Butterfly diversity (Lepidoptera: Papilionoidea) in the Ziama Massif in Guinea and the adjacent Wonegizi and Wologizi Mountains in Liberia (West Africa): A transboundary conservation approach

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Abstract: Five field surveys targeting the butterfly fauna across the transboundary landscape that encompasses the Ziama Massif in Guinea and the Wologizi and Wonegizi Mountains in Liberia (collectively called as the Ziama-Wonegizi-Wologizi Transboundary Forest Landscape) were conducted between November 2017 and April 2019. Altogether 564 species of butterfly were recorded from the research area, with 450 species from the Wologizi Mountains, 254 from the Wonegizi Mountains and 429 from the Ziama Massif. An additional five species recorded in Ziama were added to the list as literature data. The surveys revealed several taxa new to science as well as a high number of restricted-range species, endemic either to the Guinea Highlands or to the broader forest area of the Liberian subregion. The results of the ecological classification of the butterfly fauna in Ziama and Wologizi show intact forest fauna with 90% and 92% of the recorded species associated with forest habitats, respectively. These results, along with the high species richness and the outstanding number of restricted-range species, make this landscape one of the most important conservation areas for butterflies in the Liberian biogeographical subregion including the Nimba Mountains and the Greater Gola Landscape on the Liberia-Sierra Leone border.

Key words: Checklist, butterfly fauna, species richness, rapid biodiversity surveys, Upper Guinean Forest, Guinea Highlands, endemism, restricted range species, ecological composition.


INTRODUCTION

The Upper Guinean Forest was once a single block of lowland rainforest area stretching from Central Sierra Leone to the western edge of the Dahomye Gap in South-Central Ghana. The majority of the forest has now been cleared and converted into agricultural land in Sierra Leone and Ivory Coast. The once continuous forest area is completely fragmented in the Forest Region of Guinea (south-east) and in south-central and south-western Ghana (Hawthorne & Abu-Juam, 1995). In Liberia, there are still over 4 000 000 hectares of forest in variable condition found in two more or less large unfragmented forest areas, but continuous pressure from forestry and agricultural interests and the need for fertile farmland from the growing local communities threatens the integrity of these forests, especially along roads and in the proximity of settlements (Christie et al., 2007).

Higher hills and mountainous areas are scattered over a vast area in the eastern Guinea Highlands between north-western Ivory Coast, north-western Liberia and eastern Guinea. Two significant isolated mountains are found in Sierra Leone, including the highest mountain in West Africa, west of the Dahomye Gap (Mount Bintumani in the Loma Mountains). Several of these mountains used to be connected by lowland forest even in recent times, but deforestation has already resulted in complete isolation of the Tingi and Loma Mountains in Sierra Leone and other higher mountains in western Ivory Coast (e.g. Mount Tonkoui, Mount Péko).

The butterfly fauna of West Africa’s higher hills and mountains has not been extensively studied, only a few, single-area checklists are available from the Atewa Range (Ghana) (Larsen, 2006a) and the Liberian part of the Nimba Mountains (Sáfán, 2014). Larsen (2005) also summarised the knowledge on the West African butterfly fauna, and he listed many interesting butterfly species from the Loma Mountains in Sierra Leone, the Fouta Djallon plateau in Guinea, Mount Péko and Mount Tonkoui in Ivory Coast and Tano Ofin in Ghana (Larsen, 2005, 2006a) including quite a few endemic species (e.g. *Mylothris atewa* Berger 1980, *Iolaus djallonii* Collins & Larsen, 1998).

No previous checklists or other publications are available on the butterfly fauna of the current study area, despite the book published on Liberian butterflies by Fox *et al.*
(1965), the active work of IFAN (for acronyms see below) scientists in Guinea in the nearby Nimba Mountains (e.g. Stempffer, 1953; Bernardi, 1954; Evans, 1954; Stempffer, 1954; Bernardi & Condamin, 1963; Condamin, 1963; Condamin & Roy, 1963; Stempffer, 1963), and many records from Diecké Forest (Larsen, 2005). Only a few mentions of Ziama appear in scientific works on butterflies. In his comprehensive work on West African butterflies, Larsen (2005) lists Hypolimnas aubergeri from Sérédou, but the locality was misattributed to the Nimba Mountains. Sáfian & Takano (2019) corrected this error in their note on the updated distribution of H. aubergeri with further records also from Ziama. Belcastro & Oremans (2016) described a new species of skipper butterfly, Abantis fabiana Belcastro, 2016 with the type locality being Sérédou (uplands 1 000 m.a.s.l.), Forêt de Ziama. Claudio Belcastro also communicated a number of his previously unpublished records to Michel Libert (Libert, 2010), including a potentially new subspecies of Neurellipes helpsi (Larsen, 1994). Some of Belcastro’s records also appear in the revisions of African Celaenorrhinus (s.l.) (Libert, 2014) and Liphyrini (Libert, 2016).

A rather comprehensive checklist of the butterfly fauna exists of the nearby Gola Forests (Greater Gola Landscape) across Liberia and Sierra Leone (Belcastro & Larsen, 2006; Sáfian, 2012) and from the Liberian side of the Nimba Mountains (Sáfian, 2014). Another, yet unpublished butterfly list was compiled by Sáfian from the Foya Proposed Protected Area, which is a lowland forest contiguous with the southern section of lowland forests of the Wologizi Proposed Protected Area. In this paper, the authors summarise their data collected over five field surveys conducted across the Ziama-Wonegizi-Wologizi Transboundary Forest Landscape (ZWW) between November 2017 and April 2019, highlighting the most interesting findings and also the biogeographical and conservation importance of the area.

MATERIAL AND METHODS

Acronyms and abbreviations

ABRI – African Butterfly Research Institute, Nairobi, Kenya
ANHRT – African Natural History Research Trust, Leominster, UK
CEP-MZUJ – Nature Education Centre, Jagiellonian University, Kraków, Poland
CFZ – Centre Forestier de N’Zérékoré, Guinea
FFI – Fauna and Flora International, Guinea and Liberia
IFAN – Institut Fondamental d’Afrique Noire, Dakar, Senegal
WA BiCC – West Africa Biodiversity and Climate Change
SCNL – Society for the Conservation of Nature, Liberia
USAID – United States Agency for International Development
ZWW – Ziama-Wonegizi-Wologizi Transboundary Forest Landscape, that encompasses the Ziama Biosphere Reserve (Massif de Ziama, Forêt Classée de Ziama) in Guinea and the Wonegizi (Mountains) and Wologizi (Mountains) Proposed Protected Areas in Liberia

Study area and sampling sites

The study area is described below and shown in Figure 1.

Wologizi Mountains

The Wologizi Mountains are part of the Wologizi Proposed Protected Area in Lofa County, also one of Liberia’s Important Bird Areas (BirdLife International, 2020a) of approximately 20 000 hectares (excluding the large tract of lowland forest east of the mountain range). Not much further information is found in publications, except that the mountain formations are metamorphic, sedimentary and volcanic rocks rich in iron ore (White, 1973). Its highest peak Mount Wutewe (other spellings are also used, such as Wutewe or Wutuwi) is also the highest point of Liberia, with variable altitude given in the few references between 1 350 and 1 447 m.a.s.l. (Peal & Kranz, 1990; BirdLife International, 2020a). The mountains consist of two roughly south-north, long and narrow independent ridges, separated by a deep valley. The southern ridge is lower with its highest peak reaching about 1 050 m.a.s.l. The higher and longer northern ridge harbours two prominent peaks: Mount Wutewe (cc. 1 400 m.a.s.l.) and Mount Belegizi (cc. 1 186 m.a.s.l.). It branches to multiple massive spurs to both east and west and has a small plateau a few kilometres north of Mount Wutewe lying at about 1 100 m.a.s.l. The mountain slopes are very steep with several deeply incised valleys. Numerous water-courses are found below 800 m.a.s.l., and almost none above. Almost the entire mountain range is covered with primary forest, mainly of wet evergreen forest below and upland evergreen forest above 800 m.a.s.l. The peak area of Mount Wutewe is covered by a woodland thicket of shorter trees and shrubs. Rather large edaphic grassland savannah patches are found at the foothills of Wologizi around Lisco village on iron ore sedimentation. The forests on the main ridgeline and part of the Belegizi Ridge were damaged by wildfire during the extensive dry season in 2015, where regenerating secondary vegetation is overgrowing the damaged upland forest.

Wonegizi Mountains

Very little information could be gathered about the Wonegizi Mountains. They are encompassed by the Wonegizi Proposed Protected Area of approximately 20 000 hectares of forest land in Lofa County, situated north-east of Wologizi. The two were once connected, but an increasingly wider gap is being opened up by human activities for the growing need of agricultural land. The majority of the proposed protected area is covered by lowland forest, while the mountains, probably with upland forest at higher altitude, emerge mainly in the south-eastern and north-eastern parts with the northern ridges directly connected and being part of the Ziama Massif. The highest peak is Mount Wonegizi (1 110 m.a.s.l.).

Ziama Massif (Massif de Ziama)

Ziama is the largest, single block rainforest area in Guinea, covering 119 019 hectares in the Ziama Massif and the surrounding lowland area. Administratively, the classified forest (Forêt Classée de Ziama) lies in the
Macenta Prefecture of the Guineé Forestière region and stretches for about 50 km from the Liberian border north-east towards Kerouane and Beyla Prefectures. It is part of the seven classified forests under the management of the CFZ.

Ziama has long been recognised for its intrinsic value, particularly for the internationally important population of forest elephant (Barnes & Awo, 2005), pygmy hippopotamus (Butzler, 1994), various species of endangered primates, the rich avifauna of over 280 species (BirdLife International, 2020b) and over 1300 species of vascular plants, with most samples preserved in the Ziama Herbarium, Sérédou. Ziama also serves as a regionally important water catchment area. The forest reserve (forêt classée) was established in 1932 and designated as a Biosphere Reserve (Massif de Ziama) in 1980 (Brugiere & Kormos, 2008; www.unesco.org).

A significant part of Ziama Forest is covered by lowland rain forest of variable quality, mainly secondary forest in various stages of regeneration, interspersed with patches of forest plantations of native or in some cases non-indigenous species. The lowland forest remains relatively untouched, only a few kilometres away from human settlements and the inaccessible lower slopes of the massif. The upland zone of Ziama Massif, usually above 800 m, remains largely untouched, logged only above Sérédou town and large areas still qualify as primary upland evergreen forest. The entire forest is very densely interwoven by natural water courses, which support the formation of various microhabitats, including stretches of riverine forest, lowland and upland marshes and swamps, also swamp forests. At higher altitudes, rocky outcrops often prevent the formation of deep soil and here closed canopy forest is interspersed with more open canopy drier forest patches on hilltops, while on the highest ridges even open, grassy patches occur.

**Sampling localities**

The sampling localities are described below and shown in Figure 1.

**Wologizi Mountains**

1. LISCO grassland and anthropogenic habitat (LIS). 8°9’56.1"N, 9°57’7”W (8.165586, -9.951939); 578 m.a.s.l.; 08–10.xii.2018.

   The Lisco village is an old mining exploration settlement situated at the western foothills of Wologizi Mountains with extensive tall-grass savannah grassland, formed on iron rock sediments that originate from the mountains. Near and inside the settlement a variety of anthropogenic habitats are found, including old-grown mango trees, cassava, plantain and vegetable farms and fallow land.


   Tall-grass savannah habitat on iron sedimentation, similar
to that of Lisco and the lowland forest edge.

3. Dabu Road (DAB). 8°5′15.5″N, 9°58′21.6″W (8.087653, -9.972681); 530 m.a.s.l.; 30.xi.2017.

Secondary forest in different stages of regeneration and smaller patches of grassland (of the same character as above) alongside the road verges.


Lowland secondary forest with dense undergrowth, with numerous signs of recent human activities (tree-felling, pole-cutting). Maranthaceae thickets are found along the old mining-exploration track near creeks.

5. Rosewood Camp (ROS). 8°6′14.8″N, 9°57′27.2″W (8.104131, -9.957569); 577 m.a.s.l.; 18 – 25.xi.2018.

Old-grown, natural looking secondary lowland forest with primary patches, with virtually no signs of logging or other disturbance. The landscape is very diverse with gentle hills interspersed with creeks and swamps and the deep valley between the two main ridges with untouched riverine vegetation (Fig. 2), except alongside the old LISCO exploration road.


The northern section of the lower ridge of the Wologizi Mountains is frequently visited by forest elephants. It is covered entirely by primary upland rainforest, with obvious presence of local disturbance (playground, tree-felling) caused by elephants on flatter hilltops or depressions.


Untouched upland forest on the ridge and the steep slope of a minor spur of the Belegizi Ridge, dominated by Lophura alata.


Disturbed upland forest on the ridge and untouched primary upland forest on the steep slopes of the lower section of the Belegizi Ridge.


The massive spur that leads to the Belegizi Summit where it connects the main northern ridge is a narrow mountain ridge with very steep slopes on both sides. Originally the entire ridge was covered by upland forest, but during a long-lasting wildfire at the end of the dry season (February to April) in 2015 the entire ridge burned down, destroying large tracts of this unique habitat type (Fig. 3). Now the ridge and the upper slopes are covered by herbaceous and woody secondary vegetation with a strong presence of various invasive plants (e.g. Chromolaena odorata) and those native but very successful in the initial stage of regeneration (e.g. sword-grass).

Figure 2 – The deep and narrow river valley between the two main ridges in the Wologizi Mountains is outstandingly beautiful and harbours a very rich butterfly community with multiple rare and restricted-range species.

Figure 3 – Upland forest in the Wologizi Mountains. Note the burned twin-summits of Mount Belegizi. A large tract of upland forest has been destroyed or damaged by wildfire in 2015.

Wonegizi Mountains

10. Wetezu Camp (WET). 8°4′57.1″N, 9°3′47.9″W (8.082531, -9.579961); 550 – 711 m.a.s.l.; 19 – 27.iii.2019.

The single area surveyed in Wonegizi lies in hilly country with peaks between 500 – 600 m.a.s.l. The habitat inside the reserve is primary forest with mosaic patches of formerly farmed secondary forest along the forest edges. Disturbed habitats, including young regenerating fallow land, recently cleared and burned farmland and shaded cocoa-farms were also surveyed during trekking in and out the reserve.

Ziama Massif

11. Sérédou lowland forest (SEL). 8°21′25.7″N, 9°1′7′8.4″W (8.357144, -9.296772); 626 m.a.s.l.; 28 – 31.iii.2019.

The forest at the foothills of Ziama Massif is rather degraded due to decades of logging. There are large stands
of planted *Terminalia ivorensis* at lower altitude and forest quality gradually improves further away from Sérédou town.


The upland zone of the Ziama Massif above Sérédou is covered largely by primary upland forest reaching over 1 000 m.a.s.l., with areas of logged secondary forest and several smaller watercourses and upland swamps, some of which have been converted into rice paddies and small vegetable farms (Fig. 4).

Figure 4 – Formerly upland swamp forest in Ziama above Sérédou. A strictly endangered habitat type drained and converted into plantain and banana farm and rice paddies. All wetlands in the upland zone should be treated as a prime conservation area.


The lowland forest along the Massadou-Dopamaï road is old-grown secondary forest with patches of untouched primary lowland forest. Even from the public road which crosses this section of the forest the habitat looks very diverse with recognisable natural strata of high canopy rainforest, including the old emergent trees, as well as lowland swamps and temporary watercourses with swamp/riverine vegetation. The vegetation along the road-verges is regularly cut, occasionally burned, creating secondary open habitats with young, regenerating scrub.


The lowland forest is more secondary around the village with old-grown patches, also a unique-looking semi-open canopy dry forest type is found in the summit area of the rocky hills.


The forest between Baignema and Fassankoni is a stretch of lowland secondary forest, which was heavily logged in the past. Its quality varies according to the intensity of past forest use. Some areas were planted with *T. ivorensis*, which still dominate the higher canopy layer. The closed canopy secondary forest is often interspersed with more open canopy swamp forest and palm-thicket.

**Limitations of the study**

A near complete faunal checklist of butterflies from a high diversity African tropical forest area is difficult to accomplish. Up to now, only a few examples could be found, where the knowledge of the butterfly fauna could be considered comprehensive. All these examples are results of years, but usually decades, of data collecting by one or more authors, often supplemented by published literature records or museum collection data. In the Kakamega Forest in Kenya, the first published checklist contained only relatively few observations and it was published as a report of a field expedition by Emmel & Warren (1993) listing 223 identified species with a few that remained undetermined. Kühne et al. (2004) have published a much more comprehensive checklist of 491 butterfly species, correcting some of the previous mistakes of determination. However, this list needed the contribution of Steve Collins of ABRI, who has spent years conducting field work in Kakamega in the last four decades. An updated checklist was published just four years later (Collins, 2008), with critical revision of all previous published records. In West Africa, a near comprehensive list was produced by Larsen et al. (2007) in the Bobiri Forest Reserve and Butterfly Sanctuary, where multiple recorders have contributed to the checklist of 456 butterfly species, accounting approximately 75% of the estimated species richness, compiled over nine field trips in different seasons between 2003 and 2007. The compilation of the 644 butterfly species positively recorded and identified in the Liberian Nimba Mountains is a result of ten months of field work by Sáfián and various field assistants and collaborators (Sáfián, 2014; Sáfián, unpublished data).

The current ZWW butterfly checklist was compiled from records of expeditions to the Wologizi Mountains: two weeks in November – December 2017 and three weeks in November – December 2018, a 10-day field survey at a single location in the Wonegizi Mountains (March 2019) and two rapid field surveys in the Ziama Massif, three weeks in February – March 2019 and one week in March – April 2019. The field teams altogether spent ten weeks in the study area.

From the limited time and resources available, the teams were not able to sample the butterfly fauna in multiple seasons in each survey location: Wologizi was sampled only at the beginning of the dry season (in two consecutive years), Wonegizi was sampled at the beginning of the transition season (from dry to wet), while Ziama was sampled only during the last three weeks of the dry season and one week during the transition season (from dry to wet).

Logistical constraints also limited the study to the lowland and mid-altitude (upland) localities in both Wologizi and Ziama. The highest altitude forests above 1 200 m.a.s.l. were inaccessible and were therefore completely excluded from the sampling.
Identification, taxonomy and nomenclature

Identification of more difficult taxa was aided by various literature sources, including Larsen (2005; unpublished manuscript), Libert (1999, 2010, 2014, 2016, 2020), as well as examination of museum specimens in the ABRI, ANHRT and CEP-MZUJ scientific collections, supplemented by dissection and examination of male genitalia in various cases.

The generic order of the checklist of Rhopalocera largely follows the latest work of Williams (2015). Brakefieldia Aduse-Poku, Lee & Wahlberg, 2016 has replaced the genus Heteropsis in mainland Africa (Aduse-Poku et al., 2016) with a single species in Ziana. Haydonia Pyrcz & Collins, 2020 was erected for a few former members of Gnophodes Westwood, 1849 (Pyrcz et al., 2020). The establishment of the new Hesperiid genera Isoteinon Felder & Felder, 1862, Argemma Grishin, 2019 and Lissia Grishin, 2019 is a result of molecular revision of a large number of African and Asian taxa (Cong et al., 2019).

The species order within each genus largely follows the comprehensive work on West African butterflies by Larsen (2005), except in genera where the revisions were published after Larsen’s work, some with complete re-ordering of species (e.g. Henning & Williams, 2010; Libert, 2010, 2014; Pyrcz et al., 2020). Richardson’s (2019) revision of Neptis was considered and consulted while compiling the list of Neptis, however in the cases of N. loma Condamin, 1971 and N. cf. constantiae Carcasson, 1961 (N. loma was synonymised with N. constantiae) and the similar N. metanira Holland, 1892 and N. cf. continuata Holland, 1892, the names with respective records are left as they were originally identified because of taxonomic uncertainties. Two further Neptis species could not be assigned to any described taxa.

Field methods

Conventional non-standardised capture with butterfly nets was used to record the majority of species. Field recorders collected specimens in sunny weather, usually between 08h30 and 16h30. This general collecting was supplemented by capture with fruit-baited net-traps, using modified IKEA PS FÅNGST storage nets, as described in detail in Sáfián et al. (2010), Maicher et al. (2018) for sampling in the understorey, while classical van Someren-Rydon traps (Rydon, 1964) were used to collect canopy-dwelling fruit-feeding butterflies.

Ecological classification

The ecological classification of West African butterflies is used to assess ecological position, intactness and conservation potential of an assessed habitat, survey area or even a country using the categories established by Larsen (1994) and further developed by Larsen (2006a) and also by Sáfián (2012, unpublished) with the inclusion of new West African taxa, based on the distribution pattern and observed habitat preferences of each species occurring in the area. The species in each category do not necessarily occur solely in one particular habitat, but are centred on it, sometimes with high fidelity, therefore they are much less likely to be found or appear very rarely outside of their ecological niche, except during migration, dispersal or occasionally due to other, unexplained ecological factors.

Forest-dwelling butterfly species are further sub-divided according to forest types, which are generally distributed following precipitation patterns and altitude in the following groups: Wet Forest Species (WET) are centred on lowland hyper-wet and wet evergreen rainforest, a widely distributed forest type in Liberia which occurs also in parts of Guinea. The group Mesophilous Forest Species (MEF) contains a large number of butterflies, which have wider ecological tolerance towards wetter climatic conditions but occur commonly also in the moist- and dry semi-deciduous forests of the Ghana subregion in the Upper Guinea forest zone. Dry Forest Species (DRF) are most commonly found along the rather narrow forest-savannah transition zone in West Africa, also in drier forest formations in the Dahomey Gap (Togo Mountains), the drier coastal forests of Ghana, Ivory Coast and south-eastern Liberia and in the north in mountainous areas in Ivory Coast and Guinea. They usually express little ecological tolerance and many of them are localised. Upland Forest Species (UPF) occur only in mid-altitude (upland) evergreen forest, a special habitat type in West Africa, which harbours several restricted-range, often narrowly endemic, butterfly species. Only a few of such upland localities exist in Ghana and eastern Liberia, more in the Guinea Highlands. Montane Forest Species (MTF) are extremely restricted to the very few unique forest areas in the Guinea Highlands above 1 400 m a.s.l. Currently, only a single species is known to be associated with high altitude montane forest habitats in West Africa west of the Dahomey Gap (Sáfián, 2018). Many forest butterfly species with a wide ecological tolerance and distribution are not usually restricted to any of the forest types mentioned above, but occur across the forest zone, also penetrating the Guinea savannah zone along rivers. They are listed under All Forest Species (ALF). West African butterflies associated with open habitat formations are sorted into the following categories: Guinea Savannah Species (GUI) inhabit the rather broad, wooded-savannah zone north of the Upper Guinea forest and also the savannah area in the Dahomey Gap including the savannah slopes of the Togo Mountains. The butterfly fauna of mid-altitude wooded-savannah area of the Nimba Mountains also show strong similarities with those inhabiting Guinea savannah habitats. A high proportion of butterfly species in this group express moderate tolerance to habitat degradation and some could survive in cleared areas or in disturbed, open canopy habitats in the forest zone. Sudan Savannah Species (SUD) inhabit the dry, grassy-scrubby savannah zone, between the Guinea savannah and the arid Sahel zone, these species usually have little tolerance to habitat degradation, are often connected with specialised food plants and only a few can penetrate the forest zone by migration or by dispersal to the south during the dry season. Species associated with special microhabitats (SPE), such as swamps or other wetlands are often found only locally in more open habitat formations. The Ubiquitous group of butterflies (UBQ) consists of generally mobile species, often with migratory tendencies, and they can establish colonies in all kinds of habitat from dry grasslands to forest glades or in degraded areas inside the forest zone, also in and around human
settlements. The habitat preference of a few butterfly species is insufficiently known (INS) for accurate classification.

RESULTS

Faunistic results

In the three study areas across the ZWW, altogether 564 butterfly species were recorded during five field surveys between November 2017 and April 2019. When including literature data, the total number of species recorded from the ZWW is 569 (see references below). In the Wologizi Mountains 450 butterfly species were recorded, 360 in 2017 and 362 in 2018 with 90 new area records. During the surveys in Ziama Forest in February and April 2019 altogether 429 species were positively recorded and identified, while records of another 5 species were found in literature sources (Libert, 2010, 2014; Belcastro & Oremans, 2016; Libert, 2016) making the total recorded species 434. During the one-week survey in Wonegizi Nature Reserve, 254 species were found from a single locality.

In Wologizi, 108 species were found that were not in the other two study areas. A further 93 species were found only in Ziama Forest, and thus recorded only from Guinea, and only seven species were recorded only from Wonegizi. Another 15 species were recorded only in Wologizi and Wonegizi, making the total of 134 species recorded only from Liberia.

A checklist of the species found in each area is given in Appendix 1.

Taxonomic novelties

From the collected material, eight potentially new taxa were identified, five species and three subspecies. Three of them are already formally described: *Eagris tetrastigma lomana* Belcastro & Sáfián, 2020, *Gorgyra ziana* Belcastro & Sáfián, 2020 and *Telchinia pseudapaea ziana* Belcastro, Boireau & Sáfián, 2020 (Sáfián et al., 2020a,c), while the others await description: *Pseudathyema cf. neptidina, Neurellipes helpsi* sp. nov., *Eresiomera* sp. nov., *Stempfferia michelliberti* sp. nov. and *Cephetola wologizi* sp. nov. (manuscript names).

*Eagris tetrastigma* (Mabille, 1891) is now divided into three rather easily recognisable subspecies between Central Africa and the Ghana subregion of West Africa. Subspecies *subolivescens* previously represented the species in West Africa. It was recognised by Belcastro (1986) that the westernmost population is morphologically nearer to the nominate subspecies with its more yellow hindwing underside and a firm and narrow, black marginal line. Male specimens of the populations occurring in the Liberian subregion show consistent differences and were recently described as subspecies *lomana* Belcastro & Sáfián, 2020 (Sáfián et al., 2020a). Specimens in the type series were found in hyper-wet and wet lowland forests in Liberia and in both lowland and upland forest in the Loma Mountains, Sierra Leone and in Ziama.

*Gorgyra ziana* Belcastro & Sáfián, 2020 is a Liberian subregion endemic butterfly, which appears to be the western vicariant of the Congolian forest species *G. kalinzu* Evans, 1949. The latter is distributed between Uganda and eastern Nigeria (Larsen, 2005). *Gorgyra ziana* was first collected in the Ziama Forest in Guinea by Claudio Belcastro but was later found also in Liberia (Puu Range, Wologizi Mountains) and Sierra Leone (Tonkolili Forest Reserve) (Sáfián et. al., 2020a).

One *Cephetola* species in the family Lycaenidae, subfamily Poritiinae, collected only in Wologizi on the Belegizi Ridge, is identified as new to science, close to *Cephetola aureliae* Libert, 1999. The latter is known only from Eastern DRC (North Kivu and Ituri Forest) (Ducarme, 2018) and no closely related species was known previously from Upper Guinea.

*Eresiomera* sp. was also collected only in upland forest in Wologizi. It is currently under investigation whether the Liberian population is conspecific with the very poorly known *E. jacksoni* or whether it represents an undescribed species. Belcastro (pers. comm.) collected a series of females in the Gola Rainforest National Park, Sierra Leone.

*Stempfferia nr. zelza* (*S. michelliberti* sp. nov.) is recognised as new to science, recorded previously only as a few specimens from western Ivory Coast (Sáfián et al., in prep.), a single female from the Nimba Mountains in Liberia (Sáfián, 2014) and from a single male specimen collected in the Gola Forest, Sierra Leone (Belcastro, pers. comm.).

The Ziama population of the rare and very local lycaenid *Neurellipes helpsi* (Larsen, 1994) (Fig. 5), first illustrated in Libert (2010), certainly represents an undescribed taxon as recognised by Belcastro (pers. comm., teste Libert, 2010).

The male of *Neurellipes helpsi* ssp. nov. is illustrated in Figure 5 and is a unique butterfly, found only in upland wetland (creeks, swamps) habitats in Ziama: a) upper side and b) underside.

Figure 5 — Male of *Neurellipes helpsi* ssp. nov., a unique butterfly, found only in upland wetland (creeks, swamps) habitats in Ziama: a) upper side and b) underside.
The population of *Pseudathyma cf. neptidina* from Mount Tonkou (western Ivory Coast), the Ziama Forest and from the higher plateaus of Fouta Djallon could well represent an undescribed western vicariant, rather than a disjunct population of a Guineo-Congolian species – as mentioned in Larsen (2005).

A new subspecies *Telchinia pseudepaea ziama* Belcastro, Boireau & Sáfián, 2020 was also collected and recognised by Belcastro from Ziama. It is also known from a few specimens collected in the Nimba Mountains in Guinea, Ivory Coast and Liberia and Mount Tonkou in Ivory Coast (Sáfián et al., 2020c).

**Taxa of conservation concern**

Restricted-range butterfly taxa are often of conservation concern (https://www.iucnredlist.org; Meccenero et al., 2013), including potentially narrowly distributed endemics, as well as endemics to the Guinea Highlands and Liberian subregion. All potentially new taxa fall in one of these categories, however the knowledge on the distribution of many of them is still limited and their status could change as a result of further research.

Narrowly endemic taxa are often found in a single locality or a discreet ecological or biogeographical unit. Usually very few butterflies in the West African butterfly fauna fall into this category. Currently, two undescribed taxa collected at a single locality during the surveys fall in this category: *Cephetola wologizi* sp. nov. was collected only in the Wologizi Mountains on an individual hilltop in undisturbed upland forest. *Neurellipes helpsi* ssp. nov. is known only from a single locality in upland swamp forest in Ziama. Both taxa would currently fall in the Critically Endangered (CR) category according to the IUCN Red List criteria (IUCN, 2012): both have a single population with an area of occupancy less than 10 km² and the habitats of both are directly threatened by human activities causing wildfires and drainage/clearance of upland wetland habitats, respectively, matching criteria B2b (see details below, under Conservation issues and implications).

Guinea Highlands endemic taxa are sporadically distributed in the mountainous area between north-western Ivory Coast across north-western Liberia, northern Sierra Leone and the Fouta Djallon landscape to the Senegal border. Multiple West African butterfly species are known to be restricted to the pre-montane, upland and sub-montane forest habitats of one or more of the mountains ranges and several of them were collected in the ZWW landscape.

*Bettonula betoni nimba* Collins & Larsen, 2005, previously known only from two specimens collected in the Nimba Mountains (Larsen, 2005), was caught in Liberia for the first time (Wologizi Mountains). A strong colony of *Hypolimnas aubergeri* Hecq, 1987 was found near Rosewood Camp in Wologizi. Definitely the largest known population of *Euphaedra aubergeri* Hecq, 1977 was discovered in the upland forest of Wologizi (Fig. 6), where males were observed hill-topping in small numbers on each surveyed hilltop between 800–1000 m.a.s.l with natural forest cover. For decades, this species was recorded only around its type locality, Danané (Ivory Coast), but most natural forest habitats have already disappeared due to deforestation (Larsen, 2005) and the species is now presumably extinct from that area. Only one quite recent record is known from Liberia, collected on Mount Beeton in West Nimba (Sáfián, 2014). This species was also found during the survey in Wonegizi.

**Figure 6** – *Euphaedra aubergeri*, a Guinea Highlands endemic butterfly.

*Mylothris melita* sp. nov. Belcastro & Warren-Gash (manuscript name) (Warren-Gash, in press) was previously collected only at its type locality, on the summit of Mount Kakoulima near Conakry in Guinea and in the Fouta Djallon plateau. The species was also found in Wologizi, a new country record for Liberia.

*Uranothauma belcastroi* Larsen, 1997 is locally abundant in the upland forest above Sérédou in Ziama Forest but was not recorded from Wologizi or Wonegizi (Fig. 7). It was previously known only from Mount Tonkou in Ivory Coast, the Nimba Mountains (Liberia, Guinea and Ivory Coast), the Loma Mountains in Sierra Leone and from a recent unpublished record (Sáfián, pers. obs.) from the Fouta Djallon, Guinea.

**Figure 7** – *Uranothauma belcastroi* is a Guinea Highland endemic butterfly.

Two recently described *Epitola sensu lato*, *Cephetola wingae* Sáfián, 2015, *Stempfferia katikae* Sáfián, 2015 and a *Theclinae Pilodeudorix mano* Sáfián, 2015 were recorded in the upland forest in Wologizi. All were described from the Nimba Mountains and were previously known only from the Nimba area (Sáfián, 2015b; Sáfián et al., 2015a), but a single male specimen of *P. mano* was...
also collected in the upland forest above Sérédou in Ziaima Forest (Sáfián, 2020). *Pseudathyma cf. neptidina* and *Telchinia pseudopaeza ziaima* Belcastro, Sáfián & Boireau, 2020 were recorded from the upland forest zone of Ziaima. The latter was collected only in a few other localities in Northern Liberia (Haut Cavally, Nimba Mountains) and on the Ivory Coast/Guinea border (Nimba Mountains), while the former is known to occur only in a few upland/sub-montane forests in the Guinea Highlands: Loma Mountains in Sierra Leone (Larsen, 2005) and Foua Djallon in Guinea (Sáfián, unpublished).

Liberian subregion endemic taxa are distributed in a poorly defined, narrow forest area between the Sassanda River in Western Ivory Coast and Central Sierra Leone, sometimes referred to as the Liberia Forest Region (Larsen, 2005). This forest area receives higher annual precipitation compared to the eastern part of the Upper Guinean forest zone (CILSS, 2016) and evidence shows that this area has been one of the West African refuges during the drier periods in the Pleistocene (e.g. Van Rompaey, 1993; Planà, 2004). Some of these taxa also occur in the Guinea Highlands but quite a few are confined to the lowland forests and do not or only slightly penetrate the Guinea Highlands. *Ceratrichia crowleyi* Riley, 1925 is generally common in wet lowland forest in the Liberian subregion, it has a disjunct population also in south-western Ghana (Ankasa National Park) (Larsen, 2005). *Europhe neptidina* Belcastro, 1986 was found exclusively in the Liberian subregion, while *E. leonis* (Aurivillius, 1899) is also known from a couple of specimens from south-western Ghana and Eastern Ivory Coast. Larsen (2005) still considers it as a Liberian subregion endemic species. *Parasiomera alfa* Sáfián, 2015 and *Geritola pacifica* Sáfián & Libert, 2015 were discovered and described recently from the hyper-wet lowland forest of Gola in western Liberia (Sáfián et al., 2015; Sáfián & Collins, 2015). The latter one was found also in the neighbouring Foya Proposed Protected Area (Sáfián, 2020). Their records from Wologizi are currently the northernmost occurrences for both species. *Neurellipes ferenzi* Libert, 2010 is known only from three specimens, all collected in Guinea. The holotype was found in Coyah (Libert, 2010), the second specimen in the Nimba Mountains (Sáfián, unpublished), while the third near Baignema in secondary lowland forest in Ziaima. The distribution of the three localities indicates its presence also in Liberia. *Iolaus liberiana* Sáfián, 2017 is known only from a few specimens in lowland forest in Liberia’s Nimba Mountains (Sáfián, 2017) and Ziaima. *Gorgyra ziaima*, *Stenpferia* nr. *zelza* and *Eagris tetrastigma lomana* are also considered as Liberian subregion endemic butterflies.

**New country records and other records of biogeographic interest**

Twelve species are reported for the first time in Liberia, since the publication of Larsen (2005) and the subsequent publications and biodiversity survey reports by Brattström (2010), Sáfián (2012, 2014, 2015a,b), Sáfián & Collins (2015) and Sáfián et al. (2013, 2015a,b, 2019), For Guinea, 82 species are new country records since the publications of Larsen (2005, 2006b), the taxonomic revisions by Libert (2010, 2014, 2016) and the three short taxonomic papers by Belcastro and Oremans (2016), Sáfián (2018) and Sáfián et al. (2020a).

Several of the new country records are also of biogeographical interest as they represent either a unique occurrence in an ecologically different area or a significant range extension.

*Bicyclus uniformis* (Bethune-Baker, 1908) is widely distributed in Central Africa but is rare and local in the Upper Guinean forest, known mainly from localities in Ghana (Larsen, 2005). More recently Brattström et al. (2016) list it from Guinea (Nimba Mountains), the first record for this country. It was also found in Wologizi (upland forest) and Wonegizi (lowland forest), the first Liberian specimens. Quite a few also came to banana-baited traps in both lowland and upland forest in Ziaima. The Wologizi specimens represent the westernmost occurrence of the species with a significant range extension. The reason why the species was not found elsewhere in Liberia is unknown.

*Bicyclus mesogenina* (Grünberg, 1912) was not known to occur in West African until a couple of specimens collected in Ziaima Forest during the current field surveys were identified as *Bicyclus mesogenina*, based on the wing morphology and male genitalia. *Bicyclus mesogenina* was recently resurrected from synonymy (Aduse-Poku et al., 2016). So far, the species is known from Guinea as two male specimens collected in upland forest above Sérédou in Ziaima (Florczyk et al., in prep.).

*Apaturopsis cleocharis* (Hewitson, 1873) is rare in West Africa, and is difficult to collect, because imagos mostly stay in the canopy. The butterfly is more easily captured by fruit-baited traps, set at canopy level (Larsen, 2005). The first Liberian specimen was collected in a canopy trap in Wonegizi.

*Euryphurana nobilis* (Staudinger, 1891) was recorded from Liberia (Larsen, 2005) but with no precise locality shown. In Wologizi, a female was observed in the deep valley between the two main ridges in the afternoon hours but could not be collected. It was investigating a sun-lit leaf low down in the thick undergrowth, opening its wings, turning and then jumping onto another leaf just some 20 cm away.

*Bebearia ashantina* (Dudgeon, 1913) is a rare Upper Guinean endemic species, previously recorded only in Ghana and Ivory Coast (Larsen, 2005). It was first recorded in Liberia in the Putu Mountains in 2012 but the record remained unpublished (Sáfián, pers. obs.). *B. ashantina* was found in upland forest both in Wologizi and Ziaima, also in lowland forest near Massadou and Dopamâi.

*Iridana agneshorvathae* Collins, Larsen & Sáfián, 2008 is a very poorly known species, which was known as three specimens from Ghana and Benin. The first Liberian record from Wologizi is the first for the Liberian subregion, a significant range extension. The recent knowledge on the species was summarised in Sáfián et al. (2020b).

*Piloeduedorix mera* (Hewitson, 1873) was previously
collected only on Mount Péko, Ivory Coast in West Africa west of the Dahomey Gap (Larsen, 2005). The two specimens found in upland forest in Wologizi are of great interest and indicate the species’ presence elsewhere in the Guinea Highlands. These populations could represent an undescribed taxon, but further specimens and application of molecular methods are needed before a conclusion can be reached on its taxonomic status.

Ecological composition and patterns

More complete datasets are available from Wologizi and Ziama to allow for a comparison of ecological patterns. However, for Wonegizi, all butterflies came from a single locality collected during a one-week rapid survey. Therefore, the Wonegizi dataset was excluded from the comparison, because insufficient data could cause significant bias in the ecological composition towards more easily recordable open habitat species and widespread and common generalists.

Despite the huge difference in species recorded and the surveys conducted in completely different seasons in each area, the ecological composition of the butterflies of Wologizi and Ziama show surprisingly similar patterns (Figs 8–10).

![Figure 8](image1.png)  
**Figure 8** – Number of butterfly species in each ecological group.

The dominance of forest-dwelling butterfly species in both areas was expected, with 92% in Wologizi and 90% in Ziama. This, together with the 8% and 10%, respectively, of combined open area species (savannah-dwelling and ubiquitous species), corresponds to the butterfly fauna in the transboundary landscape of Gola Forests (Sierra Leone and Liberia), a diverse forest landscape of outstanding conservation value (Sáfián, 2012).

The differences at a finer scale are more significant, particularly in the WEF and DRF groups where species have a rather narrow ecological tolerance and they rarely occur outside their optimal habitats.

![Figure 9](image2.png)  
**Figure 9** – The proportion of butterfly species in each ecological group found at Wologizi.

Although the proportion of DRF is almost equal in both samples (5% in Wologizi, 4.5% in Ziama), the proportion of WEF is higher in Wologizi (23%) than Ziama (19%). This is probably a bias caused by the time of sampling as the microclimatic conditions are still much more favourable for WEF in the beginning of the dry season, when Wologizi was sampled. Towards the end of the dry season, when Ziama was sampled the forest interior often dries out, and the activity of WEF is generally low. In the

Gola Forests, WEF represent 20% of the butterfly fauna, and does not differ significantly from those recorded in Ziama and Wologizi. Although the overall proportion of WEF is not outstandingly high – it is 26% of the Ghanaian butterfly fauna (Larsen, 2006a) – it indicates an intact forest interior with a low level of disturbance and a healthy forest ecosystem.

![Figure 10](image3.png)  
**Figure 10** – The proportion of butterfly species in each ecological group found at Ziama.

The MEF group is rather tolerant to seasonality and not surprisingly they are represented equally in both Wologizi (32%) and Ziama (33%). In Gola, the proportion of MEF is even higher, reaching 35% (Sáfián, 2012).

Species in the ALF group have a wide ecological tolerance, the majority being generally common. They are equally represented in Ziama (32%) and the Gola Forest Landscape (32%) (Sáfián, 2012), compared to Wologizi (29%).
The West African UPF group often represents species with narrow distributions (see above, under Taxa of conservation concern). The 2% of UPF in Wologizi is an outstanding value, which is comparable only to the Nimba Mountains (Sáfián, 2014), an area of global conservation importance for its high biodiversity and high rate of endemism. The low value and proportion of UPF in Ziama does not necessarily reflect the actual situation, since during the survey, the upland forests were unusually dry in March 2019 and UPF could have been simply out of season or present only in low densities. Apparently, as expected, no UPF were reported in the Gola Forests landscape (Sáfián, 2012).

Although species from the MNF group are not expected to occur in Wologizi and Ziama, it should be noted that the highest altitude areas (above 1 100 m.a.s.l.) were excluded from the surveys in both areas.

Both the GUI and SUD groups were slightly better represented in Ziama (4.5% and 0.5%), probably because the northernmost sampling point is almost 30 km further north from the southernmost surveyed point in Wologizi, and the Ziama Massif is already extending into the forest-savannah transition zone in the north. Towards the end of the dry season, climatic conditions were also more favourable for several GUI and SUD species to disperse into open areas inside the forest, mainly along roads. In Wologizi, the majority of GUI and the few SUD (3% and 0.4%) species were actually recorded in the edaphic savannah grassland areas at the foothills. In the Gola Forests, the proportion of open habitats species (GUI+SUD) were even lower, represented by only 3% of the species associated with Guinea savannah habitats and a single species associated with Sudan savannah.

The proportion of species in the UBQ group (5% for both Wologizi and Ziama) is relatively high for rainforest areas but was only 3% in the Gola Forest landscape (Sáfián, 2012). They clearly indicate habitat degradation, also explained in more detail below among other conservation issues.

The proportion of species in both the SPE and INS groups was insignificant in both areas.

**DISCUSSION**

**Butterfly diversity of ZWW in a West African context**

Generally, the butterfly fauna of the Upper Guinean forest zone are significantly poorer compared to those in Lower Guinea or in the Congo Basin, but are still considerably rich with approximately 1 000 species (Larsen, 2005). In the same work, the estimated species richness in Korup National Park on the Nigerian border in Cameroon exceeds 1 000 butterfly species, while in the Ituri Forest in the eastern DRC 1 105 species were recorded over a 40 year period by Ducarme (2018) and his local assistants. In contrast, not even the highest predicted species richness exceeds 700 species in Upper Guinea and is usually lower between 500 and 670 in a single forest area of substantial size in good condition (Larsen, 2006a; Larsen et al., 2007, 2009; Sáfián, 2012, 2014).

Compared to other forest areas in West Africa, west of the Dahomey Gap, the recorded species richness (569 species) in the ZWW does not appear to be outstanding at first sight. Larsen et al. (2009) estimate the species richness to slightly exceed 600 species in major protected forest areas in Ghana (e.g. Bia, Kakum, Ankasa National Parks, Bobiri Butterfly Sanctuary), while only in the unique upland forests of Atewa Range does species richness approach approximately 700 species (Larsen, 2007), based on meticulous species-to-species level analysis.

In the Liberian subregion (the once continuous forest area between western Ivory Coast and central Sierra Leone) of West Africa, the species richness of butterflies seems to be considerably higher, similar to that of Atewa. In the Nimba Mountains alone Sáfián (2014) estimates approximately 700 species with 644 species positively recorded and identified. However, this estimate excludes the specialist butterflies that are confined to mid-altitude savannah, high-altitude grassland and the high-altitude forest habitats in the Guinean and Ivorian part of Nimba.

Results of the only other transboundary study on West African butterflies across the Gola Forest Landscape (Gola Rainforest National Park, Sierra Leone and Gola Forest National Park, Liberia) (Belcastro & Larsen, 2006; Sáfián, 2012) show similar figures of recorded and estimated species richness (576 and 700, respectively). However, it should be stressed that both Ziama and Wologizi were visited only during a single-season period at the beginning and at the end of the dry season (Wologizi: November – December, Ziama: February – April), and the higher altitude habitats above 1 200 m.a.s.l. were excluded from the field studies due to logistical constraints in both areas. Wonegizi was surveyed only for one week at a single site (March 2019). The species composition and in particular the high recorded number of restricted range species observed during these short surveys suggest a higher species richness with the presence of many more, yet unrecorded, generally common and widespread forest butterflies in these areas, but further comprehensive studies are necessary to establish more accurate estimates.

**The conservation value of ZWW as judged from the butterfly fauna**

The ZWW is probably the only area in West Africa which could protect a wide range of forest habitats from lowland forest to upland forest (maybe just reaching the submontane zone above 1 300 m.a.s.l.), and to the drier woodlands on rocky outcrops, also important micro-habitats such as upland creeks and swamps. The ZWW also extends across an ecological gradient from the hyper-wet lowland forest area of western Liberia to the southern edge of the forest-Guinea savannah transition zone. The diverse butterfly fauna clearly corresponds to this diversity of habitats, with multiple species of conservation concern, including seven undescribed or newly described taxa, two of which have not been recorded elsewhere (Cephetola wologizi sp. nov. and Neurellipes helpsi ssp. nov.). The richness of endemic species is also outstanding with a mixture of Liberian subregion endemic lowland forest specialists (with records of Geritola pacifica and Parasiomera alfa) and pre-montane or upland forest butterflies previously known only from the Nimba
identified by Guillaumet (1967) cited in Van Rompaey. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa. It would not be surprising, as the area overlaps periods caused disconnection of forest areas in West Africa.

The ecological composition in both Wologizi and Ziama clearly shows an intact forest butterfly fauna, where the adverse effects of habitat disturbance is almost negligible, only enriching the butterfly communities with ubiquitous species or savannah elements with better dispersal abilities (Junonia hierta cebrene, Cataglyphis cloanthae, Telchiniya serena and Acraea caecilia). The presence of quite a few dry forest and savannah species with rather narrow tolerance to ecological conditions (Graphium adamastr and Bicyclus campa) reflect the proximity of zonal Guinea Savannah. Actually, the scattered mountains of the Guinea Highlands play an important role in conserving the Ziama forest, as their geographic position result in precipitation much higher than elsewhere further east in West Africa (CILSS, 2016).

The third major importance of the ZWW landscape is its size. With its 114 000 hectares, Ziama is by far the largest protected area in Guinea. The three forest areas cover well over 200 000 hectares of natural habitats, Wonegizi being contiguous with Ziama and Wologizi is also proposed to be re-connected via wildlife corridors. Although the Nimba Mountains harbour a similarly unique butterfly fauna (Sáfián, 2014), its size is about the quarter of that of the ZWW landscape and that already includes the Zor, Blei and Gba Community Forests, whose protection status is very fragile and they suffer from continuous human disturbance. With its size, the ZWW landscape could most probably effectively mitigate the increasing extremities of global climate change, providing a buffer for the protection of the numerous special butterfly habitats.

**Conservation issues and implications**

Currently within the ZWW, only the Massif du Ziama Man and Biosphere Reserve is formally protected, although both Wonegizi and Wologizi appear on the list of proposed protected areas (PPA) in Liberia. The Wologizi Mountains are rich in iron ore and could easily become a target for mining prospection, as happened previously in the 1960s (White, 1973). Without formal protection, Wologizi is also threatened by a range of human activities. Although hunting would not directly affect butterfly populations, it was reported by local communities that the devastating wildfire in 2015, which caused the destruction of upland forest on the main Wologizi ridge and also partially on the Belegizi ridge (Fig. 3) had originated from a poachers’ camp, who had settled inside the forest for several months, smoking their meat on site. Unfortunately, this fire coincided with an extremely long dry season, previously unprecedented in the region, but recently longer and more severe dry seasons appear more frequently. The regeneration of the upland forest will take several decades even without any further negative effect of wildfire events. Further damage in Wologizi is caused by illegal wood-cutting and logging. Serving the international demand, rosewood (Pterocarpus spp.) poachers cause regular damage by opening new roads into the forest and thinning out rosewood individuals (Fig. 11). During our field survey, illegal logging of Terminalia superba and T. ivorensis trees (pit-sawing) in commercial quantities were observed in Wologizi. Both Pterocarpus and Terminalia species are known larval food plants for various butterflies in West Africa (Larsen, 2005) and their disappearance from the arboraceous vegetation could influence the abundance of butterfly populations.

**Figure 11** – Poaching of rosewood (Pterocarpus spp.) and other timber species in Wologizi reduces food-source availability for a number of butterflies and opens up the forest for other illegal activities.

Inside Wonegizi, no illegal logging or farming activities have been observed, however, the clearance of forest habitats outside the PPA is approaching its boundary. As visible also on the map of Figure 1, the connection between Wologizi and Wonegizi is lost due to recent deforestation along the main Zorzor-Voinjama road. From the ZWW landscape conservation perspective, the importance of the re-establishment of connection between the forest areas by a number of re-forested corridors should be a priority. In the corridors, the canopy cover should be unbroken, and the forest interior microclimate should be maintained (to approach natural forest structure). The present disjunction of the two forest areas causes further fragmentation of forest butterfly populations, which in extreme cases could lead to complete isolation. It is well known that a significant proportion of forest interior butterflies have little ability to penetrate or fly through eroded forest habitats and some of them will completely avoid flying into or through open areas (e.g. Elbers & Bossart, 2009; Sáfián et al., 2010).

Large areas of lowland forest in Ziama were extensively logged and later re-planted with multiple timber tree species, such as T. ivorensis, but non-indigenous forest stands also exist in the lowland areas along the N’Zérékoré–Sérédo road. Although the butterfly studies in the ZWW focused on more natural forest communities...
with low disturbance, it should be mentioned that these forest stands maintain lower butterfly diversity and are therefore of lower conservation concern compared to natural primary and old-grown secondary forest.

It is a general practice that lowland marshes and swamps inside Ziama Forest were provided to local communities for wood harvest and subsequent food production. However, in certain areas this has become so excessive that virtually all forest in the wetlands was completely cleared and the land converted into intensively managed farms, disregarding plant and animal communities directly associated with wetland habitats. This practice should be strictly controlled, and only limited wetland areas should be selected for agriculture utilisation. The same practice was observed in upland forest above Sérédou village (Fig. 4). The wetlands in the upland zone are not only part of the water-catchment area of Sérédou and other communities, but they belong to a unique and endangered biotope, upland swamp, which is known to occur in West Africa only in the Atewa Range in Ghana (small plateau swamps), worthy of strict protection (McCullough et al., 2007), and in the central depressions of the Ziama Massif (possibly other undocumented locations also exist in the Loma Mountains in Sierra Leone). Two butterflies found are directly associated with this habitat type. Neurellipes helpsi is known only from the Atewa Range as well as from a possible record from Banco forest in Ivory Coast and now also from Ziama Forest (both confirmed records are upland localities). The latter population is taxonomically distinct from the Ghana population and thus endemic to Ziama. The other species is Pseudathyma cf. neptidina, which is known from a few mountainous areas in West Africa between western Ivory Coast and Fouta Djallon in Guinea. Larsen (2005) already mentioned that this species could be strictly associated with permanent water courses. The populations in the Guinea Highlands are possibly taxonomically distinct from the Central African one and thus endemic to the mountainous areas in Sierra Leone, Guinea and Ivory Coast. For the protection of the populations of these butterflies, further utilisation of upland wetland Ziama should be completely avoided and the land previously moved into utilisation should be reclaimed for conservation purposes and abandoned for natural processes to restore upland forest habitats.

Another conservation issue observed in Ziama is unnecessarily wide forest clearance alongside the road verges between Massadou and Sedimal communities. Larger trees were already felled several years ago, but the regenerating young arboraceous vegetation seems to be cut back every few years on both sides by a variable width between 10–20 metres, leaving the area completely open. This practice exposes the forest to drought and further edge effects. Invasive plants, such as Chromoleana odorata have already established along the road verges, also various savannah butterflies with the ability to penetrate open areas inside the forest zone (e.g. Colotis eupippe, Junonia hierta cebrene) already appear, following the widely open road verges. Here the vegetation is also regularly burned in the dry season, making the forest even more exposed to climatic effects. Following the clearing and burning, various crops are planted alongside the road. The continuity of such practices would virtually bisect the forest, preventing or reducing gene-flow and dispersal of deep forest-dwelling butterflies (and probably other immobile insects) between the two sections (e.g. Euphaedra and Euriphe species), as mentioned above regarding the lack of corridors between Wologizi and Wonegizi. The road maintenance in the communities around Ziama seems to be dependent solely on local practice, as road verges through Ziama Forest from Baingama to Fassankoni are well maintained, preserving the arboraceous vegetation. It is also very similar in Diecké Classified Forest some 80 km southeast of Ziama, where disturbance of the forest is minimised even along the main road to Liberia.

**Conclusions**

It is almost certain that with further surveys in the ZWW the butterfly checklist will continue to grow from the current, already considerably high number. This is indicated by the limitations of the current studies since each survey locality was visited only during a single season while seasonality of butterflies is usually well pronounced. Also, the highest altitude habitats were completely excluded from the surveys in all three areas. Other studies in mountainous areas in the region indicate the presence of several upland specialist butterflies, which could be targeted in future studies.

The high number of recently described and some still undescribed taxa, presumably of restricted-range species, the outstanding representation of Liberian subregion and Guinea Highlands endemics and various species having not been found in Liberia or in Guinea during previous studies are all clear indicators of the outstanding natural value of the area.

Although conservation work faces various challenges in all three areas, the ecological composition of the butterfly fauna clearly shows an intact forest butterfly community with little signs of disturbance and alteration of natural habitats.

There is no doubt, that the ZWW is amongst the most important ecosystems in the Liberian subregion of the Upper Guinean forest zone with altogether 200 000 hectares of forest habitats. Furthermore, the three areas represent a faunal transition between the hyper-wet lowland forests of Sierra Leone-Liberia in the south, towards the northern dry forest and transitional forest zone in Guinea, as well as a complete altitudinal gradient from lowland to upland forest and its diverse geological features that allowed the formation of microhabitats, where butterflies could establish highly localised populations.

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**LITERATURE CITED**


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Unknown sexes in four West African Lycaenidae populations, with new data on their distribution.

Two new species in the genus Iolaus (Lepidoptera, Nymphalidae, Nymphalinae) from the Nimba Mountains (Guinea), West Africa. Metamorphosis 26: 126–131.


Two new species in the genus Iolaus from West Africa (Lepidoptera: Lyciidae: Metamorphosis 29: 126–131).


The previously unknown sexes in four West African Lyciidae (Lepidoptera) with new data on their distribution. Zootaxa 4834(2): 219–230.


New data on the distribution of Iridana agnesborrhoea (Lepidoptera, Hesperididae) from the previously unknown female (Lepidoptera, Lyciidae, Poritiinae). Faunitaly 8(3): 1–3.

New data on the distribution of Iridana agnesborrhoea (Lepidoptera, Hesperididae) from the previously unknown female (Lepidoptera, Lyciidae, Poritiinae). Faunitaly 8(3): 1–3.


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APPENDIX 1

Checklist of butterflies recorded in the Wologizi Mountains, the Wonegizi Mountains and in the Ziama Massif. Subspecific names are listed only when they are not represented by the nominate subspecies in the study area.

† – New records for Liberia (since the publication of Sáfián (2014).
* – New records for Guinea (since the publication of Larsen (2005).
Green highlight – Species found only in Ziama Forest during the field surveys and thus recorded only in Guinea.
Blue highlight – Species found only in the Wologizi Mountains during the field surveys and thus recorded only in Liberia.
Red highlight – Species found only in the Wonegizi Mountains during the field surveys and thus recorded only in Liberia.
Ochre highlight – Species found in both Wologizi and Wonegizi during the field surveys, and thus recorded only in Liberia.

PAPILIONIDAE

*Graphium angolanus baronis (Ungemach, 1932) – ZIA: MAS
*Graphium tyndareae (Fabricius, 1793) – WOL: WOB, ROS, ELE, BEL; ZIA: SER, BAI
*Graphium latreillianus (Godart, 1819) – WOL: WOB, ROS, RC1, RC2, ELE, WON; WET; ZIA: SER, MAS
*Graphium adamasator (Boisduval, 1836) – ZIA: SER
*Graphium leonidas (Fabricius, 1793) – WOL: DAB, WOB, ROS, RC2, ELE, BEL; ZIA: SER, MAS, DOP, BAI
*Graphium illyris (Hewitson, 1873) – WOL: ROS, ELE; ZIA: SER, BAI
*Graphium polices (Cramer, 1775) – WOL: WOB, ROS, ELE, BEL; WON; WET; ZIA: SEL, SER, MAS, BAI
*Graphium antheus (Cramer, 1779) – WOL: ROS; WON; WET; ZIA: SER, MAS, BAI
*Papilio antimachus Drury, 1782 – WOL: ELE, BAI
*Papilio dardanus Brown, 1776 – WOL: RC2, ELE; WON; WET; ZIA: SEL, SER, MAS, DOP, BAI
*Papilio phorcas Cramer, 1775 – WOL: DAB, WOB, ROS, ELE; WON; WET; ZIA: SEL, SER, MAS
*Papilio horribilis Butler, 1874 – WOL: WOB, ROS; ZIA: SEL, SER, MAS, DOP, BAI
*Papilio chrapkowskoides murretini Koçak, 1993 – WOL: WOB, ROS, WON; WET; ZIA: SER, MAS, DOP, BAI
*Papilio sosia Rotschild & Jordan, 1903 - WOL: ZIA; SEL
*Papilio nireus Linnaeus, 1758 – WOL: WOB, ROS, RC2, ELE, BEL; ZIA: SER, MAS, BAI
*Papilio menestheus Drury, 1773 – WOL: WOB, ROS, ELE, BEL; WON; WET; ZIA: SEL, SER, MAS, DOP, BAI
*Papilio demodocus Esper, [1798] – WOL: LIs, BEL; WON; WET; ZIA: DOP
*Papilio cyproeofila Butler, 1868 – WOL: DAB, WOB, ROS, RC1, ELE, BEL; ZIA: SEL, SER, MAS, BAI
*Papilio zenobia Fabricius, 1775 – WOL: WOB, RC1, RC2, ELE, BEL; WON; WET; ZIA: SER, MAS
*Papilio cynortia Fabricius, 1793 – WOL: ROS, RC1, RC2, ELE, WON; WET; ZIA: SEL, SER, MAS

HESPERIIDAE

*Coeliades chalybe (Westwood, 1852) – WOL: ELE; ZIA: SEL, SER, MAS, DOP, BAI
*Coeliades forestian (Stoll, [1782]) – WOL: BEL, WOB, ROS, RC1, RC2, ELE, BEL; ZIA: SEL, SER
*Coeliades hanno (Plötz, 1879) – ZIA: MAS, DOP

Katereus johnstoni (Butler, 1888) – WOL: ROS, RC2, ELE
†Ortholexis dimidia (Holland, 1896) – WOL: ROS
*Ortholexis hollandi (Druce, 1909) – WOL: RC1; ZIA: MAS

PYRGINAE

*Calenorrhinus maesseni Berger, 1976 – WOL: WOB, ROS
*Calenorrhinus plagiatius Berger, 1976 – WOL: WOB, ROS; ZIA: SEL, SER
†Bettonula bettoni nimba (Collins & Larsen, 2000) – WOL: ROS, ELE; ZIA: SER
*Apallaga safindi Libert, 2014 – WOL: WOB, ROS, RC1, RC2, ELE; ZIA: SER, MAS
*Apallaga leona Berger, 1975 – WOL: ROS, RC2
*Apallaga ankasa (Larsen & Miller, 2005) – WOL: WOB
*Apallaga galemus (Fabricius, 1793) – WOL: WOB, ROS, ELE; ZIA: SEL, SER, MAS, DOP, BAI
*Apallaga galkasa Libert, 2014 – WOL: ROS, RC1, ELE; ZIA: MAS
*Apallaga confusa occidentalis Libert, 2014 – WOL: WOB, ROS, RC1, ELE, BEL
*Apallaga perconfusa Libert, 2014 – WOL: RC2
*Tagiades flesus (Fabricius, 1781) – WOL: BEL, WOB, ROS, RC1, RC2, ELE, BEL; ZIA: SEL, SER, MAS, DOP, BAI
*Eagris denuba (Plötz, 1879) – WOL: RC1, ELE, BEL; ZIA: SEL, SER
*Eagris decastigma decastigma Mabille, 1891 – WOL: WOB, RC2
*Eagris subalbida (Holland, 1893) – WOL: WOB, ROS
*Eagris heres quaterna (Mabille, 1890) – ZIA: SER, MAS
*Eagris tetrastigma lomana Belcastro & Sáfián, 2020 – WOL: WOB, ROS, ZIA: SER
*Procampta rara Holland, 1892 – ZIA: MAS, DOP
*Calleagriris lacteus dannatti (Ehmann, 1893) – WOL: WOB
*Eretis plistonicus (Plötz, 1879) – WOL: WOB; ZIA: SER
*Serangesa tertullianus (Fabricius, 1793) – WOL: WOB, ELE; ZIA: SER
*Serangesa tricerata (Mabille, 1890) – ZIA: SER, DOP
*Serangesa thecla (Plötz, 1879) – WOL: WOB, ROS; ZIA: SER
*Serangesa bouvieri (Mabille, 1877) – ZIA: SER
*Serangesa brighida (Plötz, 1879) – ZIA: SEL
*Abantis fabiana Belcastro, 2016 – ZIA: SER
*Spialia ploetzi occidentalis de Jong, 1977 – ZIA: SER
*Astictopterus anomoeus (Plötz, 1879) – ZIA: SER
*Prosopalpus styla Evans, 1937 – WOL: WOB, ROS
HESPERIINAE

Gorgyra heterochrus (Mabille, 1890) – WOL: WOB; ZIA: SER
Gorgyra abraeae (Plötz, 1879) – ZIA: DOP
*Gorgyra ziama Belcastro & Sáián, 2020 – WOL: ELE; ZIA: SER, DOP
*Gorgyra bina Evans, 1937 – WOL: WOB, RC2; ZIA: SER, DOP
*Gorgyra afikpo Druce, 1909 – ZIA: BAI
Gorgyra diversata Evans, 1937 – WOL: WOB
*Gorgyra sara Evans, 1937 – ZIA: SER, DOP
*Gorgyra pali Evans, 1937 – WOL: RC1, ELE; ZIA: SEL, SER, MAS
	
Ceratrichia phocion (Fabricius, 1781) – WOL: WOB, ROS, BEL; ZIA: SER, MAS
*Ceratrichia crowleyi Riley, 1925 – WOL: WOB, ROS; ZIA: SEL, MAS
Ceratrichia nothus (Fabricius, 1787) – WOL: WOB, ROS, RC1, ELE; ZIA: SER, MAS
*Argemma argentata (Plötz, 1879) – WOL: WOB, ROS; ZIA: BAI
*Argemma maesseni (Miller, 1971) – WOL: WOB, ZIA: MAS
Ceratricula semilutea (Mabille, 1891) – WOL: RC1, RC2; ZIA: SER, MAS
Teniorhinus watsoni Holland, 1892 – WOL: RC1, RC2, ELE
*Teniorhinus ignita (Mabille, 1877) – WOL: RC2; ZIA: MAS
Pardaleodes incerta murcia (Plötz, 1883) – ZIA: MAS
Pardaleodes edipus (Stoll, 1781) – ZIA: SER
Pardaleodes sator (Westwood, 1852) – WOL: WOB, RC1, RC2, ELE, BEL; ZIA: SER
Pardaleodes tibullus (Fabricius, 1793) – WOL: WOB, BEL; ZIA: MAS
Xanthodisca rega (Mabille, 1890) – WOL: WOB, RC1, RC2, ELE, ZIA: SER
Rhabdomantis galatia (Hewitson, 1868) – WOL: ELE, BEL
Rhabdomantis sosia (Mabille, 1891) – WOL: WOB
Osmodes laronia (Hewitson, 1868) – WOL: WOB; ZIA: SER, MAS
Osmodes thorae (Plötz, 1884) – WOL: BEL; ZIA: SEL
Osmodes distincta Holland, 1896 – WOL: WOB, RC2, ELE; ZIA: SER
Osmodes adon (Mabille, 1890) – WOL: RC2
Osmodes lindseyi occidentalis Miller, 1971 – WOL: WOB; ZIA: MAS
Osmodes costatus Aurivillius, 1896 – WOL: WOB; ZIA: SER, BAII
*Paraceros biguttatus (Mabille, 1890) – WOL: WOB; ZIA: MAS
*Paraceros substriagata (Holland, 1893) – WOL: WOB; ZIA: SER
Paraceros maesseni Berger, 1978 – WOL: WOB
Acleros ploeti Mabille, 1890 – WOL: WOB; ZIA: SER, MAS
Acleros mackeni olaus (Plötz, 1884) – ZIA: SEL, MAS
Acleros nigrafex Strand, 1913 – WOL: WOB, RC1, RC2; ZIA: SER, MAS
Semalea pulvina (Plötz, 1879) – WOL: WOB, BEL; ZIA: SER
*Semalea atrio (Mabille, 1891) – WOL: ROS, BEL; ZIA: MAS
**AMYRISIDAE**

*Charaxes varanes* vologaes (Mabille, 1876) – **WOL:** WSA
*Charaxes fulvescens* senegalensis van Someren, 1975 – **WOL:** DAB, WOB, ELE; **WON:** WET; **ZIA:** SEL, MAS, BAI
*Charaxes cinthia* Butler, 1866 – **WOL:** DAB, WOB, ELE; **WON:** WET; **ZIA:** SEL, MAS, BAI
*Charaxes larseni* Vande weghe, 2009 – **WOL:** WOB; **WON:** WET; **ZIA:** SEL, MAS, BAI
*Charaxes eudoxus* Cramer, 1777 – **WOL:** WOB, ELE; **WON:** WET; **ZIA:** SEL, MAS, BAI

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**NYMPHALIDAE**

**DANAINE**

*Banana* chrysippus (Linnaeus, 1758) – **WOL:** LIS, DAB, BEL; **WON:** WET; **ZIA:** SEL, SER, MAS, DOP
*Tirumala petiverana* (Doubleday, 1847) – **ZIA:** SER, BAI
*Maenius* niavius (Linnaeus, 1758) – **WOL:** WSA, DAB, WOB, ELE, BEL; **ZIA:** SEL, MAS
*Maenius* tartarea Mabille, 1876 – **WOL:** LIS, ELE, BEL; **ZIA:** SER
*Maenius* hecate (Butler, 1866) – **WON:** WET; **ZIA:** SER, BAI
*Maenius* damoecles (Fabricius, 1793) – **WOL:** DAB; **ZIA:** SER

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**LIBYTHINAE**

*Libythea* labdaca Westwood, 1851 – **ZIA:** SEL, SER, MAS, BAI

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**SATYRINAE**

*Gnophodes* parmeno Doubleday, 1849 – **WOL:** WOB, ROS, RC1, ELE; **WON:** WET; **ZIA:** SEL, SER, MAS, DOP
*Haydonia* pythis (Fabricius, 1793) – **WOL:** ROS; **ZIA:** SER, MAS
*Haydonia* harpa Karsch, 1893 – **WOL:** ROS
*Melanitis* leda (Linnaeus, 1758) – **WOL:** ROS, RC1, RC2, ELE; **WON:** WET; **ZIA:** SER, MAS
*Melanitis* libya Distant, 1882 – **WOL:** ROS, RC1, RC2, ELE; **WON:** WET; **ZIA:** MAS
*Elymniossis* bammakoo (Westwood, [1851]) – **WOL:** ROS; **WON:** WET; **ZIA:** SEL, SER, MAS, DOP, BAI
*Bicyclus* xenae occidentalis Condamin, 1965 – **WON:** WET; **ZIA:** SEL, MAS
*Bicyclus* evadne (Cramer, 1779) – **WOL:** WOB, ROS; **WON:** WET; **ZIA:** SER, MAS, DOP, BAI
*Bicyclus* ephorus Weyster, 1892 – **WOL:** RC1, ELE; **WON:** WET; **ZIA:** MAS
*Bicyclus* zinebi (Butler, 1869) – **WOL:** ROS, RC1, ELE; **WON:** WET; **ZIA:** SEL, SER, MAS
*Bicyclus uniformis* Kirby, 1887 – **WOL:** ELE; **WON:** WET; **ZIA:** SEL, SER, MAS
*Bicyclus* procera (Karsch, 1893) – **WOL:** WOB, ROS, ELE; **WON:** WET; **ZIA:** SER
*Bicyclus* trilophus jacksoni Condamin, 1961 – **WOL:** ROS
*Bicyclus* maesseni Condamin, 1971 – **WOL:** ROS; **ZIA:** BAI
*Bicyclus* larseni Vande weghe, 2009 – **WOL:** WOB; **WON:** WET; **ZIA:** MAS, BAI
*Bicyclus* taenias (Hewitson, 1877) – **WOL:** WOB, ROS, RC1, BEL; **WON:** WET; **ZIA:** MAS
*Bicyclus* vulgaris (Butler, 1868) – **WOL:** WOB, ROS, RC1, ELE; **WON:** WET; **ZIA:** SEL, SER, MAS, DOP, BAI
*Bicyclus* dorothea (Cramer, 1779) – **WOL:** DAB, WOB, ROS, ELE; **ZIA:** SEL, MAS, DOP, BAI
*Bicyclus* sandace (Hewitson, 1877) – **WOL:** DAB, WOB; **ZIA:** MAS
*Bicyclus* sambulos unicolor Condamin, 1971 – **WOL:** ELE; **WON:** WET; **ZIA:** SER, MAS
*Bicyclus* sangmelinae Condamin, 1963 – **WOL:** WOB, ROS, RC1, ELE; **WON:** WET; **ZIA:** SEL, MAS
*Bicyclus* mesogenina Grünberg, 1912 – **ZIA:** SER
*Bicyclus* mandanes Hewitson, 1873 – **WOL:** RC1, RC2; **ZIA:** SER
*Bicyclus* auricruda (Butler, 1868) – **WOL:** WOB, ROS, RC1; **WON:** WET; **ZIA:** SEL, SER, MAS
*Bicyclus* camba (Karsch, 1893) – **ZIA:** SER
*Bicyclus* angulosa (Butler, 1868) – **WON:** WET; **ZIA:** SER
*Bicyclus* abnormis (Dudgeon, 1909) – **WOL:** ROS, RC1; **WON:** WET; **ZIA:** SEL, MAS, BAI
*Bicyclus* safita (Westwood, 1850) – **ZIA:** SER
*Bicyclus* funebris (Guérin-Méneville, 1844) – **WOL:** WOB, ROS, RC1, RC2, ELE; **WON:** WET; **ZIA:** SEL, SER, MAS, DOP, BAI
*Bicyclus* dekeyseri (Condamin, 1958) – **WOL:** WOB, ROS, BAI; **ZIA:** SER
*Bicyclus* madeus (Hewitson, 1874) – **WOL:** ROS, RC1, RC2, ELE; **WON:** WET; **ZIA:** SEL, MAS
*Bicyclus* martius (Fabricius, 1793) – **WOL:** DAB, WOB, ROS, RC1, ELE; **WON:** WET; **ZIA:** SEL, MAS, BAI
*Hallelesis* halyna (Fabricius, 1793) – **WOL:** DAB, WOB, ROS; **WON:** WET; **ZIA:** SEL, DOP, BAI
*Brakefieldia* decora (Plötz, 1880) – **WOL:** WOB, ROS, RC1, RC2, BEL; **WON:** WET; **ZIA:** SEL, MAS

*Ypthima* doleta Kirby, 1880 – **WOL:** LIS, DAB, WOB; **ZIA:** SER, DOP

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**CHARAXINAE**

*Charaxes* varanes vologaes (Mabille, 1876) – **WOL:** WSA
*Charaxes* fulvescens* senegalensis* van Someren, 1975 – **WOL:** DAB, WOB, ELE; **WON:** WET; **ZIA:** SEL, MAS, BAI
*Charaxes* caindope (Godart, 1824) – **ZIA:** SER
*Charaxes* protoclea Feisthamel, 1850 – **WOL:** LIS, DAB, WOB, ROS, ELE, BEL; **WON:** WET; **ZIA:** SEL, SER, MAS, DOP, BAI
*Charaxes* bocnei Feisthamel, 1850 – **ZIA:** SEL, SER, MAS, DOP, BAI
*Charaxes* cynthia Butler, 1866 – **WOL:** WOB, ROS, RC2, ELE; **WON:** WET; **ZIA:** SEL, SER, MAS, BAI
*Charaxes* leucetius Cramer, [1775] – **WOL:** DAB, ROS, RC1; **WON:** WET; **ZIA:** SEL, MAS, DOP, BAI
*Charaxes* castor (Cramer, 1775) – **WOL:** ROS, BAI; **WON:** WET; **ZIA:** SEL, MAS, BAI
*Charaxes* brutus (Cramer, 1779) – **WOL:** WOB, RC2, ELE, BEL; **WON:** WET; **ZIA:** SEL, SER, MAS, DOP, BAI
*Charaxes* pollii (Cramer, 1775) – **WOL:** DAB, ELE, BEL; **WON:** WET; **ZIA:** SEL, SER, MAS
*Charaxes* eudoxus (Drury, 1782) – **WOL:** BAI
*Charaxes* tiridates (Cramer, 1777) – **WOL:** DAB, ELE, BEL; **WON:** WET; **ZIA:** SEL, SER, MAS, BAI
*Charaxes* numenes (Hewitson, 1859) – **WOL:** WOB
RC1, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, BA
Charaxes smeragdalis butleri Rothschild, 1900 – WOL: ROS, RC1, RC2
Charaxes imperialis Butler, 1874 – WOL: RC2; WON: WET; ZIA: MAS, DOP
Charaxes ameliae doumeti Henning, 1989 – WOL: DAB, WOB, ELE; WON: WET; ZIA: SEL, SER, MAS, BA
Charaxes hadrianus Ward, 1871 – WOL: WOB, RC2, ELE; WON: WET; ZIA: SER, BA
Charaxes nobilis claudie Le Moult, 1933 – ZIA: SEL
Charaxes zinha (Stoll, 1780) – WOL: DAB, WOB, ROS, RC1, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
Charaxes etesipe (Godart, 1824) – LIS, WOB, ROS, RC2, ELE, BEL; WON: WET; ZIA: SER, BA
Charaxes achaemenes atlantica van Someren, 1970 – ZIA: SEL
Charaxes eupale (Drury, 1782) – WOL: LIS, DAB, WOB, ROS, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
Charaxes subornatus couillioudi Plantrou, 1976 – WOL: ROS, ELE
Charaxes anticlea (Drury, 1782) – WOL: WOB, RC1, BEL; WON: WET; ZIA: SEL, SER, MAS, BA
*Charaxes hildebrandti gillesi Plantrou, 1973 – WOL: ROS; WON: WET; ZIA: SER, MAS, DOP, BA
Charaxes ethoeles (Cramer, 1777) – WOL: WOB, ROS; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
*Charaxes petersi van Someren, 1969 – WOL: ZIA: SEL, SER, MAS, BA
Charaxes virilis van Someren & Jackson, 1952 – ZIA: SEL, SER, MAS
Charaxes cedreatis Hewitson, 1874 – WOL: WOB, ROS; WON: WET; ZIA: SEL, SER, MAS, BA
Charaxes pleione (Godart, 1824) – WOL: WOB, ROS; WON: WET; ZIA: SER
Charaxes paphianus falcata (Butler, 1872) – WOL: WOB, ROS, RC1, ELE, BEL; WON: WET; ZIA: SER, MAS
*Charaxes nichetis houchei Plantrou, 1974 – WOL: ROS; WON: WET; ZIA: SER, MAS, DOP, BA
Charaxes porthos gallayi van Someren, 1968 – WOL: ZIA: SEL, MAS
Charaxes zelica Butler, 1869 – WOL: WET; ZIA: SER, SEL, MAS, BA
Charaxes lycurgus (Fabricius, 1793) – WOL: WON; ZIA: MAS
*Charaxes mycerina (Godart, 1824) – WOL: RC2; WON: WET; ZIA: SEL, MAS
Charaxes doubledayi Aurivillius, 1889 – ZIA: SER
Charaxes eurinome (Cramer, 1775) – WOL: BEL; WON: WET; ZIA: SER, MAS, BA
*Palla violinitens (Crowley, 1890) – WOL: WOB, ROS; WON: WET; ZIA: SEL, MAS, BA
Palla decius (Cramer, 1777) – WOL: WON; ZIA: SEL, SER, MAS, DOP, BA
Palla usscheri (Butler, 1870) – WOL: WOB, ROS, RC1, BEL; WON: WET; ZIA: SER, MAS, DOP, BA
*Palla publius Staudinger, 1892 – WOL: ROS; WON: WET; ZIA: SEL, SER, MAS, DOP

APATURINAE
*Apaturopsis cleochares (Hewitson, 1873) – WOL: WET

NYMPHALINAE
Kalimoides rumia (Doubleday, 1849) – WOL: WOB, ROS, RC1, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
Vanessula milca (Hewitson, 1873) – ZIA: SER
Antanartia delius (Drury, 1782) – WOL: DAB, WOB, ROS, RC1, RC2, ELE, BEL; ZIA: SER, MAS, DOP, BA
Precis octavia (Cramer, 1777) – WOL: BEL; ZIA: SER, MAS, BA
Precis pelargia (Fabricius, 1775) – WOL: DAB, WOB, ROS, RC2, ELE, BEL; WON: WET; ZIA: SER, MAS, DOP
Precis sinuata Plötz, 1880 – WON: WET; ZIA: SEL, SER, DOP, BA
Precis milonia Felder & Felder, 1867 – WOL: WOB, ROS, ELE, BEL
Hypolimnas misippus (Linnaeus, 1764) – WOL: WOB, RC1, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
Hypolimnas antheon (Doubleday, 1845) – WOL: DAB, WOB, ROS, RC2, ELE, BEL; WON: WET; ZIA: SER, BA
Hypolimnas dinarcha (Hewitson, 1865) – WOL: WOB, ROS, ELE; WON: WET; ZIA: SER, BA
Hypolimnas aubergeri Heccq, 1987 – WOL: ROS; ZIA: MAS
*Hypolimnas salmacis (Doubleday, 1773) – WOL: DAB, WOB, ROS, BEL; WON: WET; ZIA: SEL, SER, MAS, BA
Salamis cacta (Fabricius, 1793) – WOL: ROS, ELE; ZIA: MAS, BA
Protagonionmorpha cytoria (Doubleday, 1847) – WOL: WOB; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
Protagonionmorpha parhassus (Drury, 1782) – WOL: DAB, WOB, ROS; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
Junonia orthya madagascarensis Guenée, 1865 – WOL: LIS, WSA
Junonia oenone (Linnaeus, 1758) – WOL: BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
Junonia hierta cebrene Trimen, 1870 – ZIA: MAS
Junonia sophia (Fabricius, 1793) – ZIA: SEL, SER, MAS, DOP
Junonia stygia (Aurivillius, 1894) – WOL: WOB; WON: WET; ZIA: SEL, SER, MAS, BA
Junonia chorimene (Guérin-Méneville, 1844) – WOL: BEL, WON: WET
Junonia terea (Drury, 1773) – WOL: DAB, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
Catacroptera cloanthe (Stoll, 1781) – WON: WET; ZIA: BA

CYRESTINAE
Cyrestis camillus (Fabricius, 1781) – WOL: WOB, ROS, BEL; WON: WET; ZIA: SEL, SER, MAS, BA

BIBLIDINAE
Biblya anvatara crameri Aurivillius, 1894 – WOL: WSA; WON: WET; ZIA: SEL, SER, MAS, DOP, BA
Mesoxantha ethosea (Drury, 1782) – WOL: WOB, ROS,
**ACRÆIDAE**

_Acraea camaena_ (Drury, 1773) – **WOL:** WOB

_Acraea endoscoila_ Le Doux, 1928 – **WOL:** BEL; **WON:** WET

_Acraea leucographa jolyi_ Pierre, 2009 – **WOL:** ELE

_Acraea quirina_ (Fabricius, 1781) – **WOL:** ROS; RC1, RC2, ELE, BEL; **WON:** WET; **ZIA:** SEL, SER, MAS, DOP

_Acraea zetes_ (Linnaeus, 1758) – **WOL:** BEL; **ZIA:** SER, MAS, DOP, BAI

_Acraea abdera eginopsis_ Aurivillius, [1899] – **WOL:** RC1; **ZIA:** DOP

_Acraea egina_ (Cramer, 1775) – **WOL:** DAB, BEL; **WON:** WET; **ZIA:** SER, DOP _Acraea caecilia_ (Fabricius, 1781) – **WOL:** WSA; **BEL:** ZIA: MAS

_Acraea pseudegina_ Westwood, 1852 – **WOL:** DAB

_Acraea rogersi_ Hewitson, 1873 – **WOL:** RC2, ELE, BEL; **ZIA:** SER

_Acraea alcinoe_ Felder & Felder, [1865] – **ZIA:** SER

*Acraea epea_ (Cramer, [1779]) – **WOL:** WOB, ROS, RC1, RC2, ELE, BEL; **WON:** WET; **ZIA:** SEL, SER, MAS, BAI

_Acraea macaria_ (Fabricius, 1793) – **ZIA:** SEL, SER, MAS

_Acraea umbra_ (Drury, 1782) – **WOL:** RC1, BAI; **ZIA:** SER, MAS

_Acraea vestalis_ Felder & Felder, [1865] – **ZIA:** SER

_Telchinia alciopa/aurivillii_ – **WOL:** DAB, WOB, RC1, RC2, ELE, BEL; **WON:** WET; **ZIA:** SER, MAS

_Telchinina bonasia_ (Fabricius, 1775) – **WOL:** DAB, WOB, ROS, RC1, RC2, ELE, BEL; **WON:** WET; **ZIA:** SER, DOP

_Telchinia circeis_ (Drury, 1782) – **WOL:** WOB, ROS, RC1, RC2, ELE, BEL

_Telchinia encedana_ (Pierre, 1976) – **WOL:** WOB, WSA; **ZIA:** SER

_Telchinia encedon_ (Linnaeus, 1758) – **WOL:** LIS, DAB; **ZIA:** SER

_Telchinia jodutta_ (Fabricius, 1793) – **WOL:** DAB, WOB, ROS, RC1, RC2, ELE, BEL; **WON:** WET; **ZIA:** SER

_Telchinia lycoa_ Godart, 1819 – **WOL:** DAB, WOB, RC1, RC2, ELE, BEL; **WON:** WET

_Telchinia pharsalus_ (Ward, 1871) – **WOL:** BAI; **ZIA:** SER

_Telchinia polis_ (Pierre, 1999) – **WOL:** RC1, RC2, ELE, BEL; **WON:** WET; **ZIA:** SEL, SER, MAS, DOP

*Telchinia pseudepea ziana_ Belcastro, Boireau & Sáfián, 2020 – **ZIA:** SER

_Telchinia serena_ (Fabricius, 1775) – **ZIA:** LIS, DAB, WOB, SOR, BAI; **ZIA:** SER

*Telchinia perenna_ (Doubleday, [1847]) – **WOL:** LIS; **ZIA:** SER

**LIMENITIDAE**

_Apatura pharsalus_ (Fabricius, 1793) – **WOL:** ROS, ELE; **ZIA:** WET; **WOB:** LIS, WOB, ROS, RC1, RC2, ELE, BEL; **WON:** WET; **ZIA:** SER, MAS, DOP, BAI

*Phalanta eurytis* (Doubleday, 1847) – **WOL:** LIS, WOB, ROS, RC1, RC2, ELE, BEL; **WON:** WET; **ZIA:** SER, MAS, DOP, BAI

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*Neptis nicobule* Holland, 1892 – ZIA: MAS, DOP
*Neptis mixophyes* Holland, 1892 – WOL: RC1; ZIA: MAS
*Neptis trigonophora meliicertula* Strand, 1912 – ZIA: MAS

_Neptis agouale_ Pierre-Baltus, 1978 – WOL: WOB; WON: WET
*Neptis trondii_ Pierre-Baltus, 1978 – ZIA: SER, DOP
_Neptis sp. 1._ – WOL: WOB
_Neptis sp. 2._ – WOL: WOB

_Evena criithæ_ (Drury, 1773) – WOL: WOB, ROS; WON: WET; ZIA: SER, MAS, DOP
*Evena nijii_ (Fox, 1965) – WOL: WOB, ROS; ZIA: SER, MAS

_Evena obertueri_ (Karsch, 1894) – WOL: WOB, ROS, RC2, ELE, BEL; WON: WET; ZIA: SER, MAS
_Evena angustatum_ (Felder & Felder, 1867) – WOL: WOB, ROS; WON: WET; ZIA: SEL, SER, DOP, BAI

_Euryphora togoensis_ Suffert, 1904 – WOL: RC2, ELE; WON: WET

_Euryphora chalcis_ (Felder & Felder, 1860) – WOL: WOB, ROS, RC1, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

_Euryphurana nobilis_ (Staudinger, 1891) – WOL: ROS

_Humanumida daedalus_ (Fabricius, 1775) – ZIA: BAI

_Aterica galene_ (Brown, 1776) – WOL: DAB, WOB, ROS, RC1, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

_Cynandra opis_ (Drury, 1773) – WOL: WOB, RC1, RC2, ELE, BEL; WON: WET; ZIA: DOP

_Euphyrène veronica_ (Stoll, 1780) – WOL: WOB, ROS, RC1, RC2, ELE; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

_Euphyrène simplex_ (Staudinger, 1891) – WOL: RC1, RC2, ELE; WON: WET; ZIA: SER, MAS, BAI

_Euphyrène amicia gola_ Fox, 1965 – WOL: WOB; WON: WET; ZIA: DOP

_Euphyrène aridatha feronia_ (Staudinger, 1891) – WOL: WOB, RC1, RC2, ELE; WON: WET; ZIA: DOP

_Euphyrène coerulae_ Boisdouval, 1847 – WOL: WOB, ROS; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI
*Euphyrène lomaensis* Belcastro, 1896 – WOL: ELE; ZIA: SER, MAS

_Euphyrène gambiae vera_ Hecq, 2002 – WOL: WOB, ROS, RC1, RC2, ELE; BEL; WON: WET; ZIA: DOP, BAI

_Euphyrène ampedusa_ (Hewitson, 1866) – WOL: RC1, ELE; WON: WET; ZIA: SER, MAS

_Euphyrène leonis_ (Aurivillius, 1899) – WOL: RC1, RC2, ELE; WON: WET

_Euphyrène atossa_ (Hewitson, 1865) – WOL: WOB, ROS, RC1, RC2, ELE; WON: WET; ZIA: MAS, DOP, BAI
*Euphyrène doricae_ (Drury, 1782) – WOL: WOB, ROS, RC1, RC2, ELE; WON: WET; ZIA: SER, MAS, BAI

_Bebearia osyris_ (Schultze, 1920) – WOL: RC1, RC2, ELE, BEL; WON: WET; ZIA: SER
*Bebearia carshena_ (Hewitson, 1871) – WOL: WOB; WON: WET; ZIA: MAS

_Bebearia absolon_ (Fabricius, 1793) – WOL: WOB, ROS; WON: WET

_Bebearia mandinga_ (Felder & Felder, 1860) – WOL: WOB, RC2, ELE; WON: WET; ZIA: SER
*Bebearia oxione_ (Hewitson, 1866) – WOL: RC1, ELE, BEL; WON: WET; ZIA: SER, DOP

_Bebearia barce_ (Doubleday, 1847) – WOL: ROS, RC1, ELE, BEL; WON: WET; ZIA: SER

_Bebearia mardantia_ (Fabricius, 1793) – WOL: WET; ZIA: SER

_Bebearia cocalia_ (Fabricius, 1793) – WOL: WOB, ROS, ELE; WON: WET; ZIA: SEL, SER, MAS, BAI

_Bebearia sophus_ (Fabricius, 1793) – WOL: WOB, RC1, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, BAI

_Bebearia arcadius_ (Fabricius, 1793) – WOL: ROS, RC1, RC2, ELE; ZIA: MAS, DOP

_Bebearia laetitia_ (Plötz, 1880) – WOL: WOB, ROS, RC2, ELE; ZIA: MAS, DOP

_Bebearia phantasina_ (Staudinger, 1891) – WOL: WOB, ROS, RC1, RC2, ELE, BEL; ZIA: SEL, SER, MAS

_Bebearia demetra_ (Godart, 1824) – WOL: RC1, ELE, BEL; WON: WET; ZIA: SEL, MAS

_Bebearia maledicta_ (Strand, 1912) – WOL: WOB
*Bebearia ashantina_ (Dudgeon, 1913) – WOL: ELE; ZIA: SER, MAS, DOP

_Bebearia cutleri_ harley Fox, 1968 – WOL: WET

_Euphaedra albergaeri_ Hecq, 1977 – WOL: ROS, RC1, RC2, ELE; WON: WET

_Euphaedra medon_ (Linnaeus, 1763) – WOL: RC1, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

_Euphaedra gausape_ (Butler, 1866) – WOL: DAB, WOB, ROS, RC1, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP

_Euphaedra judith_ Weymer, 1892 – WOL: WOB, ROS

_Euphaedra xyipete_ (Hewitson, 1865) – WOL: WOB, ROS, RC2, ELE; WON: WET; ZIA: SEL, SER, MAS, BAI

_Euphaedra hebes_ Hecq, 1980 – WOL: WOB, ROS, RC1, RC2, ELE; WON: WET; ZIA: SEL, MAS, BAI

_Euphaedra diffusa albocoeules_ Hecq, 1976 – WOL: WOB, ROS, ELE; ZIA: MAS, DOP, BAI

_Euphaedra crockeri_ (Butler, 1869) – WOL: WOB, ROS, RC1; WON: WET; ZIA: MAS, BAI

_Euphaedra eusemoids_ (Grose-Smith & Kirby, 1889) – WOL: RC2; ZIA: MAS

_Euphaedra sarcoptera sarcoptera_ (Butler, 1871) – WOL: WOB, RC2

_Euphaedra cyparissa cyparissa_ (Cramer, 1775) – WOL: WOB, ELE

_Euphaedra themis_ (Hübner, 1807) – WOL: WOB, ROS, RC1

_Euphaedra laboureuana eburnensis_ Hecq, 1979 – WOL: WOB, ROS, RC1, RC2, ELE, BEL; WON: WET

_Euphaedra minuta_ Hecq, 1982 – WOL: RC1; WON: WET

_Euphaedra modesta_ Hecq, 1982 – WOL: WOB, RC2

_Euphaedra janetii_ (Butler, 1871) – WOL: WOB, RC1; WON: WET; ZIA: MAS, DOP

_Euphaedra vetusta_ (Butler, 1871) – WOL: WOB

_Euphaedra ceras_ (Fabricius, 1775) – WOL: WOB, ROS; WON: WET; ZIA: SEL, SER, MAS, BAI

_Euphaedra phaethusa_ (Butler, 1866) – WOL: WOB, ROS, RC1, RC2, ELE; WON: WET; ZIA: SEL, SER, MAS, BAI

_Euphaedra tenebrosa_ Hecq, 1983 – WOL: WET
*Euphaedra francina_ (Godart, 1824) – WOL: WOB, ROS, ZIA: SEL, BAI
Euphaedra eleus (Drury, 1782) – WOL: WOB, ROS, ELE; ZIA: MAS, BAI

*Euphaedra zampa (Westwood, 1850) – WOL: WOB, ROS, ELE; ZIA: SEL

Euphaedra edwardsi (van der Hoeven, 1845) – WOL: ROS, WON: WET

Euphaedra perseis (Drury, 1773) – WOL: WOB, ROS; WON: WET

Euphaedra harpalyc (Cramer, 1777) – WOL: WOB, ROS; WON: WET, ZIA: SEL, MAS, DOP, BAI

Euphaedra eupalus (Fabricius, 1781) – WOL: RC1, RC2, ELE, WON: WET, ZIA: SEL, MAS, DOP, BAI

Pseudathyama sibyllina (Staudinger, 1890) – ZIA: SER, MAS, DOP

Pseudathyama cf. neptidina Karsch, 1894 – ZIA: SER

PIERIDAE

COLIADINAE

Catopsisia florella (Fabricius, 1775) – WOL: LIS, DAB, BEL; WON: WET, ZIA: SER, MAS, DOP, BAI

Eurema senegalensis (Boisduval, 1836) – WOL: WOB, ROS, RC1, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

Eurema hecabe solifera (Butler, 1875) – WOL: DAB, WOB, ROS; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

Eurema floricola leonis (Butler, 1886) – WOL: DAB, WOB, ROS; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

Eurema brigitta Stoll, 1780 – WOL: WOB

PIERINAE

Nepheronia argia (Fabricius, 1775) – WOL: WOB, ROS, ELE, BEL; WON: WET, ZIA: SEL, SER, MAS, DOP, BAI

Nepheronia thalassina (Boisduval, 1836) – WOL: DAB, WOB, ROS, ELE, BEL; WON: WET, ZIA: SEL, SER, MAS, DOP, BAI

Nepheronia pharis (Boisduval, 1836) – WOL: ROS; WON: WET; ZIA: SEL, SER, DOP, BAI

Colotis epipe (Linnaeus, 1758) – WOL: LIS; WON: WET; ZIA: MAS, DOP, BAI

Belenois calypso (Drury, 1773) – WOL: WOB, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

Appias sylvia (Fabricius, 1775) – WOL: ROS, RC1, ELE, BEL; WON: WET; ZIA: SER, MAS, BAI

*Appias phaola (Doubleday, 1847) – ZIA: SER

Appias sabina (Felder & Felder, 1865) – WOL: LIS, ROS, ELE, BEL, WON: WET

Leptosia alesta (Stoll, [1782]) – WON: WET; ZIA: SER, DOP, BAI

Leptosia medusa (Cramer, 1777) – WOL: DAB, WOB, ROS, ELE, WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

Mylothris chloris (Fabricius, 1775) – WOL: LIS, WOB, ROS, RC1, RC2, ELE, BEL; ZIA: SER, DOP

Mylothris dimidiata Aurivillius, 1898 – WOL: ROS, RC1; WON: WET, ZIA: SER

*Mylothris melita Belcastro & Warren-Gash, 2020 (manuscript name) – WOL: ROS, RC2

Mylothris poppea (Cramer, 1777) – WOL: WOB, BEL; ZIA: DOP

Mylothris boireau Warren-Gash (manuscript name) – ZIA: SER

Mylothris rhodope (Fabricius, 1775) – WOL: DAB, WOB, ROS, ELE; ZIA: SER

Mylothris spica (Möschler, 1884) – WOL: BEL

Mylothris jaopura Karsch, 1893 – WOL: ROS, BEL; WON: WET

Mylothris schumannii Suffert, 1904 – WOL: RC2, ZIA: MAS

LYCAENIDAE

PORITIINAE

Pelima carnuta (Hewitson, 1873) – WOL: ROS, WOB, RC1; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

*Penitia petrea (Hewitson, 1874) – WOL: WOB, ROS, RC1, RC2; ZIA: MAS

Penitia candida Stempffer, 1963 – WOL: WOB, RC1

Penitia abrahas (Westwood, 1851) – WOL: RC2; ZIA: MAS, DOP

Telipna acraea (Westwood, [1851]) – WOL: WOB, ROS, RC1, RC2, ELE; ZIA: SER

Telipna semirufa (Grose-Smith & Kirby, 1889) – ZIA: MAS, DOP

Ornipholidotois nympha Libert, 2000 – WOL: ROS, RC1

Mimacraea neurata Holland, 1895 – WOL: RC1, RC2, ZIA: BAI

*Mimacraea darwinia Butler, 1872 – RC1, ELE; WON: WET; ZIA: SER, MAS, BAI

*Mimeresia libentina (Hewitson, 1866) – ZIA: DOP

Mimeresia moyambina (Bethune-Baker, 1904) – WOL: RC1, RC2, ELE

Mimeresia debora catorii (Bethune-Baker, 1904) – WOL: RC1

Mimeresia issia Stempffer, 1969 – WOL: RC1, RC2

Eresiomera bicolor (Grose-Smith & Kirby, 1890) – WOL: RC1, RC2, ELE; WON: WET

Eresiomera petral (Stempffer & Bennett, 1956) – WOL: RC1

†Eresiomera sp. – WOL: RC1

Parasoonia alfa Sáfián, 2015 – WOL: RC2

Citrinophila marginalis Kirby, 1887 – WOL: ROS; ZIA: MAS

Citrinophila similis Kirby, 1887 – WOL: WOB

*Citrinophila erastus (Hewitson, 1866) – WOL: RC1, RC2, BAI; ZIA: SER, MAS

Eresina maesseni Stempffer, 1956 – WOL: BAI; ZIA: SER

Eresina fusca (Cator, 1904) – WOL: WOB, BAI

Liptena griveaudi Stempffer, 1969 – WOL: WOB, ROS; ZIA: SER

Liptena alluanae Mabille, 1890 – WOL: RC1, ELE; ZIA: MAS

Liptena xanthostola coomassiensis Hawker-Smith, 1933 – ZIA: SER

Liptena septirugata (Bethune-Baker, 1903) – WOL: BAI

Liptena bia Larsen & Warren-Gash, 2008 – WOL: WOB, RC2, BAI


*Liptena flavicans (Grose-Smith & Kirby, 1891) – WON: WET; ZIA: SER, MAS

Liptena helena (Druce, 1888) – WOL: WOB, ROS, RC1; WON: WET; ZIA: SER, MAS, DOP

*Liptena catalina (Grose-Smith & Kirby, 1887) – WOL: WOB, ROS, ELE; WON: WET; ZIA: DOP
Kakumia otlauga (Grose-Smith & Kirby, 1890) – WOL: WOB, ROS, WON: WET; ZIA: MAS, DOP
Falcuna leonensis Stempher & Bennett, 1963 – WOL: DAB, ROS, RC1; WON: WET; ZIA: SEL, MAS, DOP
Falcuna campimius (Holland, 1890) – ZIA: SER, MAS, DOP

Tetrarhanis symplocus Clench, 1965 – WOL: WOB, ROS, RC1, RC2; WON: WET; ZIA: SER, MAS
*Tetrarhanis baralingi* (Larsen, 1998) – WOL: WOB; ZIA: SER, MAS, DOP

*Linaropoda eurema* (Plötz, 1880) – WOL: WOB, RC1, RC2, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

*Micropentila brunea* (Kirby, 1887) – WOL: WOB, RC1, RC2, BEL; ZIA: MAS
*Iridana agneshorvathae* Collins, Larsen & Šafián, 2008 – WOL: BEL

*Ceratula ceraninia* (Hewitson, 1873) – WOL: RC1, RC2, ELE, BEL
*Ceratula crowleyi* (Sharpe, 1890) – WOL: RC1, RC2, ELE, BEL
*Ceratula miranda* (Staudinger, 1889) – WOL: BEL
*Ceratula subangereata continua* Libert, 1999 – WOL: RC2, BEL

*Epitolina melissa* (Fabricius, 1793) – WOL: WOB, RC1, RC2

*Phytala elais catori* Bethune-Baker, 1903 – WOL: WOB
*Cephetola doleta* (Kirby, 1890) – WOL: BEL
*Cephetola pinodes* (Druce, 1890) – WOL: BEL
*Cephetola subcoruela* Roche, 1954 – WOL: BEL
*Cephetola sublustris* (Bethune-Baker, 1904) – WOL: BEL

*Cephetola obscura* (Hawker-Smith, 1933) – WOL: RC2
*Cephetola wingae* Šafián, 2015 – WOL: RC1
*Cephetola cf aureliae* – WOL: BEL

*Geritola gerina* (Hewitson, 1878) – WOL: RC1
*Geritola albomaculata* (Bethune-Baker, 1903) – WOL: RC1, RC2, ELE, BEL

*Geritola pacifica* Šafián & Libert, 2015 – WOL: RC1, RC2

*Stempfferia dorothea* (Bethune-Baker, 1904) – ZIA: SER

*Stempfferia moyambiana* (Bethune-Baker, 1903) – WOL: ROS, RC1, RC2, ELE
*Stempfferia katikae* Šafián, 2015 – WOL: BEL
*Stempfferia leonina* (Staudinger, 1888) – WOL: ELE; ZIA: DOP

*Stempfferia ciconia* (Grose-Smith & Kirby, 1892) – WOL: RC2, ELE, BEL
*Stempfferia cf. zelza* (Hewitson, 1873) – ZIA: DOP

*Stempfferia michelae* Libert, 1999 – ZIA: DOP
*Aethiopana honorius divisa* (Butler, 1901) – WOL: RC1, RC2, ELE; ZIA: SER, BAI

*Epitola dispar* (Kirby, 1887) – WOL: WOB, ROS, RC1; WON: WET; ZIA: SER, MAS, DOP
*Epitola melissa* (Druce, 1888) – WOL: WOB, ROS, RC1, ELE; WON: WET; ZIA: SER, MAS, DOP, BAI

**MILETINAE**

*Euliphyra mirifica* Holland, 1890 – ZIA: SER
*Euliphyra leucyania* (Hewitson, 1874) – ZIA: SER

Aslauga marginata marginalis Kirby, 1890 – WOL: RC1, RC2, ELE; WON: WET; ZIA: SEL
Spalgis lemoelae pilos Druce, 1890 – WOL: RC2; WON: WET; ZIA: SEL, SER, MAS, DOP

*Megalopalpus zyma* (Westwood, 1851) – WOL: WOB; WON: WET
*Megalopalpus metaluceus* Karsch, 1893 – WOL: ROS; ZIA: SER, BAI

**APHNAEINAE**

*Aphnaeus orcas* (Drury, 1782) – ZIA: SER, MAS, BAI
*Aphnaeus nimbaensis* Šafián & Libert, 2013 – WOL: RC1
*Cigaritis iza* (Hewitson, 1865) – ZIA: SER
*Pseudaletis leonis* (Staudinger, 1888) – WOL: RC1

**POLYOUMMATINAE**

*Anthene larydas* (Cramer, 1780) – WOL: LIS, DAB, WOB, ROS, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI
*Anthene sylvanus* (Drury, 1773) – WOL: WOB, ELE, BEL; ZIA: BAI
*Anthene yeve* Libert, 2010 – ZIA: SER
*Anthene rubricinctus derubescens* Libert, 2010 – WOL: WOB, ROS, ELE, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI
*Anthene agumenta* Libert, 2010 – WOL: ROS; WON: WET; ZIA: MAS
*Anthene liodes* (Hewitson, 1874) – WOL: WOB, ROS, BEL; ZIA: BAI
*Anthene irrumu* (Stempffer, 1948) – WOL: DAB; ZIA: MAS

*Neurellipes hussen* (Hewitson, 1874) – WOL: ROS; ZIA: SER
*Neurellipes fulvomacula* (Mabille, 1890) – WON: WET
*Neurellipes jubae* (Fabricius, 1787) – WOL: WOB; WON: WET; ZIA: SER

*Neurellipes helpe* Larsen, 1994 – ZIA: SER
*Neurellipes lyzani* (Hewitson, 1874) – WOL: RC1, ELE; WON: WET; ZIA: SEL, MAS, DOP, BAI
*Neurellipes fercenz* Libert, 2010 – ZIA: BAI
*Neurellipes laches* (Hewitson, [1878?]) – WOL: ROS; WON: WET; ZIA: BAI
*Neurellipes atewa* (Larsen & Collins, 1998) – ZIA: SER
*Neurellipes lyzae* (Hewitson, 1874) – WOL: WOB; ZIA: SEL, SER, MAS, DOP

*Triclema lucretii* (Hewitson, 1874) – WOL: ROS, ELE
*Triclema lamius* (Hewitson, 1878) – ZIA: MAS
*Triclema fasciatus* (Aurivillius, 1895) – ZIA: SER, MAS
*Triclema staudingeri* (Grose-Smith & Kirby, [1894]) – WOL: WOB, ROS; ZIA: SER

*Triclema phoenicis* Karsch, 1893 – ZIA: SER, MAS, DOP, BAI

*Caprideles lithas* (Druce, 1890) – ZIA: BAI
*Caprideles jacksoni* Stempffer, 1969 – ZIA: MAS
*Pseudonacaduba sichela* (Wallengren, 1857) – WOL: LIS, DAB, ROS; ZIA: SER, MAS
*Lampides boeticus* (Linnaeus, 1767) – WOL: WSA, WOB, BAI

*Uranothauma falkensteini* (Dewitz, 1879) – WOL: DAB, WOB, ROS; WON: WET; ZIA: SEL, SER, MAS, BAI
**Uranothauma belcastro**i Larsen, 1997 – ZIA: SER
Uranothauma cyra stactalla (Karsch, 1895) – WOL: WOB, ROS; ZIA: SER, MAS, BAI

*Cacryeus lingeus* (Stoll, 1782) - WOL: WOB

Leptotes pirit hous (Linnaeus, 1767) – WOL: DAB, BEL; WON: WET; ZIA: SEL, SER, MAS, DOP, BAI

*Tuxentius carana kontu* (Karsch, 1893) – WOL: WOB, ROS; ZIA: SER, MAS

Eciochr yps hippocrates (Fabricius, 1793) – WOL: LIS, WSA, DAB, WOB, RC2; ZIA: SER, MAS

Euchrysops malathana (Boisduval, 1833) – WOL: LIS, DAB, BEL; ZIA: SER

Euchrysops osiris (Hopffer, 1855) – WOL: WSA; ZIA: SER

**Lepidochrysops parsimon** Fabricius, 1775 – WON: WET

Thermoniphos m cyclus (Cramer, 1780) – WOL: DAB, WOB; ZIA: DOP

Oboronia punctatus (Dewitz, 1879) – ZIA: SEL, SER, BAI

Oboronia ornata (Mabille, 1890) – WOL: DAB, WOB, ROS; ZIA: SER, DOP, BAI

Azanus mirza (Plötz, 1880) – WOL: LIS, DAB, WOB, ROS, ELE; WON: WET; ZIA: SEL, SER, MAS, BAI

Azanus isis (Drury, 1773) – WOL: DAB, ROS, RC1, BEL; WON: WET; ZIA: SER, MAS, BAI

**THECLINAE**

*Myrina silenus* (Fabricius, 1775) – ZIA: SER

*Iolaus eurisus* (Cramer, 1779) – WOL: RC2; WON: WET; ZIA: SER, DOP

*Iolaus iulus* Hewitson, 1869 – WOL: RC2, BEL; ZIA: SER, MAS

*Iolaus alcibiades* Kirby, 1871 – WOL: BEL; ZIA: MAS, DOP

*Iolaus calisto* (Westwood, 1851) – WOL: BEL; ZIA: MAS

*Iolaus laonides* Aurivillius, 1898 – WOL: BAI

*Iolaus liberiana* Sáfián, 2017 – ZIA: MAS

*Iolaus timon* (Fabricius, 1787) – WOL: RC1, RC2, ELE

*Iolaus moyambina* (Stempffer & Bennett, 1959) – ZIA: MAS, DOP

*Iolaus pollux oberthueri* (Riley, 1929) – ZIA: DOP

*Iolaus sappirus* (Druce, 1902) – WON: WET; ZIA: DOP

*Iolaus bellina* (Plötz, 1880) – ZIA: MAS New record for Guinea

*Iolaus fontainei* (Stempffer, 1956) – ZIA: DOP

*Iolaus aesthria* Karsch, 1893 – WOL: WOB; ZIA: SEL, SER, MAS

*Iolaus isis* Hewitson, 1865 – WON: WET; ZIA: SER

*Hypolycaena philippus* (Fabricius, 1793) – ZIA: MAS

*Hypolycaena liara* Druce, 1890 – WOL: RC1, RC2, ELE, BEL

*Hypeolycaena lebona* (Hewitson, 1865) – ZIA: DOP

*Hypolycaena scintillans* Stempffer, 1957 – WON: WET; ZIA: SEL, DOP

*Hypolycaena dubia* Aurivillius, 1895 – WON: WET; ZIA: SEL, BAI

*Hypolycaena antifaunus* (Westwood, 1851) – WOL: WOB, ROS; ZIA: SER, BAI

*Hypolycaena hattita* Hewitson, 1865 – WOL: ROS, ELE; WON: WET; ZIA: SER

*Hypolycaena nigra* Bethune-Baker, 1914 – WOL: WOB, ROS, BEL; ZIA: SER, MAS, DOP, BAI

*Deudorix antalus* (Hopffer, 1855) – WOL: BAI

*Deudorix lorisona* (Hewitson, 1862) – WOL: RC1; ZIA: SER, DOP, MAS

*Hypomyrina mimetica* Libert, 2004 - WOL: RC1, ELE

*Paradeudorix eleala* (Stempffer, 1964) – WOL: ROS, RC1, RC2, ELE; ZIA: SER, MAS

*Pilodeudorix mano* Sáfián, 2015 – WOL: RC2, ZIA: SER

Pilodeudorix virgata (Druce, 1891) – WOL: RC1, ELE; ZIA: MAS, DOP

Pilodeudorix camerona (Plötz, 1880) – WOL: RC1, RC2, BAI; ZIA: SER

Pilodeudorix zela (Hewitson, 1869) – ZIA: SER, MAS, DOP

Pilodeudorix mera (Hewitson, 1873) – WOL: ELE

Pilodeudorix otr aedea (Hewitson, 1863) – ZIA: SER

Pilodeudorix leonina (Bethune-Baker, 1904) – WOL: RC1

Pilodeudorix aurivilliusi (Stempffer, 1954) – WOL: RC1

Pilodeudorix kiellandi (Congdon & Collins, 1998) – WON: WET

Pilodeudorix violetta (Aurivillius, 1897) – WON: WET; ZIA: DOP

*Dapidodigma hymen* (Fabricius, 1775) – ZIA: MAS, DOP

*Dapidodigma demeter* Clench, 1961 – WOL: WOB

*Oxy lides faunus* (Drury, 1773) – WOL: ROS, RC2; WON: WET; ZIA: SER, MAS, DOP, BAI