

Description of two new subspecies and notes on *Charaxes* Ochseneimer, 1816 of Angola (Lepidoptera: Nymphalidae)

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Abstract

This paper concerns the description of two new subspecies of the genus *Charaxes* Ochseneimer, 1816 of Angola, one of *C. fulvescens* (Aurivillius, 1891) and another of *C. jahlusa* Trimen, 1862. Both are compared with the remaining known subspecies. The status of *C. boueti carvalhoi* Bivar-de-Sousa, 1983 is discussed and based primarily on Angolan material, *C. saturnus brunnescens* Poulton, 1926 is definitely placed within the synonymy of *C. saturnus saturnus* Butler, 1865 as previously suggested by some authors.

KEY WORDS: Lepidoptera, Nymphalidae, *Charaxes*, descriptions, synonymies, Angola.

Descripción de dos nuevas subespecies y notas sobre *Charaxes* Ochseneimer, 1816 de Angola (Lepidoptera: Nymphalidae)

Resumen

En la presente contribución, se describen dos nuevas subespecies del género *Charaxes* Ochseneimer, 1816 de Angola, una de *C. fulvescens* (Aurivillius, 1891) y la otra de *C. jahlusa* Trimen, 1862. Se comparan con las subespecies conocidas. El status de *C. boueti carvalhoi* Bivar-de-Sousa, 1983 es discutido y, basándose sobre todo en material angolano, *C. saturnus brunnescens* Poulton, 1926 se sitúa definitivamente en la sinonimia de *C. saturnus saturnus*, como antes habían sugerido algunos autores.

PALABRAS CLAVE: Lepidoptera, Nymphalidae, *Charaxes*, descripciones; sinonimias, Angola.

Descrição de duas subespécies e notas sobre as *Charaxes* Ochseneimer, 1816 de Angola (Lepidoptera: Nymphalidae)

Resumo

Na presente contribuição descrevem-se duas subespécies novas de do género *Charaxes* Ochseneimer, 1816 de Angola, uma de *C. fulvescens* (Aurivillius, 1891) a outra de *C. jahlusa* Trimen, 1862, e comparam-se com as subespécies conhecidas. O estatuto de *C. boueti carvalhoi* Bivar-de-Sousa, 1983 é discutido e especialmente com base em material angolano, rectifica-se a sinonímia de *C. saturnus brunnescens* Poulton, 1926 relativamente a *C. saturnus saturnus* Butler, 1865, como antes considerado por alguns autores.

PALAVRAS CHAVE: Lepidoptera, Nymphalidae, *Charaxes*, descrições, sinonímias, Angola.

Introduction

Two new subspecies of *Charaxes* Ochseneimer, 1816 from Angola, are described, belonging to

two quite distinct species-groups: *C. fulvescens* (Aurivillius, 1891), of the “*varanes*-group” and *C. jahlusa* Trimen, 1862, the only known representative of the “*jahlusa* group”. The former, described from the Bengo, Kuanza Norte, Kwanza Sul and Uíge provinces, is considered by several authors, e. g. TURLIN (2005a, b), to integrate the only species-group representative of a subgenus of its own, *Charaxes* (*Stonehamia*) Cowan, 1968; the latter, described from the Namibe province, is part of the nominate subgenus.

Recent taxonomical changes concerning the true independence of *C. boueti* Feisthamel, 1850 relatively to *C. macclounii* Butler, 1859, both now considered as bona species, led to the alteration of the taxonomic position of what was originally described as *C. boueti carvalhoi* Bivar-de-Sousa, 1983.

Additionally, the study of several specimens of *C. saturnus* Butler, 1875 from central Angola (Bié and Huambo provinces) and northern and eastern Angola (Kuanza Norte, Lunda Norte and Moxico), Mozambique, Namibia, Swaziland and Zimbabwe, revealed notable individual variation from the same collection localities. Furthermore, all the intermediate morphotypes, from the typical *C. saturnus saturnus* Butler, 1875 to the typical *C. saturnus brunescens* Poulton, 1926 were found to co-occur together. This allowed us to state definitely that these subspecies are synonyms as previously considered by some other authors.

Methodologies

The following abbreviations concerning morphological features, collections, countries and institutions, will be used along the text: AF: António Figueira private collection, to be deposited in the Museu de História Natural da Universidade do Porto (the Natural History Museum of the Oporto University); AR: Collected by A. Serrano; BS: Bivar de Sousa private collection - Angolan lepidopterans series in the MUHNAC; CAR: Central African Republic; DR Congo (= Congo Kinshasa, = Zaire, = Belgian Congo); CZ: Former Centro de Zoologia of the IICT; EAU: Mission of the Estudos Apícolas do Ultramar of the CZ; FW: Forewing; HW: Hindwing; IICT: Former Instituto de Investigação Científica Tropical, now integrated in the MUHNAC; LM: Collected by L. Mendes; MB: The former Museu Bocage, the old name of the zoological department of the then Museu Nacional de História Natural, in Lisbon, and that (almost) completely burned during a fire the 28th March 1978; MM: Mário Macedo private collection, now in the MUHNAC; MUHNAC: Museu Nacional de História Natural e da Ciência, in Lisbon, previously integrating the MB; NA: Nozolino de Azevedo private collection; nn: no registration number; PC: Passos de Carvalho private collection, now deposited in the MUHNAC; PG: Pessoa Guerreiro private collection, offered to the IICT, now in the MUHNAC; R: recto or dorsum or dorsal wing surface; RC: Collected by R. Capela; V: ventral or under wing surface; WL: forewing length.

Most of the recently collected specimens were obtained by Ruben Capela and Artur Serrano mainly in Kuanza Sul province, not far from the Kuanza river source. Suspended traps baited with rotten fruit were used, though a few specimens were found within pitfall traps set out at the same localities. The remaining specimens were collected by sweep netting.

All type-specimens were previously deposited in the CZ and are now part of the MUHNAC. The original registration numbers of the studied specimens - or samples - were maintained; those beginning by BS, NA or PG are, or were, part of the personal entomological collections of, respectively, Bivar de Sousa, Nozolino de Azevedo and Pessoa Guerreiro and they all were collected by them.

WL of the studied specimens was always measured using an Etalon clipper along the wing outer margin, from the apex to the anterior insertion on the thorax; only exceptionally the WL doesn't concern the left wing.

A list of the collecting localities is provided (Table 1). For each one, the recent administrative province it integrates, as well as approximate latitude, longitude and altitude above sea level are presented. Angolan localities and the administrative provinces they integrate were mostly presented by MENDES *et al.* (2013). When the name of a locality has changed or when it appears wrongly spelt in previous contributions or labels, the old or the incorrect name is remitted to the new or the correct one.

Table 1.— Collecting localities of the studied samples: administrative provinces and coordinates, country by country, in alphabetical order. Old and incorrectly spelt names are remitted to the recent or correct denominations.

Locality	Province	Latitude	Longitude	Altitude (m)
ANGOLA				
Bruco	Namibe	15°08' S	13°11' E	750
Calulo ^(*)	Kuanza Sul	10°00' S	14°54' E	999
Camissombo	Lunda Norte	08°09' S	20°40' E	950
Chianga	Huambo	12°44' S	15°50' E	1740
Dalatando	Kuanza Norte	09°18' S	14°55' E	790
Golungo Alto	Kuanza Norte	09°08' S	12°46' E	630
Huambo	Huambo	12°46' S	15°44' E	1650
Inga	Uige	07°18' S	14°25' E	600
Kasinga	see Kassinga	—	—	—
Kassinga	Huila	15°08' S	16°05' E	1310
Luau	Moxico	10°42' S	22°14' E	1100
Lumeje	Moxico	11°33' S	20°47' E	1150
Mumbué (Kuanza source)	Bié	13°49' S	17°19' E	1550
Mussende	Kuanza Sul	09°57' S	14°47' E	905
Nova Lisboa	see Huambo	—	—	—
Nova Oeiras	Kuanza Norte	09°28' S	14°27' E	100
Otchinjau	Cunene	16°30' S	13°56' E	1200
Pungo Andongo	Malanje	09°49' S	15°35' E	1000-1250
Quiminha	Bengo	08°58' S	13°47' E	120
Salazar	see Dalatando	—	—	—
Satchijamba	Bié	13°45' S	17°10' E	1580
Saurimo	Lunda Sul	09°39' S	20°24' E	1070
Teixeira de Sousa	see Luau	—	—	—
Veríssimo Sarmiento	see Camissombo	—	—	—
Vogelfountain	see Otchinjau	—	—	—
Xa-Sengue	Lunda Norte	10°27' S	18°31' E	1300
MOZAMBIQUE				
Chicualacuala	Gaza	21°06' S	31°42' E	180
Estima	Tete	15°44' S	32°45' E	330
Maputo	Maputo	25°58' S	32°35' E	< 10
Namaacha	Maputo	25°59' S	32°02' E	430
S. Martinho do Bilene	Maputo	25°16' S	33°16' E	< 10
NAMIBIA				
Fingerklip (= Vingerklip)	Kunene	20°30' S	15°40' E	1100
SWAZILAND				
Namaacha road	Lubombo	26°00' S	32°00' E	600
ZIMBABWE				
Hwange	N. Matabeleland	18°20' S	26°30' E	760
Victoria Falls	N. Matabeleland	17°58' S	25°50' E	950

^(*) Captures were carried out in three localities bordering, Calulo village-Cabeza, Monte Café and the road to Mussende - and all received the same coordinates.

Taxonomy

CHARAXINAE

Genus *Charaxes* Ochseneimer, 1816

“*varanes* group”

Charaxes fulvescens rubenarturi Bivar-de-Sousa & Mendes, ssp. n. (Figs. 1-6)

Material examined: Holotype: ANGOLA: Kwanza Sul: Mussende, XII-2015, AS + RC, 1 ♂ (BS-34880). Paratypes: ANGOLA: Bengo: Quiminha, V-1973, 1 ♂ paratype (BS-12767). Kwanza Norte: Golungo Alto, ?/1962, MM, 1 ♂ paratype (MB-17421). Salazar, III-1973, 1 ♀ allotype AF-NYM11102, 2 ♂♂ paratype (AF-NYM11101, 11103). Kwanza Sul: Calulo, 1 ♂ paratype, XI-2015, AS + RC, (BS-34875), XII-2015, AS + RC, 2 ♂♂ (paratype (BS-34876-34877)). Mussende, XII-2015, AS + RC, 2 ♂♂ paratypes (BS-34878, 34879). Uige: Inga, IX-1964, 1 ♂ paratype (BS-12765). Others specimens: Kwanza Norte: Salazar, IV-1972, 1 ♂ (BS-16630); *ibid.*, II-1973, 1♂ (BS-16634). UIGE: Inga, IX-1964, 1 ♂ (BS-12766).

Description: WL: Male 43-46 mm; female 50 mm. The subspecies is characterized by the WL; the small well defined light-brown spots of the FWR submarginal and post-discal rows, clearly contrasted against the dark-brown ground-colour; the relatively small and not strongly contrasted blackish post-discal spots on the HWR; and the brown V - externally to the post-discal line - and olivaceous or olivaceous-brown - internally to this line (Figs. 1- 6).

Discussion: *Charaxes fulvescens* (Aurivillius, 1891) is part of the “*varanes*-group” 1968, characterized by the large serrations along the FW costa; several subspecies occur along Africa, yet the species has never been reported from Angola. *C. fulvescens fulvescens* was described from Cameroon and is known to extend to CAR and Congo; currently, it is also accepted as the subspecies that flies in western Nigeria, east of the Dahomey Gap (BOERSMA & GERNAAT, 2009). *C. fulvescens senegala* van Someren, 1975 (= *C. fulvescens maesseni* Plantrou, 1983) occurs in Sierra Leone, Ghana, Senegal, Guinea-Bissau, Guinea and Ivory Coast; it is not present in western Nigeria, as previously assumed, since it is possibly the Dahomey Gap and not the Niger delta that represents the ecological barrier between this and the nominate subspecies. *C. fulvescens marialuisae* Canu, 1989, is endemic to the Equatorial Guinean island of Bioko. *C. fulvescens monitor* Rothschild, 1900 ranges along East Africa west of the Rift Valley, in southern Sudan, Kenya, Uganda and Tanzania, eastern DRC and northern Zambia. *C. fulvescens imenti* Plantrou, 1989 in Henning, 1988 is exclusive to the Kenyan highlands east of the Rift Valley (Mt. Meru and Mt. Kenya).

The Bioko endemic is readily distinguishable due to its much larger size; HENNING (1989) reports a WL of: ♂, 51-52 mm, ♀, 54-56 mm and BOERSMA & GERNAAT (2009); report ♂, 56 mm, ♀, 55 mm. In addition, the R and, especially, the male FWR is much darker than in *C. fulvescens rubenarturi* ssp. n., and the light maculation is strongly reduced.

C. fulvescens imenti is the smallest among the known subspecies, though only slightly smaller than *C. fulvescens rubenarturi* ssp. n.; HENNING (1988) refers WL: ♂, 41-43 mm, ♀, ca. 48 mm and BOERSMA & GERNAAT (2009) studied 1 ♂ with 37 mm. It is also darker than the new subspecies, particularly in the apical area of the FWR; the light submarginal spots on the FWR in this Kenyan endemic are less conspicuous than the post-discal spots, while they are more or less equally developed in the new Angolan taxon.

C. fulvescens senegala differs from the new subspecies in the slightly concave FW outer margin, such that the apex is clearly more pointed; the outer margin of the FWR is darker and its light submarginal spots, particularly those of the apical area, are reduced. The light submarginal spots on the FWR in *C. fulvescens maesseni* Plantrou, 1983 are considerably smaller than the post-discal spots and the light basal area in the same wing is much broader, as in *C. fulvescens senegala*. This led LARSEN (1996) and BOERSMA & GERNAAT (2009) to consider both as synonymous entities.

C. fulvescens fulvescens is lighter than the new Angolan endemic, and its dark post-discal spots on the HWR are less marked and clearly less contrasted against the ground-colour of the marginal band.

The new subspecies is possibly closer to *C. fulvescens monitor* with a similar wingspan but with distinct and more contrasted small light spots on the FWR - mainly the post-discal ones. The light inner area of the HWR is also slightly broader, and the dark post-discal spots larger.

Ecology: *C. fulvescens* is a typical forest species. The caterpillars of other subspecies feed on *Allophylum*, *Cardiospermum* (Sapindaceae) and *Rhus* (Anacardiaceae).

Etymology: The new subspecies is dedicated to the collectors of the studied specimens obtained in the Kuanza Sul province: Ruben Capela and Artur Serrano.

“*jasius* group”

Charaxes saturnus saturnus Butler, 1865 (Figs. 7-18, Map 1)

(= *C. pelias saturnus* Butler, 1865 ab. *brunnescens* Rothschild, 1900)

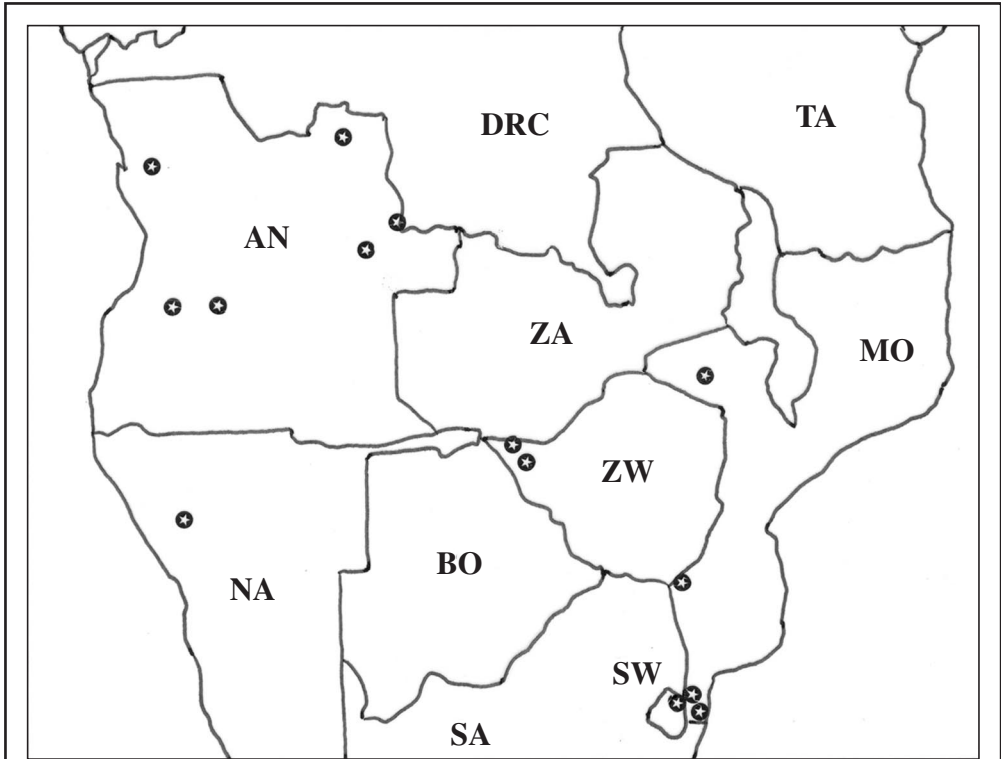
(= *C. pelias brunnescens* Poulton, 1926)

(= *C. jasius brunnescens* van Someren, 1963)

Material examined (Map 1): ANGOLA: Bié: Mumbué, IV-2014, AS + RC, 1 ♂ (BS-32957), 1 ♀ (BS-32958). Satchijamba, XI-2014, AS + RC, 2 ♂♂ (BS-33313, 33316), 3 ♀♀ (BS-33306, 33314, 33315) + *ibid.*, no date, AS + RC, 1 ♂ (BS-34890), 3 ♀♀ (BS-34888-34389, 36054). Huambo: Chianga, VI-1972, PC, 1 ♀ (BS-12777). Nova Lisboa, XI-1857, EAU, 1 ♂ (CZ-2952); *ibid.*, II-1964, 1 ♂ (NA-nn); *ibid.*, III-1964, 1 ♂ (NA-nn); *ibid.*, IV-1964, 1 ♂, 1 ♀ (NA-nn); *ibid.*, VII-1964, 1 ♂ (NA-nn); *ibid.*, XI-1964, 3 ♂♂ (NA-nn); *ibid.*, III-1965, 1 ♂ (NA-nn); *ibid.*, VIII-1965, 1 ♂ (NA-nn); *ibid.*, I-1971, 1 ♂ (NA-nn). Kwanza Norte: Nova Oeiras, XII-1973, 1 ♂ (BS-12771). Lunda Norte: Veríssimo Sarmiento, IX-1965, 1 ♂ (BS-12773). Moxico: Lumeje, IV-1965, 10 ♂♂ (BS-12774, 34100-34101, 34103-34104, 34106-34107, 34109-34111) 3 ♀♀ (BS-12776, 34105, 34108); *ibid.*, V-1965, 1 ♂ (BS-12775). Teixeira de Sousa, II-1965, 1 ♂ (BS-12772). Province: ?. No labels (no locality, no date), coll. J. J. Monteiro, 1 ♀ (*) - see text afterwards. MOZAMBIQUE: Gaza: Chicualacuala, VIII-1955, 3 ♂♂ (CZ-2753). Maputo: Maputo, VI-1974, 1 ♂ (BS-10398); *ibid.*, II-1993, 2 ♂♂ (PG-4376, 4377); *ibid.*, V-1994, 1 ♀ (PG-4382); *ibid.*, VII-1994, 1 ♀ (PG-4383); *ibid.*, VIII-1994, 1 ♀ (PG-4384). Namaacha, III-1993, 1 ♂ (PG-4378). S. Martinho do Bilene, XI-1955, 1 ♀ (CZ-2473). Tete: Estima, IX-1973, 1 ♂ (CZ-3812). NAMIBIA: Kunene: Fingerklip (or Vingerklip), VIII-2001, LM, 1 ♂ (CZ-5110). SWAZILAND: Lubombo: Namaacha road, IX-1995, 1 ♂ (PG-4379). ZIMBABWE: North Matabeleland: Hwange, IV-1994, 2 ♀♀ (PG-4385- 4386). Victoria Falls, IV-1994, 3 ♂♂ (PG-4380, 4381, PG-nn).

Previous references for Angola: *C. saturnus* and *C. brunnescens* have been reported from Angola several times, but mostly without details. They have been treated either as valid species, or as valid subspecies, or as morphs: DRUCE (1875 as *C. saturnus*) reports “Angola” based on material collected by J. J. Monteiro. ROTHSCHILD & JORDAN (1898 as *C. pelias saturnus* ab. *brunnescens*), “N. Angola”. WEIMER (1903, as *C. pelias* var. *saturnus* Butl.), Vogelfontain. POULTON (1926) describes *C. pelias brunnescens* from “Angola”. JORDAN (1925 as *C. pelias brunnescens* Roths.) refers Pungo Andongo. AURIVILLIUS (1928 as *C. pelias saturnus* ab. *brunnescens* Roths.), “Angola sept.”. LADEIRO (1956 as *C. saturnus* Btlr.), Xa-Sengue and Saurimo. MONARD (1956 as *C. pelias saturnus* Bth.), Kasinga. BACELAR (1961 as *C. pelias saturnus* Btlr., 1865) assigns 2 ♀♀ to the “Bié” with no precise location. Van SOMEREN (1963 as *C. jasius brunnescens*) assigns “N. Angola” and notes that in the south of the country there is a smaller and lighter form; he also states, that *C. jasius saturnus* occurs in north-western “Rhodesia” close to the Angolan border. FOX (1968 as *C. pelias brunnescens*) registers “N. Angola”. PLANTROU (1983 as *C. saturnus saturnus* Butler, 1865 - map) shows one unspecified locality - in the middle of what shall be the Uige province - and considers *C. jasius brunnescens* Poulton, 1926 as its synonym. Subsequently, HENNING (1988), ACKERY *et al.* (1995), KOÇAK & KEMAL (2007) and WILLIAMS (2008) state that it is *C. jasius brunnescens* that flies in “Angola” - again no

geographical details – and GARDINER (2004) reports this same subspecies from the “Four corners area” (extreme Kwando-Cubango, once again, no details). TURLIN (2005a, b) maintains that it is *C. saturnus brunnescens* that flies in “Angola” and assigns *C. saturnus saturnus* to East Africa: Botswana and Katanga. Meanwhile, BACELAR (1948) misidentified one ♀ of the present species as *C. castor* from “Angola” said to be collected by J. J. Monteiro, and at the time deposited in the MB; the correction of this misidentification, though never published, was done by BS before the 1978 fire that destroyed the MB and most of its entomological collection. This record is thus included in the material examined and marked with a *, as it was effectively studied before its disappearance.



Map 1.– Distribution of the studied specimens of *Charaxes saturnus saturnus* Butler, 1865 (precise coordinates in Table 1). AN: Angola; BO: Botswana; DRC: Democratic Republic of Congo; MO: Mozambique; NA: Namibia; SA: South Africa; SW: Swaziland; TA: Tanzania; ZA: Zambia; ZW: Zimbabwe.

Discussion: The problem of the independence and status of *C. jasius*, *C. saturnus* and *C. brunnescens* remains unsolved not only relatively to Angola but all along “these species” ranges. In relation to the neighbouring former Zaire, BERGER (1981) states that the existent species is *C. jasius*, that *C. jasius saturnus* has a large geographic range in the country - Mayumbe to Kasai and Haut-Katanga - and that *brunnescens* is no more than one of its morphs. ACKERY *et al.* (1995) recognize *C. saturnus* and *C. jasius brunnescens* as independent. The first is reported from South Africa (Natal, Transvaal), Malawi, Mozambique, “Rhodesia” (Zimbabwe), Zambia, south-western Zaire (DRC) and east of Tanzania and Kenya, while the second is reported from Angola, Congo, Gabon and western DRC; HENNING (1988) adds Botswana and north-eastern Namibia to the *C.*

saturnus range, and CAR to that of *C. jasius brunnescens*. D'ABRERA (2004) doesn't recognize the independence between *saturnus* and *brunnescens*, considering the latter to be a local and seasonal variation of *C. saturnus*. He adds southern DRC to the species range, but questions the presence of *C. saturnus* in Angola despite *C. pelias brunnescens* Poulton having been described from there. The same interpretation can be made from statements by PLANTRON (1983), who reinforces that specimens of typical *C. jasius saturnus* and *C. jasius brunnescens* were collected in the very same traps in the Congo, and are therefore the same taxon. TURLIN (2005a, b) on the other hand, based on wingspan and wing colour, accepts *saturnus* and *brunnescens* as valid subspecies, pointing to the presence of the latter in West and Central-West Africa, Angola included. WILLIAMS (2008) reports *C. jasius brunnescens* Poulton, 1926 from northern Angola without details and considers *C. pelias brunnescens* Poulton, 1926 its synonym. He doesn't assign *C. jasius saturnus* to Angola, but considers it a valid subspecies.

With respect to the typical *C. jasius brunnescens*, Van SOMEREN (1963) assigns to WL: male, 45-47 mm, female, 48-55 mm, and 39-40 mm to a "small form, not quite so dark in colour ... found in southern Angola" he characterizes as showing darker blue spots on the HW and a rather acuminate FW; he presents two black and white photos of these specimens (plate 6, figs. 31-32). However, in his note relative to *C. jasius saturnus* Butler from the "interior South Africa", he describes WL: male, 40-44 mm and female, 46-50 mm, and highlights "...there is a tendency to darkening in specimens from north-west Northern Rhodesia, on the Angolan frontier (Pl. 6, figs. 31, 32).", registering the very same two photos. TURLIN (2009) in his real-size photos, also displays smaller specimens of *C. saturnus saturnus* (WL: Rwanda male, 41.3 mm, Katanga male, 42.8 mm, Rwanda female, 48.1 mm) relatively to the larger specimens of *C. saturnus brunnescens* (WL: Gabon male, 46.6 mm, Congo female, 54.2 mm).

The WL measured on 26 Angolan specimens with undamaged FW, reveal that this cannot be used as a diagnostic feature due to its variability within one or neighbouring populations (17 ♂♂ 31.2-43.3 mm, and 7 ♀♀ 44.0-51.0 mm). The same happens with the remaining specimens studied in detail: Mozambique (16 ♂♂, 38.4-47.6 mm, 7 ♀♀, 45.9-50.0 mm), Namibia (1 ♂, 42.3 mm), Swaziland (1 ♂, 42.7 mm), Zimbabwe (2 ♂♂, 39.6, 41.2 mm, 2 ♀♀, 46.6, 47.9 mm).

With regard to the ground-colour and overall colouration, we were also not able to detect any diagnostic features. Indeed, despite *C. brunnescens* described as being darker and with an ochreous rather than orange-coloured median band, we found lighter and darker specimens collected in the same locality and at the same time. If examined one by one, these could be considered typical representatives of either *C. saturnus* or *C. brunnescens*.

Ecology: The species was collected from sea level to almost 1600 m in diverse biotopes, from dry savanna woodland to woodland and secondary forest. According to PLANTRON (1983), the caterpillars feed on *Cassine*, *Catha*, *Maytenus* (Celastraceae), *Afzelia*, *Bahuinia*, *Brachystegia*, *Burkea*, *Colophospermum*, *Copaifera* and *Schotia* (Fabaceae).

"*jahlusa* group"

Charaxes jahlusa angolensis Mendes & Bivar-de-Sousa, ssp. n. (Figs. 19-22)

Material examined: Holotype: ANGOLA: Namibe: Bruco, 8-IX-1974, 1 ♂, PC (BS-12669). Paratypes: Ibid., 28-VIII-1974, 1 ♀, allotype, PC (BS-12670); 2 ♀♀, same data, (PC-nn).

Description: WL: male 22-23 mm, female 28-29 mm. The new subspecies is characterized by the WL; the identical ochreous orange ground-colour in both sexes; the development of the black marks on the FW; the type and development of dots on the black submarginal band on the HWR; the arrangement of the silvery-white spots on the HWV; and the brightness of the silvery apical spots on the FWV.

Discussion: The "*jahlusa* group" is known to include only the present species. Relatively small and not strongly dimorphic, it has conspicuously falcate FW, mainly in the male, and the wings have

a narrow black submarginal band. The FW also display a series of dark markings on both surfaces. The HW has two small tails and its R is almost plain; the V is marked with dark-brown to black, and silvery motifs.

When describing *Charaxes jahlusa rex* from South Africa, eastern Botswana and southern Zimbabwe, HENNING (1978) presented a map with the range of each of the *C. jahlusa* subspecies known that time: *C. jahlusa argynnides* Westwood, 1864 is reported from south-western Angola near the Cunene river valley, in two very close localities that are completely isolated - more than 1 500 km - from the main range he provided for the subspecies: central and eastern Zambia to Mozambique and Tanzania. Later (HENNING, 1988) re-describes *C. jahlusa argynnides* (Zambian specimens photographed), confirming its presence in South Africa (Natal), Mozambique, north-western Zimbabwe, Zambia, Malawi and southern Tanzania and states "... Specimens captured in southern Angola appear to come closest to this subspecies ..."; he notes, further, that the Natal and southern Mozambique populations were previously considered to be a cline between the nominate subspecies and *C. jahlusa argynnides* (van SOMEREN, 1974) - 5 specimens, 1 ♂ and 4 ♀♀ from Montepuez, Cabo Delgado province (BS-13167-13171) were studied for comparison. ACKERY *et al.* (1995) in their Catalogue, note that *C. jahlusa argynnides* ranges along South Africa (Natal), Angola, former Zaire, Zambia, Zimbabwe, Malawi, Mozambique and Tanzania, with no further details and certainly based on HENNING (1978). KOÇAK & KEMAL (2007, 2009) also assign *C. jahlusa argynnides* to Angola though based on the African Lepidoptera data-bank, without details, comments or studied specimens.

PLANTROU (1983) doesn't consider *C. jahlusa* to be present in Angola (Map 71, p: 360 - no data are marked in the country) and once again, D'ABRERA (2004) doesn't report the species from the country. Recently, TURLIN (2009) drops again the presence of the species in Angola; indeed, among the 9 subspecies he reports, the westernmost data concern the Shaba area of DRC for *C. jahlusa argynnides*. No sample is reported from Angola, not even from Moxico or for the south-easternmost extreme of the Kwando-Kubango (GARDINER, 2004), the only regions in the country with a Zambezian-related biome.

C. jahlusa angolensis Mendes & Bivar-de-Sousa, ssp. n. differs from *C. jahlusa argynnides* Westwood, 1864 which is the closest from a geographical point of view (Figs. 23-26 - for comparison), with somewhat differently shaped FW outer margin, as the former is smaller, more ochreous than orange, more heavily marked in the D while *C. jahlusa argynnides* is more contrasted in the V, and with the male FW tornal area more produced; the silvery subapical mark on the FWV is also better developed and the silvery spots on the HWV are distinct.

It is also much smaller than the deeper orange *C. jahlusa rex* Henning, 1978, especially in the male, and with poorly developed black markings on the FW; further, the blackish submarginal band in both sexes are much broader than those of *C. j. angolensis* ssp. n. and, consequently, the orange marginal line is narrower.

C. jahlusa kigomaensis Someren, 1974(75) from western Tanzania is larger, with a more extruded FW tornal lobe in the male and a different colour pattern: the black submarginal band on the R is continuous, darker and wider, while the black markings are smaller on the R and much more conspicuous on the V.

The same can be said to *C. jahlusa mafiae* Turlin & Lequeux, 1992, exclusive to the Tanzanian Mafia Island. Males are fulvous with black marginal areas, black FW apex and reduced blackish spotting. Females are very light, also with reduced black spotting and almost devoid of a black submarginal band.

C. jahlusa rwandensis Plantrou, 1976, from north-western Tanzania, Rwanda and Burundi, is quite distinct from the remaining subspecies, including the new one. Male FW are more deeply falcate, the black spots on the R are larger and the colours more contrasted, while the V is greenish, not ochreous-orange.

C. jahlusa kenyensis Joicey & Talbot, 1925 from Kenya and Tanzania, is also much larger, and has, like *C. jahlusa rwandensis*, a greenish V.

In *C. jahluca pallene* Someren, 1974, from Kenya, considered by HENNING (1988) to be a form of the previous subspecies, the orange colour of the male is darker, the female is lighter yellowish, and the V tint is quite distinct from that of the new subspecies.

C. jahluca jahluca Trimen, 1862, from South Africa (south-eastern and eastern Cape) is slightly larger, but exhibits a wider and more continuous blackish submarginal line on the HWR.

C. jahluca ganalensis Carpenter, 1937 from Ethiopia, southern Sudan, northern Kenya and north-eastern Uganda, has a wingspan similar to that of *C. jahluca angolensis* ssp. n. However, black maculation is heavier on the FWR, especially in the costal margin. The male is more orange while the female is lighter and yellowish. The post-discal silvery spots on the FWV are almost inexistent.

Ecology: The species as a whole is considered by TURLIN (2009) to be typical of woodland savanna, although KIELLAND (1990) stated that it may occur in different types of forest from the coast to 1500 m. *C. jahluca argynnides* and *C. jahluca kigomaensis* were reported from forest, dry evergreen forest and forest margins (KIELLAND *op. cit.*), *C. jahluca kenyensis* (ACKERY *et al.*, 1995; LARSEN, 1996) from the much drier *Acacia* forest and *Bracystegia* woodlands, and *C. jahluca rex* was described as common in the even drier bushveld where the males are often seen hilltopping on koppies (HENNING, 1978). All the specimens of *C. jahluca angolensis* ssp. n. were obtained in the narrow strip of evergreen forest at the base of the Angolan Escarpment in the Namibe Province, quite close to the western border of the Huambo Province. When known, the caterpillars are polyphagous and were recorded on species of *Pappea*, *Haplocoelum* (Sapindaceae), *Grewia* (Tiliaceae), *Acacia* and *Dalbergia* (Papilionaceae).

Etymology: The new subspecies is named according to the country from where it is known.

“*protoclea* group”

Charaxes macclounii carvalhoi (Bivar-de-Sousa, 1983) **comb. n.**

(= *Charaxes boueti carvalhoi* Bivar-de-Sousa, 1983)

Material re-examined: Holotype: ANGOLA: Kwanza Norte: Dalatando (Salazar) 1 ♂ (BS-1918). Paratypes: ANGOLA: Kwanza Norte: Dalatando (Salazar), VI-1972, 1 ♀ allotype (BS-1919), 2 ♂♂ (AF-NYM11405-11406); *ibid.*, III-1973, 2 ♂♂ paratype (BS-1920-1921), Non-type material: ANGOLA: Kwanza Norte: Dalatando 1 ♂ (AF-NYM11407); *ibid.*, IV-1973, 2 ♂♂, 1 ♀ (AF-NYM11408-11410). Kwanza Sul: Calulo, XII-2015, AS+RC, 1 ♀ (BS-36076).

Discussion: *C. macclounii* Butler, 1895 was described from Malawi (ACKERY *et al.*, 1955) and later (AURIVILLIUS, 1898, Van SOMEREN, 1970 among others) considered a subspecies of *C. boueti* Feisthmel 1850 - *C. boueti macclounii* (Butler, 1895). In the meantime, BIVAR-DE-SOUSA (1983) described *C. boueti carvalhoi* which was compared with *C. boueti macclounii* as it was then considered as a *C. boueti* subspecies. However, recently it was rehabilitated as a bona species (PLANTRON, 1983; HENNING, 1988; ACKERY *et al.*, 1995). The AF studied material was already identified by him as *C. boueti boueti* (unpublished data). Originally compared with *C. boueti*, then the only valid species of this pair, and considered one of its subspecies, the Kwanza Norte specimens fairly correspond, in fact, to the general characteristics of *C. macclounii*. This is particularly noticeable in the presence of the white or silvery ventral inner band, allowing the immediate diagnosis relatively to *C. boueti*, implying the new presented combination.

Ecology: The only AF female was kept alive for a while and laid 6 eggs, 5 of which hatched after 4 days. The caterpillars were fed bamboo leaves and all died when reaching ca. 10 mm (FIGUEIRA, pers. inf.). In fact, HENNING (1988) assigns *Oxyenantha abyssinica* as the host-plant of *C. macclounii*, and TURLIN (2009) notes that the species occurs on bamboo. HENNING (*op. cit.*) emphasizes that the species occurs mainly in bamboo growths and on hillsides and savanna.

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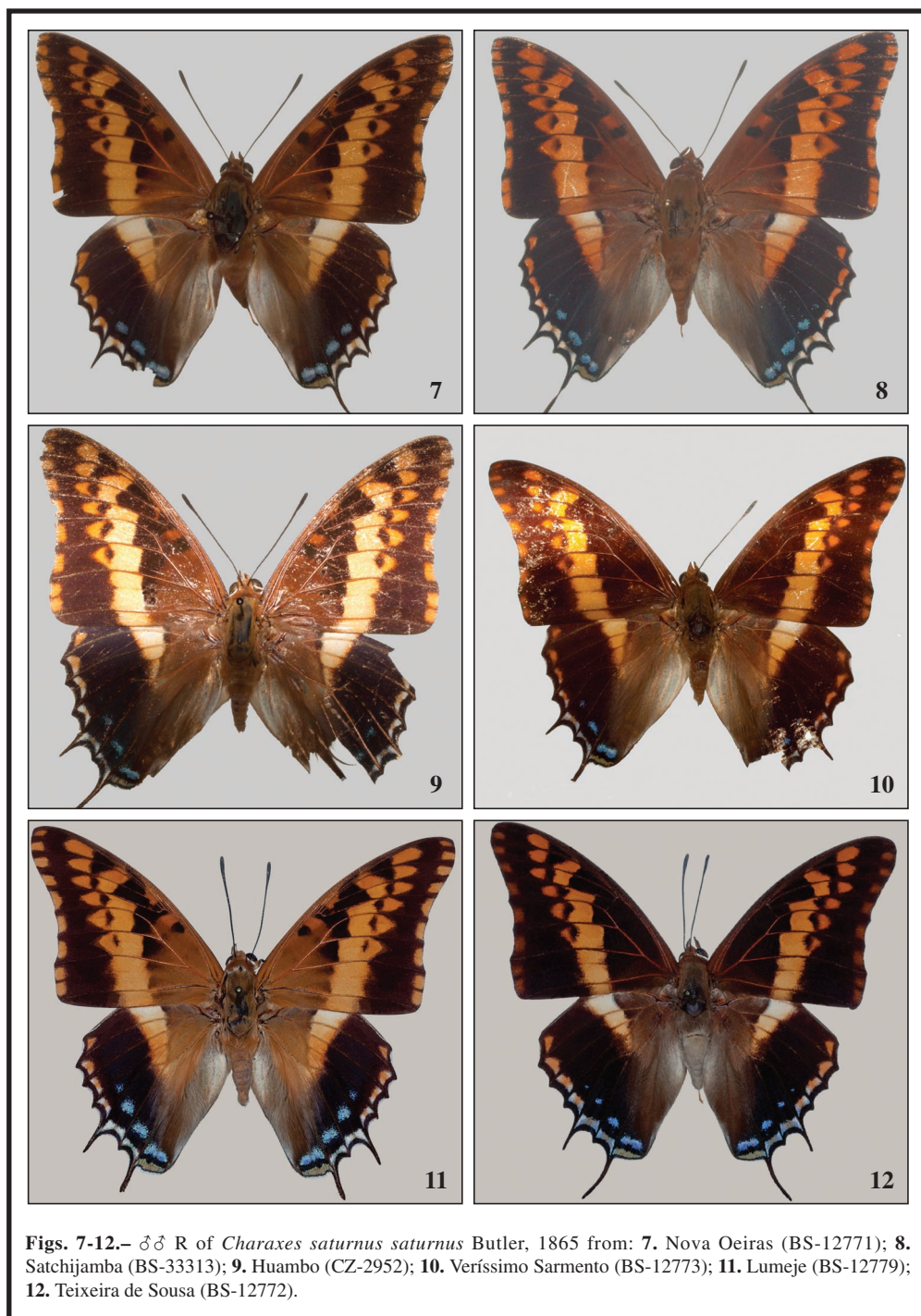
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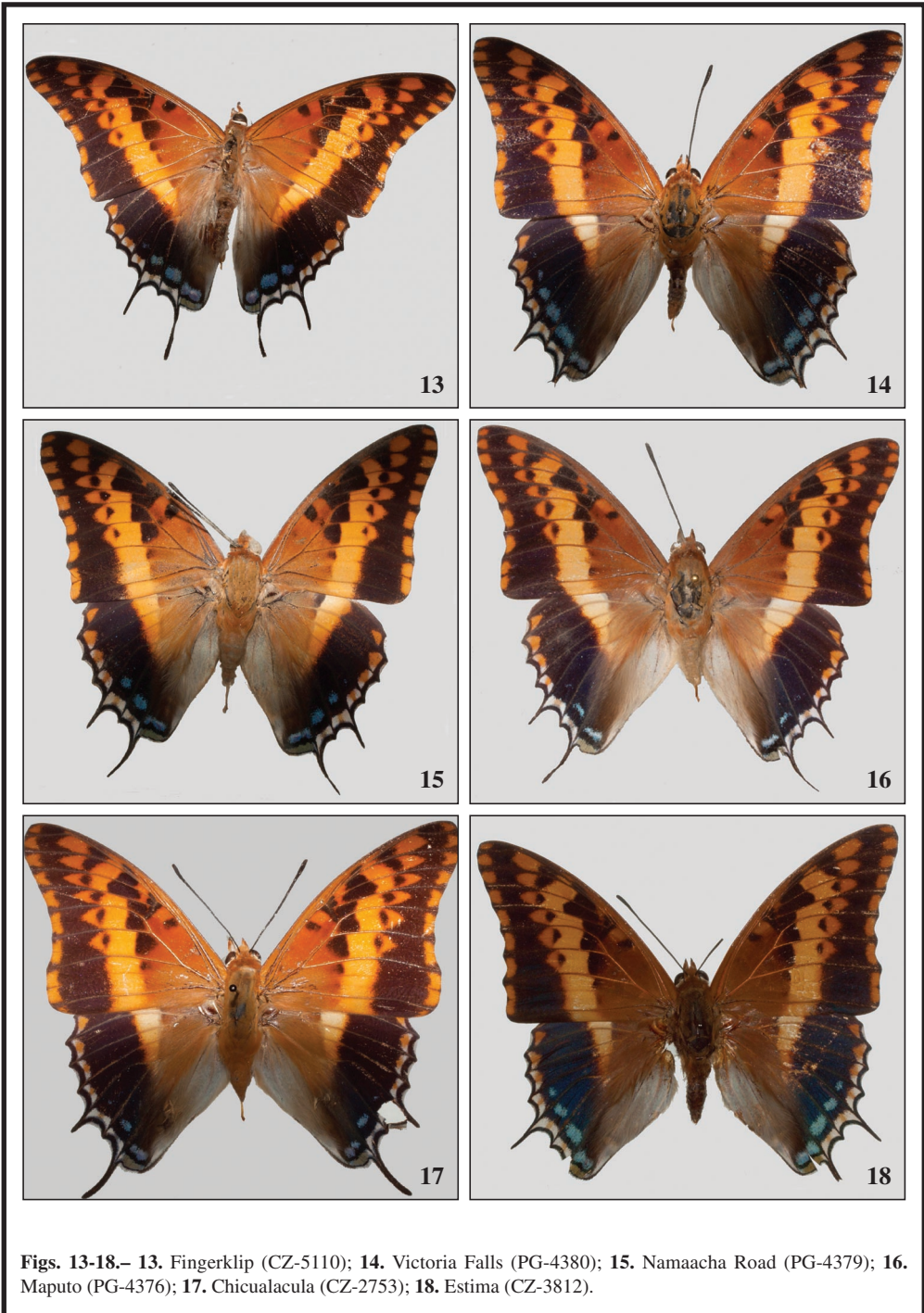
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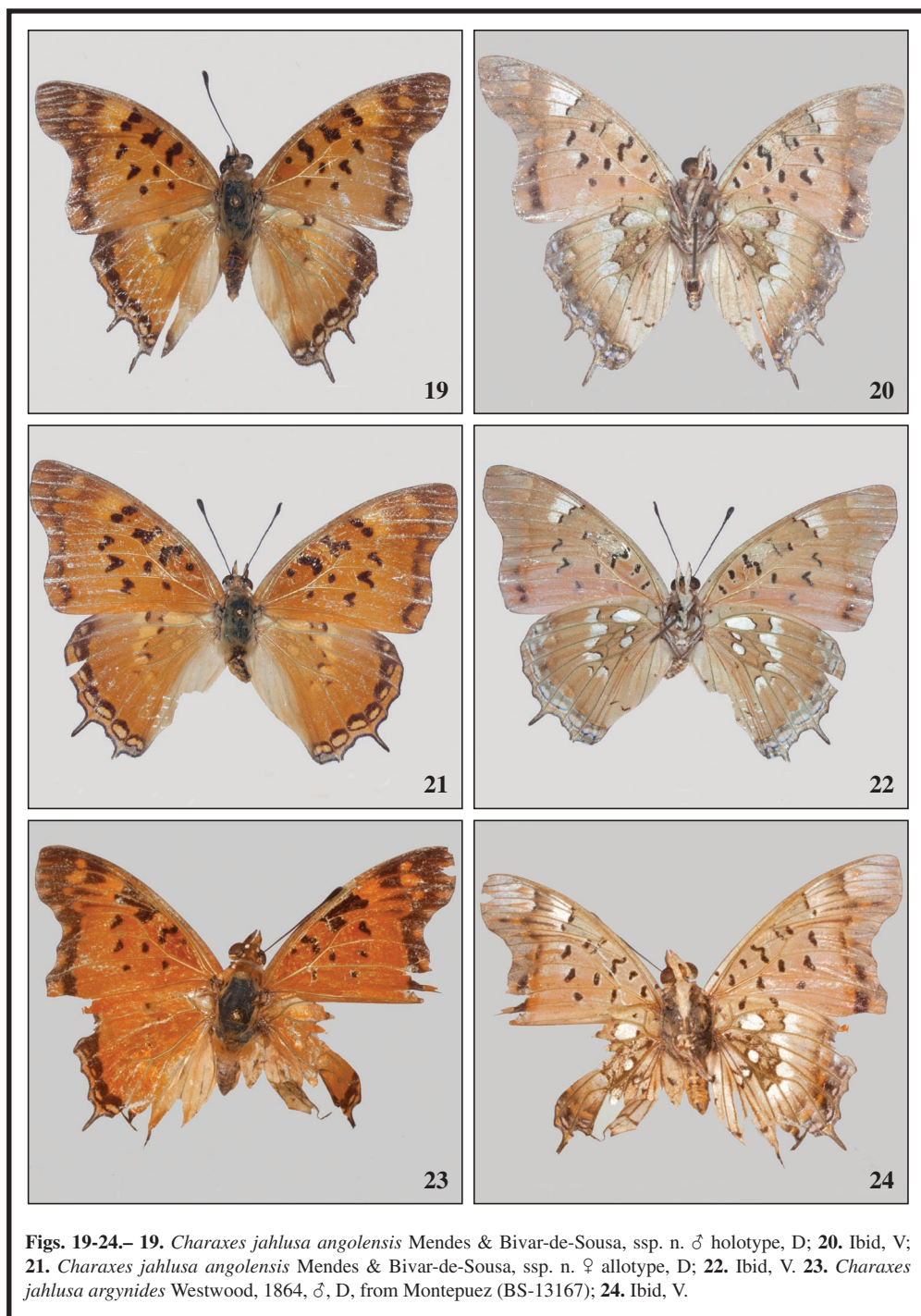


Figs. 1-6.— 1. *Charaxes fulvescens rubenarturi* Bivar-de-Sousa & Mendes, ssp. n. ♂ holotype, R; 2. *Ibid*, V; 3. *Charaxes fulvescens rubenarturi* Bivar-de-Sousa & Mendes, ssp. n. ♀ allotype, R; 4. *Ibid*, V; 5. *Charaxes fulvescens rubenarturi* Bivar-de-Sousa & Mendes, ssp. n. ♂ paratype (PC-nn), R; 6. *Ibid*, V.

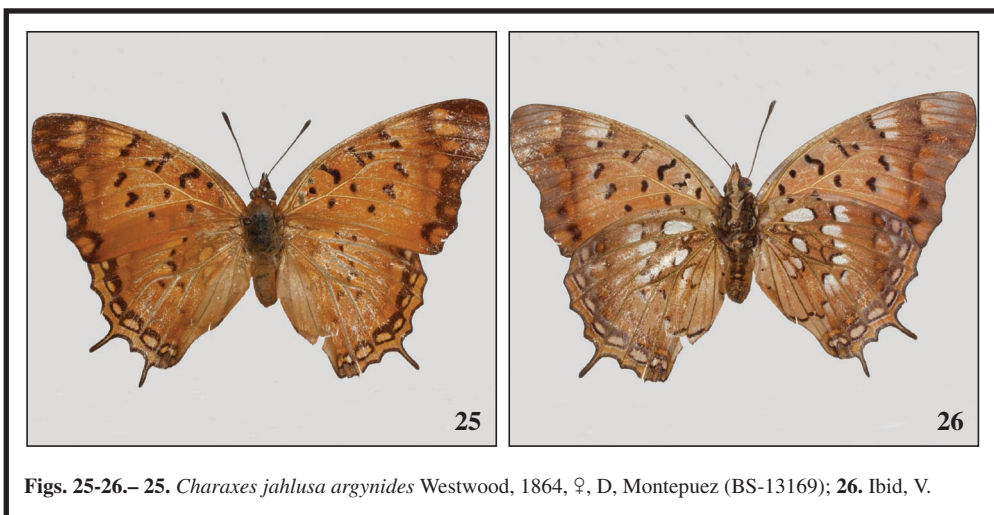


Figs. 7-12.– ♂♂ R of *Charaxes saturnus saturnus* Butler, 1865 from: **7.** Nova Oeiras (BS-12771); **8.** Satchijamba (BS-33313); **9.** Huambo (CZ-2952); **10.** Veríssimo Sarmento (BS-12773); **11.** Lumeje (BS-12779); **12.** Teixeira de Sousa (BS-12772).





Figs. 19-24.– 19. *Charaxes jahlusa angolensis* Mendes & Bivar-de-Sousa, ssp. n. ♂ holotype, D; 20. Ibid, V; 21. *Charaxes jahlusa angolensis* Mendes & Bivar-de-Sousa, ssp. n. ♀ allotype, D; 22. Ibid, V. 23. *Charaxes jahlusa argynides* Westwood, 1864, ♂, D, from Montepuez (BS-13167); 24. Ibid, V.



Figs. 25-26.– 25. *Charaxes jahlusa argynides* Westwood, 1864, ♀, D, Montepuez (BS-13169); 26. *Ibid.*, V.