TAXONOMY OF THE AFROTROPICAL GENUS *MELPHINA* EVANS AND THE DESCRIPTION OF TWO NEW GENERA: *MELPHINYET* AND *NOCTULANA* (LEPIDOPTERA: HESPERIIDAE: HESPERIINAE, *INCERTAE SEDIS*)

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Abstract - Two new genera of Afrotropical Hesperiidae, *Melphinyet* and *Noctulana*, are described to receive some of the species currently included in the genus *Melphina* Evans, to which they do not belong. The type species are respectively *Melphina flavina* Evans and *Parnara noctula* Druce. The need to include genitalia and androconial features in the definition of genera is emphasized since this was rarely done when defining the African Hesperiidae genera. The males of all species and a selection of genitalia from the three genera are illustrated.

Key words: *Melphinyet flavina* **comb. nov.**, *Melphinyet statirides* **comb. nov.**, *Melphinyet tarace* **comb. nov.**, *Melphinyet unistriga* **comb. nov.**, *Noctulana noctula* **comb. nov.**, genitalia, androconia.

INTRODUCTION

When Evans (1937) revised the Afrotropical skippers (Hesperiidae) he described about 75 new species (and many new subspecies) bringing the total to 421 species and 157 subspecies (he published another 25 species in subsequent notes between 1938 and 1956). He also described 15 new genera, bringing the African total to 70. One of these was the genus *Melphina* with *M. melphis* Holland as the type species. As defined by Evans it included five species, with *M. tarace* Mabille having four distinct forms, later raised to species level by Lindsey & Miller (1965). The species included in the genus had previously been placed in the "omnibus" genera *Pamphila*, *Parnara*, and *Baoris* – depending on dates and authors. While preparing a monograph on the African Hesperiidae I have inspected most species and dissected or obtained good genitalia preparations of nearly all genera and more than two-thirds of known African mainland species. It became increasingly clear that several genera were not monophyletic and needed redefinition. In the case of *Melphina*, this has resulted in splitting off some species into two new genera, described in this paper: *Melphinyet* and *Noctulana*. This is in large part because the structure of the male genitalia and the nature of androconial features are also taken fully into account. Evans sometimes mentioned structural characters of the male genitalia, and always described androconia, but hardly ever considered them relevant to the definition of the African genera, using them mainly to tell species apart.

A parallel example to the issues raised by the *Melphina* is the recent revision of the subfamily Coeliadinae (Afrotropical and Oriental/Papuan) by Chiba (2009). He placed the African species in two genera: *Coeliades* Hübner and *Pyrrhiades* Lindsey & Miller (1965). *Coeliades* has 18 species covering all of Africa and Madagascar, while *Pyrrhiades* has five species with a wide gap between the three West African and the two East African/Malagasy species (the area between the Dahomey gap in Bénin and the Albertine Rift). Both genera are very similar, but there are some minor differences in venation, hardly strong enough to support genus rank. However, the genitalia of the two genera differ strongly (Fig. 1). In *Coeliades* the uncus is massive and narrows to a tip that is sometimes slightly bifid, while at the tegumen-uncus juncture there are small triangular processes. In *Pyrrhiades* the uncus has two rather narrow, widely separated branches while the two lateral processes from the tegumen-uncus juncture are almost as long as the uncus, being more massive than the uncus branches. This pattern is stable within each of the genera and the main difference between species lies in a fair amount of variation in the shape of the valves. Both genera have varying colour patterns, with some species brown and others shining blue in both; some species have white bands on the hindwing underside, in both genera. Evidently, the two genera evolved sympatrically for a considerable amount of time, with no radical changes to the genitalia. Any lingering doubts I had that they should be considered distinct genera were removed when I realized that the positioning of the hindwing underside band differed in the two genera; in the nine *Coeliades* with a white or ochreous band it runs from costa to tornus, while in the three *Pyrrhiades* with a band it runs from the abdominal fold towards the wing apex. It should also be noted that *Coeliades* and the Oriental *Choaspes* Moore have very similar genitalia, while those of *Pyrrhiades* have no strong likeness with any Oriental genus; in the molecular study by Warren *et al*. (2009) *Coeliades* clusters with the Oriental *Choaspes* Moore in a shared clade, with all other Oriental genera in separate clades. Unfortunately, no *Pyrrhiades* were sequenced. The two African genera have no visible androconia.

I also believe that in Hesperiidae androconial features are more important than perceived by Evans. Androconial features should generally be similar within a genus, though there are cases where they are lost in some members of a given genus. A good example is the recently revised genus *Caenides* Holland with structurally very similar genitalia that differ from other African genera. All nine males have similar wing-shapes and venation, but differ somewhat in the fairly standard hyaline spotting of the forewing, which also varies from white or light cream to deep ochreous. Three species entirely lack the large spot in space 2. Five species have a prominent discal brand on the forewing, which is missing in the other four. However, all nine have a prominent discal hair-tuft on the hindwing, which is unique in African skippers, but also found in the Oriental *Baoris* Moore (Baorini) (Larsen & Collins 2011). Given the

Fig. 1. **A**. The uncus and tegumen of *Coeliades hanno* (inset: the hindwing underside in *C. hanno*). **B**. The uncus and tegumen of *Pyrrhiades anchises* (inset: the hindwing underside in *P. anchises*).

similarities in all other characters we did not consider the absence of such brands in some species to be a significant generic feature. This happens in other homogenous genera: in *Eagris* Guenée most species have an androconial pouch along the forewing costa, but it is missing in some; many *Gorgyra* Holland have tornal androconial hair-tufts on the hindwings (as in the new genus *Melphinyet*), in others they are missing; some *Gretna* Evans have a unique androconial pit in the forewing space 2 that is missing in similar species with almost identical genitalia. However, as pointed out already by Watson (1893), what would not be expected is that within the same genus one type of androconia would be lost, with another type – not otherwise known within the genus – replacing it.

Genus *Melphina* Evans, 1937

The species discussed below and the three genera included are all Afrotropical members of the subfamily Hesperiinae, the tribal classification of which is unclear. Three species of *Ampittia* Moore are placed in the well-defined, mainly Oriental tribe Aeromachini that is centred on tropical Asia (Larsen & Congdon in press); there are an additional five or six Oriental *Ampittia*. Four genera of the large tribe Baorini are also shared between the Afrotropical and Oriental Regions out of a total eleven occurring in both Regions. However, the bulk of the diverse Afrotropical Hesperiinae genera have not yet been placed in tribes due to insufficient DNA sampling in both Regions and must therefore be considered as *incertae sedis*. From the available data, it seems probable that some new tribes will be shared between the two Regions, though the already defined Taractrocerini are centered on the Oriental Region with no African representatives (Warren *et al*. 2009).

The genus *Melphina* was described by Evans (1937) to include five species previously placed by their authors or by later writers in the 'omnibus' genera *Pamphila* Fabricius, *Baoris* Boisduval, or *Parnara* Moore. *Pamphila* is a junior objective synonym of *Hesperia* Fabricius in the tribe Hesperiini, which has no Afrotropical representatives. *Baoris* and *Parnara* are found in both the Oriental and the Afrotropical Regions, but are now placed in the well-defined tribe Baorini.

All species that have been placed in *Melphina*, or in the two new genera described in this paper, are listed in table 1 with reference to their original descriptions, genus placement, type localities, as well as any synonyms. The males of all species are illustrated in Fig. 2.

Material figured on the plates is from the collections of the Natural History Museum (British Museum of Natural History), London [BMNH], the Royal Africa Museum, Tervuren [MRAC], the African Butterfly Research Institute, Nairobi [ABRI], and my own collection [TBL].

The genus *Melphina* was included by Evans (1937) in his Gegenes group, which he characterized thus:
"IX. GEGENES GROUP. Hindwing vein 1a longer than vein 2 : end of cell inclined and the lower outer angle of the cell much turned up, i.e. the median vein and vein 4 not collinear: vein 5 faint or absent: vein 7 arising before vein 2: termen produced at the end of vein 1b and excavated before it. Palpi usually erect and the third segment in continuation of the second. Antennal club bent at right angles well before the middle to a fine apiculus. Legs comparatively smooth."

Evans' Gegenes group is basically the same as the tribe Baorini, except for the presence of the genera *Melphina*, *Fresna* Evans, and *Platylesches* Holland, which were removed from Baorini to the status of *incertae sedis* by Warren *et al*. (2009), partly because of the host-plant information and discussion in Larsen (2005). Evans actually appeared somewhat uncertain, stating that "this genus [*Melphina*] seems to be the connecting link between the Ploetzia and Gegenes groups". The description of his new genus *Melphina* was as follows:
"GENUS 62 ***MELPHINA*, nov.** Genotype: *Parnara melphis* Holland. This genus seems to be the connecting link between the Ploetzia and Gegenes groups, being placed in the latter group because of the prolonged hindwing, vein 1A being longer than vein 2, and because of the absence of the dense thoracic clothing which is characteristic of the former group. Antennae longer than half costa, hooked beyond the middle

Table 1. List of species that have been included in the genus *Melphina* and their new placement in *Melphina*, *Melphinyet*, and *Noctulana*. Publication details, type depositories (where known), and synonymy are given. The males of all taxa are illustrated in figure 2.

Genus *Melphina* Evans, 1937

A catalogue of the African Hesperiidae indicating the classification and nomenclature adopted in the British Museum:8, 162 (212 pp.). Type-species: *Parnara melphis* Holland, by original designation.

The five taxa originally placed as valid species in *Melphina* by Evans (1937) are indicated by an asterisk *.

Melphina malthina (Hewitson, 1876) *

Hesperia malthina Hewitson, 1876. *Annals and Magazine of Natural History*, (4) 18:457 (449-457). Type locality: Nigeria: "Calabar". Type depository: ♂ (BMNH), (inspected). Placed in the genus *Melphina* by Evans (1937).

Synonym: *Pamphila euryspila* Mabille, 1891. *Bulletin de la Société Entomologique de Belgique*, 35:179 (59-88, 106-121, 168-187). Sierra Leone.

Melphina statira (Mabille, 1891) *

Pamphila statira Mabille, 1891. *Bulletin de la Société Entomologique de Belgique*, 35:180 (59-88, 106-121, 168-187). Type locality: Sierra Leone. Type depository: ♀ not traced. Placed in the genus *Melphina* by Evans (1937).

Synonym: *Parnara argyrodes* Holland, 1894. *Entomological News*, 5:93 (89-95). Gabon: "Valley of the Ogové". Given as a valid species of *Melphina* by Ackery *et al.* 1995 but treated as a synonym of *Melphina statira* by Evans (1937:164) and Larsen (2005:535). Type in Carnegie Museum, Pittsburgh (inspected by Vande Weghe (pers. comm.).

Melphina melphis (Holland, 1893) *

Parnara melphis Holland, 1893. *Entomological News* **5**:31 (26-31). Type locality: Gabon: "Valley of the Ogové". Type depository: ♂ not traced. Placed in the genus *Melphina* by Evans (1937) as type species of the genus.

Melphina hulstaerti Evans, 1956

Melphina malthina f. *hulstaerti* Evans, 1956 (as ♀ form [in part]). *Annals and Magazine of Natural History* (12) **8**:885 (881-885). Type locality: Democratic Republic of Congo: "Eanza, Equateur, Congo Belge". Type depository: ♀ (MRAC), (inspected). The female of f. *hulstaerti* was raised to species rank with Evans (1956) as author and a male ne-allotype designated by Berger (1974).

Melphina evansi Berger, 1974

Melphina evansi Berger, 1974. *Lambillionea* **74**:69 (66-69). Type locality: Democratic Republic of Congo: "Tshuapa, Bamanya". Type depository: ♂ (MRAC), (inspected).

Synonym: *Melphina malthina* ♀ f. *hulstaerti* Evans, 1956 [In part]. *Annals and Magazine of Natural History* (12) **8**: 885 (881-885).

Melphina maximiliani Belcastro & Larsen, 2005

Melphina maximiliani Belcastro & Larsen, 2005. *in* Larsen, 2005. *Butterflies of West Africa*: 559. Type locality: Ghana: "Cape Coast, Kissi". Holotype July, 1996 (T. B. Larsen leg.). Type depository: ♂ (ABRI), (inspected).

Genus *Melphinyet* Larsen, 2012 (22(1):21-22)

Tropical Lepidoptera Research, this paper (gender feminine). Type-species: *Melphina flavina* Evans, 1937, by original designation.

Melphinyet tarace (Mabille, 1891) * **comb. nov.**

Pamphila tarace Mabille, 1891. *Bulletin de la Société Entomologique de Belgique* **35**:179 (59-88, 106-121, 168-187). Type locality: Sierra Leone: [Guma Valley]. Type depository: ♀ not traced. Placed in the genus *Melphina* by Evans (1937).

Melphinyet unistriga (Holland, 1893) **comb. nov.**

Parnara unistriga Holland, 1893. *Entomological News* 5:30 (26-31). Type locality: Gabon: "Valley of the Ogové". Type depository: ♂ not traced. Placed in the genus *Melphina* as a form of *M. tarace* by Evans (1937). Raised to species rank by Lindsey & Miller (1965).

Melphinyet statirides (Holland, 1896) **comb. nov.**

Baoris statirides Holland, 1896. *Proceedings of the Zoological Society of London* **1896**:69 (2-107). Type locality: Gabon: "Valley of the Ogové". Type depository: ♀ not traced. Placed in the genus *Melphina* as a form of *M. tarace* by Evans (1937). Raised to species rank by Lindsey & Miller (1965).

Synonym: *Parnara flavifasciola* Druce, 1909. *Proceedings of the Zoological Society of London* **1909**:412 (406-413). Cameroun: ♂ "Bitje, Ja River, Cameroons, 2000 feet". Type depository: ♂ (BMNH) (inspected – very typical *statirides*).

Melphinyet flavina (Evans, 1937) **comb. nov.**

Melphina tarace f. *flavina* Evans, 1937. *A catalogue of the African Hesperiidae indicating the classification and nomenclature adopted in the British Museum*: 164 (212 pp.). Type locality: Uganda: "Budongo Forest, Unyoro, 3,400 ft". Type depository: ♂ (BMNH) (inspected). Placed in the genus *Melphina* as a form of *M. tarace* by Evans (1937). Raised to species rank by Lindsey & Miller (1965). Placed as type species of the genus *Melphinyet* in this paper.

Melphinyet eala (Evans, 1956) **stat. rev., comb. nov.**

Melphina melphis f. *eala* Evans, 1956 [1955]. Type locality: Eala, Democratic Republic of Congo. *Annals and Magazine of Natural History* (12) **8**: 885 (881-885). Type depository: ♀ MRAC, Tervuren (inspected). Only two females are known and are here placed in *Melphinyet*, where they fit much better than in *Melphina*. Evans' description as a form of *M. melphis* must have been based on the lack of forewing cell-spots, though there are actually traces of these, which is never the case in *M. melphis*. Otherwise the two specimens are close to *M. statirides* except that the light markings are white rather than cream, including the hindwing underside.

Placed as junior synonym of *Melphina malthina* (Ackery *et al*. 1995); this must have been an error since there is no similarity at all.

Genus *Noctulana* Larsen, 2012 (22(1):21-22)

Tropical Lepidoptera Research, this paper (gender feminine). Type species: *Parnara noctula* Druce, 1909, by original designation.

Noctulana noctula (Druce, 1909) * **comb. nov.**

Parnara noctula Druce, 1909. *Proceedings of the Zoological Society of London* **1909**:411 (406-413). Type locality: Cameroun: ♂ "Bitje, Ja River, Cameroons, 2,000 feet". Type depository: ♂ (BMNH) (inspected). Placed in the genus *Melphina* by Evans (1937). Placed as type species of the genus *Noctulana* in this paper.

Synonym: *Parnara palocampta* Druce, 1909. *Proceedings of the Zoological Society of London* **1909**:411 (406-413). Cameroun: ♀ "Bitje, Ja River, Cameroons, 3,000 feet" (inspected) [this is clearly a female of *N. noctula*].

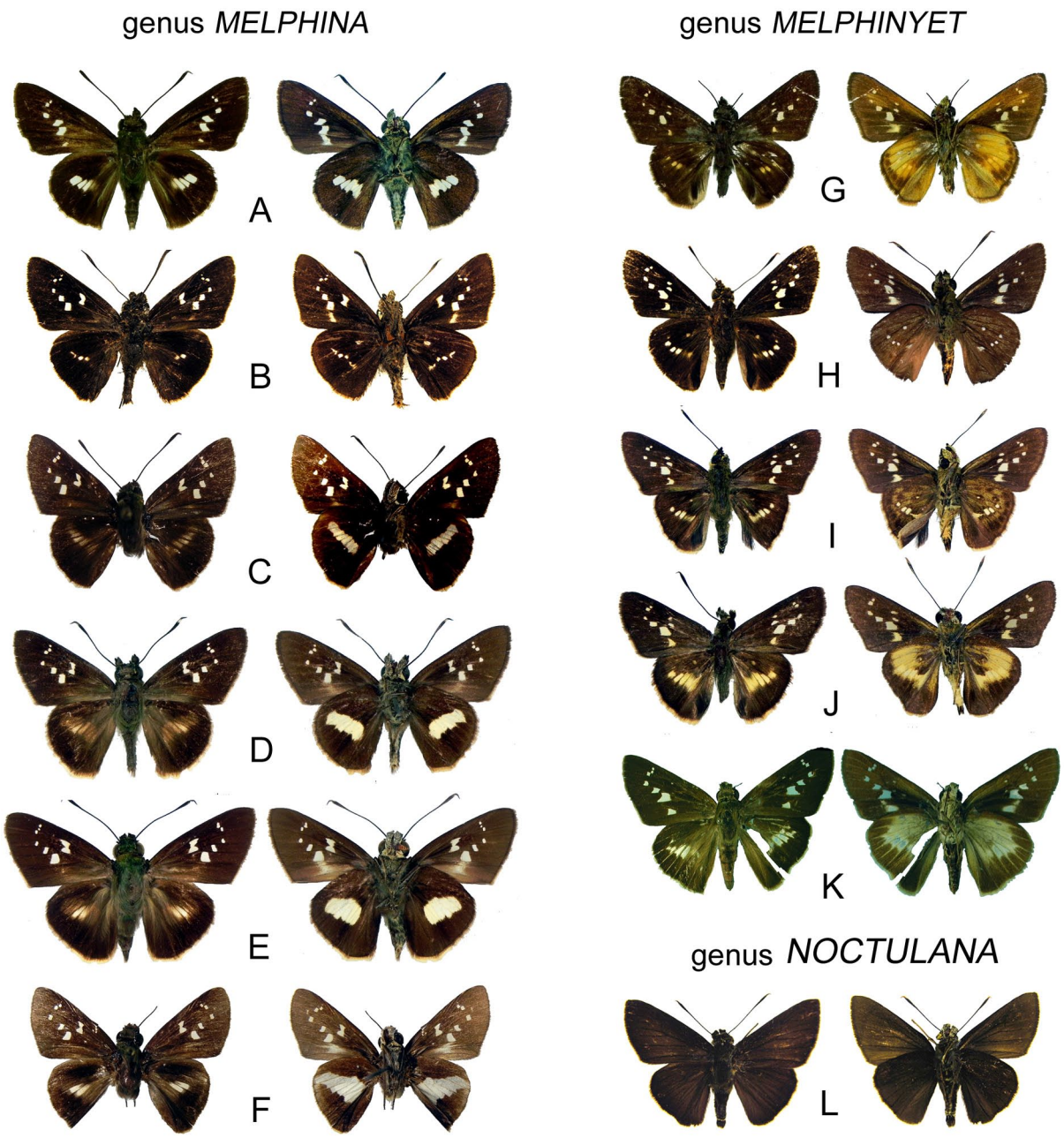

Fig. 2. The male upperside (left) and underside (right) of species placed in the genus *Melphina* by Evans (1937) and subsequent authors as now assigned to the three genera in this paper. Sexual dimorphism is slight. All are near natural size. **A.** *Melphina melphis* (type of its genus) Sierra Leone, Moyamba (BMNH); **B.** *Melphina statira* Ivory Coast, no locality (BMNH); **C.** *Melphina evansi* Democratic Republic of Congo, Bamanya (MRAC); **D.** *Melphina maximiliani* Ivory Coast, no locality (BMNH); **E.** *Melphina malthina* Republic of Congo, Kuilu (BMNH); **F.** *Melphina hulstaerti* Democratic Republic of Congo, Bamanya (MRAC); G *Melphinyet flavina* (type of its genus) Uganda, Budongo Forest (holotype) (BMNH); **H.** *Melphinyet unistriga* Nigeria, Lagos (TBL); **I.** *Melphinyet tarace* "West Africa" (BMNH); **J.** *Melphinyet statirides* upperside Cameroun, Bitje (BMNH) – underside Nigeria, Warri (BMNH); **K.** *Melphinyet eala* Democratic Republic of Congo, Eala (holotype); **L.** *Noctulana noctula* (type of the genus) Central African Republic, no locality (RCA) (ABRI).

of the club to a short apiculus which equals the width of the club. Palpi short, stout, porrect, or semi-erect, third segments convergent. Forewing vein 2 arising nearer wing base than the end of the cell and vein 3 is not approximate to vein 4. Uncus narrow and pointed in *noctula* and *tarace*, broad in *melphis*, etc. ♂ *noctula* has long, narrow glandular streaks on the forewing above under vein 1 and 2: *tarace* has a short brand under the outer half of vein 1, a unique position shared with *Prosopalpus*. Sexes alike."

Note that the prominent hindwing tornal hair-tuft of the *M. tarace*-complex is not mentioned in this description or in the genus key earlier in the Evans Catalogue; this must be an oversight made while writing since the brush is evident in the specimens that Evans saw in the BMNH.

As mentioned in the introduction, I believe that both the genitalia and the structure of the male androconia are at least as important as the traditional characters (mainly shape of palpi, antennal length, shape of antennal club and apiculus, venation, the number of spurs on the hindleg tibiae, wing-shape, and wing patterns). On this basis I am splitting off some species

into two new genera: *Melphinyet* and *Noctulana*. Remaining in *Melphina* are three of the five species placed in the genus by Evans (1937), to which must be added three species described since 1937 (details in table 1).

As redefined here, the genus *Melphina* is characterized by Evans' original description, but only including the species without visible androconia. The true *Melphina* also differ from the other species in having their forewing cell-spots (when present) fused and in their very different genitalia, with a broad uncus and with a large gnathos with two branches originating from the lowest part of the tegumen, each ending in a long lateral terminal branch with a different texture (Fig. 4). Evans (1937) did mention – without further comment – that the uncus was broad compared with the slender, pointed structures in the species here removed to *Melphinyet* and *Noctulana*; he did not comment on the complex gnathos structure that is absent in these two genera.

Of the species remaining in the genus *Melphina*, the type species, *M. melphis*, differs most from the others in lacking the fused double-spot in the forewing cell and in not having an internal harpe on the valve. However, such a harpe is simply an extension of the internal edge of the cucullus and its absence not necessarily significant at the genus level. The lack of forewing cell-spots is not very important; other genera in the Hesperiinae may have species with no, one, or two cell-spots. *M. statira* Mabille has a harpe and a very large erect, quadrangular lobe on the dorsal tip of the cucullus, but this is a difference of detail and not of structure. The remaining members of the genus, *M. malthina* Hewitson, *M. hulstaerti* Evans, *M. evansi* Berger and *M. maximiliani* Collins & Larsen, have the dorsal part of the cucullus more rounded and with a differently shaped harpe; they are all very similar, but with a broader bands on the hindwing underside than *M. statira* (Fig. 2).

It is interesting, and biogeographically significant, that all species in the circumscribed genus *Melphina* have a distinctly western distribution: *M. melphis*, *M. statira*, and *M. malthina* occur from Sierra Leone to western parts of the Equateur Province in the Democratic Republic of Congo (DRC); *M. evansi* is found in eastern Cameroun and the Equateur Province of the DRC, *M. hulstaerti* so far only in the Equateur Province, and finally *M. maximiliani* only from Sierra Leone to Ghana. Though all species are rather rare, and some very rare, this is probably a true picture. The genus presumably originated in the western area and was unable to cross the belt of Kalahari sands that once divided the western forests from those of the Albertine Rift area in the Kivu Provinces of the DRC, Uganda, western Kenya, or northwestern Tanzania. Notably, both the new genera do extend much further east and reach the Albertine Rift.

Genus *Melphinyet* gen. nov.

Type species: *Melphina tarace* f. *flavina* Evans, 1937. *A catalogue of the African Hesperiidae indicating the classification and nomenclature adopted in the British Museum*. British Museum (Natural History), London, UK: 164 (212 pp.). Type depository: ♂ British Museum of Natural History. Gender feminine.

Background: Evans (1937) moved *Pamphila tarace* to his new genus *Melphina*, in which he also placed – as distinct morphological forms of *M. tarace* – *Pamphila unistriga* Holland and *Baoris statirides* Holland, as well as describing *Pamphila tarace* f. *flavina* as new. Lindsey & Miller (1965) raised these forms to species rank on the basis that they were clearly recognizable and that there were genitalic differences. There is, however, some degree of variation in both morphology and genitalia, and individual specimens of both sexes may in some cases (less than 5%) be difficult to place with confidence. Evans (1956) described *Melphina melphis* f. *eala* on the basis of a single female (one more female recently found), which seems close to *M. statirides* but where the absence of a male makes it difficult to be sure of its correct placement.

Description: The antennae are longer than half the costa and are hooked well after the middle of the club. The palpi are semi-erect with a short third segment. The venation is generally as in Evans' description of *Melphina*, with the hindwing vein 1a longer than vein 2, making the tornus noticeably produced. The hindlegs have a single pair of tibial spurs. The main superficial characteristic of *Melphinyet* is that males have a well-developed, upturned androconial hair-tuft on the hindwing dorsum, more blackish than the ground-colour. In addition, there is a short, hardly visible, forewing linear androconial brand just below vein 1, between the spot in 1b and the margin.

The genitalia of the four species are similar, and quite different from *Melphina*, as well as from *Noctulana*. Their structure is rather simple. The tegumen is large and its dorsal edge is extended to form two flanges also fused with the vinculum that must be substitutes for a separate gnathos structure. There is a relatively slender, gently curving uncus that ends in a pointed, slightly blunted tip. The valves are more-or-less rectangular, with the dorsal cucullus turning moderately up after the middle, and with the distal edge then turning to slope somewhat back to form a triangular angle where it meets the dorsal edge of the valve proper. The distal edge of the cucullus is finely serrated. The exact shape of the valve varies within and between the species; the distinctions are not as clear as implied by Lindsey & Miller (1965). The fultura consists of two simple branches. The saccus and penis have no special characters. The narrow uncus and the lack of a complex, well-developed gnathos sets the genus strongly apart from *Melphina* (two species illustrated in Fig. 4).

A careful comparison with all described African genera shows that it is impossible to find an alternative berth for those here placed in *Melphinyet*. Its phylogenetic position within the Hesperiinae (*incertae sedis*) must await a molecular phylogeny of the entire subfamily in Africa based on the groundwork laid by Warren *et al.* (2009).

Diagnosis: The five members of the genus are generally similar (Fig. 2). The ground-colour is dark brown. The forewing has two well-separated hyaline cell-spots, as well as two subapical spots (rarely also a small upper spot), increasingly large spots in spaces 4, 3, and 2 (very occasionally a minute spot in 5), and a well-developed non-hyaline spot in 1b. The hindwing has a postdiscal row of hyaline spots from space 1c to 5, some of which may be obsolete. Some specimens have a spot, or traces of one, in the middle of the cell. The spots are whitish in *M. tarace*, *M. unistriga*, and *M. eala*, while light ochreous in *M. flavina* and *M. statirides*. The forewing underside is like the upperside except that there is a variable amount of lighter scaling along the costa and subapical area, matching the colour of the hindwing. The hindwing underside of *M. tarace* brownish with an overlay of ochreous scaling, with the spots of the upperside defined in white, an extra spot in the cell, and a darker margin; that of *M. unistriga* is similar, but wholly overlaid with brown scaling. The two other species have ochreous-yellow undersides without white spots showing through. *M. statirides* has a very wide brown margin, especially towards the tornus, as well as a prominent brown discal patch centred on space 1c. *M. flavina* is sometimes almost without a brown margin and the brown discal patch is missing. *M. eala* differs from *M. statirides* in having a whitish underside and nearly lacking cell-spots. Species of *Melphina* have completely uniform dark undersides apart from their white spotting.

The tornal hair-tuft sets the males apart from all other African genera, except from a section of the much smaller *Gorgyra*, immediately distinguished by their characteristic conical, porrect palps and the lack or near lack of the row of hyaline postdiscal hindwing spots (at most a spots in the cell, and in spaces 2 and 3). Their forewing spotting is smaller and there is no spot in space 4 (except in *G. afikpo* Druce). Their genitalia are very different from *Melphinyet* and match those of *Gorgyra* without hair-tufts. The disposition of the forewing hyaline spotting is similar to several genera of the Hesperiidae, but especially to *Borbo* Evans in the Baorini (in which genus the antennae are not longer than half the costa). All members of that tribe have genitalia with a specialized uncus structure that resembles no genus within the Hesperiinae (*incertae sedis*) and have Poaceae as their host-plant.

The consistent presence of a well-developed forewing spot in space 4 in brown species with white spotting is actually rare amongst the smaller Hesperiinae (incertae sedis), apart from *Melphina*, where all species have this spot (it is always present in the much larger *Caenides dacela* Hewitson and

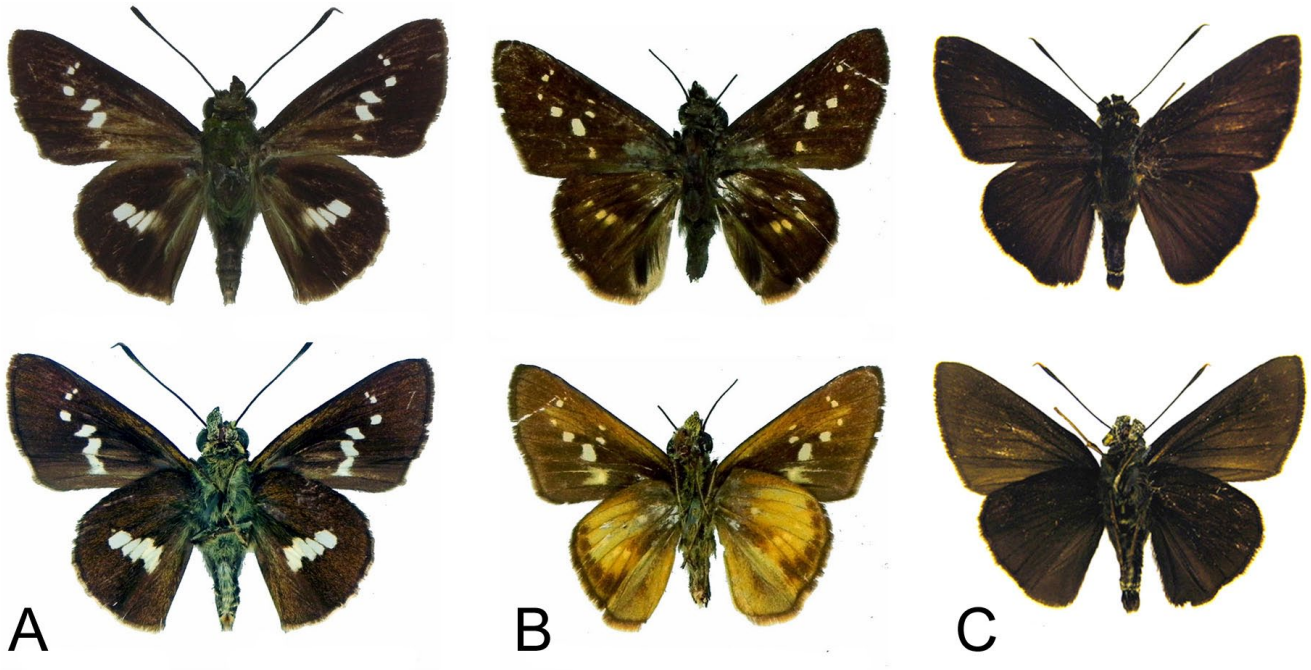

Fig. 3. The type species of the genera *Melphina*, *Melphinyet*, and *Noctulana* (top upperside, below underside). **A**. *Melphina melphis* Sierra Leone, Moyamba (BMNH); **B**. *Melphinyet flavina* Uganda, Budongo (Holotype) (BMNH); **C**. *Noctulana noctula* Central African Republic (ABRI) (pictures to scale at about 1.4 x natural size).

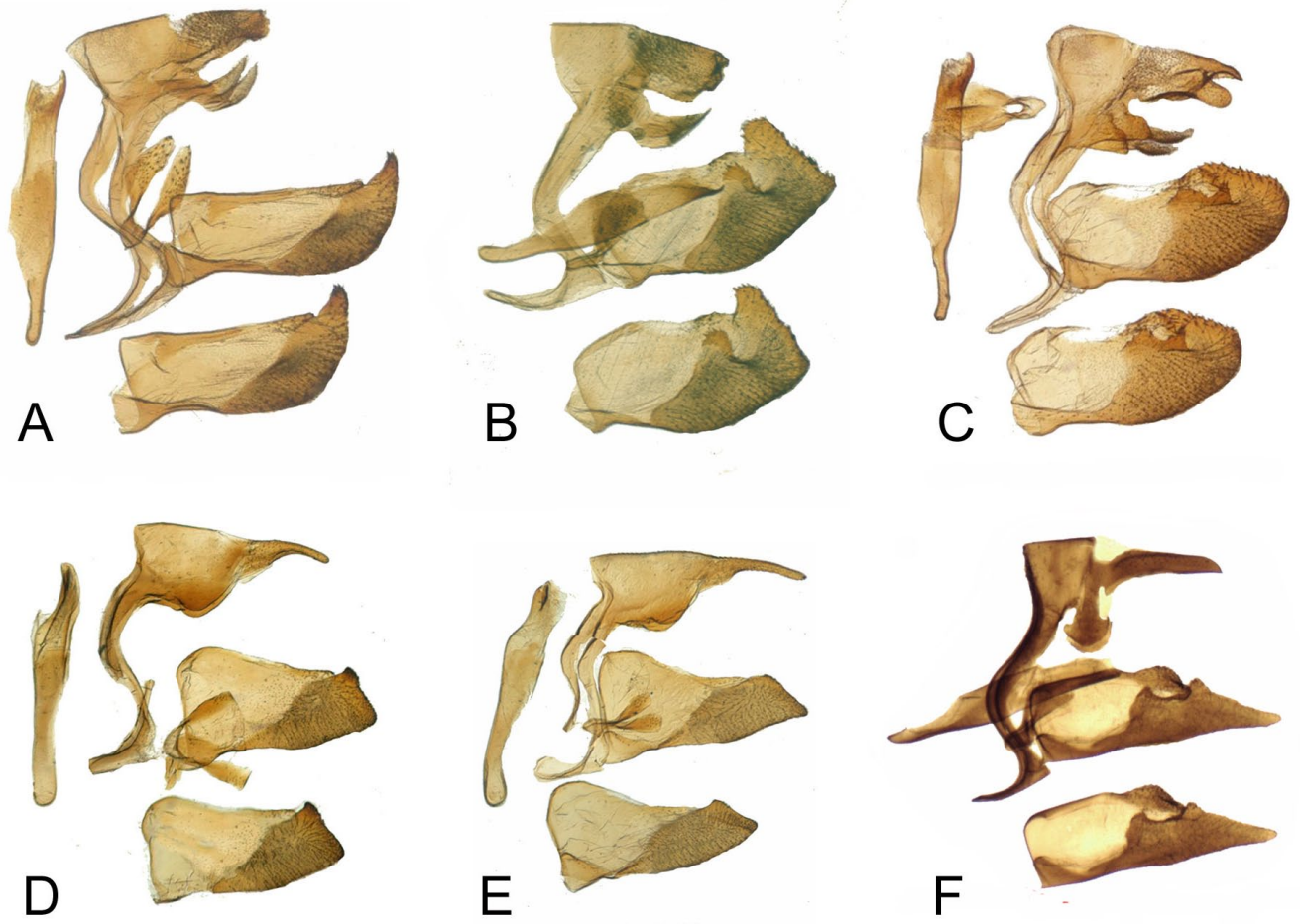

Fig. 4. Male genitalia of six species described in the genus *Melphina* with their new genus names where applicable. **A**. *Melphina melphis* Nigeria, Oban Hills (TBL BNL); **B**. *Melphina statira* Ivory Coast, no data (MRAC H.770); **C**. *Melphina malthina* Liberia, Sapo NP (TBL BNI); **D**. *Melphinyet tarace* Ghana, Bobiri (TBL BLK); **E**. *Melphinyet flavina* Nigeria, Oban Hills (TBL BLM); **F**. *Noctulana noctula* Nigeria, Ikom (MRAC H.248).

C. soritia Hewitson, and always present in the larger and very different *Gretna cylinda* Hewitson, being intermittently present in other members of these genera). Though Evans never says so, I feel sure that this spot was one of the main reasons for his placing members of *Melphinyet* in *Melphina*, though it is not an important character as such.

M. statirides was bred from *Alchornea cordifolia* (Euphorbiaceae) at Lamto, Ivory Coast (Côte d'Ivoire) by Vuattoux (1999). Other members of the genus were bred from *Manniophyton* and *Macaranga* (Euphorbiaceae) (M. Cock pers. comm.). Doubtless all *Melphinyet* feed on dicotyledons; members of no African genus of the Hesperiinae are known to feed on both dicotyledons and monocotyledons. Unfortunately, host-plants are not known for species of *Melphina* or *Noctulana*, though their habitat and behaviour suggest dicotyledons.

Etymology: The genus name is based on the conclusion that it definitely does not belong in *Melphina*.

Genus *Noctulana* gen. nov.

Type species: *Parnara noctula* Druce, 1909:411. *Proceedings of the Zoological Society of London* **1909**:411 (406-413). Type locality: Cameroun: ♂ "Bitje, Ja River, Cameroons, 2,000 feet". Type depository: ♂ Natural History Museum (BMNH), London (inspected). Gender feminine.

Background: *Parnara noctula* was described from Bitje, Cameroun by Druce (1909), who in the same paper described the female as a distinct species (*P. palocampta*) because the cilia on the hindwing was white. Evans (1937) placed the species in his new genus *Melphina* on the basis that it matched the characters of the genus, except for the presence of the forewing androconial streaks. He probably did not consider the complete lack of hyaline spotting on the wings necessarily to be a generic character, since this occurs within other genera, though mostly in tribes or subfamilies other than Hesperiinae (*incertae sedis*).

I made a slide of the genitalia (SCC 227) at the African Butterfly Research Institute, Nairobi (October, 1993), which was responsible for the note in the book on West African butterflies that the genitalia were so different that the species might not be congeneric with *Melphina* (Larsen 2005). A new genus is described below – 20 years later than it should have been.

Description: The antennae are slightly longer than half of the costa; they are hooked well after the middle of the club. The palpi are semi-erect with a short third segment. The venation is generally as for Evans' description of *Melphina*, with the hindwing vein 1a longer than vein 2, making the tornus noticeably produced. The hindleg tibiae have two pairs of spurs. The size and wing shape is rather similar to that of *Melphinyet*, but the tornus is less drawn out and the tornal androconial brush is missing (Fig. 3). The male has almost imperceptible blackish androconial streaks immediately below most of the forewing veins 1 and 2 that could easily be missed even under a microscope. The genitalia (Fig. 4) differ markedly from all other species placed by Evans in *Melphina*. The tegumen is short, being taller than it is long. The uncus is long and stout, ending in a point. There is a large fenestrula separating the dorsal edge of tegumen and uncus, which continues narrowly for half the length of the uncus. The gnathos has two solid straight branches that are not fused, ending in a broader semicircular plate without spines or strong chitinization, pointing straight downwards (very unusual with such long branches, which would tend to lie parallel with the uncus). A sheath of firm, but transparent, chitin covers the fenestrula and the gap between the lower edge of the gnathos and the almost wholly detached uncus. The valve is characteristic. The basal half is almost quadrate, with the ventral edge of the cucullus continuing straight and the dorsal edge sloping down to meet it, forming a triangle with a slightly blunt distal end (at first sight rather similar to that of the very different *Parosmodes morantii* Trimen, but differing in many details). Between the dorsal edge of the valve and the cucullus is a rounded, slightly serrated ridge that lies horizontal *in situ* and becomes evident in lateral view only after the valve has been flattened on a microscope slide. There are no special characters on the penis. The fultura is modest. The saccus is slender but longer than in most Hesperiinae. Apart from the preparation in Fig. 4, I have seen or prepared identical slides from Ikom/Nigeria, Lamto/Ivory Coast, and Atewa/Ghana (collections MRAC, ABRI, H. Boersma/TBL respectively). The genus is currently known from the single species, *N. noctula*.

Diagnosis: The upperside is a rather warm dark brown in both sexes of the only member of the genus so far known. The male has androconia as described above, but lacks the prominent tornal hair-tufts of *Melphinyet*, while the genus *Melphina* has no visible androconia. However, more importantly, the genitalia differ structurally from the other two in nearly all respects (Fig. 4). In *Noctulana*, the uncus is rather massive, but ending in a point rather than with two broad lobes as in *Melphina*, or being, slender, lightly curved, ending in a blunted point as in *Melphinyet*. *Noctulana* has an unusual gnathos that is very different from *Melphinyet*, which has no chitinized gnathos but a ventral fully-fused flange on an enlarged tegumen. *Noctulana* has a valve that differs completely from the two other genera.

The uniform brown colour of both surfaces of both wings is actually rather unusual in the Hesperiinae (*incertae sedis*). Some members of the *Semalea* Holland are similar, though their wings are as not as pointed and the tornus not drawn out; their females usually have hyaline forewing spotting. They have more visible, but shorter, androconial areas along vein 2 and the discocellular vein, but not on vein 1. The genitalia have a very different structure, with no gnathos, a much simpler valve where the cucullus unusually occupies half the distal area, and consistently with a bunch of cornuti in the penis. *N. noctula* also resembles a miniature *Borbo ratek* Boisduval (Hesperiinae, Baorini), which is endemic to Madagascar and has the special genitalia of that tribe. *Coeliades libeon* Druce (Coeliadinae) is also similar, but much larger and structurally different in all respects (the characteristic palps of the subfamily are sufficient to tell them apart).

A careful comparison with all described African genera shows that it is impossible to find an alternative berth for *N. noctula*. Its phylogenetic position within the Hesperiinae (*incertae sedis*) must await molecular study of the entire group.

Etymology: The new genus name is derived from that of the type species, *noctula*, the only member of the genus.

DISCUSSION

The genus is normally defined as a group of organisms that are all more closely related to each other than to any other groups in the same tribe, subfamily, or family. It is effectively an attempt to press a more-or-less continuous evolutionary process into a discrete unit. The delimitation of a genus is not an exact science, and indeed many genera have been the subject of splitting and lumping at various times. There is no certain way of determining the "boundaries" of genus, though some genera are very well defined and have no obvious close relatives. However, members of any genus will share a considerable amount of characters from their ancestral line, the most important of which is their genetic make-up, which is to a variable extent expressed also in visible features of all stages of the life-cycle and the imago. Molecular phylogenies will improve our precision in defining genera, but it will be a long time before sufficient material for this is available. Until then we have to base our definitions on shared, observable characters.

- *Melphina* is characterized by having fused cell-spots (when present), a very broad uncus, a large and complex gnathos structure, hindleg tibiae with two pairs of spurs, a complete lack of visible androconia, and the genus is restricted to the western half of the Afrotropical forest zone. The genitalia show some variation within the group, but are structurally sufficiently similar to be within a single genus.
- *Melphinyet* is characterized by having separate cell-spots, a narrow curving uncus, the lack of a distinct gnathos structure, hindleg tibiae with a single pairs of spurs, two different sets of visible androconial structures, and a distribution from Sierra Leone to Uganda. The genitalia of the four species are very similar.
- *Noctulana* is characterized by having no hyaline spotting at all (rare in African Hesperiinae (*incertae sedis*), a rather massive pointed uncus, a unique gnathos structure differing

strongly from *Melphina*, hindleg tibiae with two pairs of spurs, and a different set of visible androconia to those of *Melphinyet*. The genitalia are quite different from those of the other two and with no similarities.

My studies of all Hesperiinae genera and their genitalia suggest that the three genera discussed in this paper are not particularly closely related, but their exact placement within the *incertae sedis* group must await a molecular phylogeny. I expect that each of the three genera will eventually be placed in different tribes.

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