

***Iridana languyi* sp. nov., a new Liptenine lycaenid species from Liberia (Lepidoptera, Lycaenidae, Poritiinae, Liptenini)**

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Abstract – Capture of the first female in the Nimba Mountains, Liberia reveals new identity to an *Iridana* Aurivillius, 1920 species (Lepidoptera, Lycaenidae, Poritiinae), previously identified from the male as *I. agneshorvathae* Collins, Larsen & Sáfián, 2008. The male and the matching female represent an undescribed species and is named as *I. languyi* sp. nov. The newly described species is known only from the upland forest zone of two mountainous areas in Liberia. With 27 figures.

Key words – genus *Iridana*, *I. agneshorvathae*-group, *I. obscura*-group, Liberian subregion, endemism

INTRODUCTION

Iridana Aurivillius, 1920 (type species: *Iris incredibilis* Staudinger, 1891) is a small, purely Afrotropical genus in the family Lycaenidae (subfamily Poritiinae, tribe: Liptenini). Most species are very rare or rarely encountered as adults tend to fly just below the canopy level or above the high canopy of tropical rainforest (LARSEN 2005, Sáfián pers. obs.). Only one species is known to occur in more open *Brachystegia* (miombo) woodland (GARDINER 2010). The caterpillars are obligately ant-associated and are found only on the bark of *Crematogaster* Lund, 1831 (Formicidae: Myrmicinae) ant infested trees, where they live in a self-sawn silk-chamber (SÁFIÁN & COLLINS 2014). Probably because of these reasons, many species are extremely local, and their distribution is also restricted, and as a result, general knowledge on the genus and on most of the species is limited (LARSEN 2005, D'ABRERA 2009). For their rarity and obscure behaviour, it is not rare to discover new species in the genus; six species have been described from the Democratic Republic of Congo, Cameroon, Ghana and Liberia only in the last decade (BOUYER 2013, 2014, 2015a, 2015b, COLLINS & SÁFIÁN, 2014, SÁFIÁN

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& COLLINS 2014), and a taxonomic revision of the genus could probably reveal a few more. Currently, the genus counts 25 species with no subspecies recognized (see below).

In 2018 the author collected a male *Iridana* in the Wologizi Mountains in Liberia, which at first sight was recognized as *I. agneshorvathae* Collins, Larsen & Sáfíán, 2008 (COLLINS & LARSEN 2008), previously known only from two specimens collected in Ghana (SÁFIÁN *et al.* 2012). The record was recently published as such, with the first female of *I. agneshorvathae* captured in Benin (SÁFIÁN & COACHE 2020). The authors noted minor morphological differences, but from a single specimen, these differences could have represented individual variation across the geographic range. A capture of a female *Iridana* in the Nimba Mountains, Liberia, strongly resembling to the only known female of *I. agneshorvathae* provided new material for comparison. The initially recognised morphological differences between the Ghanaian and Liberian males were confirmed also in the opposite sex, which led the Liberian taxon to be recognised as a distinct and new species.

MATERIALS AND METHODS

Wing venation references follow the numeric of English system as described in MILLER (1970) and used by the authors widely in taxonomic work on butterflies (e.g., SÁFIÁN 2021, SÁFIÁN *et al.* 2020, 2021).

To correctly position the new species, a check-list of all known taxa in the genus are compiled and presented using BOUYER (2013, 2014, 2015a, 2015b), BOUYER & DUCARME (2015), COLLINS & LARSEN (2008), COLLINS & SÁFIÁN (2014), D'ABRERA (2009), SÁFIÁN & COLLINS (2014) with preliminary grouping based on morphological similarities and previous tentative groups established by BOUYER (2013, 2014, 2015) and COLLINS & SÁFIÁN (2014).

Acronyms and abbreviations: ANHRT – African Natural History Research Trust, Leominster, UK; DRC – Democratic Republic of Congo; HNHM – Hungarian Natural History Museum, Budapest, Hungary.

RESULTS

Ordo LEPIDOPTERA Linnaeus, 1758
 Superfamily PAPILIONOIDEA Latreille, 1802
 Family LYCAENIDAE Leach, 1815
 Subfamily PORITIINAE Doherty, 1886
 Tribe: LIPTENINI Röber, 1892
 Genus *Iridana* Aurivillius 1921
 Type species: *Iris incredibilis* Staudinger, [1891]

Check-list

Iridana incredibilis*-groupIridana incredibilis* (Staudinger, 1891)*Iridana rougeoti* Stempffer, 1964*Iridana gabunica* Stempffer, 1964*Iridana tororo* Stempffer, 1964***Iridana euprepes*-group***Iridana euprepes* (Druce, 1905)***Iridana perdita*-group***Iridana perdita* (Kirby, 1890)*Iridana marina* Talbot, 1935*Iridana bwamba* Stempffer, 1964*Iridana katera* Stempffer, 1964*Iridana kollariki* Sáfián, 2014***Iridana obscura*-group***Iridana obscura* Stempffer, 1964*Iridana pseudobscura* Bouyer, 2014*Iridana michaelgwynnei* Collins & Sáfián, 2014***Iridana unyoro*-group***Iridana unyoro* Stempffer, 1964***Iridana agneshorvathae*-group***Iridana agneshorvathae* Collins, Larsen & Sáfián, 2008*Iridana languyi* sp. nov.***Iridana hypocala*-group***Iridana hypocala* Eltringham, 1929*Iridana magnifica* Hawker-Smith, 1933*Iridana jacksoni* Stempffer, 1964*Iridana ducarme* Bouyer, 2013*Iridana noellae* Bouyer, 2014*Iridana larseni* Bouyer, 2015***Iridana nigeriana*-group***Iridana nigeriana* Stempffer, 1964*Iridana ghanana* Stempffer, 1964

Incertae sedis*Iridana exquisita* (Grose-Smith, 1898)*Iridana stempfferi* Bouyer, 2015

Description of new species

***Iridana languyi* sp. nov.**

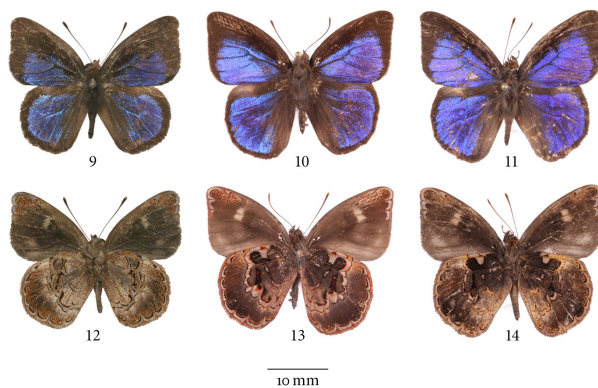
(Figures 2, 4, 6, 8, 9, 12, 17-18, 24)

Material – Holotype, female, LIBERIA, Nimba Mountains, East Nimba Nature Reserve, Cellcom Road 1155 m. 7°31'41.90"N, 8°31'39.81"W, 02.III.2021. Leg.: Sáfíán, Sz., Languy, M. DNA sample code: LepAf24. Deposited in the HNHM. Paratype, male, LIBERIA, Lofa County, Wologizi Mountains, Belegizi Ridge and Summit, 8°7'27.24"N, 9°56'10.91"W, 1000–1086 m asl. 4–9.XI.2019. Leg.: Sáfíán. Sz., Simonics, G. ANHRT: 2018.43. ANHRT unique number: ANHRTUK00058080. Deposited in ANHRT.

Description and diagnosis – The size and general appearance of both sexes of the new species are like those of *Iridana agneshorvathae* as described in COLLINS & LARSEN (2008) and in SÁFIÁN & COACHE (2020). However, they differ in the following six features. (1) Forewing outer margin of *I. languyi* sp. nov. in both sexes is distinctly more concave compared to that of *I. agneshorvathae*, which is almost straight in the latter species (Figures 1–8). (2) Hindwing tornus is less drawn-out in both sexes of *I. languyi* sp. nov. compared to that of *I. agneshorvathae* (Figures 1–8). (3) In the fork of veins 1 and 2 of forewing upperside, the basal, black, possibly androconial pit is twice as long in *I. languyi* sp. nov. as in *I. agneshorvathae* (there is no sign of physical damage on the wing) (Figures 23–24). (4) The typical *Iridana* pattern in the median of hindwing underside formed by silvery lines is distinctly finer in both sexes of *I. languyi* sp. nov. than in *I. agneshorvathae*, the width of the lines is twice as broad in certain sections of the female of *I. agneshorvathae* as in the new taxon (Figures 3, 4, 7, 8). (5) The light grey cell-closing discal spot on forewing underside in *I. languyi* sp. nov. is half the width of that in *I. agneshorvathae* in both sexes (Figures 3, 4, 7, 8). (6) Although their wingshape is different, in the fine silvery pattern on hindwing underside the new species resembles to members of the *I. obscura* species group (COLLINS & SÁFIÁN 2014), namely *I. michaelgwynnei* and *I. pseudobscura* (Figures 12–14), including a rudimental version of the tear-shaped spot in the fork of veins 3 and 4 on hindwing underside, characteristic to this group as described in COLLINS & SÁFIÁN (2014) (Figures 17–22). In both sexes of *I. agneshorvathae* the silver area in the fork is clearly attached to the band (Figures 15–16).



Figures 1–8. Adults of *Iridana* species: 1 = *Iridana agneshorvathae* (holotype) upperside; 3 = *I. agneshorvathae* (holotype) underside; 2 = *I. languyi* sp. nov. male (paratype) upperside; 4 = *I. languyi* sp. nov. male (paratype) underside; 5 = *I. agneshorvathae* female (Benin) upperside; 7 = *I. agneshorvathae* female (Benin) underside; 6 = *I. languyi* sp. nov. female (holotype) upperside; 8 = *I. languyi* sp. nov. female (holotype) underside.



Figures 9–14. Males: 9 = *Iridana languyi* sp. nov. (paratype) upperside; 12 = *I. languyi* sp. nov. (paratype) underside; 10 = *I. pseudobscura* (Mintom, Cameroon) upperside; 13 = *I. pseudobscura* (Mintom, Cameroon) underside; 11 = *I. michaelgwynnei* (holotype) upperside; 14 = *I. michaelgwynnei* (holotype) underside.

Distribution and Bionomics – The species is known so far from two mountainous areas in Liberia, the Wologizi Mountains and the Nimba Mountains. In both localities a single specimen was captured in the upland forest zone between 1000–1200 m asl (Figure 27).

Etymology – The species is dedicated to Marc Languy, a Belgian senior conservationist and protected area management expert, who has been working to establish higher management standards in protected areas in the DRC, Kenya, Cameroon and elsewhere for many years.

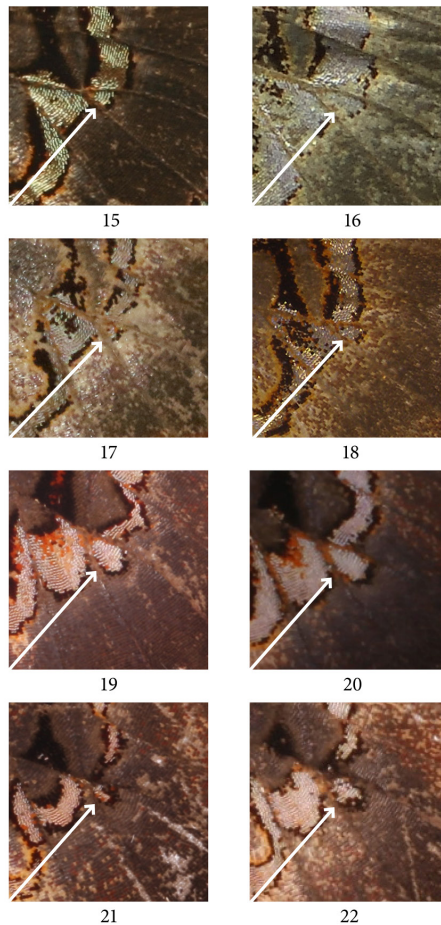
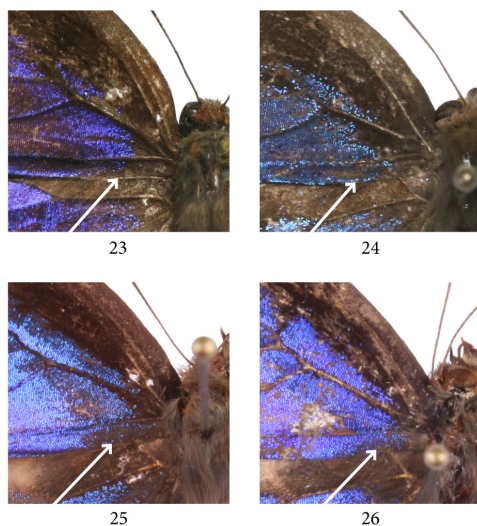


Figure 15–22. Magnified hindwing underside featuring the characteristic spot in the fork of veins 3 and 4 (indicated by arrow): 15 = *Iridana agneshorvathae* (holotype); 16 = *I. agneshorvathae* (female, Benin); 17 = *I. languyi* sp. nov. (male paratype); 18 = *I. languyi* sp. nov. (holotype); 19 = *I. pseudobscura* (male, Cameroon); 20 = *I. pseudobscura* (female, Cameroon); 21 = *I. michaelgwynnei* holotype; 22 = *I. michaelgwynnei* (female paratype).



Figures 23–26. The basal, brown, potentially androconial spot on the dorsal forewing surface (indicated by arrow): 23 = *Iridana agneshorvathae*; 24 = *I. languyi*; 25 = *I. pseudobscura* and 26 = *I. michaelgwynnei*.

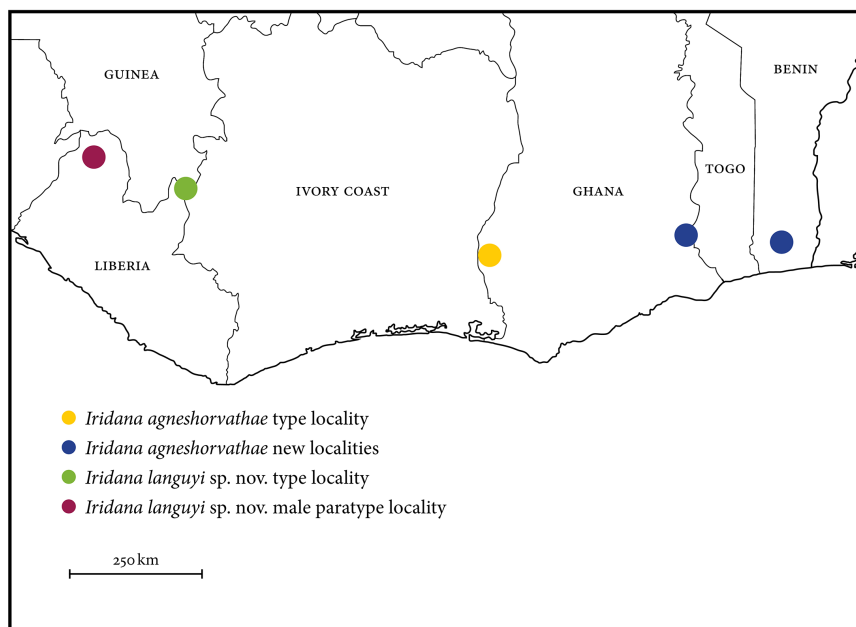


Figure 27. *Iridana languyi* sp. nov. and *I. agneshorvathae* distribution records.

DISCUSSION

Comments for identification – Both sexes of *Iridana languyi* sp. nov. are significantly smaller than any members of the *I. obscura* species group and the female has no iridescent blue scaling on the upperside similarly to that of *I. agneshorvathae*. This and the more rounded hindwing shape actually also set it closer to the latter species, hence the decision of the position of the species in the *I. agneshorvathae*-group. Although the upperside's iridescent blue colour will probably also prove to be diagnostic, here it is not compared as iridescent blue reflections are very difficult to reproduce in high fidelity by photography and the specimens were photographed under different lighting circumstances. The holotype and the paratype specimens are not dissected as there are no diagnostic information known to be carried by genitalia (STEMPFER 1968: 75; *teste* LARSEN 2005).

Biogeographical remarks – Beside the insufficient comparative material, the original misunderstanding of *I. languyi* sp. nov. is a result of the fact that the rate of endemism in Ghana subregion is rather low and the majority of Upper Guinean Forest Zone endemics that occur in Ghana has a rather broad distribution between the Dahomey Gap, Sierra Leone and the Forest Region of Guinea. Even species previously believed to be restricted to the Ghana subregion (LARSEN 2005) were recently found also in Liberia, more precisely in the Wologizi Mountains (e.g., *Liptena seyboui* Warren-Gash & Larsen, 2003, *Bebearia ashantina* (Dudgeon, 1913)) (SÁFIÁN & LORENC-BRUDECKA 2020, SÁFIÁN *et al.* 2020), where the holotype of *I. languyi* was also collected. The known localities (Figure 27) indicate that *I. languyi* sp. nov. is yet another Liberian subregion endemics, or a species narrowly endemic to the mountains of the Guinea Highlands as discussed in SÁFIÁN (2021). We also cannot rule out that the range of the two species could actually fully overlap or they could be parapatric, *I. agneshorvathae* being a lowland forest species, distributed across the Upper Guinean Forest Zone, with the strictly upland species *I. languyi* sp. nov. present only at higher altitudes.

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***Iridana languyi* sp. nov., új zuzmászka faj Libériából (Lepidoptera, Lycaenidae, Poritiinae, Liptenini)**

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Összefoglalás – Az első begyűjtött nőstény egyed nyújtott elegendő információt a korábban *I. agneshorvathae*-ként leírt zuzmászka faj (Lepidoptera, Lycaenidae, Poritiinae) pontosabb meghatározásához. A hím és a szárnyak rajzolatában megegyező nőstény leíratlan fajnak bizonyult, amely *I. languyi* sp. nov. néven kerül közlésre. Az új faj kizárólag Libéria középhegységi erdőzónájából ismert. 27 ábrával.

Kulcsszavak – *Iridana* génusz, *I. agneshorvathae* fajcsoport, *I. obscura* fajcsoport, Libériai szubrégió, endemizmus

ÁBRAMAGYARÁZATOK

1–8. ábra. *Iridana* imágók: 1 = *Iridana agneshorvathae* (holotípus) felszín; 3 = *I. agneshorvathae* (holotípus) fonák; 2 = *I. languyi* sp. nov. hím (paratípus) felszín; 4 = *I. languyi* sp. nov. hím (paratípus) fonák; 5 = *I. agneshorvathae* nőstény (Benin) felszín; 7 = *I. agneshorvathae* nőstény (Benin) fonák; 6 = *I. languyi* sp. nov. (holotípus) felszín; 8 = *I. languyi* sp. nov. (holotípus) fonák.

9–14. ábra. *Iridana* hímek: 9 = *Iridana languyi* sp. nov. (paratípus) felszín; 12 = *I. languyi* sp. nov. (paratípus) fonák; 10 = *I. pseudobscura* (Mintom, Kamerun) felszín; 13 = *I. pseudobscura* (Mintom, Kamerun) fonák; 11 = *I. michaelgwynnei* (holotípus) felszín; 14 = *I. michaelgwynnei* (holotípus) fonák.

15–22. ábra. A hátulsó szárny fonákján kinagyítva a 3. és 4. erek tövében található jellegzetes foltrajzolat (nyíl jelzi): 15 = *Iridana agneshorvathae* (holotípus); 16 = *I. agneshorvathae* (nőstény, Benin); 17 = *I. languyi* sp. nov. (hím paratípus); 18 = *I. languyi* sp. nov. (holotípus); 19 = *I. pseudobscura* (hím, Kamerun); 20 = *I. pseudobscura* (nőstény, Kamerun); 21 = *I. michaelgwynnei* (holotípus); 22 = *I. michaelgwynnei* (nőstény paratípus) – H.

23–26. ábra. Az elülső szárnyfelszín tövében lévő barna, lehetséges androkoniális folt (nyíl jelzi): 23 = *Iridana agneshorvathae* (holotípus); 24 = *I. languyi* sp. nov. (hím paratípus); 25 = *I. pseudobscura* (hím, Kamerun); 26 = *I. michaelgwynnei* (hím, Kamerun).

27. ábra. Az *Iridana languyi* sp. nov. és az *I. agneshorvathae* előfordulási pontjai.