

Description of one new species and one new subspecies of Nymphalidae from Angola (Lepidoptera: Papilionoidea)

A. Bivar-de-Sousa, L. F. Mendes & S. Vasconcelos

Abstract

The present paper deals with the description of a new species of *Euphaedra* (*Euphaedrana*) (Limenitidinae) of the “preussi-group” from northern Angola, and of a new subspecies of *Acraea* (*Acraea*) *violarum* Boisduval, 1847 (Heliconiinae) of the “violarum-group”, from the western and central area of the country; they are compared with the most similar known taxa.

KEY WORDS: Lepidoptera, Papilionoidea, Nymphalidae, *Euphaedra*, *Acraea*, new taxa, Angola.

Descripción de una especie y una subespecie nuevas de Nymphalidae de Angola (Lepidoptera: Papilionoidea)

Resumen

En la presente contribución, se describe una especie nueva de *Euphaedra* (*Euphaedrana*) (Limenitidinae) del “grupo-preussi” del norte de Angola y una subespecie nueva de *Acraea* (*Acraea*) *violarum* Boisduval, 1847 (Heliconiinae) del “grupo-violarum”, del centro y oeste del país; se les compara con los taxa más parecidos.

PALABRAS CLAVE: Lepidoptera, Papilionoidea, Nymphalidae, *Euphaedra*, *Acraea*, nuevos taxa, Angola.

Descrição de uma espécie e uma subespécie nova de Nymphalidae de Angola (Lepidoptera: Papilionoidea)

Resumo

Na presente contribuição descrevem-se uma espécie nova de *Euphaedra* (*Euphaedrana*) (Limenitidinae) do “grupo-preussi” do norte de Angola e uma subespécie nova de *Acraea* (*Acraea*) *violarum* Boisduval, 1847 (Heliconiinae) do “grupo-violarum”, do centro e oeste do país; são comparadas com os taxa mais parecidos.

PALAVRAS CHAVE: Lepidoptera, Papilionoidea, Nymphalidae, *Euphaedra*, *Acraea*, novos taxa, Angola.

Introduction

One new species of *Euphaedra* (*Euphaedrana*) part of the “preussi-group”, the most diverse in the genus, is described from the northern Angolan riparian forest of the Loge River and is compared with the other known taxa of this lineage.

One new subspecies of *Acraea* (*Acraea*) *violarum* Boisduval, 1847 of the “violarum-group”, formerly known from Angola as a morph, is also described. It ranges along western and central Angola, in the Benguela, Bié, Cunene, Huambo and Huila provinces and remains completely isolated from the other studied samples of the species, reported from the Cape and from East Africa.

Methodologies

The following abbreviations will be used along the text, as follows: BS: Bivar de Sousa collection; CDR: Congo Democratic Republic (= 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; MUHNAC: Museu Nacional de História Natural e da Ciência / Museu da Universidade de Lisboa; MB: 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; NA: Nozolino de Azevedo personal collection; nn: no registration number; PC: Collected by Passos de Carvalho; R: recto or dorsum or dorsal wing surface; V: ventral or under wing surface; WL: wing length.

Locality	Province	Latitude	Longitude	Altitude (m)
Bailundo	Huambo	12° 12' S	15° 52' E	1560
Bailundu	see Bailundo	—	—	—
Benguella	see Benguela	—	—	—
Benguela	Benguela	12° 35' S	13° 25' E	< 50
Bihé	see Cuito			
Bimbi ⁽¹⁾	?	?	?	?
Caala	Huambo	12° 51' S	15° 33' E	1750
Caconda	Huila	13° 44' S	15° 04' E	1700
Calunga	Malanje	09° 59' S	15° 42' E	1050
Calwe R.	Huambo	13° 58' S	16° 02' E	1650
Calweha	see Calwe R.	—	—	—
Cambo ⁽²⁾	?	?	?	?
Caquenje ⁽²⁾	?	?	?	?
Chianga	Huambo	12° 44' S	15° 50' E	1740
Chimporo	Cunene	15° 50' S	17° 01' E	1200
Cubal River ⁽³⁾	?	?	?	?
Cuíma	Huambo	13° 14' S	15° 39' E	1700
Cuito	Bié	12° 23' S	16° 57' E	1459
Huambo	Huambo	12° 46' S	15° 44' E	1650
Inga	Uige	07° 18' S	14° 25' E	600
Kalukembé	Huila	13° 47' S	14° 41' E	1700
Nova Lisboa	see Huambo	—	—	—
Sacaala	see Caala	—	—	—
Sanguévé	Huila	13° 53' S	15° 50' E	1640
Tyitunda	Huila	14° 28' S	15° 30' E	1450

(1). Bimbi was assigned by MONARD (1956) as “mission catholique à 90 km de Bailundu et 108 km N. NE. de Nova Lisboa ... à 1.200 m d'altitude environ”. This reference is considered insufficient to the place location and shall concern Huambo or Bié. (2). There is a locality on the Bié named Cambo Caquenje with the coordinates 11° 45' S, 17° 36' E, 1350 m a.s.l. but BERNAUD (2009) considers two independent localities, namely Cambo: 10° 06' S, 13° 59' E and Caquenje: 07° 38' S, 14° 35' E, that we were not able to rectify - not even after consulting the 1: 100 000 maps from Angola (JIU, 1969). (3). Indeterminable. The Cubal River crosses the provinces of Benguela, Cuanza Sul and Namibe. BERNAUD (2009) reports 12° 39' S, 14° 40' E (Benguela ?) that was impossible to rectify.

All the original registration numbers were maintained. The specimens registered with a number

beginning by BS or by PC were part of the personal entomological collections of respectively, Bivar de Sousa and Passos de Carvalho.

The wing length of the studied specimens was measured with an Etalon clipper, always along the FW outer margin, from its apex to the anterior insertion on the thorax; only exceptionally it doesn't concern the left wing.

The approximate coordinates of the localities from where the studied specimens proceed are listed behind; they are close to the assigned towns/villages and were in their majority previously 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 will be remitted to the new or to the corrected one. Each locality is assigned to the recent administrative province it belongs to, as well as its approximate latitude, longitude and altitude above sea level in meters.

Taxonomy

LIMENITIDINAE

Genus *Euphaedra* Hübner, [1819]

Euphaedra (Euphaedrana) uigensis Bivar-de-Sousa & Mendes, sp. n. (Figs. 1-4)

Material examined: Holotype: ANGOLA, UIGE, Inga, near the Vale do Loge colonial settlement, October 1964, 1 ♂ (BS-16154, MUHNAC). Remaining specimens: ANGOLA, UIGE, Inga, near the Vale do Loge colonial settlement, November 1964, 1 ♀, allotype (BS-16155, MUHNAC), October 1964, 1 ♀, paratype (BS-16156, MUHNAC), November 1964, 1 ♀, paratype (BS-16158, MUHNAC). December 1964, 1 ♀, paratype (BS-16157, MUHNAC).

Description: WL: male: 38 mm; female: 49-51 mm. Male and female with quite similar colour and pattern, R black and golden-green, V light yellowish-brown; thorax and abdomen devoid of metallic spots. FW pre-apical band white, with a light greenish tint, not especially wide and more or less parallel-sided; most external spot shorter and rounder than the preceding one, this one usually more elongated, their inner border defining a more or less clear indentation. Greenish area of the FWR restricted to spaces 1a and 1b (male) or 1a, 1b and 2 (female), being in this last one more or less widened - only exceptionally it extends to the base of the cell. HWR submarginal blackish band not much enlarged, with small light greenish dots. V without special characteristics: cell spots absent or if present, light and usually small, 0-3 on the FW cell, 0-1 on the HW cell; space 7 white and conspicuous; submarginal dots white, round (male) or, if existing, more elongate and with a few inner greyish scales (female); poorly distinct white post-distal markings on spaces 3-4 and 5.

Discussion: The “*preussi*-group” is considered by HECQ (1997, 1999) to integrate almost 30 species and subspecies, and it is characterized by the white or very light and usually well marked HWV space 7 and the often metallic D; in most of the species, the FWR cell is completely black and in many cases the sexual dimorphism is conspicuous; main differences between the species concern, further, the R and V ground-colour, the shape of the FW pre-apical light band and the development of each one of its unities, as well as the HWV pattern. The group's highest biodiversity seems to correspond to the CDR, mainly to the Shaba area. *E. uigensis* sp. n. may be distinguished from the remaining known species of the “*preussi*-group” as follows:

E. paradoxa Neave, 1904 from Kenya is quite unique, taking into account its reddish R and because there is no distinctive light band on the HWV space 7.

E. overlaeti Hulstaert, 1926, from CDR and northern Zambia is also distinct due to the uniform violet R, the poorly developed light FWR pre-apical band and the almost inexistent HWV light space 7.

In *E. niveovittata* Aurivillius, 1903, known from Shaba (CDR), while the R may be whitish-green or ochreous, the FWD pre-apical white band is quite different, with the outer spot reduced and round and the HWV space 7 dark orange; further, all the V round black cell spots are large and clear on both wings.

E. neumanni Rothschild & Jordan, 1902, exclusive from Ethiopia is also immediately distinguished

due to its quite unique V, with whitish FW margin and an ill-defined white HW space 7, which is prolonged by a longitudinal irregular whitish band.

E. miranda Hecq, 1984, from Cameroon, CAR and northern CDR is also distinct due to the ochreous or ochreous-green ground-colour and usually very wide, almost ovoid, ochreous to orange pre-apical FW light band; its HWV shows whitish bands along most of the HWV spaces.

In *E. procera* Hecq, 1984 from Shaba (CDR) and *E. subprocera* Hecq, 1984 from CDR to Uganda, the FW pre-apical band is distinct, with the outermost white spot reduced and well individualized from the remaining ones of the band; further, the R metallic ground-colour is blue, not greenish.

E. fascinata Hecq, 1984, from Cameroon, CAR, Congo and CDR, though somewhat variable, is clearly distinct from the remaining species in the group due to the quite conspicuous HWR whitish post-discal spots; further, the FWR cell is usually not black.

Several species show - usually associated to other dissimilarities - a clear chromatic sexual dimorphism, inexistent in the new *E. uigensis*. These are the cases of: *E. illustris* Talbot, 1927, from a restricted area in southern Shaba (CDR), with green male and whitish female, quite distinct from all the species in the group taking also into account, among other features, the wide and S-shaped FW pre-apical light band, the large black dots on the V cells and the HWV whitish wide submedian markings along the wings spaces. *E. bergeri* Hecq, 1974, also from Shaba (CDR) and also with greenish male and whitish female, has a somewhat wider pre-apical band and a much lighter V, with large FWV cell black dots. In the northern CDR *E. leloupi* Overlaet, 1955, the FWR is green in the male and blue in the female, the pre-apical band is thinner than in *E. uigensis* sp. n. and the V is green, not brown; besides, at least in the male the green area of the FWR often attains the cell. Also in *E. fulvofasciata* Holland, 1920 from Cameroon and northern CDR, male is greenish and female bluish; its FW pre-apical band is yellow, its more external spot is more or less coma-shaped and the V shows large black cell spots. *E. xerophila* Hecq, 1974, from southern Kivu (eastern CDR), also with greenish male and whitish or bluish-white female, has a green strongly marked V and the black cell dots are large especially on the FW. In *E. ochrovirens* Hecq, 1984, mainly from Cameroon and CDR, the male is greenish (no black FWR apex) and the female whitish, the white FW pre-apical band is thin or even obsolescent and the FWR cell is usually free of black scales - so, with conspicuous black dots. *E. ipassa* Vande-Weghe, 2009 from eastern Gabon, described as close to *E. preussi*, may be distinguished from the new Angolan species with which it shares the large white spot 4 of the FW, mainly by the distinct light colour of the female D and, mainly, by the rufous V with well developed black spots on the FW and HW cells and the much darker and contrasted submarginal spots of the HWV.

E. margueritae Hecq, 1978, from the high primary forests of eastern CDR, Rwanda and Uganda, is only slightly dimorphic, with more dark greenish males and more dark bluish females, but its main diagnostic feature concerns the clearly independent white spots of the FW pre-apical white band.

Otherwise, several other species show the FW pre-apical light band conspicuously thinner than it is in the new Angolan species allowing their immediate diagnosis: this feature, alone or together with other morphological differences, is quite visible in *E. albofasciata* Rebel, 1914, from CAR to CDR, *E. disjuncta disjuncta* Hecq, 1984 and *E. disjuncta virescens* Hecq, 1984, both from CDR, *E. olivacea* Grünberg, 1906, from Uganda, *E. vicina vicina* Hecq, 1984, from Cameroon to Uganda, *E. vicina longinqua* Hecq, 1984 from Nigeria and *E. vicina pallidoides* Hecq, 1984 from the Shaba (CDR).

In the somewhat variable *C. preussi preussi* Staudinger, 1891 known from Nigeria to East Africa and in *E. preussi pallida* Hecq, 1986, from Shaba (CDR), both with well developed V black cell spots, the HWR post-discal lighter spots are bluish and not much distinctive while those of the HWV are large and aureolate by blackish scales. We wander if the previous references of *A. preussi* from Angola (AURIVILLIUS, 1928, to the country and LADEIRO, 1956, from Calunga - material not re-examined) really belong to *E. preussi*.

In *E. subviridis* Holland, 1920, from CDR, the FW pre-apical band tends to be yellowish, mainly in the female, and its individual spots are clearly cut by the black wing nerves. Male is more green than that of *E. uigensis* sp. n. and the V is greenish and heavily marked with black (large cell and submarginal spots).

At last, *E. mayumbensis* Heqc, 1984, reported from Cameroon, Gabon, Congo and CDR, also somewhat dimorphic, with more greenish male and more whitish female, is distinct from the new Angolan endemic due to the light (white or yellowish) and externally enlarged FW pre-apical band. ACKERY *et al.* (1995) point it is exclusively present in the Mayumbe CDR and western CAR - Cameroon not considered.

E. cinnamomea Rothschild, 1918, from CDR is considered by HECQ (1999) as dubious and as an eventual synonym of *E. castanea*, but this last one is not even reported by him; it was pointed by ACKERY *et al.* (1995) as an *E. castanea* Berger, 1981 synonym and later accepted by D'ABRERA (2004) as a morph of *E. castanea* Rothschild, 1918 nec Berger, 1981 who presented its type-female R photo; whatever its status will be, it shows a FWR pinkish or light brown (cinnamon) ground-colour and the cell black spots are, as a rule, large and well visible.

Ecology: All the type-specimens were collected by net-sweeping on the Loge gallery-forest. The Loge River flows East-West on the south Uige and along the border between the Angolan Zaire and Bengo provinces, entering the Atlantic Ocean north from Ambriz town (northern Bengo). This forest remains unconnected to any other gallery-forests, and is completely separated from the closest ones by savanna and/or by open dry forest.

Etymology: The new species, is named after the Angolan province of Uige, due to the geographical origin of the known samples.

HELICONIINAE

Genus *Acraea* Fabricius, 1807

Acraea (Acraea) violarum anchietai Mendes & Bivar-de-Sousa, ssp. n. (Figs. 5-8)

(= *Acraea violarum* f. *assimiliora* Le Doux, 1922)

Material examined: Holotype: ANGOLA, HUAMBO, Cuíma, XII-2015, 1 ♂, (BS-34931, MUHNAC). Remaining specimens: ANGOLA: HUAMBO: Chianga, I-1973, 1 ♂ paratype, (PC-nn, MUHNAC); Ibid, I-1973, 1 ♀, paratype (PC-nn, MUHNAC); Ibid, 15-I-1972, 2 ♂♂, paratype (PC-nn, MUHNAC). Nova Lisboa, II-1971, 1 ♂ non-type, (NA-nn). Sacáala, Nova Lisboa, VII-1958, 1 ♀, allotype, EAU, (CZ-3057, MUHNAC).

Description: WL: m: 22 mm; f: 23.5 mm. The main morphological feature allowing us to consider the Angolan samples as belonging to a new subspecies is the shape of each element of the HW submarginal band; indeed, while in the nominate subspecies each element is more or less round and so, the inner margin of that band is more or less regular, in *A. violarum anchietai* ssp. n. each one of the spots is clearly triangular in such a way that the submarginal band inner margin remains clearly toothed. The other black spots of the R and V fairly agree with those of the photos presented by D'ABRERA (1997) and PIERRE & BERNAUD (2013), certainly corresponding to specimens belonging to the eastern populations of the species though nothing is reported about their geographical origin. The new subspecies corresponds to the morph *assimiliora* (LE DOUX, 1922) of *A. violarum*, of which the male was described from "Angola" and the female from the Bailundu, a name not valid and not usable in light of article 45 of the ICNZ (2000).

Discussion: *A. violarum* Boisduval, 1847 belongs to the "*violarum*-subgroup" of the "*egina*-group", the most diverse of the subgenus in Angola - named by PIERRE (1988) the "*egina*-supergroup". ACKERY *et al.* (1955) and D'ABRERA (1997) report this species as monotypical and ranging along South Africa (Eastern Cape, Natal and Transvaal), Mozambique, Zimbabwe and Angola; it was assigned by PIERRE & BERNAUD (2013) as eventually represented by two subspecies, the nominate one from Angola, Zimbabwe and South Africa and the northernmost, smaller and lighter *A. v. gracilis* Wichgraf, 1909 from Zimbabwe and Mozambique.

A. violarum was assigned from Angola by AURIVILLIUS (1928, no precise location), by ELTRINGHAM (1912) who points to the species in Bihé, Calweha, Caconda, Cubal R., Cambo,

Caquenje and Benguella and by LE DOUX (1922) who describes the morph *assimiliora* as ♂ from “Angola” and ♀ from the Bailundu; MONARD (1956) assigns the species to Kalukembé, Sangevé, Tiytunda, Bimbi and Chimporo. PIERRE (1988) describes the female sphragis and the male genitalia (specimens origin not considered) and represents in a schematic map its occurrence in Angola, though without precise information: despite the hard correspondence between the map dots and the localities from where the species was known in Angola, its scattered ranges are quite conspicuous both in Angola and in its remaining known range (Zimbabwe, Mozambique and South Africa); he reports, further, that the species is typical from “Afrique Méridionale, de l’Angola au Nyassaland jusqu’au Cap”; in his point on the phylogenetic hypothesis, he selects characters 21-24 as typical for the “*violarum*-group” related to the male genitalia and the sphragis morphology. The complete independence of the two areas from where the species is known is also clearly visible in the map presented by BERNAUD (2009): on one side western and central-western Angola, on the other eastern Zimbabwe, Mozambique and South Africa, with a blank corresponding to eastern Angola, Zambia, Namibia and Botswana. KOÇAK & KEMAL (2007, 2009) assigns the species to Angola without comments with *natalensis* (Angas, 1849) in its synonymy, and considers it is monotypical - *gracilis* Wichgraf, 1909 is not accepted as valid. LE DOUX (1922) presented photos of the R of the male and female of Angolan specimens he described as *A. violarum* f. *assimiliora* where it is possible to perceive the more or less acute shaped spot of the HW marginal band (Taf. 3, Figs. 4, 5).

Ecology: *A. violarum* is known to fly in deciduous woods and seems always uncommon. Caterpillars of the nominate subspecies are known to feed on *Tryphostemma* (Passifloraceae).

Etymology: The new subspecies is named in memory of José Alberto de Oliveira Anchieta (Lisbon?-Portugal, 1832 - Caconda-Angola, 1897) a Portuguese explorer that in the middle XIX century collected along Angola mainly vertebrates which were studied in Lisbon by Barboza du Bocage. His laboratory in Angola was located in Caconda.

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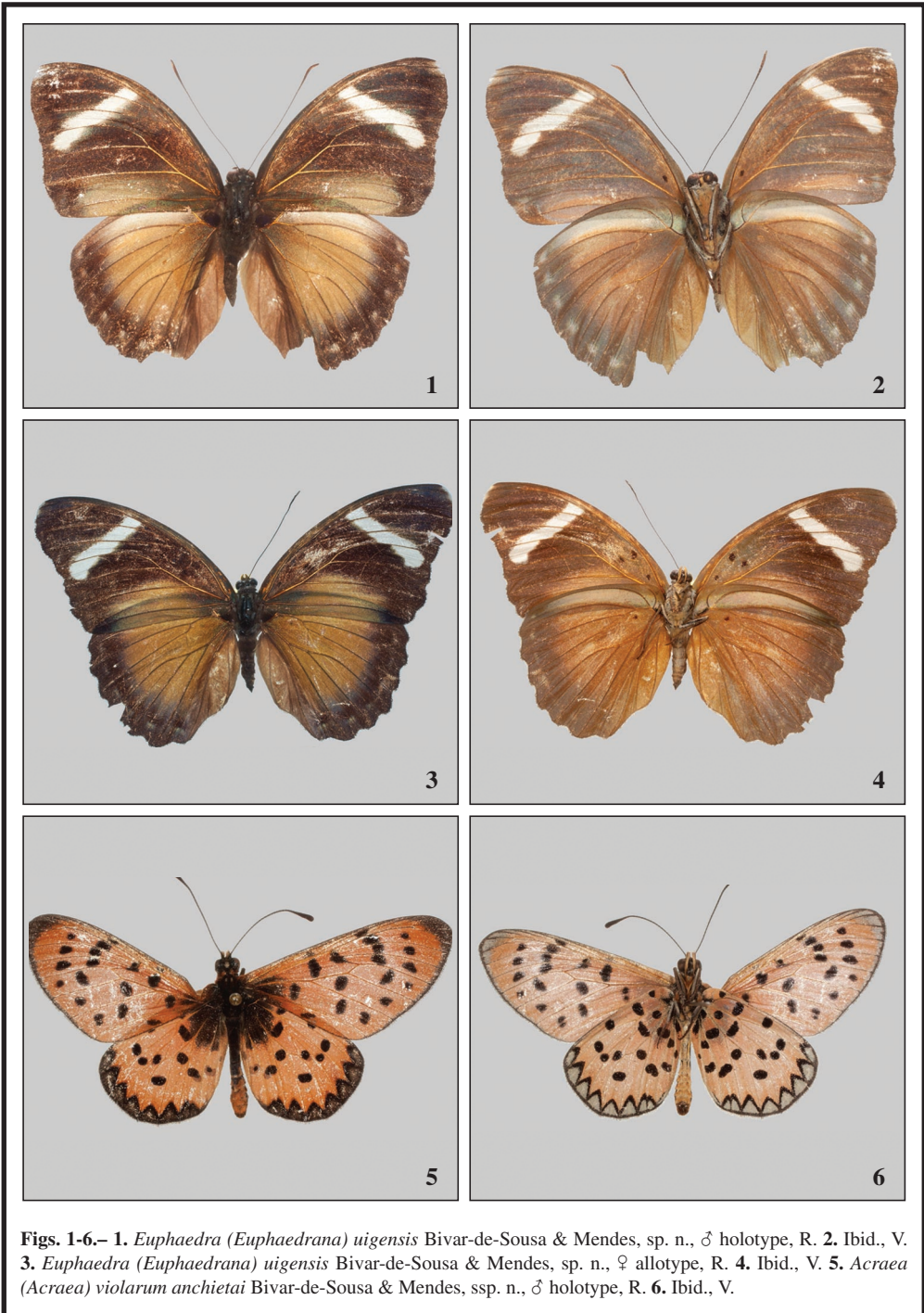
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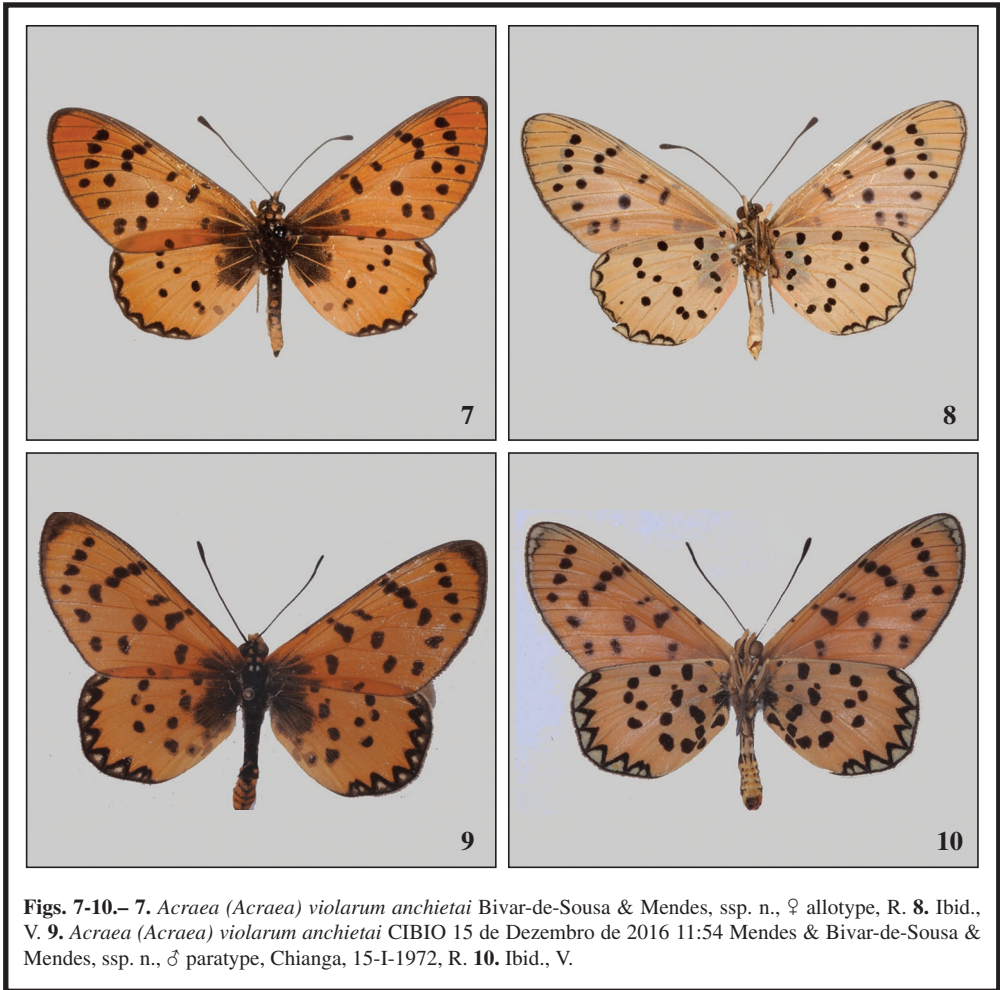
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Figs. 1-6.– 1. *Euphaedra (Euphaedrana) uigensis* Bivar-de-Sousa & Mendes, sp. n., ♂ holotype, R. 2. Ibid., V. 3. *Euphaedra (Euphaedrana) uigensis* Bivar-de-Sousa & Mendes, sp. n., ♀ allotype, R. 4. Ibid., V. 5. *Acraea (Acraea) violarum anchietai* Bivar-de-Sousa & Mendes, ssp. n., ♂ holotype, R. 6. Ibid., V.



Figs. 7-10.– 7. *Acraea (Acraea) violarum anchietai* Bivar-de-Sousa & Mendes, ssp. n., ♀ allotype, R. 8. *Ibid.*, V. 9. *Acraea (Acraea) violarum anchietai* CIBIO 15 de Dezembro de 2016 11:54 Mendes & Bivar-de-Sousa & Mendes, ssp. n., ♂ paratype, Chianga, 15-I-1972, R. 10. *Ibid.*, V.