

# Six New Records of Butterflies (Lepidoptera, Papilionoidea) from Trinidad, West Indies

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## ABSTRACT

Details of six new butterfly records from Trinidad are presented: *Phoebis agarithe* (Boisduval) (Pieridae), *Macrosoma ustrinaria* (Herrich-Schäffer) (Hedylidae), *Udranomia kikkawai* (A.G. Weeks), *Telemiades squanda* Evans (Hesperiidae, Eudaminae), *Morvina morvus para* Evans (Hesperiidae, Pyrginae) and *Thoon modius* (Mabille) (Hesperiidae, Hesperinae). Notes on the biology of *U. kikkawai*, reared on *Ouratea guildingii* (Ochnaceae) are presented. The total number of butterfly species known from Trinidad is now 781.

**Key words:** Pieridae, Hesperidae, Hedylidae, Ochnaceae

## INTRODUCTION

Following the recent publication of three checklists for the larger butterflies Pieridae, Papilionidae and Nymphalidae (Cock 2014a), Hedylidae and Hesperidae (Cock 2014b), and Lycaenidae (Cock and Robbins 2016), it is no great surprise that new records and adjustments come to light. Morrall (2015) records the capture of *Megeuptychia antonoe* (Cramer) in southern Trinidad, a new satyrine (Nymphalidae) for the island. Cock (2016) reports that what he listed as *Staphylus* sp. (Hesperidae) (Cock 2014b) is actually *S. kayei* Cock, which is more variable than previously thought. In this paper we publish and illustrate new island records for one Pieridae (previously overlooked), one hedylid (newly observed) and four hesperiids (three previously unidentified and one newly found).

We refer to material examined in the following collections:

MJWC Matthew J.W. Cock, private collection

SAS Scott Alston-Smith, private collection

ABCT Angostura-Barcant Collection, Laventille, Trinidad

NHMUK The Natural History Museum, London, UK

### *Phoebis agarithe* (Boisduval, 1829) (Pieridae)

This species was not considered or included in Cock (2014a). However, in preparing an updated list of the butterflies of Tobago (Cock 2017) it became apparent that this species is not rare in Tobago, based on Sheldon (1936) and several recent records. Accordingly, collections of Trinidad butterflies were examined, and *P. agarithe* was found to be mixed with *P. argante* (Fabricius) in ABCT. There are two males in the collection, both displayed as the underside only; one labelled Cruse, 4 October 1966, and the other unlabelled. The fact that Barcant displayed the diagnostic undersides of two different males side by side (Fig. 1) suggests he had noticed this difference, but

had not appreciated its significance. There is a further specimen, in the collection of John Morrall, from Point Gourde, 11 Jun 2013. *Phoebis agarithe* is most easily distinguished from the two species under the name *P. argante* in Trinidad (Cock 2014a and below) by the forewing underside submarginal line which is continuous and straight in *P. agarithe* and stepped at vein 4 (M3) mid wing in the *P. argante* complex (Fig. 1). We conclude that *P. agarithe* is a resident species in Trinidad, easily overlooked as *P. argante* complex.

Janzen *et al.* (2009) reported that *P. argante*, as then understood, comprises two similar species, with distinct markings, genitalia and barcodes, but did not resolve the nomenclature, referring to them as *P. argante* DHJ01 and *P. argante* DHJ02. Cock (2014a) recognised the same two species from Trinidad. Janzen *et al.* (2009) suggest that it seems likely that *P. argante* DHJ01 represents the true *P. argante*, while *P. argante* DHJ02 will prove to be *P. hersilia* (Cramer). The names suggested by Janzen *et*



**Fig. 1.** Underside of male *P. argante* (left) and male *P. agarithe* (right), Trinidad, no data labels, M. Barcant (ABCT). Scale bar = 1cm. (Photo M.G. Rutherford).

*al.* are coming into use (e.g. Janzen and Hallwachs 2015), although there has as yet been no formal taxonomic treatment. However, *Papilio hersilia* Cramer, 1777 is an unavailable homonym of *P. hersilia* Fabricius, 1776 (Lamas 2004), and the oldest available name for this species is probably *Phoebis larra* (Fabricius) (Lamas 2004), which is why Cock (2014a) referred to *P. argante* DHJ02 as likely to be *P. larra*. For the moment, it is probably better to continue to refer to them as *P. argante* DHJ01 and *P. argante* DHJ02 until the group is revised. Because of their similarity to *P. agarithe* here recorded as new to the island, we illustrate the two species confused under *P. argante*, to facilitate the separation of all three species. *Phoebis argante* DHJ01 has dark spots at the outer margin of the upper side forewing (Fig. 2), whereas *P. argante* DHJ02 has a continuous narrow, dark, marginal line (Fig. 3). Barcant (1970, plate 11.3) illustrates a male of *P. argante* DHJ02 as *P. argante*, and his collection contains five male and two female *P. argante* DHJ01, six male and six female *P. argante* DHJ02 and two male *P. agarithe* all treated as *P. argante*. It would appear that *P. argante* DHJ01 and *P. argante* DHJ02 are both relatively common in Trinidad, while *P. agarithe* is relatively uncommon.

***Macrosoma ustrinaria* (Herrich-Schäffer, [1854])  
(Hedylidae)**

Cock (2014b) listed just two species of Hedylidae from Trinidad. A third species is now known. Steve Nanz (2016) photographed an adult *M. ustrinaria* at the Asa Wright Nature Centre, 23 March 2015 (Fig. 4). It was identified by comparison with the illustration in Herrich-Schäffer (1850–1858) and from Scoble (1990). This species is found from Panama, south to Peru and east to French Guiana (Scoble 1990), so its presence in Trinidad is not surprising.

***Udranomia kikkawai* (A.G. Weeks, 1906) (Hesperiidae,  
Eudaminae)**

This species was described from Venezuela and is reported from Mexico to the Guianas to Brazil (Evans 1952), so its presence in Trinidad is not unexpected. However, *U. kikkawai* is now known to be a complex of at least three species in Costa Rica, almost identical in appearance, male genitalia, early stages and food plants but occupying different habitats and with different barcodes (Janzen *et al.* 2011). Bächtold *et al.* (2017) report that the species they studied in southeast Brazil is the true



**Fig. 2.** *Phoebis argante* DHJ01; male (left) Rio Claro, July 1954, M. Barcant; female (right) West Trinity, 2 July 1967, M. Barcant (ABCT) (photos M.G. Rutherford). Scale bar = 1cm.



**Fig. 3.** *Phoebis argante* DHJ02; male (left) Ariapita Estate, 3 September 1966, M. Barcant; female (right) Rio Claro, 20 September 1954, M. Barcant (ABCT) (photos M.G. Rutherford). Scale bar = 1cm.



**Fig. 4.** Adult *Macrosoma ustrinaria* (probably male) Asa Wright Nature Centre, 23 March 2015 (Photo: S. Nanz).

*U. kikkawai*, based on a barcode obtained from the type. It is not known whether the other species found in Costa Rica also occur in South America.

We initially identified this species from Evans (1952) and Warren *et al.* (2016); the three Trinidad specimens lack the white cell spot UNH which Evans (1952) considered diagnostic for *U. kikkawai*, but so do several

specimens illustrated by Warren *et al.* (2016). We were able to obtain a barcode of one Trinidad specimen (Fig. 5, DNA ref. MJWC-2016-012) which was an exact match to *Udranomia kikkawai* DHJ02 in BOLD (2016), and which Bächtold *et al.* (2017) state matches the barcode obtained from the type specimen of *U. kikkawai*. We are therefore confident of the identification of the species in Trinidad.

Cock and Alston-Smith (2013) gave an account of the two known *Udranomia* spp. of Trinidad: *U. orcinus* (C. Felder and R. Felder) and *U. eurus* (Mabille & Boulet). Neither Cock and Alston-Smith (2013), nor Cock (2014b) mention *U. kikkawai*, which SAS discovered in Trinidad in 2015 (Fig. 5). *Udranomia kikkawai* is similar in appearance to the other two *Udranomia* spp. found in Trinidad. It is significantly larger than *U. orcinus*, and differs in details of the markings, and in particular it does not have the white veins UNH and UNF found in *U. orcinus* (Cock and Alston-Smith 2013, Fig. 1). Although comparable in size to *U. eurus*, the ground colour is more uniformly dark brown in that species, making the white spots more contrasting (cf. Cock and Alston-Smith 2013, Fig. 5).

SAS found mature caterpillars on *Ouratea guildingii*

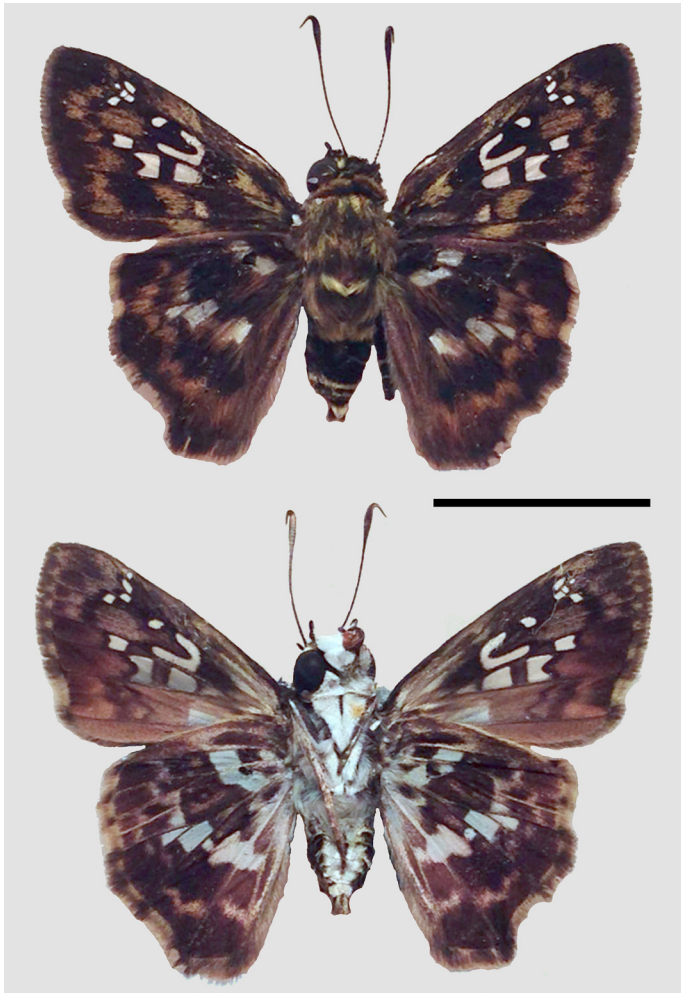
(Ochnaceae), growing in the savannah land about 400m short of the Toco lighthouse, March 2015 (male), August 2015 (female) and January 2016 (female). The caterpillar heads were light brown, with red-brown eye spots; body pale green, with a thin yellow line across each of T1–T3. The pupa was similar to that of *U. orcinus* (Cock and Alston-Smith 2013, Fig. 3), but slightly larger. The caterpillar is not an exact match to those shown by Janzen and Hallwachs (2016) from Costa Rica which have the head reddish brown, the eye spots hardly or not differentiated, and in some cases a dark bar across the face, tapering laterally. Similarly, it is not an exact match to the caterpillars shown by Bächtold *et al.* (2017) from south-east Brazil, which have a 'dark brown head and diffusely black spots extended laterally in the adfrontal area'.

Janzen and Hallwachs (2016) reared this species many times from *Ouratea lucens* and *Cespedesia spathulata* (Ochnaceae) in Costa Rica, and Bächtold *et al.* (2017) reared it from *O. hexasperma* and *O. spectabilis* in south-east Brazil. In Trinidad, the family Ochnaceae comprises

two species of *Ouratea*, and two species of *Sauvagesia*, which are low herbs (Williams 1929). *Ouratea guildingii* grows to be a tree, but these collections were made on young or regrowth plants. *Ouratea purdieana* has already been reported as the food plant of *U. orcinus* in Trinidad (Cock and Alston-Smith 2013), but SAS also found and reared it on *O. guildingii* at Toco, which is a new food plant record.

***Telemiades squanda* Evans, 1953 (Hesperiidae, Eudaminae)**

Cock (2014b) noted SAS' view that two species are mixed as *T. epicalus* Hübner in Trinidad usage. We have now investigated this and find that the name *T. epicalus*



**Fig. 5.** Adult male *Udranomia kikkawai* collected March 2015 as caterpillar on *Ouratea guildingii*, Toco, S. Alston-Smith (SAS). Scale bar = 1cm



**Fig. 6.** Adult male (left) and female (right) *Telemiades squanda*. Male, Los Bajos, November 1994, S. Alston-Smith (SAS); female, Quinam, August 1992, S. Alston-Smith (SAS). Scale bar = 1cm.



**Fig. 7.** Adult male (left) and female (right) *Telemiades epicalus*. Male, Guanapo Valley, December 2000, S. Alston-Smith (SAS); female, West Moreau, 31 December 1979, M.J.W. Cock (MJWC). Scale bar = 1cm.

was correctly applied, but SAS had a second large species of *Telemiades* in his collection. MJWC dissected a male of the second species and was readily able to identify it as *T. squanda* from Steinhauser (1989). The two species are shown for comparison (Figs. 6 and 7). *Telemiades squanda* was described from near Rio de Janeiro and is recorded from Bolivia to Guyana (British Guiana) from a handful of specimens (Evans 1953).

SAS has collected two males: Rio Claro – Guayaguayare Road, September 1993 (dissected) and Los Bajos, November 1994, and two females: Fondes Amandes, March 1983, and Quinam, Aug 1992. Adults of this species were observed to sunbathe, often returning to more or less the same perch, and were also seen at flowers. The life history of *T. squanda* does not seem to have been recorded, but *Telemiades* spp. are known to feed on Fabaceae such as *Inga* spp., *Lonchocarpus* spp. and *Machaerium* spp. (Janzen and Hallwachs 2016).

***Morvina morvus* (Plötz, 1884) para Evans, 1953**  
(Hesperiidae, Pyrginae, Erinnini)

Judging by the collection of the NHMUK (Evans 1953), this species is rare throughout its range. Three subspecies are recognised: the nominate ssp. *morvus* from southern Brazil, ssp. *para* from Belem (Pará) and Santarém, and ssp. *cyclopa* Evans, which was described from Bolivia, but has a disjunct distribution, as it is also known from Guyana (Evans 1953). SAS has collected one male (Inniss Field, January 2007) and two females (Brigand Hill, January 1980 and August 1980) of this new skipper for Trinidad (Fig. 8). Our identification is from Warren *et al.* (2016) and Evans (1953).

The congeneric *M. fissimacula pelarge* (Godman & Salvin) feeds on Rutaceae, primarily *Toxosiphon lindennii* and to a lesser extent on *Galipea dasysperma* (Janzen and Hallwachs 2016). Neither genus occurs in Trinidad (Williams 1929), so the food plant of *M. morvus* may be some other indigenous Rutaceae.

This skipper is superficially similar to *Mimia phydile* (Godman & Salvin), which Kaye (1940) recorded from Trinidad, based on a specimen taken by F.W. Jackson at Tabaquite, 3 April 1922. Having located no such specimen, Cock (2014b) suggested this record was an error, however, it may well be that what Jackson caught was *Morvina morvus*.

***Thoon modius* (Mabille, 1889) (Hesperiidae, Hesperinae, Moncini)**

This species is found from Guatemala to Bolivia and East to the Upper Amazon, so this record from Trinidad is a considerable extension of its range. It was identified from Evans (1955) and Warren *et al.* (2016) and confirmed



**Fig. 8.** Adult male *Morvina morvus para* Evans, collected Inniss Field, January 2007, S. Alston-Smith (SAS). Scale bar = 1cm.

by dissecting the male genitalia and comparing them with the figure in Godman & Salvin (1893–1901, plate 97, fig. 38). Fig. 9 is a good match to the type.

S. Alston-Smith has captured a male at roadside eupatorium flowers, Balata East, January 2015 (Fig. 9), and a female, also at roadside flowers, Inniss Field, May 2003 (Fig. 10). The adults fly very rapidly and quickly change their positions on flowers.

This species can be distinguished from the other spotted brown Moncini known from Trinidad (Cock 2012) by the presence and alignment of the UPH yellow spots in spaces 2, 3 and 4-5, combined with the cell spot UNH, the spot in space 1B UPF and the spots in spaces 2 and 3 UPF which just overlap at the adjacent corners.

**DISCUSSION**

The new record of *Phoebis agarithe* is based on the historical collection made by Malcolm Barcant, and



**Fig. 9.** Adult male *Thoon modius*, collected at roadside eupatorium flowers, Balata East, January 2015, S. Alston-Smith (SAS). Scale bar = 1cm.

preserved in Trinidad by Angostura Ltd. (ABCT). Because Barcant's collection contained 22 specimens, all of which he thought were *P. argante*, it was possible to not only recognise the three different species amongst them, but also suggest that *P. agarithe* is relatively rare in Trinidad. This demonstrates the importance of keeping a reference collection of this standard in Trinidad, and making it available to researchers.

Cock (2014a) suggested that about 765 butterfly species are now known from Trinidad. The total is now 781, comprising Papilionidae 15, Pieridae 30, Nymphalidae 162, Lycaenidae 131, Riodinidae 123, Hedyliidae 3, and Hesperidae 317 (Cock 2014a, 2014b, Cock and Robbins 2016, Cock and Hall in prep., this work).

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**Fig. 10.** Adult female *Thoon modius*, collected at roadside yellow Asteraceae flowers, Inniss Field, May 2003, S. Alston-Smith (SAS). Scale bar = 1cm.

who barcoded one of SAS's specimens of *Udranomía kikkawai*, Steve Nanz (<http://stevenanz.com/>) for allowing us to publish his record and image of *Macrosoma ustrinaria*, and the National Herbarium of Trinidad and Tobago for identifying the food plant of *U. kikkawai*.

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