown (which should help distinguish this species from others of the genus), in the female they are nearly white. Compared with the last two species, the female is larger, has more pointed wings and the UPS wing bases are a brighter orange colour such that above this species resembles *Proteides mercurius*. Costal fold; F ♂ 29mm, ♀ 34 mm.

A rare species in Trinidad; I have taken just one pair in copulo on Lalaja ridge (v. 1979) and I know of no other records.

Life history and foodplant unknown.

23. *Epargyreus clavicornis tenda* Evans 1955
Plate 11-12

Although Evans (1952) treated this species as *E. c. orizaba* Scudder, in the corrections (Evans 1955, p. 476) the type of *orizaba* is reported to be one of the subspecies of *E. socus*, and the replacement name *tenda* put forward for this subspecies. *E. clavicornis* is divided into two principal subspecies: *tenda* from Central America and northern South America and *clavicornis* from the rest of South America to Paraguay. Cock (1982) recorded this species as new to Trinidad.

The colouring is similar to that of the last three, but the ground colour is a slightly darker brown. The reduced silver markings on the underside of the hindwing, particularly in the male, are distinctive. The female is very similar to that of *E. nutra*, and perhaps not reliably identifiable from illustrations. Costal fold; F ♂ 32 mm; ♀ 35 mm.

A scarce species in Trinidad; Cock (1982) lists six captures, half of which are from Parrylands and there are two more females in the University Museum, Oxford, collected by R.W. Farmborough (Palo Seco-Siparia Road, i. 1917; Fyzabad, i. 1918). I observed and caught a female ovipositing on *Dioclea guianensis*, but no larvae were reared. Beyond this observation, the life history is unknown.

24. *Polygonus leo leo* Gmelin 1790
Plate 13

This is a widespread species occurring from Florida to Argentina, but generally not common. Evans (1952) recognises three further subspecies from the Caribbean.

Ground colour brown; white hyaline spots. UNH brown, basal area and two discal bands pale mauve; a black spot at the base of space 7. The body is brown and the head below pale brown. Illustrations in Lewis (1973, Plate 85, No. 21; as *P. lividus* Hubner), Riley (1975, Plate 21, No. 8; subsp. *lividus* from Haiti) and Brown & Heineman (1972, Plate IX, No. 4; subsp. *hagar* from Jamaica). No costal fold; F ♂ 20 mm; Evans (1952, p. 53) gives 25mm; Trinidad specimens may be smaller than normal.

The single specimen of this species from Trinidad in the BMNH is from St. Anns (i-iii. 1932, A. Hall), while the only two specimens I have seen were caught along the lower part of the track to Morne Catharine (v. 1982). Apparently scarce in the island, it may prove to be restricted to the north-west. Wolcott (1951) records the foodplants of the subspecies *P. leo lividus* in Puerto Rico as *Lonchocarpus* sp., *Derris elliptica* and *Piscidia piscipula* (all Leguminosae) and describes the larva as having a flat chordate head, yellow with a large dark spot on each side of the dorsal cleft. The head of the earlier instars Wolcott records as black. Riley (1975) suggests the body is green with yellow markings. Other recorded foodplants include *Piscidia piscipula* and Jamaica Dogwood, *P. erythrina*, in Florida, and *Lonchocarpus* sp. in Cuba (Brown & Heineman 1972). Williams (1931) considers three species of *Lonchocarpus* to be indigenous in Trinidad, but none of *Piscidia* (= *Ichthyomethia*).

25. *Polygonus manueli manueli* Bell & Comstock 1948
Plate 14-15

This species has a similar distribution to the last, but is rather

more common. There is one other subspecies, *punctus* Bell & Comstock, from the Lesser Antilles. Kaye (1940) and hence Barcant (1970) refer to this species as *Acolastus amyntas* Fabricius, a synonym of *P. leo*.

Ground colour dark brown; white hyaline spots; strong blue flush UPF base. UNH ground colour restricted to two discal and one marginal bands; tornus very dark brown; space 1A pale brown; space 1B brassy; space 1C and the margin yellow brown; the rest of UNH purplish mauve; the black spot at the base of space 7 much reduced compared to *P. leo*. UNF dark brown on disc; blue flush at end cell; margin and apical quarter with purple flush; marginal and submarginal ochreous bands. The UNH colouring and the size of the black spot at the base of space 7 should serve to distinguish the two species of *Polygonus*. Riley (1975, Plate 21, No. 9) illustrates the subspecies *punctus* from Dominica. No costal fold; F ♂ 22-23mm; ♀ 23mm.

Of the 19 specimens of this species from Trinidad in the BMNH, eight are from St. Anns, four from Arima, one from the Northern Range and the remainder do not specify a locality. The three specimens which I have caught are also from the Northern Range (Morne Catharine, St. Anns Peak, Mt. Tabor), so there are no records from Central or South Trinidad for this species. It can be found on shady paths, similar to those used by *Phanus marshallii* Kirby (Cock 1984b), but is considerably less common. It rests under leaves with its wings closed. The life history in Trinidad is unknown, but in Brazil Moss (1949) records the food plants as *Muellera moniliformis* (cf. *Proteides mercurius*). He describes the full grown larva as "... half green, half yellow, the transparency of the skin giving it a patchy look. The dorsal area is enclosed by light stripes. The head is rather flat, light red and glossy, darker behind and with black eye-spots in the upper portion."

26. *Chioides catillus catillus* Cramer 1779
Plate 22

This widespread and common species is recorded from the southern USA to Argentina. It is variable over its range, and Evans (1952) recognises eight subspecies. The nominate subspecies occurs throughout South America (to Argentina) except Ecuador and the north of Peru. Although *Chioides zilpa zilpa* Butler occurs in Venezuela, I believe Kaye's record of this species from Trinidad (Kaye 1921, No. 454) to be in error. It is based on a capture at Morne Diable by Sir. N. Lamont, but there are no specimens in Lamont's collection housed at the University of the West Indies, and I have seen no specimens from Trinidad.

Ground colour brown; yellow hyaline spots; UNH mottled brown; UNF with dark brown triangle on costa at apex adjoining the apical spots, which is distinctive for the genus and will serve to identify *C. catillus* from the other tailed skippers in Trinidad. The female has larger hyaline spots than the male, but otherwise the sexes are similar. Illustrations in Barcant (1970, p. 86, No. 3; ♀), Riley (1975, Plate 21, No. 10; ♂ subsp. *churchi* Bell & Comstock from Jamaica), Lewis (1972, Plate 81, No. 38) and Brown & Heineman (1972, Plate IX, No. 8; ♂ subsp. *churchi* from Jamaica). Weak costal fold; tail ♂ 15-20mm; ♀ 21-22mm; F ♂ 26-27mm; ♀ 27 mm.

This species occurs throughout Trinidad and Tobago at all times of the year. Usual habitats include gardens, rough ground and roadsides, and the adults feed freely at flowers such as *Eupatorium* (s.l.) spp. and *Bidens pilosa* L. . Like most of the group its resting position is with the wings closed. The food-

plant for the larva in Trinidad is kudzu, *Pueraria phaseoloides* (Roxb.) Benth., and perhaps other legume vines. The eggs are laid singly in the middle of the leaf lamina on the uppersurface or undersurface. The young larva hides in leaf shelters similar to those described for *Epargyreus* spp. The mature larva has a slightly indented vertex to its large, rounded, dark brown head; on the face a pair of large black eye-spots with an orange patch below each. Prothorax brown with a shiny black, narrow dorsal plate. Mesothorax, metathorax and abdomen dark green speckled with yellow dorsally and white laterally; a darkened dorsal line and a narrow orange dorso-lateral one, widened at abdominal segment 8. Legs of prothorax black, remaining thoracic legs and prolegs orange brown. Small larvae have black heads and medium sized ones develop orange eye-spots. A first instar collected 17 February 1982 emerged as an adult on 9 April. Riley (1975) describes the larva of this species from Mexico as having the head with the vertex scarlet, merging into red below, with a Y shaped black, frontal mark and feeding on *Tephrosia* sp.

27. *Aguna asander asander* Hewitson 1867
Plate 18

Apart from subspecies restricted to Jamaica and Haiti, this species is constant throughout its range from Mexico to Argentina.

The uppersurface resembles that of an *Epargyreus* sp.: ground colour brown; hyaline spots yellow. UNS brown with a white band running from mid costa UNH to near termen, clearly defined on basal side, but indistinct on distal side. Body brown except anterior femora and head below which are near white. A distinct species owing to the broad white band UNH. Illustrations in Lewis (1972, Plate 80, No. 13; UNS), Riley (1975, Plate 21, No. 13; ♂ subsp. *haitiensis* Mabille & Boulet) and Brown & Heineman (1972, Plate IX, No. 5; subsp. *jasper* Evans). Costal fold; F ♂ 26 mm.

Although Kaye (1921) reports this species as being "fairly common", I have seen only three specimens from the island: two collected by Sir N. Lamont at Palmiste and one I caught at flowers of *Chromolaena odorata* (L.) King & Robinson (Compositae) in Parrylands (i. 1981). The life history is unknown, but the foodplant is thought to be a species of Leguminosae.

28. *Aguna aurunce* Hewitson 1867
Plate 16-17

Aguna aurunce ranges from Guatemala to the Amazons as a monotypic species. Kaye (1921, 1940) does not include this species, but he does include the similar species *A. coelus* (below) thus: "Two specimens in the National Collection taken by W.E. Broadway. A single specimen from St Ann's Valley (W.J. Kaye.) Chancellor Road not common Nov. 1920 (W.J.K.)" (Kaye 1921, p. 123). Broadway's specimens in the BMNH are *A. aurunce*, so clearly the two species were mixed together by Kaye.

Ground colour brown; hyaline spots yellowish; UPF base, UPH basal half to termen, UPS thorax and head with overlay of metallic green hairs (scales on body). UNH with white band from 2/3 on costa to vein 1B (1mm in ♂, 2 mm in ♀); an inconspicuous white streak in space 1A; basal 1/4 UNH and extreme base UNF flushed green. Thorax, abdomen below pale brown; head below white. Costal fold; tail ♂ 3 mm; ♀ 2.5 mm; F ♂ 24mm; ♀ 24 mm.

I have specimens from San Miguel Valley and Parrylands and there are specimens from St Anns in the BMNH. This species appears to be associated with at least semi-natural forest; one specimen was taken at flowers of *Chromolaena odorata*. I consider it an uncommon species, although the 11 specimens in the BMNH suggest it may have been more common in the past. Moss (1949) records *Tabebuia pyramidata* DC (Bignoniaceae) as the foodplant of *A. aurunce*. It is possible that this record refers to *A. coelus* below, as Moss's series in the BMNH was mixed (W.H. Evans footnote in Moss (1949) p. 42). The larva in Brazil is described by Moss as having a red chordate head with black eye-spots; above the level of the spiracles yellow with alternate thin and thick black bands (one of each segment); below the spiracles, legs and body extremities red; pupa bone coloured with lateral streaks.

29. *Aguna coelus* Stoll 1781
Plate 19-20

As for the last, this species is monotypic and can be found from Guatemala to the Amazons. The colouring is also similar to that of *A. aurunce*. Costal fold; UNH white band width ♂ 0.75 mm, ♀ 1.75 mm; F ♂ 20-21 mm, ♀ 22-23 mm.

This species is commoner in the south of Trinidad than in the north. I have records of four specimens from the north (Arima Valley, Guanapo Valley, Blanchisseuse - Paria Bay track) and 11 from the south (Moreau, Rock, Siparia, Parrylands, Trinity Hills). This may explain why *A. coelus* is less well represented in the BMNH (3 specimens) than *A. aurunce* (11 specimens) as relatively few of the BMNH collection from Trinidad are from the south. My captures are principally from the dry season (one in September, one in October, nine in December to February, and one in April). Five of my captures were at flowers of *Chromolaena odorata*. I would regard this as a moderately common species. Life history and foodplant unknown.

30. *Typhedanus undulatus* Hewitson 1867
Plate 23

This species has a wide range, from Mexico to Argentina, with no subspecies recognised. Kaye (1921) records it from Trinidad on the basis of a record by Crowfoot (1893). Sheldon (1938) records the capture of a specimen at Scarborough, Tobago, but there are no specimens from Tobago in the BMNH (to which most or all Sheldon's Tobago material was bequeathed). I can confirm this to be a Tobago species, having captured a specimen at Crown Point (ix.1982).

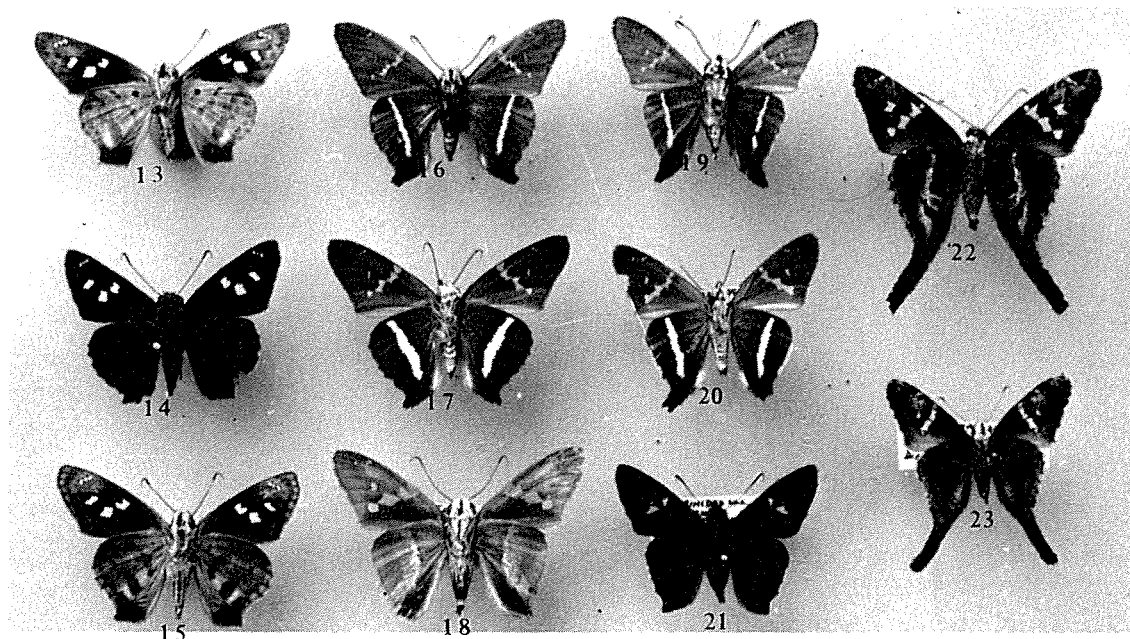
A small undistinguished tailed skipper, ground colour brown; white hyaline spots. UNF brown with pale brown patch over end cell and margin; UNH with dark markings and distinctive striations on the unmarked areas. The markings, particularly the striations, of the UNH and the alignment of the spots of the cell and space 2 to form a bar are distinctive for this species. Illustration in Lewis (1973, Plate 87, No. 47). No costal fold; tail ♂ 12 mm; F ♀ 20 mm.

Apparently a scarce species in Trinidad, *T. undulatus* is probably easily overlooked. It is attracted to flowers (e.g. *Chromolaena odorata*), but can probably be obtained most easily around the foodplant or by rearing the larva. I have seen specimens from St Augustine (larvae coll. xi.1981), Piarco (i.1982) and Siparia (xii. 1981; J. & F. Preston). The resting position is with the wings closed. The larval foodplant of *T. undulatus* in Trinidad is *Cassia* (*Senna*) *obtusifolia* L. (= *C. tora* auct. nec L.) (Caesalpinaceae) (Cock & Evans 1984), although it may also use

C. alata L., *C. reticulata* or *C. occidentalis* L. which Moss (1949) records as less preferred foodplants. The mature larva forms a shelter by spinning together the terminal leaflets which, because of the larva's weight, hang down and are quite conspicuous. The head is black, chordate, rugose and shiny; thorax and abdomen dull, translucent green; spiracles yellow, surrounded by yellow-orange joining up to form a lateral stripe; legs concolorous. The pupa is stubby; pale brown with dark speckles and prominent black spiracles. Moss (1949) describes the larva from Brazil as having a dark brown head with yellow eye-spots.

weakly differentiated dark band, cell spot and dark tails. The eight spots referred to in the name assumeably include those of space 12 and the costa which are joined together. It can be recognised by the arrangement of the UPF spots. Illustration in Riley (1975, Plate 21, No. 16). Costal fold; tail ♂ 7 mm, ♀ 9 mm; F ♂ 20 mm, ♀ 23 mm.

† This is not a common species in Trinidad or Tobago. There are two males from Tobago in the BMNH (one from Roxborough), but none from Trinidad. I have seen only three female specimens from Trinidad: two taken at flowers of black sage,



Plates 13-23. 13, *Polygonus leo leo* ♀ UNS (St Anns, i.iii.1932, A Hall, specimen in BMNH); 14, *P. manueli manueli* ♂ UPS (Mt. Tabor, 25.i.1981, MJWC); 15, *P. manueli manueli* ♀ UNS (Morne Catharine, 18.ix.1982, MJWC); 16, *Aguna aurunce* ♂ UNS (St. Georges, x. 1981, CW Ellacombe, specimen in BMNH); 17, *A. aurunce* ♀ UNS (San Miguel Valley, 29. vii. 1978, MJWC); 18, *A. asander* ♂ UNS (Parrylands, 13.i.1981, MJWC); 19, *A. coelus* ♂

UNS (Parrylands, 2.ii.1980, MJWC); 20, *A. coelus* ♀ UNS (Blanchisseuse-Paria Bay track, 22.i.1980, MJWC); 21, *Chrysoplectrum perniciosus perniciosus* ♂ UPS (Morne Catharine, 28.i.1980, MJWC); 22, *Chioides catillus catillus* ♂ UNS (Morne Catharine, 21.v.1982, MJWC); 23, *Typhedanus undulatus* ♂ UNS (Piarco, 16.i.1982, MJWC).

31. *Polythrix octomaculata octomaculata* Sepp 1848 Plate 24

This and the following four species belong to the quite distinctive genus *Polythrix*. They differ from the other tailed skippers in their larvae and by the fact that the wings are held flat at rest, enabling the genus to be recognised immediately in the field. *P. octomaculata* is a widespread species ranging from Mexico to Argentina the subspecies, *decussata* Ménétriés, is restricted to Haiti.

Ground colour brown, slightly tawny; hyaline spots yellow tinted; UPF two indistinct dark spots in space 1B; UNH with *Cordia curassavica* (Jacq.) R. & S. (Boraginaceae) in Nariva Swamp (Cock 1982a) and one from Piarco (at light, vii.1979). Moss (1949) records the larvae of this species feeding on several Leguminosae including *Muelleria moniliformis*: 'the larvae have extremely flat heart-shaped heads. They are nearly white and decorated with numerous tiny longitudinal streaks of grey, the dorsal area being scarcely divided from the remainder by a faint line. The heads are Naples yellow with looplike pattern in pale mauve or light red followed by a dark line. The pupae are light

bone-coloured with a broken side-line of reddish streaks and there are angular projections near the head". Steinhauser (1975) records this species feeding on *Myroxylon balsamum* v. *pereirae* (Royle) Baill. (as *Toluifera perreirae*) (Leguminosae) in El Salvador.

32. *Polythrix roma* Evans 1952 Plate 25

This species is quite restricted in its distribution, being found only from the Amazon to Venezuela. It was described from Para and the holotype is a specimen collected by A. Miles Moss whose rearing records are unique for South American Hesperidae. Earlier works, e.g. Kaye (1921, No. 455), Moss (1949) refer to this species as *P. asine* Hewitson, a Central American species.

Ground colour brown, paler on disc UPH, dorsum UNF and UNH; hyaline spots white. disc 1 UPF with a dark spot towards the base and two spots (the upper slightly hyaline, the lower dark) in space 1B under the spot in space 2; the inner margins of the spots in spaces 2 and 3 point the costa between the costal and apical spots, rather than at the apical spots as

stated by Evans (1952, p. 68). Also Evans states that there are three apical spots but in the two female specimens before me there is an arc of 6 spots in spaces 4 to 9. The BMNH series shows this to be variable, ranging from the condition in some Amazon specimens with dark spots in spaces 4 and 5 and none in space 9 to the extreme shown by the Trinidad females. UPH and UNH with two macular dark bands, the outer edged with pale brown in spaces 1C and 2 UNH; tails dark. *Polythrix roma* can be identified in Trinidad by the arrangement of the F spots. Costal fold; tail ♂ 7 mm, ♀ 12 mm; F ♂ 18 mm, ♀ 20-21 mm.

This is another scarce species in Trinidad. There are two males in the BMNH and I have caught two females (viii.1980; ix.1982) and been given a third (i.1979, W. de Voogd) from Curepe. There is a fourth in Sir Norman Lamont's collection from Palmiste (iii.1930), while Kaye (1921) records two more taken at Palmiste by Lamont. Moss (1949) states that this species feeds on the same foodplants as *P. octomaculata*, and the larva can only be distinguished from that of *P. octomaculata* by a pair of eye-spots on the head.

33. *Polythrix caunus* Herrich-Schaffer 1869 Plate 26

There are no recognised subspecies of *P. caunus* which is found from Mexico to Paraguay but is not common in collections. Kaye does not record this species from Trinidad (Kaye 1921, 1940), but doubtless he confused it with the next, *P. auginus*, as A. Hall took both in St. Ann's Valley (i-iii.1932) and Kaye records these specimens as *P. auginus*.

Ground colour dark brown; hyaline spots white; basal 1/3 UPF and basal 1/2 to dorsum UPH with paler brown hairs with a slight metallic green tint; similar green tint UNS even less marked; head above green, below white; thorax and abdomen above ground colour overlaid with metallic green hairs; thorax below with mixed green and brown hairs; abdomen below pale brown. UNH with dark indistinct end of cell spot and macular submarginal band; basal 1/3 of spaces 1B and 1C bare (and hence pale) associated with hair tuft on vein 1B in ♂; white spot at 2/3 on vein 1B; tails dark, almost black at tip. Close to the next species under which differences are considered. Costal fold; hair tuft vein 1B UNH in ♂; tail ♂ 7-9 mm, ♀ 13 mm; F ♂ 19 mm, ♀ 20 mm.

This species is widespread but not common in forested situations in Trinidad to at least 2,000 ft. It is my impression that males defend territories which may be sunlit patches in the forest (Nariva Swamp, Andrew's Trace, Las Lappas Trace) or forested hill tops (Mt. Tabor). I have seen no specimens at flowers, and caught only one female for six males. Life history and foodplant apparently unknown.

34. *Polythrix auginus* Hewitson 1867 Plate 27

This species is closely related to the last, but has a narrower range (Nicaragua to South Brazil) and is, if anything, less common through this range. Kaye (1940) confused this species with *P. caunus* and both occur in Trinidad.

P. auginus is close to *P. caunus* in colour and markings, but differs as follows: UNF base of costa strongly green; green at base UNH stronger; UNH uniform pale brown with broad dark brown margin and tails; pale area at base of spaces 1B and 1C less pronounced; white bar across space 2 at 2/3; *P. caunus*

usually has four apical spots, while *P. auginus* has three, but this is an unreliable character as I have a ♀ *P. caunus* before me with three apical spots. The best characters for distinguishing the two species are the white bar in space 2 of *P. auginus* which is reduced to a spot on vein 1B for *P. caunus* and the uniform disc UNH of *P. auginus*, as opposed to the end of cell spot and macular submarginal band of *P. caunus*. Illustration in Lewis (1973, Plate 85, No. 24; UPS). Costal fold; hair tuft vein 1B UNH in ♂; tail ♂ 13 mm; F ♂ 19 mm, ♀ 20 mm.

This species is scarcer than the last, and the few records of which I am aware are from the Northern Range. In view of my capture of a male on the summit of El Tucuche (vi.1979) it is possible that they defend hilltop territories; I have caught only one female and that was in secondary forest at about 1,000 ft on Mt. Tabor (i.1982). As with the last, I have not seen this species at flowers and the life history and foodplant are unknown.

35. *Polythrix metallescens* Mabilie 1888 Plate 28

This species is found from Honduras to the Amazons, and is scarce in collections. Above, it resembles *P. caunus* and *P. auginus* (above) in colouring, although the wing shape is different; labial palps below green, otherwise body as *P. caunus*; UNH plain brown with a conspicuous white band from vein 1B to 2/3 on vein 6. Costal fold; conspicuous brown hair tuft from near base vein 1B UNF in ♂; tail ♂ 11 mm; F ♀ 22 mm.

This is a rare species in Trinidad. Kaye (1940) lists a capture in Santa Cruz Valley (iii.1929, Huntingdon); there is a male in the BMNH labelled "Trinidad / A.G.B. Russell" and I have captured a female in Parrylands (ix.1981). Life history described by Moss (1949) as similar to that of *P. octomaculatus*, utilizing the same foodplants and in addition *Lonchocarpus* sp. and *Machaerium floribundum* Benth.

36. *Chrysoplectrum perniciosus perniciosus* Herrich-Schaffer 1869 Plate 21

The nominate subspecies *perniciosus* occurs from Panama to south Brazil, and the subspecies *epicincia* Butler & Druce is found in Central America. Kaye (1940, p. 566) records this species from Trinidad on the basis of a specimen collected near Arima (i-iii.1932, A. Hall), but the specimen is not in the BMNH. Recent captures confirm this as a Trinidad species.

Ground colour very dark brown; hyaline spots white; the male to a slight degree, and the female to a negligible degree, have a green metallic tint to the UPS and UNS, which is only visible at certain angles, otherwise unmarked except for a narrow white band UNH near margin in spaces 1C and 2. The males have a curious bronze comb-like double row of short spines on the hind tarsi which is distinctive for the genus, and from which it derives its name. There is some variation in the extent of the hyaline markings: one male before me has reduced markings with no spot in space 1B and only a dot in space 3; the other has the spot in space 3 well developed and a dot in space 1B, while the female has the spot in space 1B well developed. A distinctive species owing to the markings (or lack of them) and the comb

on the hind femora of the male. Costal fold; F ♂ 20 mm; ♀ 21 mm.

Generally scarce in Trinidad. I have taken three males on Morne Catharine at c. 1,500 ft., and a female at West Moreau in the south of Trinidad; S. Alston-Smith has taken it on the Arima-Blanchisseuse Road. The males defend territories of sunlit clearings in the forest, usually returning to a favourite perch after seeing off intruders and are wary and difficult to catch. They rest in sunshine with their wings spread or partially spread. S. Alston-Smith has reared this species in Trinidad.

37. *Codotractus carlos arguta* Evans 1952
Plate 29

Evans (1952) described this species, recognising three subspecies: *carlos* Evans from Mexico to Colombia, *rowena* Evans from Colombia and Venezuela, and *arguta* restricted to Trinidad.

Ground colour brown; hyaline spots yellow. UNF end of cell, base of spaces 4 and 5 and UNH ground colour pale mauve brown. UNH with three dark brown bands brown margin and white bar in space 1C between outer band and margin. Distinguished from the rather similar *Urbanus dorantes* by the more contrasting UNH markings, the white bar UNH and the presence of a hyaline spot in space 5 UPF. No costal fold; F ♂ 22 mm, ♀ 25 mm.

The type series of this species in the BMNH: 2 ♂, 2 ♀ Northern Mts. xii. 1938-i.1939, A. Hall and a ♂ from Caparo Collected by Dr. Rendall. As this species closely resembles *U. dorantes*, I (and probably other collectors) have overlooked it. Certainly while preparing this account, I was pleasantly surprised to pick out a previously unrecognised female *C. c. arguta* from amongst my series of *U. dorantes* (vi.1979, Brigand Hill). Specimens which appear to be *U. dorantes* but are taken in forest situations should be closely examined. I do not know the resting position of this species, but it probably rests with its wings above its head, as does *U. dorantes*. Life history and foodplant unknown.

[38. *Codotractus melon* Godman & Salvin 1893] deleted
Plate 31

Apart from a single specimen labelled "Trinidad" in the BMNH, this species is restricted to Central America (Mexico to Nicaragua). I strongly suspect this to be a mislabelled specimen and suggest *C. melon* be dropped from the Trinidad list.

39. *Urbanus proteus proteus* Linnaeus 1758
Plate 44-46

Evans (1952) recognises two subspecies of this common and widespread species: *proteus* which is found from the southern U.S.A. to Argentina, including Trinidad and Tobago, and *domingo* Scudder which is darker with reduced markings and found throughout the Caribbean to Grenada.

The colouring of this and the next six species is basically similar: ground colour brown; base UPF, base and disc UPH and body UPS with overlay of metallic green hairs; hyaline spots white; UNH with two discal bands, 2 spots in space 7, the tails and to some degree the termen dark on pale brown ground colour. The identification of these seven species will cause some problems, and the reader is referred to the key at the end of this section. Steinhauser (1981) gives a detailed treatment of this part of the genus. The distinguishing features of *U. proteus*

within the Trinidad fauna are: spots in spaces 4 and 5 UPF (more developed in ♀); UNH discal bands continuous, the outer reaching the apex; UNH margin dark to space 7. Illustrations in Lewis (1972, Plate 88, No. 5, ♂) and Riley (1975, Plate 21, No. 14); the illustration of this species in Barcant (1970, Fig. 4, No. 1) is not *U. proteus* ♂ as labelled, and although not adequate for reliable identification most closely resembles *U. esta* Evans (No. 41b below). Costal fold; tail ♂ 12 mm, ♀ 15 mm; F ♂ 23 mm, ♀ 25 mm.

This is a common and widespread species in Trinidad and Tobago, frequenting rough, open ground at all elevations. It is common at flowers and I have captured a male feeding at a fresh bird dropping (ix. 1979, Curepe). Although I have not reared this species I have found the larvae in *Epargyreus* type leaf shelters quite commonly on bodie beans at Aranguez and Macoya Gardens. It is of little importance as a pest, and is usually kept in check by parasitoids, of which *Trichogramma* sp(p). attacking the eggs and *Apanteles* sp. attacking the larvae are the most commonly mentioned. It probably uses a number of other legume vines as hostplants. In Puerto Rico Wolcott (1951) records it attacking beans, cowpeas, *Meibomia purpurea* and *Stigmatophyllum lingulatum*, and illustrates the adult, larva and pupa. Kendall (1976) records the larvae feeding on *Desmodium neomexicanum* Gray (Leguminosae) in Mexico.

40. *Urbanus belli* Hayward 1935
Plate 47

Evans (1952) considered *Urbanus viterboana* Ehrmann to have three subspecies: *viterboana* from Mexico to the Andes, *alva* Evans from Mexico to Argentina and *belli* from Bolivia and Argentina. Steinhauser (1981) combines *belli* and *alva* (*belli* is the senior name) and considers *belli* and *viterboana* to be distinct species. Kaye (1921, 1940) did not recognise this or the next five species which have been lumped together under *U. proteus* in Trinidad collections.

Colouring as for *U. proteus*. Distinguishing features of *U. belli* include: no spots UPF in spaces 4 and 5 (not strictly true as a female before me has a dot in space 4); UNH the basal band broken into spots, the outer band indented slightly at the veins and stopping at vein 6. Costal fold; tail ♂ 9-12 mm, ♀ 14 mm; F ♂ 21-22 mm, ♀ 23 mm.

This species occurs in similar situations to the last, but also extends into forests, and is even commoner. In addition to Trinidad and Tobago it has been recorded from Chacachacare Island (Cock 1981b). Because of past confusion with *U. proteus* the life history has not been recognised; undoubtedly the larval foodplants are Leguminosae, probably vines.

40a. *Urbanus pronta* Evans 1952
Plate 48

This species is moderately common from Mexico to Paraguay. Having compared my specimen with the series in the BMNH, I can now confirm the tentative record in the addendum to Cock (1982).

In colouring this species resembles *U. proteus*, and in markings is closest to *U. belli*. It can be distinguished principally by the outer band UNH which is crossed by pale veins and starting to break up into spots in spaces 3 - 6. Other characters include the absence of spots in spaces 4 and 5 UPF (again not strictly true, my female has a narrow arc-shaped spot in space 4), the

macular basal band UNH and a strong white bar beyond the outer band in space 1C. Costal fold; tail ♀ 10mm; F ♀ 24mm.

Probably a rare species in Trinidad. I cannot add to my capture of a female in Parrylands (i. 1980). Life history and larval foodplants apparently unknown.

41. *Urbanus esmeraldus* Butler 1877
Plate 50

This is another fairly common and widespread species in the Americas, being found from Mexico to Paraguay. Evans (1952, p. 89) records 15♂ 4♀ from Trinidad, so although Kaye must have seen some of these he did not distinguish them from *U. proteus*.

U. esmeraldus resembles *U. proteus* in colouring, although the green may be more brilliant, and it is also closest to *U. proteus* in markings: spots in space 4 and 5 forming (or partially forming) an arc between the apical spots and the spot in space 3; UNH ground colour pale brown, the bands standing out clearly; basal band split into two very clear spots in space 1C and cell; outer band slightly broader than in other species and reaches vein 6 where it meets a dark patch at apex UNH; margin UNH dark to vein 3. Costal fold; tail ♂ 10mm, ♀ 11-13mm; F ♂ 21mm, ♀ 22-23mm.

This is a somewhat localized and uncommon species in Trinidad, but is probably overlooked amongst the other similar species. I have a female from Nariva Swamp (Cock 1981a), and several specimens from Irois Beach taken at flowers of *Lantana camara* L. (ix.1982). There are specimens from Caparo and the Northern Range in the BMNH. Kendall (1976) records the larval foodplant as *Desmodium neomexicanum* (cf. *U. proteus*).

41a. *Urbanus esma* Evans 1955
Plate 49

This species is found from Colombia to Peru to the Guyanas only (Evans 1952), but was recorded from Trinidad for the first time by Steinhauser (1981) and included in Cock (1982).

U. esma is another of the *proteus* group in colour and markings; it resembles *U. esmeraldus* most but lacks the hyaline spots in spaces 4 and 5 UPF; UNH ground colour paler than *U. esmeraldus*, basal band split into spots; outer band broad to vein 6 where it meets, but is distinctly darker than, a dark patch at apex UNH; margin UNH broadly dark and a conspicuous pale bar in space 1C between the outer band and the margin.

The specimen listed by Steinhauser remains the only one from Trinidad known to me, but it could be confused with other species of this appearance. Life history and larval foodplant unrecognised.

41b. *Urbanus esta* Evans 1952
Plate 51

This species seems quite common throughout its range from Mexico to Argentina. In the addendum to Cock (1982) I recorded a possible Trinidad specimen, which I can now confirm, having compared it with the BMNH series.

In colouring it is similar to *U. proteus*, and the specimen I have is undoubtedly smaller. It can be recognised by the following combination of characters: no costal fold in ♂; UPF no spots in spaces 4 and 5; UNH basal band macular; outer band straight, continuous to vein 6 where it meets a dark patch at apex

UNH; margin dark to vein 3. The illustration of *U. proteus* in Barcant (1970, Fig. 4, No. 1) may well be of this species. No costal fold; tail ♀ 10mm; F ♀ 19mm.

Probably a rare species in Trinidad. I cannot add any information to my capture of a single female in Parrylands (viii. 1980) at flowers of *Chromolaena odorata*. Life history and larval foodplants apparently unrecognised.

42. *Urbanus acawoios* Williams 1926
Plate 52

This species seems to be less common than those of the genus considered so far and is found from Panama to the Amazons only. There are no specimens from Trinidad in the BMNH, but Steinhauser (1981) and Cock (1982) record this species from Trinidad.

Colouring as for *U. proteus* and others of this group, but the green not as bright. The principal distinguishing character of this species is the narrow forewing (width less than 1/2 costa), but it can also be recognised by the plain cilia of the forewing, which are chequered in all the other species of the genus with green on the UPS. Other characters include: no spots in spaces 4 and 5 UPF; UNH basal band weakly broken into spots, outer band continuous to vein 6, no dark patch at apex; UPF markings reduced and spaced out. Costal fold; tail ♂ 8 mm; F ♂ 21mm.

This seems to be a genuinely uncommon species in Trinidad; Steinhauser (1981) lists one specimen from Trinidad, Cock (1982) lists captures from Arima-Blanchisseuse Road, milestone 10 and Caroni Swamp, and I can add one male from San Miguel valley at 500 ft. (ix. 1982). Foodplant and life history apparently unknown.

43. *Urbanus dorantes dorantes* Stoll 1790
Plate 30

This species is common throughout its range from the southern USA to Argentina. In addition to the nominate subspecies from the mainland, Evans (1952) recognises two subspecies from the Greater Antilles (but not in Jamaica), one from throughout the Lesser Antilles including Barbados, and one from the Galapagos Islands. Trinidad and Tobago specimens belong to the nominate subspecies.

Ground colour brown with no green colouring; hyaline spots yellow; cilia pale but dark at ends of veins; UNH mauve-brown with brown central and outer bands, interrupted at vein 6, and submarginal wavy brown line; dark spot towards base of space 7; tails dark. The combination of no green, chequered cilia and spaced out UPF spots is distinctive within the genus, but do not serve to distinguish *U. dorantes* from *Codotractus carlos arguta*. These two species are most readily distinguished by the tone of the UNH markings which are much less contrasting in *U. dorantes*, but also the absence of a hyaline spot in space 5 UPF. Illustrations in Lewis (1973, Plate 88, No. 3; UNS) and Riley (1975, Plate 21, No. 15, subsp. *cramptoni* Comstock from Haiti). Costal fold; tail ♂ 12mm, ♀ 14mm; F ♂ 21-22mm, ♀ 22mm.

This species is very common at flowers in open spaces all over the island where its foodplant (*Desmodium* spp.) grows and on Tobago and Chacachacare (Cock 1981b). It is less likely to be found in forested areas (except along roadsides) and specimens from such areas should be examined carefully lest they be *Codotractus c. arguta*. I found a larva of *Urbanus dorantes* feeding on leaves of *Desmodium incanum* DC (Leguminosae) by night

(19.00h). Nearby was a pair of leaves spun together which doubtless was the larval shelter. The larva had a large, dark brown head, conspicuously rounded, but slightly indented at the vertex; prothorax with a brown dorsal plate and dark legs; mesothorax, and abdomen with a thin dark green dorsal line; lateral flap-like protuberance running just above legs paler than rest of body; laterally an orange stripe on mesothorax, metathorax and abdominal segment 1 developing into spots on abdominal segments 2 to 8, made more conspicuous by darkening above and below each; remaining thoracic legs and prolegs concolorous; spiracles inconspicuous, black; anal plate pale brown; body covered with sparse, short, pale hairs. The pupa is thick and short with a long, pointed cremaster; the wings and thorax dark brown; abdomen pale brown with dark speckles, and a macular dorso-lateral stripe. The pupal stage lasted nine days.

44. *Urbanus teleus* Hübner 1821
Plate 40, 42

A common species spread from Mexico to Argentina. Found in Trinidad and Tobago but not elsewhere in the Caribbean. Ground colour brown; hyaline spots on F white; UNH pale brown with dark brown central and outer bands. Very close to the next species, under which differences are discussed. No costal fold; F hyaline bar width ♂ 0.5mm, ♀ 0.75mm; tail ♂ 10-11mm, ♀ 13mm; F ♂ 20-21mm, ♀ 22mm.

This is a moderately common species, found on rough open ground throughout Trinidad and Tobago at all elevations. It feeds at flowers, especially *Eupatorium* (*s.l.*) spp. Moss (1949) records the larva feeding on a *Schrankia* sp. (Leguminosae) at Para. In contrast, Kendall (1976) observed females in Mexico ovipositing on *Panicum maximum* Jacq. (Gramineae) and bred a long series feeding the larvae on *P. maximum* and Johnson Grass, *Sorghum halepense* (L.) Pers. He describes the young larvae as cutting and folding over a portion of leaf; mature larvae hide in the grass near the ground and pupation is in a flimsy cocoon among debris on or near the ground. The detail of Kendall's observations throws doubt upon the record above of Moss.

45. *Urbanus tanna* Evans 1952
Plate 41, 43

Not as widespread as the last, occurring from Mexico to Ecuador and the Guyanas, commonest in northern South America from Colombia to Trinidad. Colouring as for the last. The simplest difference between *U. teleus* and *U. tanna* is the number of apical spots on F: 4 for *U. teleus* and 5 for *U. tanna*; this holds good for all Trinidad specimens that I have seen, but I would expect this to be a variable character. A better character is the width of the UPF hyaline bar: which in each sex is narrower in *U. teleus* (but note ♀ *U. teleus* is comparable to ♂ *U. tanna*). No costal fold; F hyaline bar width ♂ 0.75mm, ♀ 1mm; tail ♂ 9-11mm, ♀ 14mm; F ♂ 21mm, ♀ 23mm.

I have found this species to be about equally common as the last, although the preponderance of *U. tanna* in the BMNH (43 as opposed to 8), suggests it may be the commoner. It occurs in similar situations as the last and has similar habits. Life history and larval foodplant not recognised; the two distinct foodplant records for *U. teleus* above lead one to speculate that Moss's (1949) record of *Schrankia* sp. may actually apply to *U. tanna*.

46. *Urbanus simplicius* Stoll 1790
Plate 32, 35

This is yet another widespread and common species found from Mexico to Argentina. The colouring is similar to the last two, but the hyaline spots are reduced and dusky. Distinguished from the last two species by the dark hyaline markings and the presence of a costal fold in the male, but this and the next species are very similar. Illustrations in Lewis (1973, Plate 88, No. 6) and Smart (1976, Page 113, No. 52). Costal fold; tail ♂ 12-13mm; F ♂ 21-22mm.

As for the last two species, this is widespread and common, occurring on rough open ground throughout Trinidad and Tobago. It feeds freely at flowers and *Stachytarpheta* spp. are a favourite. Moss (1949) records the larva feeding on *Schrankia* sp. at Para, but the single specimen I have reared was feeding on Kudzu, *Pueraria phaseoloides*, and sheltered in an *Epargyreus*-type flap. In the final instar the larva had a large black, rounded, pubescent head indented at the vertex, with raised striations running down the face; prothorax black dorsally, dark ventrally; mesothorax, metathorax and abdomen ground colour brown-orange, darker ventro-laterally; dark green dorsal stripe; abdominal segments 2 - 8 with a small dark green spot on either side of the dorsal line and an orange spot dorso-laterally on anterior margin, the orange spots weakly joined up to form a stripe; spiracles inconspicuous, black; thoracic legs dark; prolegs concolorous except tips orange; body covered with short, dark, scattered pubescence. In the penultimate instar the head is similar; prothorax with orange lateral spot; mesothorax, metathorax and abdomen ground colour yellow-green (dull green speckled with yellow); clear dorsal line; mesothorax, metathorax and abdominal segments 1 - 8 with orange spots dorso-laterally on anterior margin, most prominent on abdominal segment 2 - 7; prothoracic legs dark, remaining thoracic legs and prolegs concolorous. The pupa is 25mm long, light brown with black spiracles; thorax speckled; abdomen with dorsal bands of spots centrally, and dashes posteriorly, on each segment.

47. *Urbanus procne* Plotz 1881
Plate 33, 34, 39

This is a widespread species found from the southern USA to Argentina, but less common than the last. Not recorded from Trinidad by Kaye (1921, 1940) but listed by Evans (1952). Very close to the last in colouring, but the F hyaline spots are almost completely obscured in the male (less so in the female) and the UNH bands stand out more against a clearer ground colour. The best feature to distinguish *U. procne* from *U. simplicius* is that in the former the two spots in space 7 UNH are separated from the central band, whereas in *U. simplicius* the central bands joins the outer spot in space 7. Costal fold; tail ♂ 13mm; F ♂ 22mm.

This species is less common than the last, although doubtless confused with it in the field. The fact that three of the six specimens I have seen were from swampy areas (Nariva Swamp, Caroni Swamp) is suggestive. Kendall (1966, 1976) has recorded this species feeding on grasses in Texas and Mexico. Oviposition was noted on *Cynodon dactylon* (L.) Pers. and the larvae fed on several other species of grass; the behaviour is similar to that described for *U. teleus* above.

(*Urbanus athesis* Hewitson 1867)
Plate 36

A scarce species of restricted distribution, *U. athesis* is recorded from Panama, Colombia, Venezuela and Tobago (Evans 1952). It is similar in appearance and colouring to *U. teleus*, *U. tanna* and *U. carmelita*, but can be distinguished from the first two by the hyaline spot in space 3 UPF being out of line with the bar formed of the other spots or absent, and from *U. carmelita* by the absence of the white margin to the termen of the UNH before the cilia which that species has. Costal fold.

Although this species has not been recorded from Trinidad, it occurs on the mainland, and there is a single female in the BMNH from Tobago bequeathed by W.H. Sheldon. I suggest that this may be the "*Eudamus aminias* Hew" listed by Sheldon (1936) and Barcant (1970), but which I was unable to recognise (Cock 1982). It would be well worth watching out for this species on both islands.

48. *Urbanus carmelita trebia* Moschler 1878
Plate 37

This is an uncommon species listed by Evans (1952) from Nicaragua, Panama, Colombia and Trinidad for this subspecies, and from Brazil for the nominate subspecies *carmelita* Herrich-Schaffer. Colouring as for *U. teleus*, *U. tanna* and *U. athesis*; distinguished from the first two by the spot in space 3 UPF being absent or if present detached from the central band (as for *U. athesis*) and the shorter tails; distinguished from *U. athesis* by the UNH termen narrowly white before the cilia. Costal fold; tail ♂ 4-5mm; F ♂ 21-22mm.

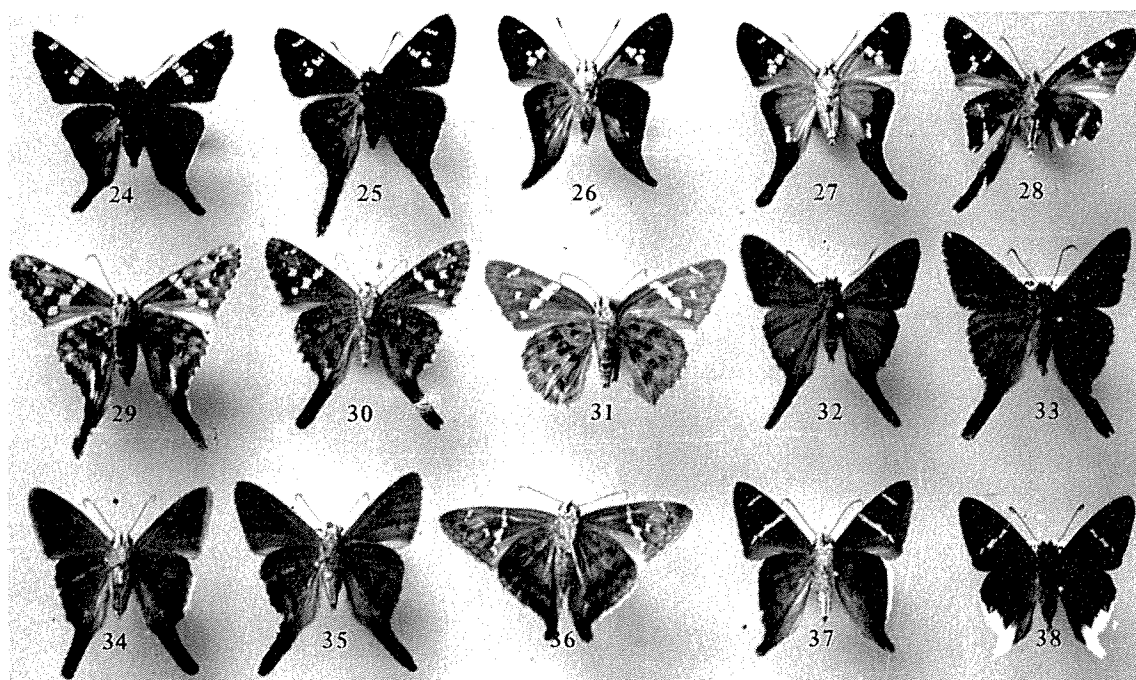
This species appears to be restricted to the North-west of Trinidad. There is one female from St Anns (A. Hall) in the

BMNH and I have two males from Morne Catharine and a third from Chacachacare Island (Cock 1981c). Although the specimens from Morne Catharine were taken in light forest, that from Chacachacare was feeding on flowers of *Chromolaena odorata* in the open near the lighthouse. The life history in Trinidad is unknown, but Moss (1949) records this species feeding on *Schrankia* sp. and *Cassia* sp. in Brazil: "the larva is purplish brown, the middle area on each side of a dark median line being marked by some six patches of light sienna and a broken design shaped like an X. The head is round and dark brown."

49. *Urbanus doryssus doryssus* Swainson
Plate 38

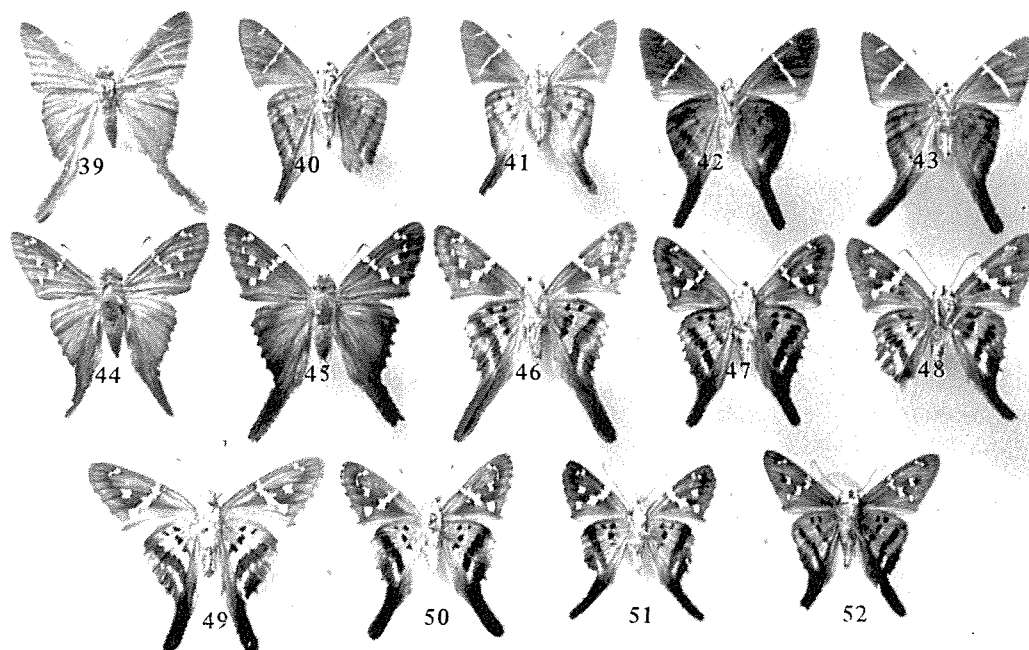
The nominate subspecies is found from Mexico to the Amazons, and another subspecies, *albicuspis* Herrich-Schaffer is found from southern Brazil to Argentina. Similar in colour and markings to *U. carmelita*, apart from a broad white margin UNH apex to tail and UPH vein 3 to tail. This is the only species known from Trinidad with white tails, although there are others known from the Guyanas and Venezuela. Illustrations in Barcant (1970, Page 86, No. 4; as *Eudamus brachius*, a synonym) and Lewis (1973, Plate 88, No. 4) Costal fold; tail ♂ 4mm, ♀ 5mm; F ♂ 20, ♀ 22 mm.

This distinctive species is not common in Trinidad, but captures have been made at all altitudes in forested areas in the North (El Tucuche iii.1979; Fondes Amandes, iv.1979 S. Alston-Smith) and more commonly in the South (Moreau, Morne Diable, Sir N. Lamont; Trinity Hills, xii.1981; Parrylands iii. 1980). Life history and larval foodplant unknown.



Plates 24-38. 24. *Polythrix octomaculata octomaculata* ♀ UPS (Nariva Swamp, 22.v.1979, MJWC); 25, *P. roma* ♀ UPS (Curepe, ix. 1982, MJWC); 26, *P. caunus* ♂ UNS (Morne Catharine, 24.iii. 1982, MJWC); 27, *P. auginus* ♂ UNS (Mt Tabor, 1.i.1982, MJWC); 28, *P. metallescens* ♀ UNS (Parrylands, 8.ix.1981, MJWC); 29, *Codotractus carlos arguta* ♀ UNS (Northern Mountains, xii.1938 – i. 1939, A Hall, type series, specimen in BMNH); 30, *Urbanus dorantes dorantes* ♀ UNS (Caura Valley, 8.viii. 1978, MJWC); 31,

Codotractus melon ♀ UNS ("Trinidad", specimen in BMNH); 32, *Urbanus simplicius* ♂ UPS (West Moreau, 31.xii. 1979, MJWC); 33, *U. procne* ♂ UPS (Caroni Swamp, 20.ii.1982, MJWC); 34, *U. procne* ♂ UNS (as 33); 35, *U. simplicius* ♂ UNS (Spanish Farm, reared from larva on *Pueraria phaseoloides*, coll 16.i.1982, MJWC); 36, *U. athesis* ♀ UNS (Tobago, W.G. Sheldon bequest, specimen in BMNH); 37, *U. carmelita* ♂ UNS (Morne Catharine, 21.v.1982, MJWC); 38, *U. doryssus* ♂ UPS (Parrylands, 10.iii. 1980, MJWC).



Plates 39-52. 39, *U. procne* ♀ UPS (French Guiana, specimen in BMNH); 40, *U. teleus* ♂ UNS (Parrylands, 2.ii. 1980, MJWC); 41, *U. tanna* ♂ UNS (Tobago, Speyside, 15.v. 1982, MJWC); 42, *U. teleus* ♀ UNS (Arima-Blanchisseuse Textel Road, 8.x.1979, MJWC); 43, *U. tanna* ♀ UNS (Curepe, 14.viii.1978, MJWC); 44, *U. proteus* ♂ UPS (Curepe, feeding on bird dropping, 23. ix. 1979, MJWC); 45, *U. proteus* ♀ UPS (Cats Hill, 19.ix.1982,

MJWC); 46, *U. proteus* ♀ UNS (Grande Ravine, 27. vi. 1979, MJWC); 47, *U. belli* ♂ UNS (Andrews Trace, 14.x.1980, MJWC); 48, *U. pronta* ♀ UNS (Parrylands, 13.i.1981, MJWC); 49, *U. esma* ♀ UNS (Guyana, specimen in BMNH); 50, *U. esmeraldus* ♂ UNS (Morne Catharine, 18.ix.1982, MJWC); 51, *U. esta* ♀ UNS (Parrylands, 21.viii.1980, MJWC); 52, *U. acawoios* ♂ UNS (San Miguel Valley, 3.ix. 1982, MJWC).

Key to the tailed skippers of Trinidad

- | | | | |
|---|---|----|---|
| 1 | UPS with at least some green colour | 2 | UNH central dark band clearly broken into distinct separate spots in space 1C and cell; these spots stand out sharply against the ground colour |
| | UPS with no green colouring | 14 | UNH central dark band more or less unbroken across space 1C and cell; these spots do not stand out as sharply against ground colour |
| 2 | UNH with white band running width of wing | 3 | (Note this is a somewhat subjective character and should be used in conjunction with the plates; Steinhauser (1981) interprets it differently). |
| | UNH no white band | 5 | |
| 3 | H tail long (more than 8mm); apical spots in straight line; spot in space 2 contiguous with spot in space 3 not cell spot | | |
| | H tail short (less than 5mm); spots in spaces 6 and 7 displaced from apical line; spot in space 2 contiguous with cell spot not spot in space 3 | 4 | |
| 4 | HW lobed rather than tailed (2mm); white band angled towards dorsum; white band 2.5mm in ♀, 1mm in ♂ | | |
| | HW tailed (4mm); white band angled towards margin near tail; white band 1.75mm in ♀, 0.75 in ♂ | | |
| 5 | UPF white hyaline spot in space 1B | 7 | |
| | UPF no white hyaline spot in space 1B | 6 | |
| 6 | UNF base of costa strongly green below; white band across space 1C UNH | | |
| | UNF base of costa negligibly green; only white spot on vein 1B | | |
| 7 | F narrow, less than 1/2 costa; F cilia plain | 8 | |
| | F broader, greater than half costa; F cilia chequered (dark at end of veins) | | |

- | | | |
|----|---|--------------------|
| 9 | UPF with white hyaline markings in spaces 4 and 5 | Urbanus esmeraldus |
| | UPF no markings in spaces 4 and 5 | 10 |
| 10 | Larger (F 22mm); green on UPH extending almost to termen | Urbanus esma |
| | Smaller (F 18mm); green on UPH little more than basal half | Urbanus esta |
| 11 | UNH outer band crossed by pale veins and becoming macular in upper part | Urbanus pronta |
| | UNH outer band with concolorous veins; the band may be indented at the veins (<i>U. belli</i>) but is not maculate | 12 |
| 12 | Usually white hyaline spots in spaces 4 and 5; UNH outer band straight and continuous to dark area at apex | Urbanus proteus |
| | Usually no white hyaline spots in spaces 4 and 5; UNH outer band indented at veins, stopping at vein 6 and no dark area at apex | Urbanus belli |
| 13 | Tails white | Urbanus doryssus |

Tails dark	14
14 Dark spots at 1/3 and 2/3 in space 1B UPF	15
No such dark spots	16
15 Hyaline spots in spaces 4 and 5 UPF	<i>Polythrix roma</i>
No hyaline spots in spaces 4 and 5 UPF	<i>Polythrix octomaculata</i>
16 Spots of costa, cell, spaces 2, 1B and sometimes 3 aligned to form a bar OR such markings reduced to give an unmarked appearance	17
Markings not arranged in such a bar, but scattered	22
17 UPF white hyaline markings clear and conspicuous	18
UPF hyaline markings dusky, reduced or absent	21
18 UPF white hyaline spot in space 3 not aligned with those of 1B, 2, cell and costa to form bar, OR spot in space 2 absent	19
UPF white hyaline spot of space 3 aligned with others to form bar	20
19 UNH termen narrowly white before cilia	<i>Urbanus carmelita</i>
UNH brown up to cilia	<i>Urbanus athesis</i>
20 Four apical spots	<i>Urbanus teleus</i>
Five apical spots	<i>Urbanus tanna</i>
21 UNH spots in space 7 completely distinct from central band	<i>Urbanus procne</i>
UNH central band runs into outer spot in space 7	<i>Urbanus simplicius</i>
22 UPF white hyaline spot of space 1B absent (or if present directly under that of space 2); UNH with dark striations	<i>Typhedanus undulatus</i>
UPF white hyaline spot present in space 1B (under spot in space 3); UNH without dark striations, mottled instead	23
23 UNF with dark triangle on costa, apex of triangle just beyond spot in space 6	<i>Chioides catillus</i>
UNF without such triangle	24
24 Male with costal fold; UNH ground colour brown; conspicuous dark spot at base of space 7 UNH; UPF with no hyaline spot in space 5	<i>Urbanus dorantes</i>
Male without costal fold; UNH ground colour pale brown; no dark spot at base of space 7 UNH; hyaline spot in space 5 UPF	<i>Codotractus c. arguta</i>

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