



Description of two new species of African Lycaenidae in the collection of the African Butterfly Research Institute

Published online: 6 June 2013

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Abstract: Two new species of African Lycaenidae recently discovered in East Africa are described, *Aslauga gallmannae* Collins & Libert sp. nov. from Kenya, and *Pseudaletis barnetti* Libert & Collins sp. nov. from Uganda.

Key words: Butterflies, Papilionoidea, Lycaenidae, Africa, *Aslauga*, *Pseudaletis*

Citation: Libert, M. & Collins, S.C. (2013). Description of two new species of African Lycaenidae in the collection of the African Butterfly Research Institute. *Metamorphosis* 24: 3–6.

INTRODUCTION

The African Butterfly Research Institute (ABRI) in Nairobi, Kenya has published several articles describing new species of African butterflies (Collins & Larsen, 1998; 2000; 2005; Collins *et al.*, 2004 [2003]). Continued collecting and research has facilitated the description of two new lycaenid species from East Africa, in the purely Afrotropical genera *Aslauga* Kirby, 1890 and *Pseudaletis* Druce, 1888, last reviewed by Libert (1994; 1997; 2007).

MATERIAL AND METHODS

The type series of both new taxa (a male and two females of *Aslauga gallmannae* sp. nov. and a male of *Pseudaletis barnetti* sp. nov.) were examined and compared with specimens of their closest relatives *A. latifurca* Cottrell, 1981 and *P. michelae* Libert, 2007.

Genitalic dissections were made of the holotype female and the allotype male of *A. gallmannae* sp. nov., and compared with the genitalia of three females and seven males of *A. latifurca*. A genitalic dissection was made of the holotype male of *P. barnetti* sp. nov. and compared with males of *P. michelae*.

Legs from three specimens of *A. gallmannae* sp. nov. (the male and two females) and six specimens of *A. latifurca* were removed and sent for DNA analysis and comparison. The legs from the holotype of *P. barnetti* were also removed and sent

for DNA analysis, sequenced and compared with the sequence available for *P. michelae*.

All samples were submitted to the Canadian Centre for DNA Barcoding (CCDB, Guelph University), where DNA of mitochondrial gene CO1 was extracted, amplified and sequenced. Protocols are available on the CCDB website: <http://www.ccdb.ca/resources.php>.

DESCRIPTIONS

Genus *Aslauga* Kirby, 1890

Aslauga purpurascens complex

The *A. purpurascens* complex of genus *Aslauga* was erected by Cottrell (1981), who placed six species in it - *A. purpurascens* Holland, 1890 plus five species forming a homogeneous group, which we name the *Aslauga marshalli* species group [*A. marshalli* Butler, 1899 and the four species described by Cottrell (*ibid.*) - *A. latifurca*, *A. orientalis*, *A. atrophifurca* and *A. australis*]. Genitalia of both sexes play a major role in the separation of the species of the *A. marshalli* group. According to Cottrell (*ibid.*), three species of this group are present in Kenya, *A. marshalli* and *A. latifurca*, plus *A. orientalis*, which has only been observed on the Kenyan coast. The new species described below is a member of the *A. marshalli* species group.

Aslauga gallmannae Collins & Libert sp. nov.

Description

Male (Figs 1c, d) Forewing length c. 12 mm. Forewings regularly rounded, without angle in space 3 present in both *A. marshalli* and *A. latifurca*. Hindwings also regularly rounded; contrast with angular wings of *A. marshalli* and *A. latifurca* more striking. Upper side dark brown, with some blue at base of forewings

Received: 20 February 2013

Accepted: 5 June 2013

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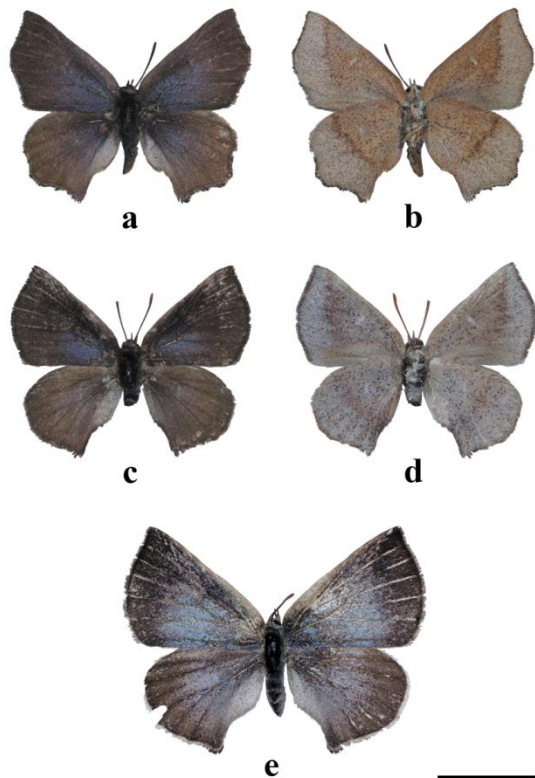


Figure 1 – *Aslauga* species (scale bar = 1 cm):
a *A. latifurca* male recto (Ngelesha forest, Kenya)
b *A. latifurca* male verso (as above)
c *A. gallmannae* sp. nov. AT male recto
d *A. gallmannae* sp. nov. AT male verso
e *A. gallmannae* sp. nov. HT female recto

(lower part of cell, basal half of space 1 and base of space 3, plus sparse scales at base of 4); blue sheen in the discal part of hindwings between veins 1 and 5. Sexual brand on hindwings (c. 2 mm) grey, hardly distinct on the dark background. Underside purple, speckled with dark scales and conspicuous dark fringes on forewings;

lighter mark faintly visible at end of forewing cells, hardly visible at end of hindwing cells. Dark oblique transverse stripe wide, ill defined, not very apparent.

Females (Fig. 1e) Forewing length 15–16 mm. Females larger than male, but similar shape, with same differences with the females of *A. latifurca*. Upper side blue much lighter than in the male; also more extended, especially in spaces 2, 3 and 4 of forewings. Underside lighter, brown rather than purple, and similarly speckled. The white mark only visible at ends of forewing cells. Transverse stripe usually much narrower than in the male, but rather variable, and in one female as wide as in the male, and even darker.

Male genitalia (Figs 2a–d) Closest to those of *A. latifurca*, (Figs 2f–h) but the fultura inferior (juxta) much wider, shape of valves different; saccus longer than the seven males of *A. latifurca* dissected (although usually not a very reliable character). Figs 2a (*A. gallmannae*) & 2f (*A. latifurca*) show difference in width of uncus but *A. latifurca* variable and difference not significant. Penis not significantly different from penis of *A. latifurca*.

Female genitalia (Fig. 2e) From three females dissected, sclerotized parts much less developed than in females of *A. latifurca* (Fig. 2i) [two females dissected, plus those illustrated by Cottrell (1981, Fig. 7)]. Lateral sclerites of the lamella postvaginalis reduced, although as widely separated as in *A. latifurca*; sinus vaginalis (antrum *sensu* Cottrell) hardly sclerotized.

Diagnosis

The genitalia show that *A. gallmannae* sp. nov. is closest to *A. latifurca*, but it exhibits differences which warrant the description of a distinct species.

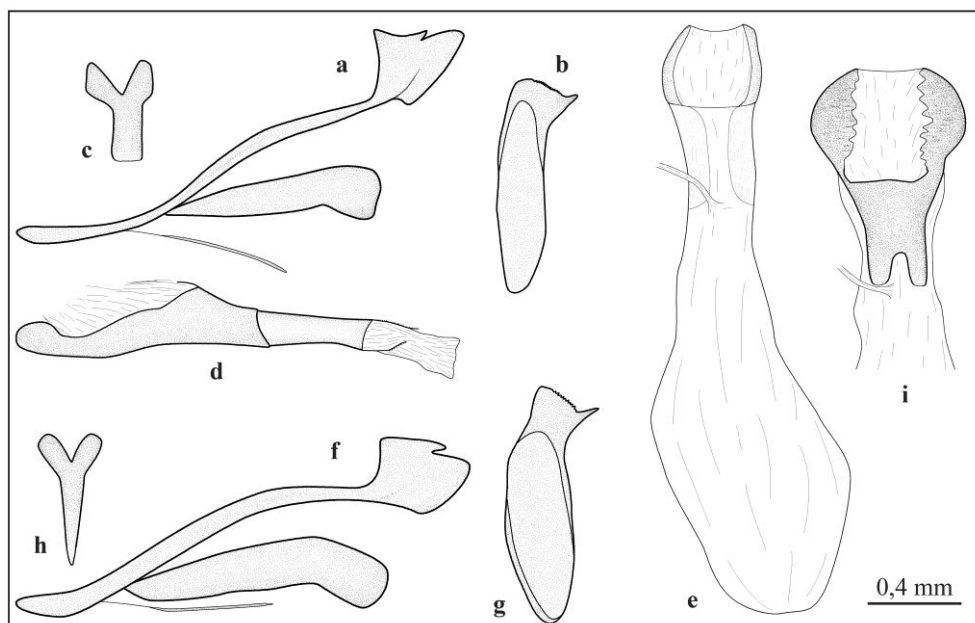


Figure 2 – Genitalia of *Aslauga* species (left, males; right, females):
a–e *A. gallmannae* sp. nov. (HT and AT)
f–i *A. latifurca* (male from Ngelesha forest, Kenya [genitalia Libert 112-365]; female from Rangwe, SE Kenya [genitalia Libert 112-370])
a, f: lateral view of male genitalia ; **b, g**: lateral view of left valve ; **c, h**: dorsal view of futura ; **d**: lateral view of penis ; **e, i**: dorsal view of sinus vaginalis.

The male of *A. latifurca* illustrated on the plate has also been caught at the type-locality of *A. gallmannae* sp. nov.; its genitalia are illustrated in Fig. 2 (f–i).

The genetic difference between the CO1 sequences of the two species exceeds 5 %, which is strong evidence that they are distinct. Data for the barcoded specimens are available in the Barcoding of Life Data System (BOLD) database www.barcodinglife.org (Ratnasingham & Herbert, 2007) project « African Lycaenidae » (code ALYML).

Type material

Holotype female: Kenya: Ngelesha forest, Ol Ari Nyiro, 50 km NW Nyahururu; 00°28.55'N, 36°17.15'E, 1780m; 7/8 June 2008. (ABRI *leg.*); genitalia Libert 112-370; BOLD: MLIB-0772. (Collection ABRI, Nairobi, Kenya).

Allotype: male, same data as holotype, except genitalia Libert 109-225; BOLD: MLIB-1079. (Collection of ABRI, Nairobi, Kenya).

Paratypes: 4 females, same data as holotype (ABRI *leg.*). Collection ABRI, Nairobi, Kenya.

1 female, same data as holotype, except M. Roberts *leg.* (Collection M. Roberts).

Habitat

Ngelesha is a mixed deciduous forest in rocky grassland.

Etymology

The species is named after Kuki Gallmann, who has done so much for nature conservation in the Laikipia district of central Kenya. By conserving the last small fragment of a much larger forest, she has conserved this butterfly, since all specimens recorded so far, one male and nine females, were collected in this forest.

Genus *Pseudaletis* Druce, 1888

The new species described below was recently discovered by Mike Barnett in the Mabira forest of Eastern Uganda, where he caught a single strikingly distinct male.

Pseudaletis barnetti Libert & Collins sp. nov.

Description

Male (Figs 3a, b) Forewing length c. 18 mm (20–21 mm for *P. michelae*). Upper side margins deep blackish; discal areas pure white, as in *P. michelae* (Figs c, d), lacking creamy shade seen in species of the *P. clymenus* group. Forewings with less black than any other black and white species. Black costal margin narrow (c. 1.5 mm) and only costal bar BC3 visible, just above end of cell. Black apical zone c. 10 mm wide, less than in *P. michelae*. Margin much narrower along external edge (c. 1 mm in space 2 and 2 mm in space 1). Hindwings characteristic, with wide black apical zone existing in no other species (c. 2 mm in space 5 and 4 mm in space 6). In spaces 1 and 2, margin narrower than in *P. michelae* (c. 0.5 mm); anal lobe more pronounced, c. 2 mm wide and entirely

black, without any light marginal line. The abdominal fold - white or creamy in other species - very dark. Short tails present at end of veins 2; longer tails usually observed at end of 1b missing (present in all other species – may be lost).

Underside similar to upper side, except for orange marginal line in anal lobe.

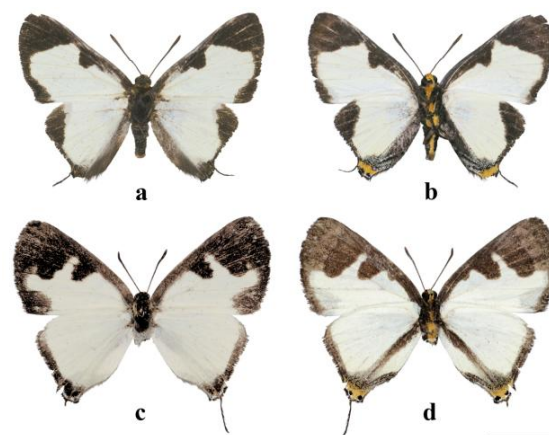


Figure 3 – *Pseudaletis* species (scale bar = 1 cm): *P. barnetti* sp. nov. male HT **a** recto; **b** verso *P. michelae* male (Zoetoupsi, Cameroon) **c** recto; **d** verso

Diagnosis

The reduced black margins and the pure white of the upper side do show that it is closer to *P. michelae* than to members of the *P. clymenus* group, but the facies differ sufficiently from *P. michelae* to justify the description of a distinct species, *P. barnetti* sp. nov.

The male genitalia of *P. barnetti* sp. nov. are virtually identical to those of *P. michelae*, confirming the closeness of the two species. *P. barnetti* is also placed in the *P. catori* subgroup of the *P. agrippina* group. It should be noted however that these groupings are based on female genitalia (Libert, 2007: 12).

The CO1 DNA sequence only has a difference of c. 2 % from the only available one for *P. michelae*, but the latter sequence is fragmentary and has only 307 bp. The difference has to be more accurately determined by sequencing more samples.

Type material

Holotype male: Eastern Uganda: Mabira forest, 55 km E Kampala, 00°28.84'N, 33°01.17'E; 8 May 2010 (M.J.H. Barnett); genitalia Libert 112-381; BOLD: MLIB-1093. (Collection ABRI, Nairobi, Kenya).

Habitat

Mabira is a hill surrounded by dense tropical forest – one of the eastern most fragments of intact Grand Central African rainforest.

Biogeography

P. michelae has only been found in Cameroon, Congo and the DRC, so *P. barnetti* could be said to be its eastern vicariant.

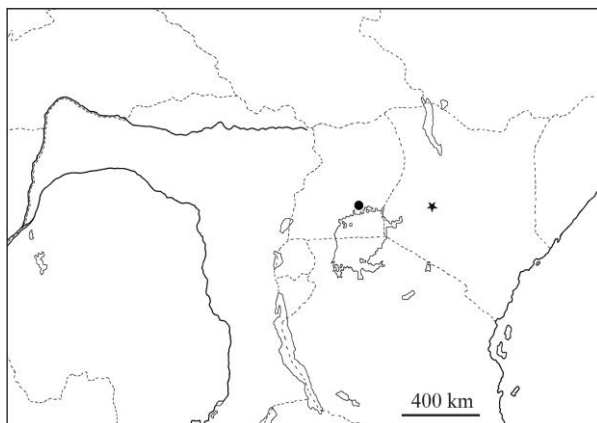


Figure 4 – Map showing the type localities of *A. gallmannae* (star) and *P. barnetti* (circle)

Etymology

The species is named in honour of its discoverer, M. Barnett, whose first *Pseudaletis* turned out to be a species new to science. His collections at Mabira forest, Jinja, together with Peter Ward over a few years have also resulted in several other scientific discoveries awaiting description.

ACKNOWLEDGEMENTS

The authors thank Kuki Gallmann for encouraging and allowing Michael Roberts and Steve Collins to collect Lepidoptera and work at her property Laikipia Nature Conservancy. They also

congratulate Michael Roberts for his excellent scientific observation capacity, and Michael Barnett for handing over the first *Pseudaletis* he had caught for the advancement of scientific nomenclature.

They are also grateful to the anonymous reviewers and the editor of *Metamorphosis* for improvements to the text and illustrations.

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