


## Note on *Liptena undina* (Grose-Smith & Kirby, 1894), with the description of two new taxa (Lepidoptera, Lycaenidae, Poritiinae)

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**Abstract:** Male and female genitalia show that two species are confused under the name *Liptena undina* (Grose-Smith & Kirby, 1894); the new species, which flies in the eastern part of the range of *L. undina*, is named *L. dunnia* **sp. nov.** It has two subspecies, the nominate in the east and subspecies *reducta* **ssp. nov.** in the west. New data are also provided on the distribution of *Liptena ochrea* Hawker-Smith, 1933.

**Résumé:** Les genitalia mâles et femelles montrent que deux espèces sont confondues sous le nom de *Liptena undina* (Grose-Smith & Kirby, 1894). La nouvelle espèce, qui vole dans la partie orientale de l'aire de répartition, est nommée *L. dunnia* **sp. nov.**; elle comporte deux sous-espèces, la sous-espèce nominative à l'est et la sous-espèce *reducta* **ssp. nov.** à l'ouest. Des nouvelles données sont fournies sur la distribution de *Liptena ochrea* Hawker-Smith, 1933.

**Key words:** Africa, Liptenini, *Liptena ochrea*, Rhopalocera

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### INTRODUCTION

Modest differences in habitus between specimens of *Liptena undina* collected by the author in Cameroon and those that Robert Ducarme collected in north-eastern DRC prompted the author to examine their genitalia (males and females), which revealed the existence of two distinct taxa. The type locality of *L. undina* is in Congo, whereas the other species flies in the eastern part of the range and is described under the name *L. dunnia* **sp. nov.**

Photos from the ABRI collection revealed the existence, in the vicinity of Bangui (CAR) and Mbandaka (DRC), of a third taxon whose facies distinguishes it from both *L. undina* and *L. dunnia* **sp. nov.**, and which is described here as *L. dunnia reducta* **ssp. nov.**

Some new data on the distribution of *Liptena ochrea* Hawker-Smith, 1933 is also provided in this publication, which will probably be the last of a series devoted to the genus *Liptena* Westwood.

### METHODS AND MATERIALS

#### Abbreviations

ABRI: African Butterfly Research Institute, Nairobi, Kenya.

ANHRT: African Natural History Research Trust, Leominster, United Kingdom.

CAR: Central African Republic.

CML: Collection Michel Libert

CRD: Collection Robert Ducarme.

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DRC: Democratic Republic of the Congo.

IRSNB: Institut Royal des Sciences naturelles de Belgique, Bruxelles, Belgium.

MfN: Museum für Naturkunde, Berlin, Germany.

MNHN: Muséum national d'Histoire naturelle, Paris, France.

MRAC: Musée Royal pour l'Afrique Centrale, Tervuren, Belgium.

NHM: Natural History Museum, London, UK.

NMK: National Museums of Kenya.

#### Genitalia

Methods for preparation and examination of genitalia were described in Libert, 2022a).

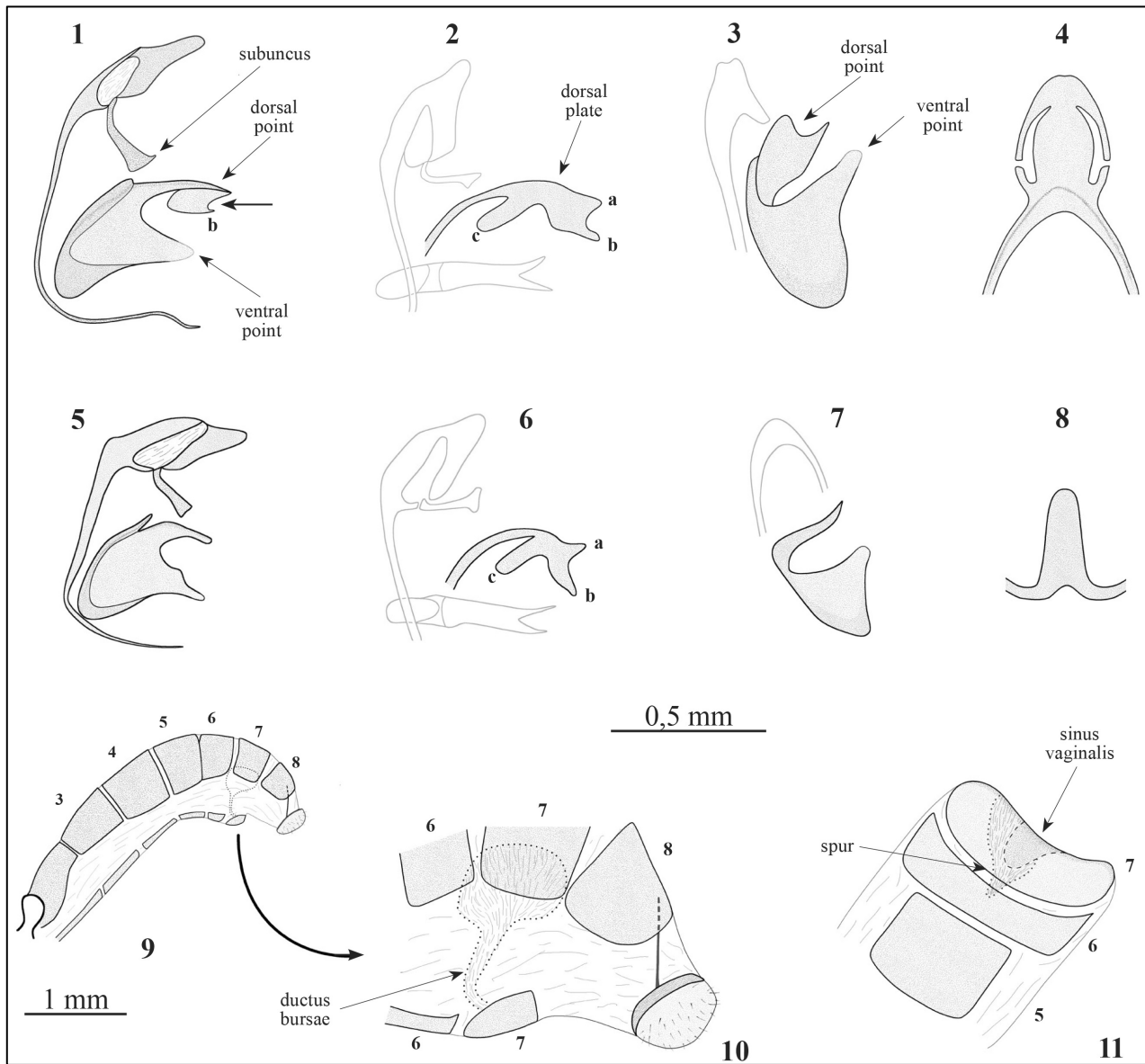
### RESULTS

#### Genitalia

The male genitalia of *L. undina* and *L. dunnia* **sp. nov.** are small, particularly so in *L. dunnia* **sp. nov.** In both taxa, the uncus and tegumen are long and widely separated by large fenestrula; the subunci are short, almost straight and widened at their end (Fig. 1).

The valves have two widely separated pointed tips, a thin dorsal point and a larger ventral one, with a barely sclerotized end (Fig. 1); the dorsal tip is much smaller in *L. dunnia* **sp. nov.**, and this difference, very apparent in lateral view, allows the two taxa to be easily separated (Figs 1, 5). The appearance is also quite different in ventral view (Figs 3, 7), but it is even more dependent on the angle of observation than in lateral view.

However, the part of the dorsal tip visible in lateral view represents only part of the tip (Figs 2a, 6a), and closer examination reveals the existence of two other excrescences (Figs 1b, 2b–c, 6b–c).



**Figures 1 to 11** – Genitalia of *Liptena undina* [Figs 1 to 4: male from Lolodorf, Cameroon; preparation n° 117-082; Fig. 11: female from Mont Fèbé, Cameroon; preparation n° 123-047] and *L. d. dunnia* [Figs 5 to 8: male from Pateka, NE DRC; preparation n° 117-081; Figs 9, 10: female from Beni, NE DRC; preparation n° 123-048]. Left lateral view of the entire genitalia (Figs 1, 5), of the abdomen (Fig. 9, reduced scale) and of its tip (Fig. 10); dorsal view of the edge of the right valve (valves held apart) (Figs 2, 6); ventral three-quarter view of the left valve (Figs 3, 7); dorsal view of the uncus and tegumen (Fig. 4); ventral view of the saccus (Fig. 8); ventral view of sternites 5, 6 and 7 (Fig. 11).

The first (Figs 1b, 2b, 6b) is a kind of plate that extends the point ventrally; barely visible in lateral view (Fig. 1, arrow); it becomes more apparent as the preparation is rotated so that it can be viewed more ventrally (Fig. 2). The second (Figs 2c, 6c) is a large, poorly sclerotized protuberance directed towards the base of the valve; completely invisible in lateral view, it can only be observed by spreading the two valves widely (Figs 2, 6) or by cutting the vinculum.

The whole (point + plate + protuberance) is very different in the two taxa, that of *L. undina* being much larger than that of *L. dunnia* sp. nov., but its appearance varies enormously with the angle of observation (it is not certain that Figs 2 and 6 show it exactly from the same angle). In both taxa, the saccus is sub-rectangular and quite long (Fig. 8), but it is short and triangular in one of the three dissected males from Cameroon; the penis is small, slightly

arched, with a forked end (Figs 2, 6). Stempffer *et al.* (1974: 164; Fig. 40) illustrate the genitalia of a male of “*Liptena undina*” from an unspecified locality, but their figure does not allow the identification of the specimen.

Two females were dissected, one from Cameroon, the other from Beni in the north-east of the DRC; their genitalia are very similar, with a shallow sinus vaginalis opening directly onto the edge of sternite 7, the ductus bursae perpendicular to it and a ball-shaped copulatory bursae (Fig. 10). Two characters, however, distinguish them quite clearly: in the female from Cameroon, a membranous spur extends the sinus vaginalis before the bend formed by the ductus (Fig. 10), but the spur is missing in the female from Beni, in which the bend is located at the entrance to the sinus vaginalis (Fig. 11). The ductus bursae are also about 2.5 times thinner in the Beni female than in the Cameroon female.

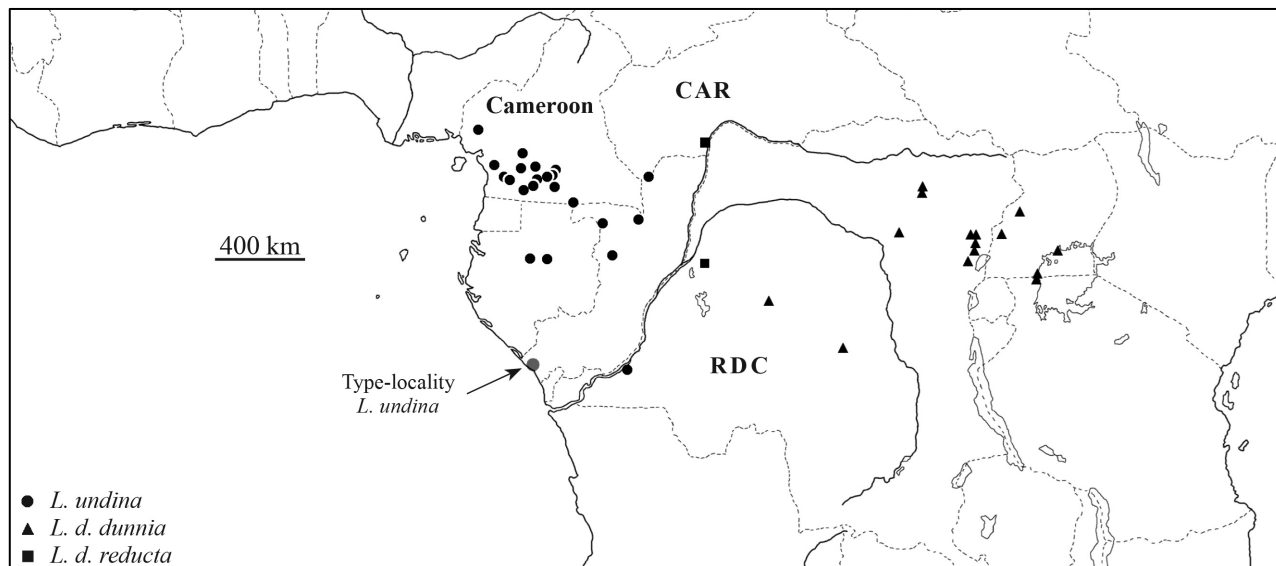


Figure 12 – Distribution map of *Liptena undina* and *L. dunnia*.

***Liptena undina*** (Grose-Smith & Kirby, 1894) (Figs 13,14)

*Pentila undina* Grose-Smith & Kirby, 1894. – *Rhopalocera exotica*, being illustrations of new, rare and unfigured species of butterflies, 2: 117 (male, Congo, illustrated pl. 25, Figs 6, 7).

The description of (*Pentila*) *undina* only mentions ‘Hab. Kuilu’ and ‘In the coll. Dr. Staudinger’. With Aurivillius (1918: 334), the type-locality becomes ‘Rivière de Kouilou’, but Stempffer *et al.* (1974: 164) specify ‘Holotype ♂, Zaire: Kuilu’. This indication is taken up by the authors, up to Williams (2022), who also places Kuilu in the DRC. Libert (2022b: 82) finally showed that Kuilu is located in the south of the Congo (ex French), without further precision (which is why Kuilu is represented by a grey dot on the map in Figure 12).

Stempffer *et al.* (ibid.) assumed that the types were destroyed during World War II; they indicate that there is a pair from the type-locality in the NMH and illustrate the male (Figs 89 and 92), without however designating a neotype. This is fortunate, as the MfN holds a series of four specimens (three males and one female) of *L. undina* from the Staudinger collection which were collected by Mocquerys from the type locality, and which certainly constitute the type-series. One of the male syntypes bears a purple ‘Origin’ label and is designated here as the lectotype. For one of the three other syntypes, the locality label specifies ‘Kuilu – Franz. Congo – 1893’; this male, in better condition than the lectotype, is illustrated here (Figs 13, 14).

Lectotype: male, Kuilu, Congo (Mocquerys) no date; MfN.

Distribution (Fig. 12)

*L. undina* is not a common species; the localities cited by Stempffer *et al.* (1974: 164; about ten specimens in the NHM collection) are included.

The western limit of its distribution is in western Cameroon, where a specimen was captured on Mount Kupe (ABRI); this locality is however isolated, and all

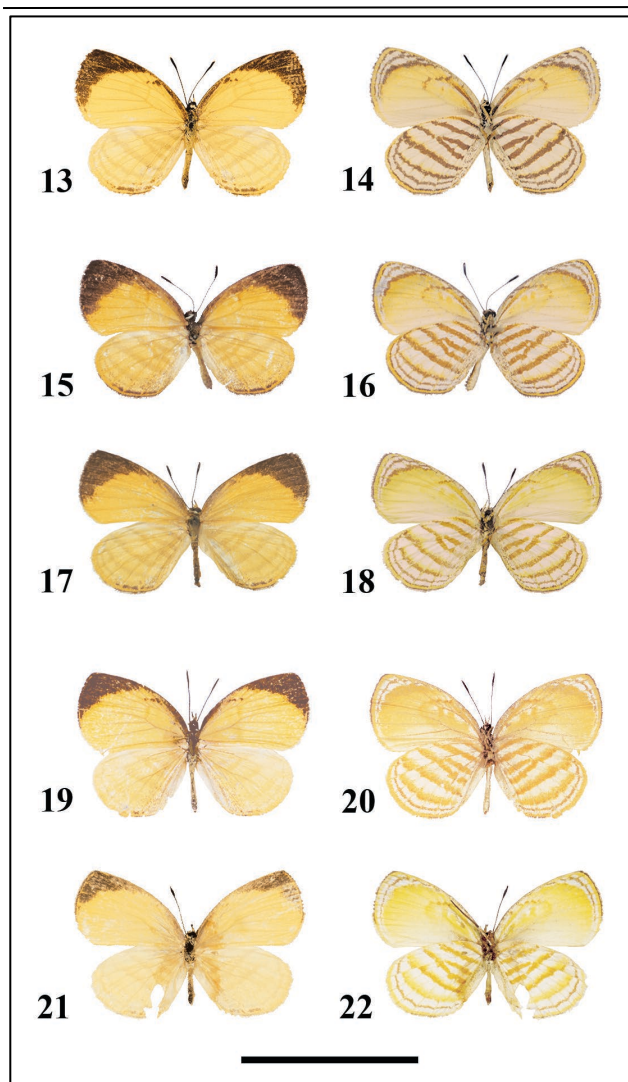
other specimens (approximately 70) have been collected from about a dozen localities located south of Sanaga, between the surroundings of Yaoundé and the border with Gabon.

In neighboring countries, *L. undina* has been observed in Gabon [Lopé NP (Vande weghe, 2010: 347, ‘a few specimens’) and Ivindo NP (Dilo, seven specimens; ANHRT)], in Congo [in the north (Ketta, Etoumbi and Mambili; *leg.* Jackson; NHM, NMK) plus Nouabale-Ndoki at the border with CAR (ten specimens; ANHRT) and in the south (type-locality, where Mocquerys captured eight specimens (NHM, MfN); grey circle on the map], as well as in the west of the DRC [Kinshasa, the southern limit of its distribution (two specimens caught by F. Cuyper; ANHRT)]. Nouabale-Ndoki and Ouessou in Congo and Kinshasa in the DRC likely mark the eastern limit of the distribution of *L. undina*, at around 16° longitude east.

Description

*L. undina* is a small species (male wingspan about 26 mm). On the forewings upperside, the black apical spot is of medium width, i.e. generally not as wide than in specimens from the DRC (*L. d. dunnia*), but wider than in those from the Bangui area (*L. d. reducta*); it is regularly rounded. It extends on the one hand along the external edge to the middle of interval 2 (where width is approximately 1 mm), and on the other hand along the costal edge, where it is narrow but visible. In intervals 8, 9 and sometimes 10, two or three small black spots seem to break away to form a more or less visible arc above the end of the cell. The rest of the wing is yellow, as are the hindwings, where there is only a thin, irregular and variably visible black line and a marginal border in the anal angle. On the hindwings, the dark transverse bands on the underside are visible through the wings.

Females are similar to males, making sexing a specimen tricky, but examination of the forelegs and/or the tip of the abdomen has shown that six of the seven specimens in my collection are females (more variable in size than males, with a wingspan of 24 to 27 mm).



**Figures 13 to 22** –*Liptena undina* plate (scale bar = 2 mm); *L. undina* ♂, 30 km S Edéa (Cameroon; ABRI), R (Fig. 13) and V (Fig. 14); *L. d. dunnia* HT ♂, R (Fig. 15) and V (Fig. 16); *L. d. dunnia* AT ♀, R (Fig. 17) and V (Fig. 18); *L. d. reducta* HT ♂, R (Fig. 19) and V (Fig. 20); *L. d. reducta* AT ♀, R (Fig. 21) and V (Fig. 22).

***Liptena dunnia* sp. nov.**

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***Liptena dunnia dunnia* ssp. nov.** (Figs 15 to 18)

*Liptena undina* Grose-Smith & Kirby, 1894 s. Jackson (1937: 207), Berger (1981: 247), Ducarme (2018: 31).

**Holotype:** male, Beni, Kivu, NE RDC, IX 1999 (R. Ducarme); IRSNB.

**Allotype:** female, Beni, Kivu, NE RDC, VII 1991 (R. Ducarme); IRSNB.

**Distribution** (Fig. 12)

The western limit of the distribution of the nominate subspecies is in central DRC (Salonga National Park), where a male, very different from those of subspecies *reducta*, was captured (genitalia Libert, 123–053; ANHRT). A little further east, around sixty specimens

were collected by Dr. Fontaine, some in Paulis and others in Katak-Kombe (most in MRAC, a few in IRNSB and MNHN). More recently, *L. dunnia* has been observed in Nebogongo (about 30 km S of Paulis; T. Desloges, pers. comm.) and Bangupa (130 km E of Kisangani; ABRI); in the north-east, it has been collected in Beni and in several other localities in Ituri close to each other (Biakatu, Mamove, Manzumbu, Mapimbi, Pateka), as well as in the north of the Mitumba mountains (Kasugho, Makusa) (about a hundred specimens; ABRI, CRD, CML).

*L. dunnia* is present in Uganda, where Jackson collected it in the west (Budongo, Mpanga Toro) and south-west (Katera) as early as the 1930s (NHM, NMK); its range even extends to the area around Entebbe, where Joe Brophy captured two specimens in the Zika forest (P. Ward and ABRI collections). In north-west Tanzania, seven specimens were collected in the Minziro forest (Congdon & Collins, 1998: 69; ABRI).

**Description**

The difference with *L. undina* is marked enough to have attracted my attention, but it only appears in a series, and it is very difficult to find a diagnostic character in the habitus; the difference is much clearer with subspecies *reducta*. Males and females are often smaller and slightly darker than those of the other two taxa. On the forewings upperside, the black apical spot is generally wider than in *L. undina* (about 10% at the apex, up to 2 mm in interval 2), and its inner edge is slightly angular at vein 3; along the costal edge the black border is broader, but the black arc above the cell is not as apparent. The anal area of the hindwings is scattered with more or less dense black scales. Females are not different from males.

**Early stages**

They were described by Jackson (1934: 207) who bred *L. d. dunnia* in the Budongo forest (W Uganda); his observations are taken up by Williams (2022).

***Liptena dunnia reducta* ssp. nov.** (Figs 19 to 22)

Some 70 specimens were collected in a few localities between the distribution areas of *L. undina* and *L. d. dunnia*, around Bangui (CAR; 54 specimens) and at Ekombe<sup>1</sup>, approximately 500 km to the south (near Mbandaka, DRC; 18 specimens); all are in the ABRI collection.

**Holotype:** male, Yakoli, RCA, IX 1997 (S. Collins); genitalia Libert 117-035; ABRI.

**Allotype:** female, Yakoli, RCA, IX 1997 (S. Collins); genitalia Libert 117-083; ABRI.

**Description**

The upperside is often lighter than in the other two taxa (it can even be very light), but this character is not strongly diagnostic. On the forewings, the black apical spot is less wide at the apex (by about a quarter) than in interval 2, where it is reduced to a point (it barely extends beyond vein 2); along the costal margin, the black margin is also much thinner and the black arc is missing above the cell. On the

<sup>1</sup> The labels indicate ‘70 km Mbandaka’, without further details; among the many localities in the DRC called ‘Ekombe’, and whose coordinates are available on the internet, only one meets

this distance condition; it is located south-east of Mbandaka (0° 24’S; 18° 23’E).

hindwings, the black pattern is reduced in the anal angle; the dark transverse bands on the underside are barely or not visible.

On the underside, the drawings of the apical part of the forewings are greatly reduced (the brown lines are hardly visible) and the black arc has virtually disappeared above the cell. The colour of the hindwings is much lighter, and the transverse lines are almost orange.

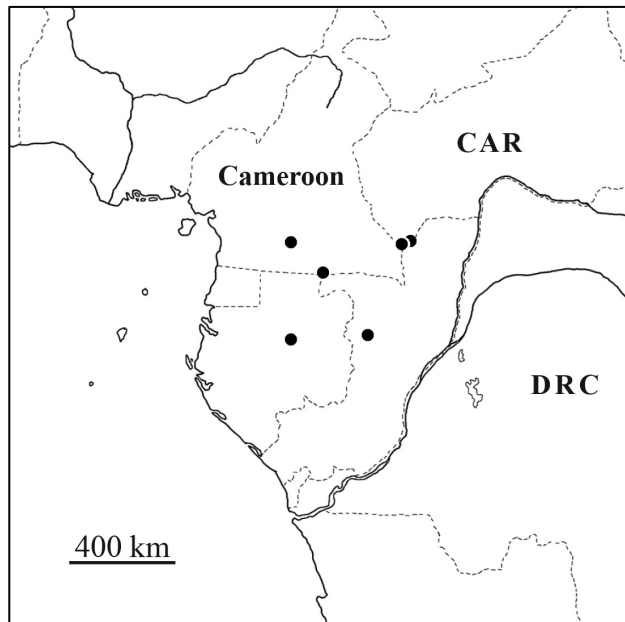


Figure 23 – Distribution map of *Liptena ochrea*.

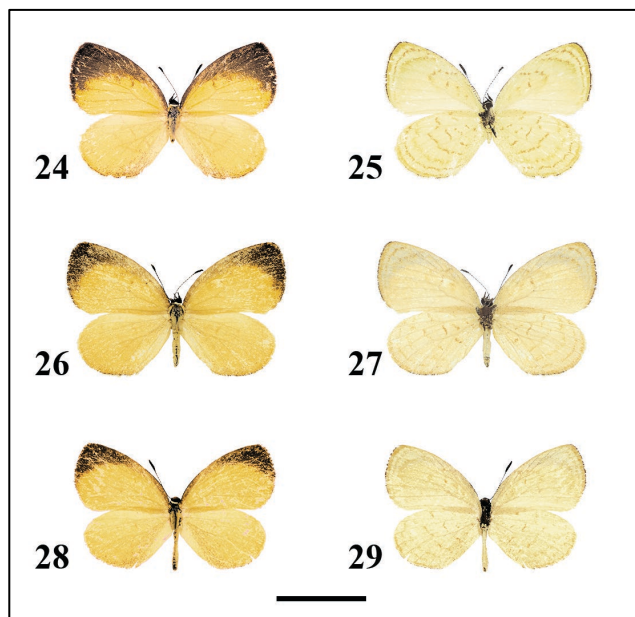


Figure 24 to 29 – *Liptena ochrea* plate (scale bar = 1 mm): *L. ochrea* ♂, Nouabale NP (Congo; ANHRT), R (Fig. 24) and V (Fig. 25); *L. ochrea* ♀, Nouabale NP (Congo; ANHRT), R (Fig. 26) and V (Fig. 27); *L. ochrea* ♂, Ivindo NP (Gabon; ANHRT), R (Fig. 28) and V (Fig. 29).

*Liptena ochrea* Hawker-Smith, 1933 (Figs. 24 to 29)

*Liptena ochrea* Hawker-Smith, 1933. – New species and races of Lipteninae (Lepidoptera, Lycaenidae). *Stylops* 2:8; the type is not illustrated, but d'Abbrera (2009: 449 and 2009: 649) shows a female.

*Liptena ochrea* Hawker-Smith, 1933 s. Stempffer *et al.*, 1974: 163 and pl. 5, Figs 78, 81 (male neAT, Congo).

**Holotype:** female, Bitje, Ja River, Cameroons, wet season, IV-V 1912 (Bates); NHM.

**Neallotype:** male, Etoumbi, Congo, XII 1958 (T.H.E. Jackson); genitalia NHB-1968-2738; NHM.

The genitalia illustrated by Stempffer *et al.* (1974, Fig. 38) are probably those of the neallotype, but Stempffer also dissected a male from Etoumbi (NMK; prep. 5464).

*L. ochrea* is a rare species that was previously known only from the female holotype and five specimens collected by Jackson in Etoumbi (Congo, 3 ♂ and 2 ♀; NHM, NMK). More recently, nine specimens have been added to the previous six; they were caught in four new localities, resulting in a significant increase in the range of *L. ochrea* (Fig. 23).

– In Cameroon (where the author did not observe it), a specimen was captured in the south, near the border with Gabon ('80 km S Mintom', approximately 150 km south-east of the type-locality; ABRI).

– In Gabon, Vande weghe (2010: 347) did not observe it, but two males were collected in Dilo (Ivindo NP; ANHRT). These males can be distinguished by a less extensive apical band on the forewings upperside (Figs 28, 29), but their underside does not differ in any way from that of the other specimens and the genitalia of the male that was dissected are identical to those of two males from Congo and CAR (and to Figure 38 in Stempffer *et al.*, 1974: 163).

– In Congo, one male and three females were captured in the north (Nouabalé-Ndoki NP; ANHRT).

– In CAR, two males were collected in the south, very close to the previous locality (Mboko, Dzangha Ndoki NP; P. Annoyer collection); their barcodes were sequenced (MLIB-1587 and -1588).

#### ACKNOWLEDGMENTS

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