



Notes on some hawk-moths (Lepidoptera: Sphingidae) from the Cape Verde Islands

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Keywords: Sphingidae, hawk-moths, Cape Verde Islands, distribution, host plants

ABSTRACT

The authors carried out a survey of butterflies on 12 of the Cape Verde Islands from 29 October to 18 December 2013. During the survey records were also made of the few hawk-moths (Lepidoptera: Sphingidae) encountered during the day, or feeding at flowers at dusk and dawn. None was collected at light. Since several of our records are believed to be new island records, we present them here. The few voucher specimens collected have been deposited in the Natural History Museum, London.

RESUMO

Os autores desenvolveram um levantamento de borboletas em 12 ilhas de Cabo Verde entre 29 de outubro e 18 de dezembro de 2013. Durante o estudo, foram igualmente efectuados registos de algumas sphingídeos (Lepidoptera: Sphingidae), encontradas durante o dia ou alimentando-se nas flores ao amanhecer e entardecer. Nenhuma foi recolhida através de luz artificial. Dado que possivelmente alguns desses registos serão novos para as ilhas, são também aqui apresentados. Os escassos espécimes 'voucher' recolhidos foram depositados no Museu de História Natural de Londres.

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INTRODUCTION

The authors carried out a successful survey of butterflies in the Cape Verde Islands during the period 29 October to 18 December 2013 (Tennent & Russell 2015). With the exception of two administrative days on Santiago, the first island we visited was Brava, where a first instar sphingid larva was discovered feeding on an Oleander bush *Nerium oleander* L. (Apocynaceae). In our ignorance – although in our defence, neither of us being a sphingid specialist and the larva being extremely small – we assumed that this was probably a larva of the Oleander hawk-moth *Daphnis nerii* Linnaeus, 1758.

We soon realised that it was not *D. nerii*, and decided that we would record such hawk-moths as we happened to encounter on our travels around the islands. When a specimen of *Nephele accentifera* Palisot de Beauvois, 1805 emerged from the ‘*nerii*’ pupa a month later, we realised that this was not only a new record of

this species from Brava, but that *Nerium oleander* probably represented a previously unrecorded host-plant.

The following short list records sphingid moths seen in the Cape Verde Islands. Aside from the specimen of *N. accentifera* already mentioned and several larvae of *Acherontia atropos* Linnaeus, 1758 collected on *Nicotiana* plants (Solanaceae), all our records are the result of collecting during the day or at dusk, in both cases usually at flowers. No moths were collected at light. We have also included such records from the literature as we happened across and also from the collections of the Instituto de Investigação Científica Tropical (IICT), Lisbon, Portugal. In a small number of cases our records appear to represent new island records or to confirm a historical record; we have indicated the former where we believe it to be so. Our few voucher specimens have been deposited in the Natural History Museum (BMNH), London, UK.

SPECIES LIST

***Agrius convolvuli* (Linnaeus, 1758) or *Agrius cingulata* (Fabricius, 1775)**

These two species may be difficult to separate on the wing (*i.e.* without experience or voucher specimens) and no comment is made on whether historical records belong to one species or the other. An *Agrius* species was observed on 15 November flying in shade under a trellis in the grounds of the Quinta da Montanha, Rui Vaz, Santiago, at *ca* 800 m. The pink/grey striped body was clearly visible in flight, but although it is acknowledged that *cingulata* is significantly brighter pink than *convolvuli*, species identification was uncertain. A sphingid, almost certainly an *Agrius* species, was also seen feeding at papaya flowers *Carica papaya* L. (Caricaceae) on São Nicolau at dusk, 23 November. This seems to be the first record of an *Agrius* species from São Nicolau.

The only sphingid species recorded from the Cape Verde Islands by Riley (1894: 131), during the U.S. Eclipse Expedition to West Africa (1889-1890), was *Agrius cingulata* (as *Sphinx cingulata*): “Three specimens, St. Vincent [São Vicente], Cape Verde Islands”, although it is noted that some of the butterflies recorded from São Vicente on that expedition are in doubt

(Tennent & Russell 2015). Aurivillius (1910) recorded an *Agrius* species (as *Herse cingulata*) from the islands of Brava (1♀) and Santiago (1♂). Nyström (1958) recorded *Herse convolvuli* from a pupa found at Praia, Santiago, 6 February 1954, which hatched in the middle of April. Schmutterer *et al.* (1978: 331) dealt with insect pests in the Cape Verde Islands and included one sphingid, *i.e.* *Agrius convolvuli*: “Eine einzelne Imago des Windenschwärmers wurde in der Ribeira Seca auf Santiago festgestellt (Sept. 1976)” [A single imago ... has been found in the Ribeira Seca in Santiago.]. Traub & Bauer (1982) recorded both species (*convolvuli* was misprinted as *concolvuli*) from Santo Antão and confirmed previous records from São Vicente and Santiago. Báez & García (2005) recorded *A. cingulata* from Brava, Santiago, São Vicente and Santo Antão. They also recorded *A. convolvuli* from Brava, Santiago and Santo Antão and regarded both species as ‘probably native’. *A. convolvuli* is known from Fogo (São Filipe) and Santo Antão (Cove de Paúl) (Ian Kitching *in litt.* 2013.).

***Acherontia atropos* (Linnaeus, 1758)**

We came across a small larva feeding on *Nicotiana*, 2 km west of João Galego, Boa Vista, at 50 m elevation, 18 November. Further larvae were encountered near the centre of Espargos, Sal, also feeding on *Nicotiana*, at sea level, 22 November. A male emerged from one of these larvae, 30 December. This seems to be the first record of this species from Sal and possibly the first published record from Boa Vista. Aurivillius (1910) recorded 2 ♀♀ of this species from Brava, Traub & Bauer (1982) recorded it from Santo Antão, São Nicolau, Santiago and Fogo, and Mück & Traub (1987) recorded it from Santiago. Mück *et al.* (1990) recorded the species from Santo Antão, São Nicolau, Santiago, Fogo and Brava, whilst Báez & García

(2005) reported *A. atropos* from Brava, Santiago, São Nicolau and Santo Antão, and suggested the species was ‘probably native’. Baliteau & Baliteau (2011) recorded the species from Santo Antão. Jenine Carvalho, Head of Wildlife Protection, Brava, showed us a small collection of insects he had collected on Brava some years previously. These included a specimen of *A. atropos*, which he said was common on the island and that larvae fed on potatoes. Additionally, ornithologist Cornelis Hazevoet found a dead specimen of *A. atropos* on a hillside above Fajã de Água, Brava, 31 December 1987. The specimen was deposited in the collection of the Naturalis Biodiversity Center (RMNH), Leiden, The Netherlands.

***Daphnis nerii* (Linnaeus, 1758)**

We did not encounter this species, despite examining a large number of *Oleander* leaves. Mück & Traub (1987) recorded it from the island of Santiago and said (Mück & Traub 1987: 94): “Obwohl zwei Raupen dieser Art im Sommer 1984 in S. Jorge auf Oleander beobachtet wurden, ist es sehr fraglich, ob *D. nerii* auf den Kapverden etabliert ist. Das zweimalige Auftreten 1983 und 1984 auf S. Tiago [Santiago] ist mit hoher Wahrscheinlichkeit auf Zuwanderung zurückzuführen” [Although two larvae of this species were observed in the summer of 1984 in S. Jorge on Oleander, it is

very questionable whether *D. nerii* is established in Cape Verde. The two-time occurrence in 1983 and 1984 on Santiago is due most likely to immigration.]. Traub (1988) recorded *D. nerii* from São Jorge dos Orgãos, Santiago, at light. Báez & García (2005) also recorded *D. nerii* from Santiago and regarded it as ‘probably native’. Mück & Traub’s record of *D. nerii* larvae feeding on Oleander is interesting as this is the usual host-plant of *nerii*, but in view of our records of a *Nephele accentifera* larva on the same plant, it may not be certain that their larvae were indeed *D. nerii*.

***Nephele accentifera* (Palisot de Beauvois, 1805)**

A small larva found feeding on *Nerium oleander* on Brava (see Introduction) was reared and produced a specimen of *N. accentifera*. A second specimen was collected in a gorge at the side of the road leading to the caldeira on Fogo late one afternoon. The only other specimen seen was flying with other sphingid species (see above) on the steep slopes of a shallow gully 2 km southeast of Povoação Velha on Boa Vista. These seem to represent the first records of *N. accentifera* from Brava and Boa Vista.

Nyström (1958) recorded the species from

the islands of São Nicolau (one specimen at Ribeira Brava in February 1954) and Santo Antão (three specimens at Chã de Morte and one at Chã de Morte-Lagedo in January 1954). Traub & Bauer (1982) recorded *N. accentifera* from Fogo, and confirmed its occurrence in Santo Antão and São Nicolau. Báez & García (2005) reported the species from Fogo, São Nicolau and Santo Antão and suggested it was ‘probably native’. Baliteau & Baliteau (2011) recorded the species from Santo Antão, including a host-plant record of *Ficus sycamorus* L. (Moraceae).

***Hippotion celerio* (Linnaeus, 1758)**

On Brava, a specimen was seen shortly after dawn feeding at flowers of *Impatiens* sp.

(cultivar) (Balsaminaceae) on the central reservation of the road outside our hotel in Vila Nova

Sintra, 5 November. In the following days, it was common at both dawn and dusk feeding at the same flowers at the grounds of the Casas do Sol hotel at São Filipe, Fogo. It was equally common on *Impatiens* flowers in mid-November on Maio. On Santiago, several were seen flying on a dull afternoon around the Quinta da Montanha, Rui Vaz, at ca 800 m, feeding at *Bougainvillea* and other flowers. Several were also seen at *Lantana* near the peak of Monte Gâmbôa (1,080 m), also on Santiago, 15 November. On Boa Vista several were encountered, 19 November, flying with *Hyles livornica*, *H. tithymali* and *Nephele accentifera*, in extremely windy conditions, on the leeward side of several slopes of a shallow gully 2 km southeast of Povoação Velha. Nothing else was flying and all were keeping very close to the ground, apparently feeding at small, unidentified yellow flowers. On São Nicolau, a specimen was taken flying around endemic *Echium stenosiphon glabrescens* (Pettersson) Romeiras & M.C. Duarte (Boraginaceae) growing in profusion outside the Monte

Gordo Park offices at 500 m elevation. These seem to be the first records of *H. celerio* from Brava, Fogo and Maio.

Nyström (1958) recorded this species from the islands of São Nicolau, São Vicente and Santo Antão, Mück & Traub (1987) recorded it from Santiago and Traub & Bauer (1982) recorded it from Santiago and Sal, while confirming Santo Antão and São Nicolau. Mück *et al.* (1990) recorded *H. celerio* from Santo Antão, São Vicente, São Nicolau, Sal and Santiago and reported the hymenopterous *Trichogramma lutea* Girault, 1911 (Chalcidoidea) parasitising ova. Báez & García (2005) reported the species from Santiago, Sal, São Nicolau, São Vicente and Santo Antão, and considered it to be 'probably native'. Vieira (2008) recorded *H. celerio* from Sal and Baliteau & Baliteau (2011) recorded it from Santo Antão. On São Nicolau, a specimen was present in a small collection of insects held at the Monte Gordo Park headquarters.

***Hippotion eson* (Cramer, 1779) or *Hippotion gracilis* (Butler, 1875)**

Two small sphingids with brown forewings and pink hindwings were seen very clearly for some minutes, feeding at *Lantana* near the peak of Monte Gâmbôa (1,080 m), Santiago, 15 November. Unfortunately, neither was collected. It could have been either of these species (Ian

Kitching *in litt.* 2013), but neither has previously been recorded from the Cape Verde Islands. The first author is familiar with similar small *Hippotion* species elsewhere (Tennent 1991, 1992, Tennent *et al.* 2015) and is in no doubt that this is what they were.

***Basiothea medea* (Fabricius, 1781)**

One specimen was taken near the peak of Monte Gâmbôa (1,080 m), Santiago, 15 November, whilst feeding at *Lantana*. Another was seen, but not caught and a third specimen was seen at the same place the following day. This seems to be the first record of this species from Santiago.

Mück & Traub (1987: 94) recorded larvae from Brava feeding on *Borreria verticillata* (L.) (Rubiaceae): "Auf der Insel Brava wurden die

grünen Raupen mit ihren Augenflecken auf dem Thorax auf der Rubiacee *Borreria verticillata* gesammelt" [On the island of Brava, the green caterpillars were collected ... on the Rubiaceae *Borreria verticillata*.]. Traub & Bauer (1982) recorded *B. medea* from Fogo and Báez & García (2005) noted the Brava record, suggesting that *B. medea* was 'probably native'.

***Hyles tithymali* (Boisduval, 1834)**

One specimen (possibly more – unconfirmed) was positively identified on Boa Vista, 19 November, flying with *Hyles livornica*, *Hippotion celerio* and *Nephele accentifera*, in extremely windy conditions, on the leeward side of the slopes of a shallow gully 2 km southeast of Povoação Velha. Although most sphingid

moths seen feeding at the flowers of *Impatiens* sp. (cultivar) in various localities on several islands were identified as either *H. celerio* or *H. livornica*, it is quite probable that these included further specimens of *H. tithymali*, which were not identified. This seems to be the first record of *H. tithymali* from Boa Vista.

Aurivillius (1910) recorded a male of this species (as *Celerio euphorbiae* var. *mauretanicum*) from São Nicolau and Mück & Traub (1987: 94) recorded this species (as *Hyles euphorbiae*) from Fogo: “Auf Fogo fressen die Raupen in grosser Zahl an der endemischen Euphorbie *Euphorbia tuckeyana*” [On Fogo, the caterpillars eat in large numbers at the endemic euphorbia *Euphorbia tuckeyana*.]. Traub & Bauer (1982) recorded this species (as *Hyles euphorbiae*) from Santo Antão,

Santiago and Fogo. Báez & García (2005) recorded it (as *Hyles euphorbiae*) from Fogo, Santiago, São Nicolau, Santo Antão and suggested it was ‘probably native’. Baliteau & Baliteau (2011) recorded it from Santo Antão. Specimens also formed part of a small collection of insects held at the Monte Gordo Park headquarters on São Nicolau. The collection of IICT contains specimens from Brava.

Hyles livornica (Esper, 1779)

Hyles livornica and *Hippotion celerio* were the two commonest sphingid moths seen by the authors in the Cape Verde Islands. On Santiago several specimens were observed (and two collected) whilst feeding at *Lantana* flowers near the peak of Monte Gâmbôa (1,080 m), 16 November. Both this species and *H. celerio* were common on Boa Vista on 19 November, flying with smaller numbers of *H. tithymali* and *Nephele accentifera* in extremely windy conditions on the leeward slopes of a shallow gully 2 km southeast of Povoação Velha. They were feeding on ground hugging yellow flowers (not identified) and did not stop for more than a few moments at individual flowers, making approach difficult on the steep, unstable shale slopes. On São Nicolau, on 23 November, one specimen was seen at dusk in some quite dense vegetation (presumably searching for flowers), near the centre of Vila da Ribeira Brava. Also on São Nicolau, several individuals were attracted to the flowers of *Echium stenosphon* on Monte Gordo at 600 m elevation on 6 December. This seems to be the first record of *H. livornica* from Boa Vista.

Aurivillius (1910) recorded three males of this species (as *Celerio lineata* var. *livornica*) from Brava and Nyström (1958) recorded it (as *Celerio lineata* f. *livornica*) from the islands of Santiago, Sal and São Vicente. Mück & Traub (1987: 95) recorded the species (as *Hyles lineata livornica*) from the island of Santiago: “Die Raupen ... fressen an *Boerhavia* spp. und *Euphorbia hirta*” [The caterpillars ... eat *Boerhavia* spp and *Euphorbia hirta*.]. Traub & Bauer (1982) recorded this species (as *Hyles lineata livornica*) from Santo Antão, São Nicolau and Fogo and confirmed Sal and Santiago. Báez & García (2005) reported it from Brava, Fogo, Santiago, Sal, São Nicolau, São Vicente and Santo Antão, regarding it as ‘probably native’. Vieira (2008) recorded it from Sal and noted it was also known from Santo Antão, São Vicente, São Nicolau, Santiago, Fogo and Brava. Baliteau & Baliteau (2011) recorded the species from Santo Antão. There are specimens from Maio and Santiago in BMNH. Harbich (2007) studied biological and morphological issues regarding *H. livornica* on Santiago.

ACKNOWLEDGEMENTS

This project was made considerably easier with pre-fieldwork advice and practical assistance from Maria Romeiras (Instituto de Investigação Científica Tropical, Lisbon, Portugal). We are also indebted to her and her staff for their assistance, humour and hospitality in Lisbon. Luís Mendes, also of IICT, kindly allowed access to the collections in his care, including historical Cape Verde material. In the Cape Verde Islands, we are extremely grateful to Nuno Ribeiro and Moisés Borges, Direcção Geral do Ambiente, for authority to carry out research in the islands. Jenine Carvalho, Head of Wildlife

Protection, Brava, kindly showed us his small collection of moths. Lindaci Oliveira, Parque Natural Monte Gordo, São Nicolau, and Lindorfo Ortet, Quinta da Montanha, Rui Vaz, Santiago, were helpful. Ian Kitching, Department of Life Sciences, Natural History Museum, London, was generous with his time and expertise in identifications and commented on a draft of this note. We are also grateful to Cornelis Hazevoet for helpful comments on the manuscript. The first author is very grateful for a fieldwork grant from the Percy Sladen Exploration Fund.

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Received 10 August 2015

Revision received 26 August 2015

Accepted 30 August 2015