



The male of *Iolaus (Epamera) malaikae* Bayliss *et al.*, 2016 from Mt. Namuli in Mozambique

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Abstract: The male of *Iolaus (Epamera) malaikae* from Mt. Namuli, Zambezia Province, Mozambique is described. The presence of an *Iolaus (Epamera) pollux* subgroup as a cohesive taxonomic subgroup is questioned; instead it is suggested the two species *I. (E.) helenae* & *I. (E.) malaikae* form the basis of a subgroup.

Key words: *Iolaus*, *Epamera*, *malaikae*, Mt. Namuli, Mozambique

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INTRODUCTION

The first specimen of *Iolaus (Epamera) malaikae*, a male, was captured in April 2008 (A.J. Gardiner) from Mt Namuli Mozambique. Several months later 3 females, November 2008, were bred from Mt Namuli by Bayliss, Bampton & Congdon. Two years later a further 2 females were bred from Mt Mabu by the same collectors. For reasons unknown to the present author, although being aware of the male specimen, *I. (E.) malaikae* was described by the authors, Bayliss *et al.* (2016), from the small female series. This paper describes the single male and although not in good condition it remains the only male specimen known to the author and confirms the specific status of the species.

MATERIALS AND METHODS

Wing pattern characteristics were analysed and compared using the pattern elements and homologues of the nymphalid ground plan (Schwanwitsch 1924, 1926, 1949; Suffert 1927; Nijhout 1991). The terminology used in the present paper, Fig. 1, follows Gardiner & Terblanche (2010). This has been used so that the developmental origins of the patterns can be obtained. The more this system is used the greater will be our ability to judge the significance of pattern changes, by comparing how patterns of the same origin have changed and how “easily” this change can occur. This together with other lines of evidence, such as DNA analysis and other morphological differences, should slowly improve our ability to delimit species.

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Material examined

Male: Mozambique, Mt Namuli, 21.iv.2008 A.J. Gardiner (Gardiner Coll. Hoedspruit, South Africa).

Other material: Photographs of the type series ♀s of *I. (E.) malaikae* were not available to the author for this study, hence the information and images from Bayliss *et al.* (2016) were utilised. Good quality photographs of the holotype ♂ and allotype ♀ of *Iolaus (Epamera) helenae* Henning & Henning, 1989 were obtained from the Ditsong National Museum, Pretoria (TMP) and the Henning Private Collection, Johannesburg (HPC). The ♂ genitalia slide of *I. (E.) helenae*, holotype, was examined (TMP). In addition good quality pictures of two ♀s of *I. (E.) helenae* were obtained from the Murphy Private Collection, Mzuzu, Malawi (MPC).

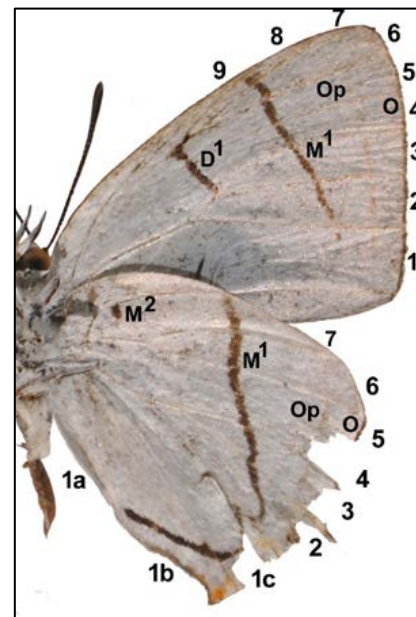


Figure 1 – Underside pattern of *Iolaus (Epamera) malaikae* ♂, using the terminology of Gardiner & Terblanche (2010).

DESCRIPTION

Iolais (Epamera) malaikae male (Figs 2A, B, I–M)

Male: Head: Distinct white ring around eyes except just anterior to pedicel (Fig. 2I), this patch and pedicel dark brown-black, also black at base of eye next to palps, palps: first and second segment black dorsally white ventrally (Fig. 2J), third segment white, frons: white with a few light brown scales [according to Bayliss *et al.* (2016) ♀ frons orange red – this would be interesting, but seems unlikely as the ♂ and ♀ frons tend to be of the same colour and structure and thus requires confirmation], legs: dorsally black ventrally white (Fig. 2K). **Wings:** The ♂ was damaged during capture and hence the tail area of hindwing cannot be described, but is assumed to be similar to the ♀. **Upper side** (Fig. 2A) black with an area of rich royal blue; blue area also containing black scales. Forewing with large black apical area, entire costal area and spaces 4–6 black, cell mostly blue, the amount of blue increasing in spaces 3–1 with anal angle black with rest of inner margin blue, this gives the blue a half to three quarter semi-circular shape. Hind wing. Space 6 black, it appears black narrows to margin and likely margin black, spaces 1a and 1b dark grey to black with a few blue scales.

Androconial sex patch light brown situated at base of space 6 and just going into space 7 close to where veins 6 & 7 join (Fig. 2L), patch ringed with dark scales, which at certain angles provide a blue reflection, white scales above androconial patch. Base of hindwing with a patch of grey-black scales that provide a purple sheen at certain angles (Fig. 2M). **Underside** (Fig. 2B): ground colour white with scattered silver scales giving the underside a silver hue. Forewing O narrow dark brown, Op1–Op5 faint broken at each vein, M¹²–M¹⁸ bold dark brown straight except slightly bulging distally in M¹⁶, broadening slightly from M¹²–M¹⁸, angled inward so nearly at 90°, small M¹¹ mark disjunct from remainder of M¹, D¹ complete. Long androconial tuft attached to margin of forewing, underside, brownish near base becoming black but only the black portion tends to be visible. Androconial tuft probably used to spread scent of hindwing androconial patch. Cilia: those present dark brown-black. Hind wing O narrow dark brown, damaged at 1c & 2 and stopping at vein 1b, Op3–Op5 faint lighter brown and broken at veins, Op1c & Op2 probably orange (also some orange can be made out near distal margin of space 1b), M¹²–M¹⁷ bold dark brown narrowest at M¹² where it bends noticeably inwards towards vein 2, M^{11c} continues as before towards margin but then bends smoothly to vein 1c where it broadens again and then runs nearly parallel to the margin stopping at vein 1b. Brown subbasal spot M²⁷. Cilia: those present dark brown with some longer white scales.

Genitalia (Figs 3A–C)

Valve (Fig. 3A) more elongate than in *helenae* (Fig. 3D) and with two apical protuberances broadly separated (Fig. 3A), inner protuberance elongated and rounded apically, outer protuberance shorter and sharper apically. In *helenae* valve (Fig. 3D) with no

protuberances but lobed and outer lobe larger than inner one. Vinculum (Fig. B) appears to be of greater diameter than in *helenae* (Fig. E) and both vinculum uncus and subuncus appear to be more robust in *helenae*. Aedeagus (Fig. C) similar to *helenae* (Fig. F) with a large apical hook (Fig. C).

Diagnosis

As far as external morphology is concerned, and the shape of the aedeagus with its large apical hook, *I. (E.) helenae* and *malaikae* are closely related. The two can easily be distinguished from other *Epamera* by the hindwing underside having a bold subbasal spot M²⁷ (Figs 1 & 2B, D, F & H). Furthermore, the underside lines discal D¹ and post discal M¹ are bold in comparison to most other species with similar markings (Figs 1 & 2B, D, F & H). For comparison the adults of both *malaikae* and *helenae* are both figured below (Figs 2A–2H). The *helenae* specimens figured are the ♂ holotype (TMP) and the ♀ allotype (HPC). Further studies, particularly genetic, may show *Iolais (Epamera) amanica* (Stempffer, 1951) to be related to these two species, as their genitalia show certain similarities such as the large hook at the apical end of the aedeagus.

Key (to distinguish between *I. (E.) helenae* and *malaikae*)

– Underside M¹, D¹ & M² lighter brown “reddish”. Underside forewing M¹²–M¹⁸ bold, similar width up to vein 2, nearly parallel to outer margin, Hindwing M¹³–M¹⁷ with a slightly uneven appearance
..... *helenae*

– Underside M¹, D¹ & M² dark brown. Underside forewing M¹²–M¹⁸ bold and straight except slightly bulging distally in M¹⁶, broadening slightly from M¹²–M¹⁸, at more of an angle to the outer margin than *helenae*. Hindwing M¹³–M¹⁷ with a straighter appearance
..... *malaikae*

Behaviour

The male was caught at an altitude of about 1250 m on Mt Namuli, it was flying in Riparian vegetation high up on a tree. It showed typical male *Iolais* territorial behavior.

DISCUSSION

The *Iolais (Epamera) pollux* “subgroup”

Although both Henning & Henning (1989) and Bayliss *et al.* (2016) recognise an *Iolais (Epamera) pollux* (Aurivillius, 1895) subgroup, the author cannot find any criteria to distinguish these taxa as a distinct group from other members of the *Epamera*. Henning & Henning (1989) stated that: “Members of the *pollux* subgroup are characterised by having the ♂s and ♀s similarly coloured and marked. The underside of both fore and hind wings have fairly straight discal and post discal lines which converge posteriorly”. Some *Epamera* species not in the *pollux* subgroup have ♂s and ♀s alike such as *Iolais (Epamera) stenogrammica*

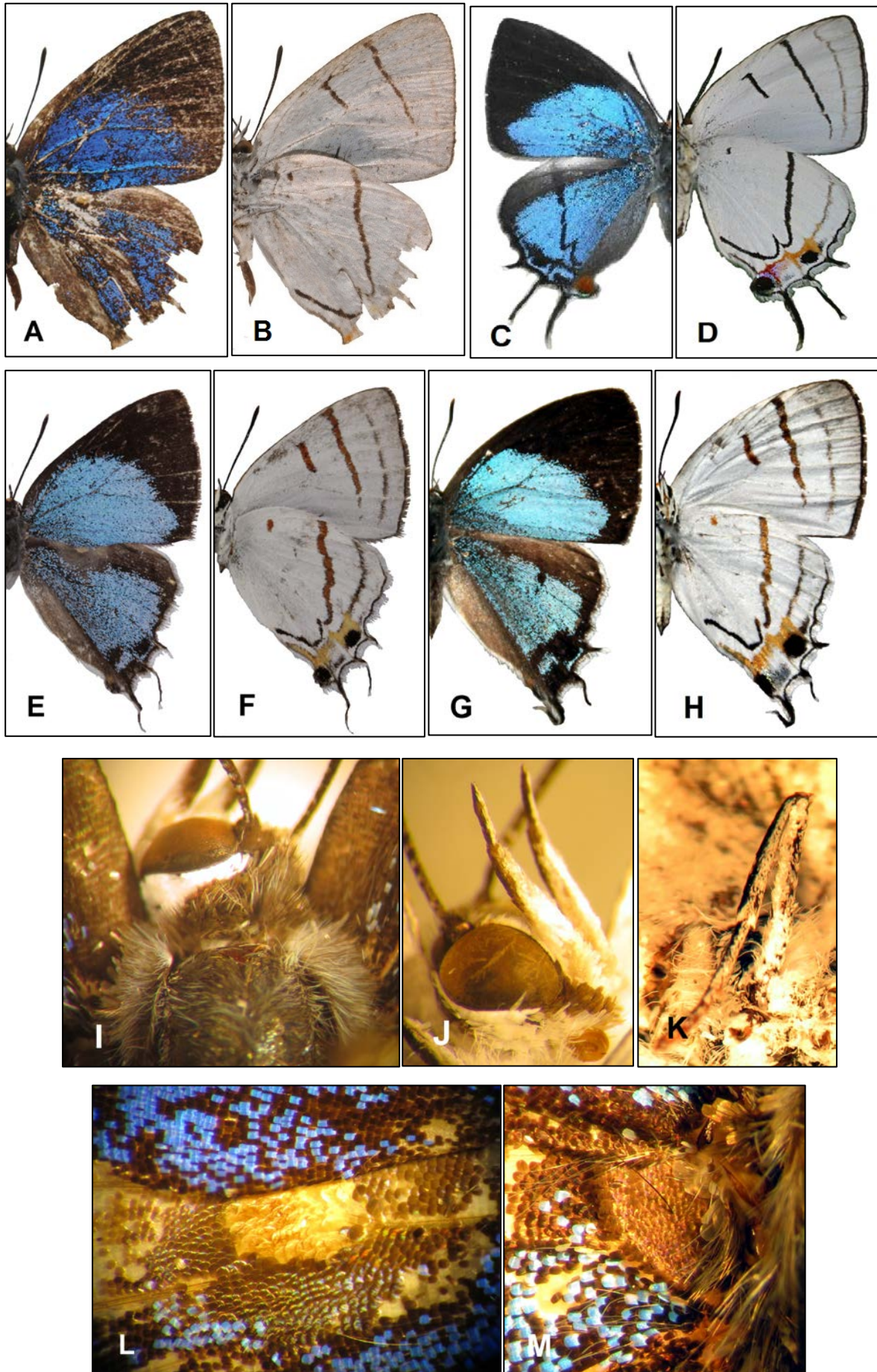


Figure 2: A–D *Iolais (Epamera) malaikae*: A & B ♂, A recto, B verso; C & D ♀ (from Bayliss *et al.* 2016), C recto, D verso. E–H *Iolais (Epamera) helenae*: E & F ♂ Holotype, E recto, F verso; G & H ♀ Allotype, G recto, H verso. I–M *Iolais (Epamera) malaikae* ♂: I – eye with white ring; J – palps; K – leg; L – androconial patch; M – scales at base of hind wing.

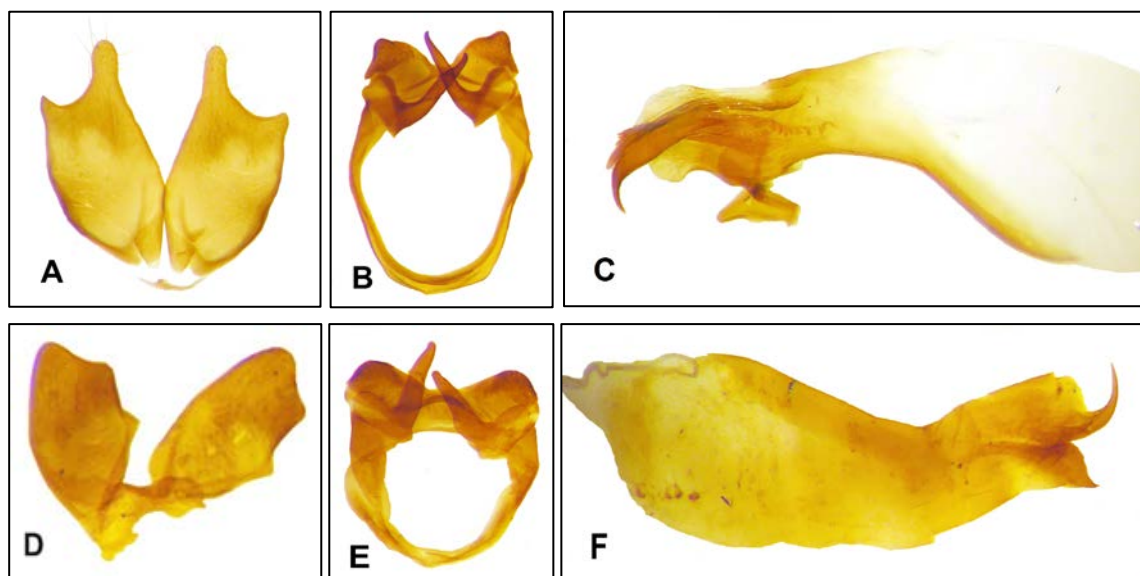


Figure 3: Male genitalia: A – C *Iolais (E.) malaikae*; A Valve, B Vinculum with uncus & subuncus & C Aedeagus; D–F *Iolais (E.) helenae*; D Valve (note this is from holotype slide and the valves may be twisted so one in ventral and other in dorsal view), E Vinculum with uncus & subuncus & F Aedeagus.

(Riley, 1928); similarly many have fairly straight discal and postdiscal lines that converge posteriorly such as *Iolais (Epamera) sibella* (Druce, 1910) and *Iolais (Epamera) iasis* Hewitson, [1865]. Some species in other subgenera of the Iolaini such as *Iolais (Pseudiolais) lulua* (Riley, 1944) fit the above description, albeit in this case the ♂ has a ♀ appearance. Furthermore, members within the “subgroup” such as *Iolais (Epamera) silanus silanus* Grose-Smith, 1899 have ♀ forms that are very different in colouration to the ♂. Even the ♀s of *Iolais (Epamera) silanus rondo* (Congdon & Collins, 1998), *I. (E.) amanica*, *I. (E.) helenae* and *I. (E.) malaikae* are easily distinguishable from the ♂ without having to look at the sex patch.

The genitalia also do not provide any characteristics supporting the subgroup. Stempffer & Bennett (1959) attempted to place the *Epamera* in subgroups according to the genitalia, but instead put the species in a sequence stating “But in our opinion, it is virtually useless to fragment this into subgenera whose validity is questionable”. Using Stempffer & Bennett’s sequence the members of the “*pollux*” subgroup occur in different parts of their arrangement.

ACKNOWLEDGEMENTS

Graham Henning made his collection available for study, and provided pictures of the allotype ♀ of *I. (E.) helenae*. Martin Kruger of the Ditsong National Museum of Natural History kindly loaned the *I. (E.) helenae* holotype ♂ genitalia slide, and provided images of the holotype ♂. Ray Murphy is thanked for providing *I. (E.) helenae* photographs from Nyika, Northern Malawi.

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