

## On the identity of the species of *Melipotis* Hübner, 1818 from Ascension Island (Lepidoptera: Erebidae)

Published online: 28 December 2024

DOI: <https://dx.doi.org/10.4314/met.v35i1.9>

Timm Karisch 

Museum für Naturkunde und Vorgeschichte Dessau, Askanische Straße 32, D-06842 Dessau, Germany; Senckenberg Deutsches Entomologisches Institut, Eberswalder Straße 90, D-15374 Müncheberg. Email: [Timm.Karisch@dessau-rosslau.de](mailto:Timm.Karisch@dessau-rosslau.de)

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**Abstract:** Robinson & Kirke (1990) reported the occurrence of *Melipotis obliquivia* (Hampson, 1926) on Ascension Island. After more material was available for genitalia dissection and barcoding, the identity of the *Melipotis* population on Ascension has been verified. The specimens are conspecific with *Melipotis famelica* (Guenée, 1852), which is widely distributed in southern North America, the Caribbean, Central and South America. On Ascension the species is quite common, with a focus on the Green Mountain.

**Key words:** Alien species, South Atlantic, Central America, *Leucaena*

**Citation:** Karisch, T. 2024. On the identity of the species of *Melipotis* Hübner, 1818 from Ascension Island (Lepidoptera: Erebidae). *Metamorphosis* 35: 43–46.

Peer reviewed

### INTRODUCTION

Ascension Island is a remote island, situated approximately at 7° 56' south and 14°21' west, nearly central in the Atlantic Ocean.

Ascension is quite young and of volcanic origin. It consists of a high mountain (Green Mountain) in the centre, which rises up to 859 m a. s. l., surrounded by hilly areas and ash cones. Before the 19<sup>th</sup> century there was no settlement on the island and the vegetation was very scarce. Following successful planting of greenery on Green Mountain in order to increase the water supply and to ameliorate the soil quality, the vegetation is now composed of a very high number of introduced plant species (Lambdon, Sim and Stroud 2024). Many non-indigenous insects followed the introduction of alien plants.

The study of Lepidoptera on Ascension goes back to McLachlan (1878). Since that time, visitors have occasionally collected butterflies and moths, until E. A. G. Dufey (1922–2019) took part in a RSPB-expedition and reported on the island's fauna (Dufey, 1964). M. StG Ch. Kirke studied moths over a ten day period in 1988. Together with G. Robinson, he published a review of the Lepidopteran fauna of Ascension. Here the existence of a *Melipotis* Hübner, 1818-species, identified as *Melipotis obliquivia* (Hampson, 1926), is mentioned for the first time.

For the DPLUS145-project Dr Adam Sharp collected a vast amount of moth material from traps positioned across the island (Darwin Initiative, 2024). This material was mostly stored in ethanol. In addition to the same project, the author had the opportunity for field studies in November and December 2023.

Received: 29 October 2024

Accepted: 23 December 2024

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### METHODS AND MATERIALS

The investigations were based on material collected by H. Mendel, NHMUK, in 2012, by A. Sharp in 2022 and 2023, and by the author in 2017 and 2023. The specimens were observed at light. A 125 W Mercury Vapour bulb or a standard size LEPI-LED was used to attract the moths, operated by a generator or powerbank.

The material is stored in the following institutions:

MNVD: Museum für Naturkunde und Vorgeschichte Dessau, Germany

NHMUK: The Natural History Museum London, U.K.

SDEI: Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany

#### Material studied:

Marine Barracks, 750m, 07°57' S, 4°21' W, 6 ♂ 21.xi.2012, UV-light, Howard Mendel (MNVD, SDEI); Cronk's Path east of Mulberry Ravine, 7°56.899' S, 14°20.686' W, 1 ♂ 2 ♀, 05.xii.2023, T. Karisch (MNVD); 200 m WSW Palmer's, up sharp bend of NASA-Road, 7°57.739' S, 14°21.000' W, 1 ♂ 1 ♀, 04.xii.2023, T. Karisch (NHMUK);

Green Mountain, Wall 60 m NE Red Lion, 7°56.972' S, 14°21.085' W, 3 ♂ 1 ♀ (gen.-slide 4232) 16.xi.2023, T. Karisch (SDEI);

Queen Elizabeth II garden, 7°57.143' S, 14°21.065' W, 5 ♂ (1 ♂ gen.-slide 4231) 1 ♀ 19.xi.2023, T. Karisch (MNVD, SDEI); id., 1 ex. (sample MNVD-45453-D06) 22.ix.2022, A. Sharp (MNVD);

Green Mountain, Restoration site, 7°57.006' S, 14°20.700' W, 1 ♂ (sample MNVD-45453-A01) 12.vii.2022, A. Sharp (MNVD);

Green Mountain, New Mountain Road, 7°56.700' S, 14°21.420' W, 1 ex. (sample MNVD-45453-C04) 07.ix.2022, A. Sharp (MNVD);

Green Mountain, Mountain Road, 7°56.940' S, 14°20.998' W, 1 ex. (sample MNVD-45453-F01) 18.vii.2022, A. Sharp (MNVD).

The preparation of genitalia slides was undertaken according to Robinson (1976). They are embedded in Euparal. Genitalia were photographed using a Zeiss Axioscope 5 microscope with Axiocam 305 colour camera. The lower quality general views are taken with a CANON EOS 1100D, mounted on an Euromex stereo microscope. Photos of the moths were taken using a Canon Eos 600D with 100 mm Macro in the laboratory, but an Olympus Tough TG-7 in the field; the latter was also used to photograph the habitats.

From the material collected by A. Sharp, legs of some specimens were sent for barcoding to the Canadian Center for DNA barcoding (CCDB) at the University of Guelph, Canada. The barcoding followed the protocols published by De Waard et al. (2008). For analysis the tools provided by BOLD Systems (2024) were used, for example the Taxon ID Tree and the Barcode Gap Summary (both: Kimura 2-Parameter distance model; BOLD Alinger). The FASTA files were loaded into the BOLD identification tool for comparison with public and private data in the databases, the results were also compared with the record list of the public data portal.

## RESULTS

*Melipotis obliquivia* is a poorly known species. It was described by Hampson (1926: 34) as *Gerespa obliquivia* after a male from Nassau in the Bahamas. Besides the type he mentioned another male from Andros, also located in the Bahamas.

According to the original description and the information given in Poole (1989), the type of *M. obliquivia* is supposed to be stored in the NHMUK, but the author was not able to locate it during a visit in 2022. G. Robinson had it at hand when he identified Kirke's specimens to be this species, but there are no subsequent records of *M. obliquivia*.

The Moth Photographers Group (2024) does not list *M. obliquivia*, neither as an accepted species nor a synonym. But there are many records of several other *Melipotis* from adjacent territories, such as Florida, Cuba or Hispaniola. It is hard to imagine that such a strong moth is an endemic species to the Bahamas. The archipelago is just a few hundred kilometers east of Florida, and all are flat islands. Adults of *Melipotis* should be able to cross such distances from time to time, perhaps with the help of stronger winds.

It is more likely that the *Melipotis* on Ascension is an introduction from the American mainland rather than from the Bahamas. Therefore the author searched for other *Melipotis* species similar to the one from Ascension. The Moth Photographers Group (2024) illustrates many North American *Melipotis* and often gives several illustrations of specimens of one species to show the variations. Accordingly, the species from Ascension (Figs 1–2, 3) was tentatively identified as *Melipotis famelica* (Guenée, 1852). By comparing the slide of the male *Melipotis* from Ascension (Fig. 4) with the illustrations on the mentioned website, the identification as *M. famelica* was confirmed. An illustration of the female genitalia of *M. famelica* is also provided here (Fig. 5).

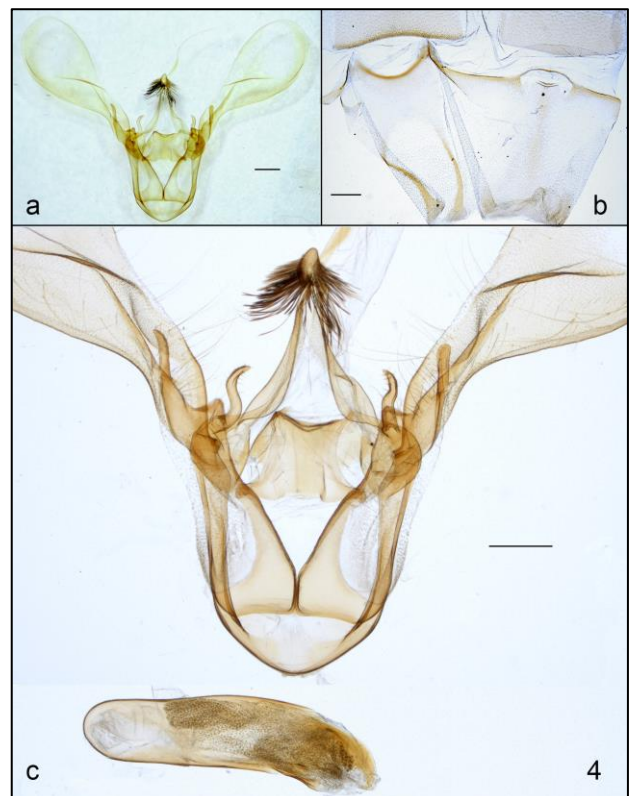


**Figures 1 & 2** – Adults of *Melipotis famelica*; 1. male, 2. female (photos: MNVD, 2024).

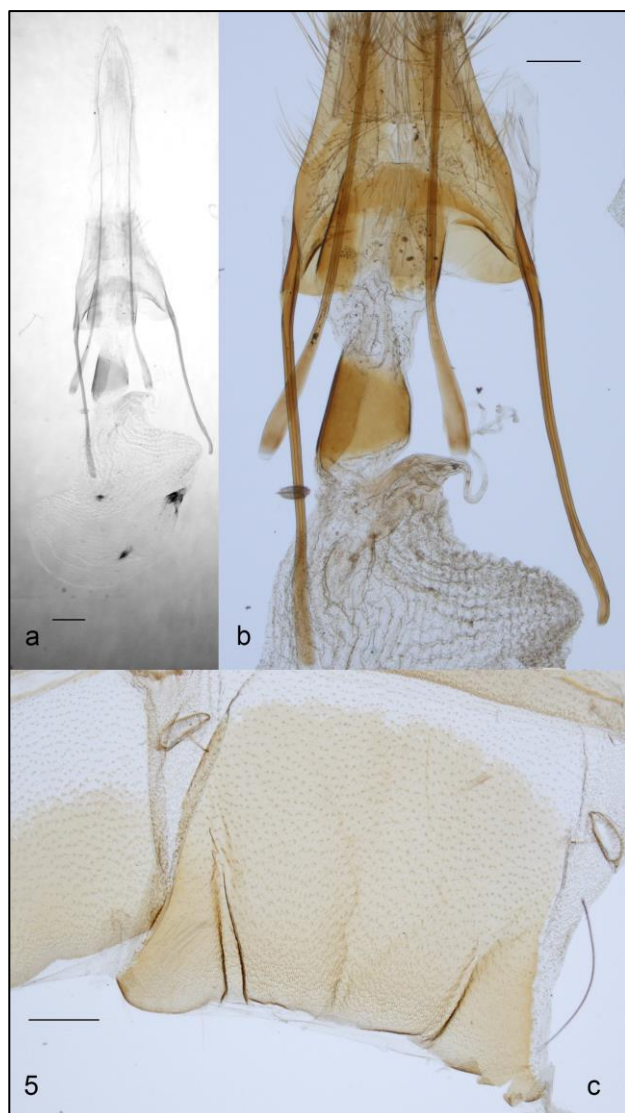


**Figure 3** – Male of *M. famelica*, resting during light trap at a wall near Red Lion (photo: T. Karisch, 2023)

Illustrations of the genitalia of *Melipotis* are difficult to find. However, the Cornell University Insect Collection(2024) gives some on its website including those of male *M. famelica* and similar species, like *M. januaris*



**Figure 4 a–c:** Male of *M. famelica*; a. general view of genitalia, b. last abdominal segment, c. genitalia and penis (photo: MNVD, 2024)



**Figure 5** – Female of *M. famelica*; a. general view of genitalia, b. details of tergum A8, ostium, antrum and ductus bursae (photo: MNVD, 2024).

The four specimens sent for barcoding to CCDB were successfully sequenced. All specimens cluster with no differences into the taxon ID tree and show no differences in barcode gap analysis. The four specimens match 99.85–100 % with 25 *Melipotis* in the Bold Systems database, all identified as *M. famelica*. These specimens were mainly collected in Costa Rica, but also in Martinique and the United States.

Following the results of the investigations described here, the original identification of the *Melipotis* species from Ascension Island (Robinson & Kirke 1990) should be revised. It is indeed *M. famelica*, also an introduction from North or Central America. It was not possible to check the original status of *M. obliquivia* with the type specimen, but Hubert Thöny (in litt., 2024) was able to provide an older photograph of the type. It shows a specimen within the variability of *M. famelica*. In the case that *M. obliquivia* is the same species as *M. famelica*, then the name *M. famelica* would have priority: *Gerespa obliquivia* was described by Hampson in 1926, *Bolina famelica* by Guenée in 1852.

*Melipotis famelica* is distributed from the southern U.S.A. through Central America and the Antilles to South America

as far as Brazil, Paraguay and Argentina (Hubert Thöny, in litt., 2024). As observed on the British Virgin Islands, the caterpillar feeds on *Leucaena latisiliqua* (L.) Benth. (FUNET 2024). On Ascension a different Mimosoideae has been introduced: *Leucaena leucocephala* (Lam.) de Wit, which might be the foodplant for the caterpillars on the island. *Leucaena leucocephala* occurs around Two Boats, Travellers Hill and on Green Mountain (Lambdon, Sim & Strout, 2024) (Fig. 6), which coincides with the occurrence of *M. famelica* (Table 1).



**Figure 6** – Habitat of *M. famelica* at Cronk's Path at the northern slopes of Green Mountain (photo: T. Karisch, 2023).

## ACKNOWLEDGEMENTS

The author thanks Dr Tiffany Simpson, Ascension Island Government, Head of Conservation Department, and Dr Adam Sharp, University of Hong Kong, for organising the stay on Ascension and issuing the relevant permissions (ERP-2023-009). Dr Phil Lambdon, Ascension Island Government, Conservation Department, is thanked for his invaluable help in identifying the plant species and finding localities for the moth search. The author is also grateful to Dr Alberto Zilli, The Natural History Museum London, for allowing the access to the collection, to Howard Mendel, Ipswich, for providing material of *M. famelica* from Ascension and introducing the island's nature in 2017, and to Hubert Thöny, Camacan, Brazil, for the type photo of *M. obliquivia* and information on the distribution of *M. famelica*. Brianne St. Jacques, Center for Biodiversity Genomics, University of Guelph, is thanked for her help in connection with the barcoding. Finally, the author is indebted to Amy-Jayne Dutton, Kingsley, for checking and improving the English language of the manuscript, and to the two reviewers for their helpful comments and corrections.

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**Table 1** – List of localities and numbers of specimens sampled at light traps during 2023 field work.

Collection dates 2023	Locality	No. of specimens	Habitat/host plant
Nov 15th	Grazing Valley, 7°57.551' S 14°21.855' W	3	Low guava shrubs with lichen covered rocks
Nov 16th	Red Lion, wall about 50 m E, 7°56.972' S 14°21.085' W	6	Park and garden, ruderal vegetation (Fig. 3)
Nov 18th	Cricket Valley, southern crest N of old NASA-building, 7°57.213' S 14°19.758' W	1	Scattered <i>Juniperus bermudiana</i> L. and guava on lichen covered stones and rocks
Nov 19th	Green Mountain, Queen Elizabeth II Garden, 7°57.143' S, 14°21.065' W	23	Cleared mixed woodland
Nov 19th	Green Mountain, street at path to Middleton, 7°56.840' S 14°21.369' W	3	Shrubs of <i>Leucaena leucocephala</i> (Lam.) De Wit-shrubs and <i>Eucalyptus</i>
Nov 20th	Mountain Red Hill, W of Gravel Bend, 7°58.193' S 14°21.362' W	3	Lichen covered scree and sparse guava
Dec 04th	NASA-road up sharp bend near Palmers, 7°57.739' S 14°20.999' W	4	Lichen covered rocks and guava
Dec 05th	Green Mountain, Cronk's path E of Mulberry Ravine, 7°56.899' S 14°20.686' W	19	Rocky slope with scarce <i>J. bermudiana</i> and guava (Fig. 6)