

Taxonomic revision of *Edebessa* Walker, 1856 and *Langucys* Butler, 1878 with descriptions of eight new species (Lepidoptera: Megalopygidae, Trosiinae)

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Summary

Taxonomic revisions of two genera of the family Megalopygidae - *Edebessa* Walker, 1856 and *Langucys* Butler, 1878 are given. Two new species are described in the genus *Edebessa* (*E. cryptobia* Volkova, sp. nov. and *E. vespera* Volkova, sp. nov.), and six new species are described in the genus *Langucys* (*L. reichertae* Volkova, sp. nov., *L. sulaki* Volkova, sp. nov., *L. witti* Volkova, sp. nov., *L. artamonovae* Volkova, sp. nov., *L. cardinal* Volkova, sp. nov., and *L. vadimi* Volkova, sp. nov.). The diagnoses of the genera and a list of generic autapomorphies are given.

Keywords: Lepidoptera, Megalopygidae, Trosiinae, new synonymy, taxonomy, systematics, Neotropical.

Revisión taxonómica de *Edebessa* Walker, 1856 y *Langucys* Butler, 1878 con descripción de ocho especies nuevas (Lepidoptera: Megalopygidae, Trosiinae)

Resumen

Se dan revisiones taxonómicas de dos géneros de la familia Megalopygidae: *Edebessa* Walker, 1856 y *Langucys* Butler, 1878. Se describen dos nuevas especies en el género *Edebessa* (*E. cryptobia* Volkova, sp. nov. y *E. vespera* Volkova, sp. nov.) y seis nuevas especies en el género *Langucys* (*L. reichertae* Volkova, sp. nov., *L. sulaki* Volkova, sp. nov., *L. witti* Volkova, sp. nov., *L. artamonovae* Volkova, sp. nov., *L. cardinal* Volkova, sp. nov. y *L. vadimi* Volkova, sp. nov.). Se dan diagnósticos de los géneros y una lista de autoapomorfias genéricas.

Keywords: Lepidoptera, Megalopygidae, Trosiinae, nueva sinonimia, taxonomía, sistemática, Neotropical.

Introduction

This article includes taxonomic revisions of two genera of the Neotropical family Megalopygidae - *Langucys* Butler, 1878, and *Edebessa* Walker, 1856. A preliminary revision of these two genera in Trosiinae was undertaken by Hopp (1934). In that work, Hopp considered four taxa, which he combined into the so-called “*Edebessa*-Gruppe” within the genus *Trosia* Hübner, 1820 [1816]; it caused numerous confusions in further research. The *Edebessa*-Gruppe included *Edebessa circumcincta* Schaus, 1905 [1906], subspecies *E. circumcincta purens* Walker, 1856 (although *E. purens* was described half a century earlier than *E. circumcincta* and clearly different from this species by morphology), *Langucys bicolor* (Möschler, 1883), *L. nigropuncta* Druce, 1909 and *L. nigrorufus* (Walker, 1864). The inclusion of these species in the genus *Trosia* was unreasonable and was not

accepted later (Becker *in* Heppner, 1995). Most likely, Hopp did not work with any type materials because his figures differ significantly from known types. Currently, the genus *Langucys* Butler, 1878 is considered the junior subjective synonym of *Edebessa* Walker, 1856, thus forming a group with only five species (Becker *in* Heppner, 1995). However, species from this complex are characterized by morphological heterogeneity.

Material and methods

I have examined all type specimens of all taxa of the genera *Langucys* and *Edebessa*, as well as about 320 specimens from the collections of the Museum Witt München (Munich, Germany) and type materials from the The Natural History Museum (London, UK), National Museum of Natural History (Smithsonian) (Washington DC, USA), State Museum of Natural History Stuttgart (Germany) and the Museum für Naturkunde der Humboldt-Universität (Berlin, Germany). The genitalia preparations illustrated here were made using standard dissecting techniques and mounted in Euparal on glass slides. Letters “GU” combined with a number refer to genitalia slide number. Photographs of adult specimens and male genitalia were taken with a Nikon D-750 camera, and the photo of mouthparts was taken at the Natural History Museum, University of Oslo (Norway) using an Axio Cam color 506 Camera mounted on a compound microscope Zeiss Axio Imager M2. Wing venation diagrams and photo editing were performed in Adobe Photoshop CS 5. In this article the original label data of the studied material are provided.

The following abbreviations are used:

NHMUK	The Natural History Museum (London, UK)
MWM	Museum Witt München (Munich, Germany), now in ZSM (Zoologische Staatssammlung München)
CVSM	Collection of Victor Sinyaev (Moscow, Russia)
SMNS	State Museum of Natural History Stuttgart (Germany)
USNM	National Museum of Natural History (the Smithsonian) (Washington, USA)
ZMHB	Museum für Naturkunde der Humboldt-Universität (Berlin, Germany)
GU	genitalia slide number
TL	type locality.

Taxonomy

Edebessa Walker, 1856 was for a long time considered to have two junior subjective synonyms - *Langucys* Butler, 1878 and *Alimera* Möschler, 1883 (Heppner, 1995). Modern results of the morphological study of these genera have shown that *Langucys* and *Alimera* are separate from *Edebessa*. *Edebessa* currently includes four species, two of them are described here as new.

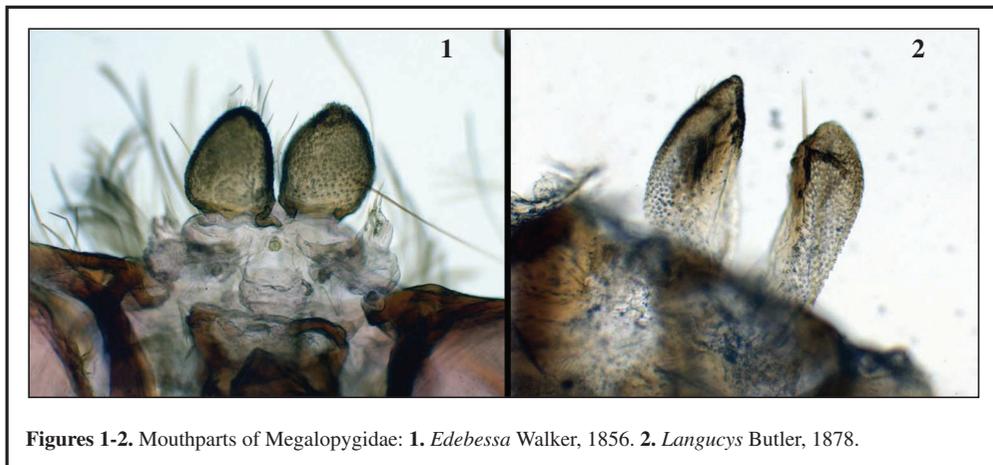
Edebessa Walker, 1856 (Figures 2, 4-13, 19, 42, 44-47)

Cat. Lep. Het. Brit. Mus., 7, 1755

Type species: *Edebessa purens* Walker, 1856, *Cat. Lep. Het. Brit. Mus.*, 7, 1755.

Adult (Figures 2, 4-13, 42): Medium sized moths, wingspan 38-56 mm. Head black, antennae bipectinate in both sexes, black. Mouthparts generally strongly reduced. Galea almost completely reduced to non-functioning short lobes with trichoid sensillae at apex. Labial palpi strongly reduced, likely not functional, consisting of two bloated shovel-shaped segments; maxillary palpi absent (Figure 2). Head covered with black or red scales; thorax covered with pink and / or black hair-like scales, abdomen always red or pinkish at least partially (basal segments in *E. vespera* are diagnostically black). Forewing lancet shaped. Forewing darker than hindwing, with contrasting, strongly tilted pattern, pattern follows shape of wing and present as longitudinal light (yellow or red) bands. These bands pass

along the costal and anal edges and merge with each other under the wing apex - it is suggested they are originally medial fasciae moved diagonally. Hindwings are monochromatic pinkish or with darkened anal angle outlined with yellow. Females with abdominal hair pillow apically formed by densely packed hair-like scales.



Figures 1-2. Mouthparts of Megalopygidae: **1.** *Edebessa* Walker, 1856. **2.** *Langucys* Butler, 1878.

Venation (Figure 42): Forewing. Sc robust, converging with R_1 , which is free and nearly parallel to Sc. Other veins of radial stem form a complex $R_2 + R_3 + (R_4 + R_5)$, which is located on a common stem as long as $1/3$ of the veins themselves. $R_2 + R_3 + R_4$ of the same length, equidistant from each other. Medial stem in R-Cu cell distinct in outer part of the cell. Foundation of M_1 originates from same base as R-stem. Origin of M_2 and M_3 converge at lower corner of discal cell. Both Cu veins present, clearly visible, nearly parallel to each other and their origins do not strongly converge. A_1 is presented. A_2 joined with A_3 forming the basal fork as long as $1/5$ of the resulting anal stem.

Hindwing: Frenulum unpaired, curved. Radial vein clearly visible along entire length and joins costal margin just behind Sc forming a stem length of $1/2$ of the Sc. Medial stem in R-Cu cell distinct over a larger of length of the cell. Origin of M_2 and M_3 converge. Both Cu veins present, clearly visible. A_1 reduced and developed only as thin membranous fold. A_2 and A_3 clearly visible.

Male genitalia (Figures 44-47). Genitalia reduced in size relative to the body (the width of the complex from one valva apex to another is ca. 2-3 mm; the height 5-6 mm). Uncus triangular, fused with tegumen. Nucullus of valvae elongate, slender and tongue-shaped. Their length approximately equal to length of the genital complex. Saccular part of valvae fused with vinculum annularly at base. Vinculum with two small distal triangular processes, bloated laterally. Aedeagus large, its length twice the length of the genital complex. Single long cornutus present (approximately $1/5$ of the aedeagus length). Pregenital segments unmodified.

Female genitalia (Figure 58): Papillae anales squared, with protruding triangular tips, densely covered with short setae. Apophyses anteriores more robustly sclerotized and slightly longer than apophyses posteriores. Ostium rounded. Area around ostium lobate. Ductus bursae membranous, broad, gradually transitioning into large, ribbon-shaped corpus bursae without additional areas of sclerotization.

Autapomorphies of genus include highly modified wing pattern of diagonal type and lancet-shaped wing.

Sexual dimorphism: Females are larger than males and more robust in structure, abdomen apically with a hair pillow formed by densely packed hair-like scales.

Biology: Imago aposematic in coloration. At rest moths fold forewings roof-like over the abdomen, costal margin of hindwings protrudes considerably from under costa of forewings, the front

legs are directed forward, the head inclined to the substrate (Figure 13). The eggs are probably laid in a cluster and interbedded or covered with scales from female's abdomen. Species of this genus inhabit mountainous and forest biotopes. Immature stages and food plants are not known.

Distribution: The range of the genus covers the northern and central parts of the South American continent, from Peru to Brazil and French Guiana.

Four species are included so far in *Edebessa* Walker, 1856: *E. circumcincta* Schaus, 1905; *E. cryptobia* Volkova, sp. nov.; *E. purens* Walker, 1856; *E. vespera* Volkova, sp. nov.

Key to species of the genus *Edebessa* Walker, 1856

- 1(4). Head and thorax black. Abdomen red, except for a few black basal segments.
- 2(3). Forewings gray, red forewing fascia narrow, hindwings gray with red marginal fascia *E. circumcincta*
- 3(2). Forewings black, red forewing fascia wide, hindwings red with a small black stroke in the center on the anal margin of the wing *E. cryptobia*
- 4(1). Head, whole abdomen and hindwings deep pink.
- 5(6). Thorax deep pink with small patches of black hairs. Forewings brown-gray with pink suffusion. Abdomen pink *E. purens*
- 6(5). Thorax black with small patches of pink hairs. Apex of the abdomen black, forewings brown-gray without pink scales *E. vespera*

Edebessa circumcincta Schaus, 1905 (Figures 4-6, 2-4, 44)

Edebessa circumcincta Schaus, 1905 [1906]. *Proc. U. S. Nat. Mus.*, 29, 335

TL: St. Jean, Maroni River, FRENCH GUIANA. Holotype ♂, USNM [examined].

Material: Holotype 1 ♂, St. Jean, Maroni, FRENCH GUIANA, Schaus coll. (USNM); ECUADOR, Napo, Hollin, 0°42'46"S/ 77°44'26"W, 1 ♂, 8-9-XI-2011, H = 1321 m, Siniaev, Romanov leg.; PERU, Camicana - Chico, Rio Carbon, Madre de Dios, Manu Park, 800-1000 m, 2 ♂♂, 3-IV-1998; Dep. Cusco, Chontachaca, Manu-Park, 800 m, 1 ♂, 1999, R. Marx; Dep. Amazonas, Puente Nieva, 700-800 m, 1 ♂, VI-2007, R. Marx (all in MWM).

Adult (Figures 4-6): Large moths, wingspan of males 45-47 mm, length of forewing 20 mm, of hindwing 14 mm. Wingspan of single known female 52 mm, length of forewing 18 mm, hindwing 11 mm. Head, antennae, and thorax black. Apex of abdomen reddish orange. Forewings gray, with contrasting, strongly tilted pattern, following shape of wing, and represented by longitudinal bands of two colors (red inside and black outside). Hindwings gray with red band at anal margin of the wing. Medial part of red band bears a black stroke.

Male genitalia (Figure 44): Differs from other congeners by slender, elongated uncus and cucullus of valvae, prolate triangular apex of vincular processes. Cornutus half the length and wider compared to congeners.

Diagnosis: From the other species differs by gray wing color (other species have black or brown-gray ground color). The morphologically similar *E. cryptobia* sp. nov. differs by the red-black forewings, hindwings, and forewing fascia (*E. circumcincta* has gray forewings with contrasting bicolored bands (red inside and black outside) whereas *E. cryptobia* sp. nov. has black forewings with contrasting red bands and monochromatic red hindwings). In male genitalia *E. circumcincta* differs by uncus shape (in *E. cryptobia* sp. nov. the uncus is shaped like an isosceles triangle) and by the cucullus of the valvae (*E. cryptobia* sp. nov. has wide band-shaped valvae with a tuft of setae apically on the cucullus).

Biology: Habitat at the altitudes from 700 to 1321 m a.s.l. The imago flies from June to November.

Distribution: French Guiana, Peru.

***Edebessa cryptobia* Volkova, sp. nov.** (Figures 11-12, 45)

Material: Holotype ♂, PERU, Dep. Madre de Dios, Manu - Park, Camicana-Chico, Río Carbón,

800-1000 m. 3-IV-1998 (GU 27655, MWM); Allotype, PERU, Cuzco, 7 km NE Mandor, 13° 18,7'S 70° 49,5'W, 1 ♀, 6-XII-2010, H = 890 m. V. and S. Sinyaev + Y. Bezverkhov (CVSM).

Adult (Figure 7, 12): Wingspan of male 47 mm, length of forewing 23 mm, hindwing 8 mm. Wingspan of single known female 49 mm, length of forewing 21 mm, hindwing 12 mm. Antennae, head, and thorax black, abdomen red. Forewings black, edges of forewing with red fascia becoming yellow apically. This fascia forms an isosceles triangle inside contour of the wing. Hindwings are red, slightly darkened basally. Anal margin of the hindwings with a small black stroke.

Male genitalia (Figure 45): Valvae are ribbon-shaped. Cuccular apex with a tuft of setae. Vinculum processes triangular. Outer side of vincular processes smooth, inner side is concave. Aedeagus large, cornutus robust, lancet-shaped, its length ca.1/3 that of aedeagus.

Diagnosis: From the congeners, this new species differs by the black ground color of the forewings. From the morphologically similar *E. circumcineta*, *E. cryptobia* differs by black forewings, red hindwings, and red forewing fascia. In addition, the forewing fascia of *E. cryptobia* forms an isosceles triangle inside the contour of the wing. The male genitalia differ by the shape of the uncus and by the cucullus of valves as pointed out above (valvae are ribbon-shaped, cucular apex with a tuft of setae).

Biology: The holotype was collected within an altitude range of 800-1000 m a.s.l. in April.

Distribution: Peru.

Etymology: The species is named due its cryptic resemblance to *E. circumcineta*.

Taxonomic note: Another male of this species was depicted by Hopp (1934: 160, pl. VI) in his revision of Megalopygidae but mistakenly listed under the name *E. circumcineta* Schaus, 1905.

Edebossa purens Walker, 1856 (Figures 8-9, 13, 46, 58)

Edebossa purens Walker, 1856. *Cat. Lep. Het. Brit. Mus.*, 7, 1756

TL: Rio de Janeiro [BRASIL]. Holotype ♀, NHMUK [examined].

Material: Holotype ♀, Rio [de Janeiro] (NHMUK); BRASIL, Espírito Santo, Santa Leopoldina, Biriricas ca. 700 m, 3 ♂♂, 20-III-20-IV-1997, Thöny leg.; Minas Gerais, Poté, ca. 500 m, 1 ♂, 20-IX-1997, Thöny leg.; Rondônia, vic. Cacauplandia, rancho Grande, 350 m, 1 ♂, III-1999, R. Alves de Santos leg.; Santa Leopoldina, Biriricas ca., 700 m, 1 ♀, 20-III-20-IV-1997, Thöny leg.; Rondonia, vic. Cacauplandia, Rancho Grande, 350 m, 1 ♀, XI-1999 (all in MWM).

Adult (Figures 8-9): Wingspan of male 42-45 mm, female 50-56 mm. Length of forewing of male 19 mm, hindwing 12 mm. Length of forewing of female 23 mm, hindwing 15 mm. Antennae black; head, thorax and abdomen pink red. Forewings brown gray with pink scales on all surfaces of wings and with colored fascia. Inner fascia pink, outer thin yellow fascia, and outside wide black fascia. Central area of wings between the elements of the pale pattern is lightened. Hindwings pink. Anal margin of the hindwings with a small black stroke outlined by yellow.

Male genitalia (Figure 46): Valvae band-shaped, cucular apex slightly dilated and covered of setae. Uncus shaped as an isosceles triangle. Aedeagus large relative to genitalia, cornutus robust, spine-shaped, its length ca.1/2 of aedeagus.

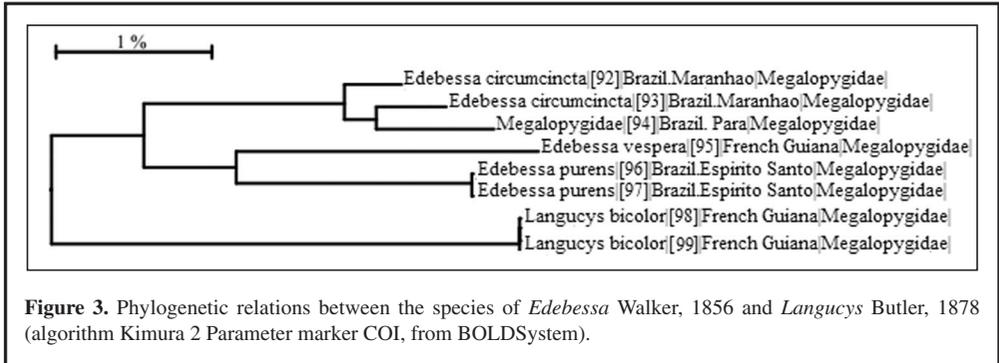
Female genitalia (Figure 58): Papillae anales squared, with irregular protruding triangular tips. Ostium rounded. Ductus bursae membranous, broad, gradually passing into large, ribbon - shaped bursa without additional area of sclerotization.

Diagnosis: The distinctive feature of this species is the color of the forewings and thorax (which are pink red with black scales). The morphologically similar *E. vespera* sp. nov. is differentiated by the shape and size of the vinculum processes (in *E. purens* the processes are smaller, triangular whereas the processes of *E. vespera* are larger and bloated basally). In addition, the uncus of *E. purens* is shaped as an isosceles triangle (the uncus of *E. vespera* is expanded basally) and the cornutus of *E. purens* more robust. *Edebossa purens* is genetically distinct from the similar *E. vespera* sp. nov. by 4,8 % (COI).

Biology: The species was collected at altitudes ranging from 350 to 700 m a.s.l. where it is on the wing in autumn and spring and thus presumably develops in two generations. Supposedly the species is not rare.

Distribution: Brazil.

Remarks: According to the results of molecular genetic studies by COI from BOLD it was found that a specimen from French Guiana (Figure 1) under code YTRTFCB 2344567 is a species of *Edebessa*. On the phylogenetic tree this specimen is sister to *E. purens* from Espírito Santo, with a distance of 4.8 %. After morphological analysis of this specimen, it was found that it differs from *E. purens* by the black color of the thorax and monochromatic pattern of forewings. Similar specimens were found in the MWM; and they are described here as *E. vespera* sp. nov.



Edebessa vespera Volkova, sp. nov. (Figures 7, 10, 47)

Material: Holotype ♂, BRASIL, Espírito Santo, Santa Leopoldina, Boquerao, 600 m, 20-III-20-IV-1997, Thöny leg (GU 27651, MWM).

Paratypes: BRASIL, Espírito Santo, Santa Leopoldina, Biriricas ca. 700 m, 5 ♂♂, 20-III-20-IV-1997, Thöny leg.; Espírito Santo, Santa Leopoldina, Dorf Tirol, 700 m, 4 ♂♂, May 2000, Thöny leg.; Bahia, Camacan, 15°24'S/39°30'W, 4 ♂♂, March 2012, Thöny leg.; PERU, Tinga María, 1 ♂, 1997; Dep. Madre de Dios, Manu-Park, Chamichana-Chico, Río Carbón, 800-1000 m, 1 ♂, 3-IV-1998; Bagua, 800 m, Dep. Amazonas, 1 ♂, Sept.-Oct. 2000, Frank Meister coll. (all in MWM).

Adult (Figures 7, 10): Wingspan of male 38-42 mm. Length of forewing 21 mm, hindwing 10 mm. Antennae black; head pink, thorax black with pink scales. Abdomen pink red, basally black. Forewings brown gray with colored fascia. The inner fascia pink, above it is a thin yellow fascia (most visible apically) and outside is wide black fascia. Hindwings are deep pink with a yellow margin fascia; anal margin of the hindwings with a small black stroke at the central margin.

Male genitalia (Figure 47): Valvae band-shaped, cucullar apex slightly dilated and covered in setae. Uncus triangular and expanded basally similar to the prolate triangular apex of vincular processes. Aedeagus is large relative to genitalia; cornutus robust, spine-shaped, its length reach ca.1/2 of aedeagus.

Female unknown.

Diagnosis: This species differs from other congeners by the deep pink color of the hindwings and by the color of the thorax (which is black with pink scales). The morphologically similar species *E. purens* differs by the black color at the base of the abdomen and by the shape and size of the vincular processes (in *E. purens* the processes are smaller, triangular whereas those of *E. vespera* are larger and bloated basally). In addition, uncus of *purens* forms an isosceles triangle (the uncus of *E. vespera* is expanded basally) and the cornutus of *E. purens* more robust. Genetically, this species is distinct from the similar *E. purens* by 4,8 % (COI).

Biology: Habitat at altitudes from 350 to 1000 m. a.s.l. The imago flies in autumn and spring - presumably, in two generations. Most likely, the species is not rare.

Distribution. Brazil, Peru, French Guiana.

Etymology: *Vespera* (Latin) - evening, for its rich pink color like the sky during sunset.

Langucys Butler, 1878, **stat. rev.** (Figures 3, 14-41)

Trans. ent. Soc. London, 1878, 49

Type species: *Glanycus nigrorufus* Walker, 1864, *Cat. Lep. Het. Brit. Mus.*, 31, 283, by original designation.

= *Alimera* Möschler, 1883, **syn. rev.** *Verh. zool.-bot. Ges. Wien.*, 32, 340

Type species: *Alimera bicolor* Möschler, 1883, *Verh. zool.-bot. Ges. Wien.*, 32, 340, by monotypy.

Remarks: Currently, the genus *Langucys* Butler, 1878 is considered the junior subjective synonym of *Edebessa* Walker, 1856, thus forming complex group by morphology with four species. As a result of this research, the taxonomic volume was increased to 10 species and *Langucys* Butler, 1878, **stat. rev.** is treated as a valid genus.

Adult (Figures 14-41): Medium sized moths, wingspan 30-50 mm. Head black, antennae bipectinate in both sexes, black. Mouth parts generally strongly reduced. Labial palpi strongly reduced, probably not functioning, consisting of two tongue-shaped segments; maxillary palpi and galea absent (Figure 3). Thorax covered with red and / or black hair-like scales, abdomen red or black (at least partially basal segments of some species are diagnostically black). Forewings are black with red pattern in the form of teardrops and fascia, which follow shape of wings. Apex of forewing pointed and sometimes weakly falcate. Hindwings black with red spot or pattern, which follow the contour of wings.

The imago is aposematically colored. At rest the moths fold their forewings roof-like, the costal margin of the hindwings protrudes from under the costa of the forewings, the front legs are directed forward, the head is inclined to the substrate (Figure 20). Collected moths are exude a pungent smell. Presumably, hemolymph of the moths contains toxins that makes them inedible.

Venation (Figure 43): Forewing. Sc robust, converging with R_1 , which is free and almost parallel to Sc. Other veins of radial stem form a complex $R_2 + R_3$ ($R_4 + R_5$), which is located on a common stem as long as 1/2 of the veins themselves. $R_2 + R_3 + R_4$ of the same length, equidistant from each other. Medial stem in R-Cu cell distinct in outer part of the cell. Origin of M_1 from the same base as R-stem. Origin of M_2 and M_3 converge. Both Cu veins present, clearly visible, almost parallel to each other and their origins insignificantly converging. A_1 is present. A_2 joined with A_3 forming basal fork as long as 1/3 of the resulting anal stem. No additional veins presented.

Hindwing: Frenulum unpaired, curved. Radial vein clearly visible along its entire length and joins costal margin just behind Sc forming a stem length of 1/2 of the Sc. Medial stem in R-Cu cell distinct on a larger extent of the cell. Origin of M_2 and M_3 converge. Both Cu veins present, clearly visible. A_1 reduced and is developed only as a thin membranous fold. A_2 and A_3 clearly visible.

Male genitalia (Figures 48-57): Generally, the genitalia are fully consistent with what is typically seen in the structure of Trosiinae (Volkova et al. 2017) and rather homogenous within the genus. Genitalia complex reduced in size (the width of the complex from one valvar apex to another is ca. 3-4 mm; the height is 5-6 mm). Tegumen is slender, hood - shaped. Uncus triangular, fused with tegumen. Ñucullus of valves are elongate, tongue-shaped with the extended apex. Their length is approximately equal to the length of the genital complex. Saccular part of valves fused with vinculum annularly at base. Laterally from this structure located is juxta in the form of two rounded processes. Vinculum with two distal small processes with rounded triangular apex. Aedeagus large, its length is twice longer as the genital complex. Cornutus single, long (approximately fi of the aedeagus length), similar to that of *Edebessa*. Pregenital segments unmodified.

Female genitalia (Figures 59-60): Papillae anales squared, with protruding triangular tips, densely covered with short setae. Fore apophysis stronger and slightly longer than hind one. Ostium rounded. Area around ostium lobate. Ductus bursae membranous, broad, gradually passing into large, ovoid bursa is different size without additional areas of sclerotization.

Autapomorphy of the genus is a highly modified pattern of oblique type. The medial system of the pattern transforms into separate elements (mostly of concentric type).

Sexual dimorphism: The genus is characterized by sexual dimorphism where females are larger and with hair pillow on abdomen apically formed by densely packed hair-like scales.

Remarks: Until now, the genus *Langucys* Butler, 1878 was considered the junior subjective synonym of *Edebezza* Walker, 1856 (Heppner, 1995). According to this research, the genus *Langucys* Butler, 1878 differs from *Edebezza* Walker, 1856 by the several important morphological features, including the-mouth parts (galea of *Langucys* are absent), genitalia (*Langucys* has juxta and a hood-shaped tegumen), wing pattern and the shape of the wings (forewings of *Langucys* with pointed and sometimes is weakly falcate apices. Forewings pattern with red teardrops and fascia in *Langucys*). Species of *Edebezza* are characterized by lancet-shaped and parallel-sided forewings with a pattern that follows the shape of the wings. The strongly reduced labial palpi is typical for this *Edebezza*. Labial palpi of *Langucys* are probably not functional, they consist of two bloated shovel-shaped segments. As result, the presence of constant and diagnostic features allows *Langucys* to be treated as a valid genus distinct from *Edebezza*.

The status of the genus *Alimera* Möschler, 1883 (type species *Alimera bicolor* Möschler, 1883) has also been revised. Until now, this genus was considered the junior subjective synonym of *Edebezza* Walker, 1856. Analysis of diagnostic characters of this genus show that *Langucys* and *Alimera* are congeneric.

The number of included species in *Langucys* is hereby increased to 10 as the result of this research; six of them are described as new. Species of *Langucys* are very difficult to diagnose because complicated wing patterns can hardly be characterized. The image of the holotype of the female of *L. bicolor* from Möschler (1883) does not match the habitus of the holotype specimen. This inaccuracy had caused incorrect identifications. In addition, the image from the article of Hopp (1934) does not illustrate the diagnostic features of *L. bicolor*. Presumably, when writing the article Hopp did not use the holotype of *L. bicolor* and instead relied on the figure from Möschler (1883). The use of figures from these articles contributes ongoing incorrect definitions of these taxa and confuses the taxonomy of the genus.

Species of the genus *Langucys* are well distinguished by features of the wings pattern which divide the genus into two species-groups. The first type of pattern is a system of toothed red fascia (*L. bicolor* (Möschler, 1883), *L. nigrorufus* (Walker, 1864), *L. reichertae* Volkova, sp. nov., *L. languciatus* (Schaus, [1905])). The second type is represented by a system of black spots arranged in vertical or diagonal chains (*L. nigropuncta* Druce, 1909, *L. cardinal* Volkova, sp. nov., *L. vadimi* Volkova, sp. nov., *L. artamonovae* Volkova, sp. nov., *L. sulaki* Volkova, sp. nov., *L. witti* Volkova, sp. nov.). These characters allow the separation of species of *Langucys* into two species-groups - the *bicolor* species-group (Figures 55-57) and the *nigropuncta* species-group (Figures 58-60). The locations of the elements of the wing pattern are diagnostic for species but often difficult to describe, therefore a special illustration (Figures 55-60) is given here. Additionally, species are well distinguished by the coloration of the thorax, abdomen, and red shades in the pattern of the wings. There are species ranging in color from carmine - pink to orange and red of different saturation within the genus. Saturation of pattern and its color is species-specific.

Distribution: Range of the genus covers the northern and central parts of the South American continent - from Ecuador, Peru and Chile to French Guiana and Surinam. Immature stages and food plants are not known.

Ten species are included so far in *Langucys* Butler, 1878, six are described as new:

bicolor species-group: *L. bicolor* (Möschler, 1883); *L. nigrorufus* (Walker, 1864); *L. reichertae* Volkova, sp. nov.; *L. languciatus* (Schaus, 1905).

nigropuncta species-group: *L. cardinal* Volkova, sp. nov.; *L. vadimi* Volkova, sp. nov.; *L. artamonovae* Volkova, sp. nov.; *L. nigropuncta* Druce, 1909; *L. sulaki* Volkova, sp. nov.; *L. witti* Volkova, sp. nov.

Key for species of the genus *Langucys* Butler, 1878.

1(8). Forewings black with red pattern. The pattern contains the system of toothed fascia
 *bicolor*-group

- 2(5). Red pattern contains concentric circles and weakly toothed fascia. Percent of the wing area covered by the pattern approximately 40 %
- 3(4). The center of costa of forewing adjoins a single red concentric spot *L. nigrorufus*
- 4(3). Red pattern of forewing contains two concentric spots in costal and basal regions of the wing
..... *L. languciatius*
- 5(2). Coverage of the red pattern approximately 70 % of wing. Pattern contains two concentric spots and expressed toothed fascia.
- 6(7). Red concentric circle in costal area is full. The black field between the costal and basal spots is small, approximately equal to the diameter of spots *L. bicolor*
- 7(6). Red concentric spot is interrupted in costal area. The black field between the costal and basal spots fairly wide, approximately 1.5 of the diameter of spots *L. reichertae*
- 8(1). Pattern of forewing contain the system of black spots arranged in two vertical rows. Forewings black with fields of colored scales. Color of scales from cinnabar red to crimson
..... *nigropuncta*-group
- 9(10). Pattern of forewing contain the large spot. Diameter of this spot is fivefold larger than the other spots. The field of colored scales is red-orange *L. vadimi*
- 10(9). All spots of wing pattern approximately equal in size. The field of colored scales is orange, cinnabar red or crimson.
- 11(12). Margin of field of colored scales is highly wavy. Pattern of forewings contain the two vertical rows of spots. Second row contain 3 spots, and the second spot in this row is twice as large as the next and the previous one. The field of colored scales is cinnabar-red *L. cardinal*
- 12(11). Margin of field of colored scales is smooth or slightly wavy. In the second row of spots is single spot only.
- 13(16). Thorax orange.
- 14(15). The field of colored scales is pale orange. Spots from the first row are small, the second spot is larger than the others. The single spot of second row is triangular. *L. witti*
- 15(14). The field of colored scales is deep orange. Colored scales mixed with black (the effect of wear). The single spot of second row is irregularly shaped *L. nigropuncta*
- 16(13). Head, thorax, and abdomen black.
- 17(18). The field of colored scales is red - crimson. Pattern of forewing with small black spots of equal size. The single spot of second row is 1.5 smaller than the spots from first row.
..... *L. sulaki*
- 18(17). The field of colored scales is deep orange. The single spot of second row is bean-shaped and three times larger than the other spots *L. artamonovae*

Langucys bicolor (Möschler, 1883) **comb. nov.** (Figures 15-17, 34-35, 48)

Alimera bicolor Möschler, 1883. *Verh. zool.-bot. Ges. Wien*, 32, 340, taf. 18, Figure 29

TL: "Ohne Angabe des Fundortes aber nach Mittheilung von Dr E. Hoffman aus Surinam". Holotype ♀, SMNS [examined].

Material: Holotype ♀, [SURINAM] (SMNS); Franz. Guayana, Plateau des Mines, S. Jean du Maroni, 125 m, 2 ♂♂, Juli, 1996 (all in MWM).

Adult (Figures 15-17, 34-35): Medium sized moths, wingspan 32-35 mm, length of forewing 16 mm, of hindwing 12 mm. Head, antennae and thorax are black. Abdomen is carmine red. Forewings are black, with carmine red teardrops in the center of the wings. Inside each teardrop there is a black spot. Two large red concentric spots are located in the costal and basal parts. The distance between them is approximately 1/6 of diameter of the spot. Hindwings with a red band at the margin of the wing. The basal part is darkened. The male wing pattern is fully consistent with that of females.

Male genitalia (Figure 48): Uncus is triangular and expanded at base. Valves are band-shaped, wide, and short (length of cucullus does not exceed fi of length of genital complex), covered of setae. Aedeagus is large; cornutus long, sharpened.

Diagnosis: Differs by form and length of cucullus of valvae and by the typical pattern of the wings

(characterized by the presence of concentric spots in the basal and costal parts and carmine red teardrops in the center of the wings). The distance between concentric spots is approximately 1/6 of diameter of the spot.

Biology: Habitat at the altitude of 125 m a.s.l. Imago flies in summer.

Distribution: Presumably a limited area. The species is so far known only from French Guiana and Surinam. According to the literature *L. bicolor* is considered a common species in the tropical forest zone of the Neotropical region. My studies have shown that most specimens identified as '*L. bicolor*' are incorrectly identified and belong to other species of this group.

Taxonomic note: The type of female is kept in SMNS and the habitus of this holotype is quite different from the drawing in the article of Möschler (1883) (Figures 40-41, this article). This has led further confusion in the identification of this species. In Möschler (1883) the original image of a type of female and a reconstruction of the drawing from the description of Möschler are present.

Langycus nigrorufus (Walker, 1864) **comb. rev.** (Figures 18-20, 36, 49)

Langycus nigrorufus Walker, 1864. *Cat. Lep. Het. Brit. Mus.*, 31, 283

TL: BOGOTA. Holotype ♂, NHMUK [examined].

= *Edepressa obusta* Dognin, 1920. *Hét. Nouv. Amer. Sud.*, 18, 12

TL: "La Union, río Huacamayo, Carabaya, Pérou Sud-Est", PERU. Holotype ♂, USNM [examined].

Material: Holotype *Langycus nigrorufus* ♂, [BOLIVIA, Bogota] (NHMUK); Holotype *Edepressa obusta* ♂, La Union, Río Huacamayo, Carabaya, S. E. Peron leg. (USNM). PERU, prov. Satipo Junin, Calabaza, ca. 2360 m, 2 ♂♂, XII-1997, A. Ugarte. ECUADOR, Pichincha, camp. Bella Vista, 0°00'41"S/78°41'17"W, 2230 m, 1 ♂, 5-19-III-2012, Brechlin and Siniaev leg (all in MWM).

Adult (Figures 18-20): Medium sized moths, wingspan 38-40 mm, length of forewing 19 mm, of hindwing 16 mm. Head, antennae and thorax are black whereas abdomen is red. Forewings are black, with a thin red fascia on the edge of the wing. The lower part of the fascia duplicates the shape of the wing. Discal area of the forewing with a single concentric spot. Basal part of the wings with red scales. Hindwings are black with a narrow red fascia along the margin of the wing.

Male genitalia (Figure 49): Uncus is large, triangular. Cucullus are slender, long and covered of setae. Vinculum with two distal triangular processes. Lateral surface of this processes are membranous, weakly sclerotized at the base. Aedeagus is large; cornutus long, sharpened, its length reach ca.1/2 of aedeagus.

Female unknown.

Diagnosis: The shape of the vincular processes is diagnostic (lateral surface of this processes are membranous, weakly sclerotized at the base). The diagnostic feature of the species is the presence of a single concentric spot in the discal area of the forewings.

Biology: This is a high mountain species; its habitat is at altitudes over 2000 m a.s.l. The studied specimens were collected in winter and spring.

Distribution: Probably has a wide area covering the entire West coast (northwest Ecuador, southwest Peru, central Colombia).

***Langycus reichertae* Volkova, sp. nov.** (Figures 15, 31, 56)

Material: Holotype ♂, COLOMBIA, Meta Restrepo, Alto del Caney, 910 m, 04° 17'31"N / 73° 35'41"W, 28-30 Sept 2014, Sinjaev, Marquez & Machado (GU 36382, MWM).

Adult (Figure 21): Medium sized moths, wingspan 34 mm, length of forewing 12 mm, of hindwing 8 mm. Head, antennae and thorax are black. Abdomen is red. Forewings are black, with a narrow red fascia on the edge of the wing. The anal part of the fascia duplicates the shape of the wing. Pattern of the wings contains of two concentric spots. Distance between spots approximately 1,5 of diameter of this spots). Upper concentric spot is interrupted in costal area. Hindwings are black with a thin red fascia along the margin of the wing. Fascia forms a loop-shaped bend near the outer margin of the wing.

Male genitalia (Figure 50): Uncus is triangular with prolate and sharpened apex. Cucullus is clavate, covered of setae. Vinculum processes are triangular, external sides of this processes are bloated.

Female is unknown.

Diagnosis: This species differs from the majority of its congeners by the shape of the uncus and an interrupted concentric spot in the wing pattern. The morphologically similar *L. bicolor* differs by bloated external sides of the vinculum processes and a wide black field between the costal and basal spots (distance between spots of *L. reichertae* approximately 1.5 times the diameter of this spots).

Biology: The holotype was collected at an altitude of 910 m a.s.l. in late September.

Distribution: Colombia, Ecuador.

Etymology: This species is named in honor of Madame Heike Reichert in gratitude for her many years of work in the Museum Witt München.

Langucys languciatus (Schaus, 1905) **comb. nov., syn. rev.** (Figures 22-23, 38, 51)

Edebeessa languciata Schaus, 1905. *Proc. U. S. Nat. Mus.*, 29, 33

TL: «St. Jean, Maroni River, French Guiana». Holotype ♀, USNM [examined].

Material: Holotype ♀, F. Guiana, Maroni, St. Jean (USNM); F. Guayana, Umg. Roura, 04°46'52" N/ 52°24'39" W, 101 m, 2 ♂♂, 6-XI-2009, Puchner leg. (all in MWM).

Adult (Figures 22-23): Medium sized moths, wingspan 39-41 mm, length of forewing 16 mm, of hindwing 12 mm. Head, antennae and thorax are black. Abdomen is orange. Forewings are black, with red orange toothed fascia, which duplicates the shape of the wing. Pattern of the wings contains of two large concentric spots - costal and basal. Spots are the same size (approximately 4 mm in diameter). Hindwings are black with orange-red fascia along the margin of the wing and narrow fascia at the base of hindwings.

Male genitalia (Figure 51): Uncus is isoscelently triangular. Cucullus are thin, tongue-shaped, and long (approximately 1.5 as much than genital complex). Cornutus is shorter and wider than in other species.

Diagnosis: This species differs from others by the long, tongue-shaped valvae, the isosceles triangle shape of the uncus and a short, wide cornutus. The pattern of the wings (two large concentric spots on the forewings and small fascia at the base of hindwings) is also diagnostic for the species. The morphologically similar *L. bicolor* differs in wing pattern (forewings of *L. languciatus* are without red teardrops; the pattern of the forewings of this species includes only two large concentric spots and fascia) and male genitalia (cucullus of *L. languciatus* are thin, tongue-shaped and long, the uncus is the shape of an isosceles triangle).

Biology: Habitat at an altitude of 101 m a.s.l. (elevation information is known for only one specimen). The studied samples were collected in late autumn.

Distribution: French Guiana.

Taxonomic note: Until now, *L. languciatus* was considered the junior subjective synonym of *L. bicolor* (see Heppner, 1995). The presence of characteristic features (in comparison to *L. bicolor*, *L. languciatus* differs by wing pattern and structure of male genitalia) allows restoring this taxon at the rank of valid species.

***Langucys sulaki* Volkova, sp. nov.** (Figures 24, 39, 52)

Material: Holotype ♂, COLOMBIA, Antioquia, Municipio de Yarumal, Vereda Ventanita, 2020 m, 07° 04' 15"N / 75° 26' 59"W, 1-4 Dec 2014, Sinjaev, Marquez and Machado (GU 36432, MWM).

Paratype: ♂, COLOMBIA, Antioquia, Municipio de Yarumal, Vereda Ventanita, 2020 m, 07° 04' 15"N / 75° 26' 59"W, 11-16-XI-2014, Sinjaev and Machado (MWM).

Adult (Figure 24): Medium sized moths, wingspan 36 mm, length of forewing 14 mm, of hindwing 11 mm. Head, antennae, thorax, and abdomen are black. Forewings are black with field of red-crimson scales. Inside this field there are seven equal-sized spots, forming a concave vertical row.

Behind this line, closer to the costal area, situated a single triangular spot which is 1,5 smaller than others. Hindwings are black with group of red scales at the upper part. These red scales are divided into two strokes - large stroke closer to the outer edge and smaller is basal.

Male genitalia (Figure 52): Uncus is triangular, slightly bloated at base. Cucullus is clavate, covered of setae. Sacculus strongly bloated. Triangular processes of vinculum with wavy outer edge. Cornutus is bent to the ventral side.

Female is unknown.

Diagnosis: Differs from other species by the form of the sacculus (which is strongly bloated), the cornutus (which is bent to the ventral side), and by the specific pattern of the forewings (red-crimson color and size and form of the single spot).

Biology: This is a high mountain species. The studied samples were collected at an altitude of 2020 m a.s.l. in the autumn-winter period.

Distribution: Colombia.

Etymology: This species is named in honor of Mr. Harald Sulak, a staff member of the Museum Witt München, for his work to the benefit of the Museum and his support of my research.

Langucys nigropuncta Druce, 1909, **comb. rev.** (Figures 25-26, 53)

Langucys nigropuncta Druce, 1909. *Ann. Mag. nat. Hist.*, (8) 3, 345

TL: «W. Colombia, San Antonio, 5800 feet», COLOMBIA. Holotype ♀, NHMUK [examined].

Material: Holotype ♀, W. COLOMBIA, San Antonio, 5800 ft., G. M. Palmer (NHMUK); Valle de Cauca, Reservel forest "La Albania", 1640 m, 03°37'32" N/ 76°23'54" W, 4 ♂♂, 2-5-XI-2013, V. Sinyaev leg.; ECUADOR, Pichincha prov, camp. Bella Vista, 0°00'41"S/ 78°41'17"W, 33 ♂♂, 5-19-III-2012, H-2230, Brechlin and Siniaev leg.; Pichincha prov, camp. Tambo Tanda, 0°01'22"S/ 78°38'48"W, 5 ♂♂, 5-25-X-2011, H-1969, Siniaev and Romanov leg.; Pichincha prov, Nanegalito, Bellavista Cloud Forest Lodge, 0°01'S/ 78°40'W, 12 ♂♂, V-2014, H-2300, H. Thöny leg.; Carchi prov, El Clical-Carolinae, 0°49'49"N/ 78°13'15"W, 14 ♂♂, 16-XI-2012, H-1970, Siniaev and Romanov leg.; Quito-Nanegalito, 37 km, 0°01'03"N/ 78°36'55"W, 1 ♂, 2-XI-2011, H=2094, Siniaev and Romanov leg.; (all in MWM).

Adult (Figures 25-26): Medium sized moths, wingspan of male 32-35 mm, female - 48 mm. Length of forewing of male 15 mm of hindwing - 11 mm, female - 19 mm and 14 mm correspondingly. Head, antennae, and thorax are black. Abdomen is deep orange. Forewings are black, with large field of orange scales which mixed with black (the effect of wear). Inside this field there are seven small equal-sized spots, forming a concave vertical row. Behind this line, closer to the costal area, is a single spot of irregularly shaped. This spot is very close to the vertical row of spots and almost touches them. Hindwings are black with group of orange scales at the apex. These orange scales are divided into two strokes - large stroke closer to the outer edge and smaller is basal.

Male genitalia (Figure 53). Uncus is spear-shaped, basally expanded. Cucullus thin, tongue-shaped, covered of setae. Vinculum processes are isoscelently triangular. Aedeagus large, cornutus approximately half the size of other species.

Diagnosis: This species differs from the majority of congeners by the spear-shaped uncus and the size of the cornutus. *Langucys nigropuncta* is also characterized by a specific deep orange pattern of the forewings with black scales (the effect of wear).

Biology: This is a high mountain species. Specimens were collected at altitudes ranging from 1600 to 2300 m a.s.l., and mainly in rainy primary forests. The imago flies in late autumn and summer. Presumably this species develops two generations.

Distribution: Colombia, Ecuador.

***Langucys witti* Volkova, sp. nov.** (Figures 27, 40, 54)

Material: Holotype ♂, ECUADOR, Napo prov., Parque Nacional Sumaco, Los Cocodrilos, 32 km road Baeza-Tena, 2170 m, 0°37'15" S/ 77°49'28"W, 3-5-III-2013, Sinjaev (GU 36429, MWM).

Paratype: ECUADOR, Napo prov., Parque Nacional Sumaco, Los Cocodrilos, 36 km road Baeza-Tena, 1670 m, 039,28' S/ 7747'16''W, 1 ♂, 5-III-2013, Ackermann, Käch, Brechlin (MWM).

Adult (Figure 27): Medium sized moths, wingspan of males 38-42 mm, length of forewing 15 mm, of hindwing 10 mm. Head, antennae, and abdomen are black. Thorax is red. Forewings are black with a field of pale orange scales. Inside this field there are seven equal-sized spots as a vertical chain. Behind this line, closer to the costal area, is a single triangular spot which is three times larger than other spots. On the apex of the forewing a barely noticeable separate black spot is situated. Hindwings are black with group of orange scales at the costal field. These scales are divided into two strokes - large one closer to the outer edge and smaller basal.

Male genitalia (Figure 54): Uncus with prolate and sharpened apex, basally expanded. Cucullus tongue-shaped, setose. Vinculum processes form an isosceles triangle. Aedeagus large, cornutus is spine shaped.

Female is unknown.

Diagnosis: This species differs from congeners by the diagnostic shape of a single spot (equilateral triangle). The morphologically similar *L. artamonovae* differs by its red thorax.

Biology: Studied material was collected at altitudes ranging from 1670 to 2170 m a.s.l in the spring (early March).

Distribution: This species is known only from Ecuador.

Etymology: The species is named in honor of the late Dr. Thomas Josef Witt, founder of the Entomological Museum Witt, München, Germany.

***Langucys artamonovae* Volkova, sp. nov.** (Figures 28-29, 41, 55, 59)

Material: Holotype ♂, ECUADOR, Napo prov., Parque Nacional Sumaco, Los Cocodrilos, 36 km road Baeza-Tena, 1670 m, 0°39,28' S/ 77°47'16''W, 5-III-2013, Ackermann, Käch, Brechlin (GU 30780, MWM). Allotype ♀, ECUADOR, Loja prov., 15 km E Loja to Zamora, 3°58'45''S/79°08'28''W, 1-III-2011, H = 2700, Käch, Brechlin leg (GU 30794, MWM).

Paratypes: ECUADOR, Napo prov, Parque Nacional Sumaco, Los Cocodrilos, 36 km road Baeza-Tena, 1670 m, 0°39,28' S/ 77°47'16''W, 1 ♂, 5-III-2013, Ackermann, Käch, Brechlin; Zamora Chinchipe, 5 km NW Zamora to la Chorrera, 04°01,50' S/ 78°57,28' W, 2 ♂♂, 3-III-2011, 1270 m, Käch, Brechlin leg.; Napo prov, Cordillera Guacamayos, 0°37'15''S/77°49'28'' W, 1 ♂, 11-XI-2011, H = 2181 m, Siniaev, Romanov leg.; Sucumbios, road Lumbaqui to La Bonita, 1660 m, 0°25'51''N/ 77°31'49'' W, 1 ♂, 20-III-2013, Sinjaev; (all in MWM).

Adult (Figures 34-35): Medium sized moths, wingspan of males 39-41 mm, length of the forewing 17 mm, of the hindwing 12 mm. Wingspan of the known female 49 mm, length of forewing 21 mm, of hindwing - 17 mm. Head, antennae, thorax, and abdomen are black. Forewings are black with field of orange scales. Inside this field there are seven equal-sized spots, forming a concave vertical row. Behind this line, closer to the costal area, is a single bean-shaped spot. The size of this spot is three times larger than other spots. Hindwings are black with group of orange scales in the costal field. These orange scales are divided into two strokes - large stroke closer to the outer edge and smaller basal. The male wing pattern is fully consistent of wing pattern of females.

Male genitalia (Figure 55): Uncus triangular. Cucullus clavate, setose. Vinculum processes are triangular with prolate apex. Aedeagus reduced in size compared to other species of *Langucys*.

Female genitalia (Figure 59): Papillae anales squared, with protruding triangular tips. Pregenital segments covered with modified setae. Ductus bursae membranous, narrow, before merging with bursa expanded. Bursa is ovoid.

Diagnosis: This species differs from congeners by the reduced size of the aedeagus and the bean-shaped single spot of the forewing. The morphologically similar *L. witti* Volkova, sp. nov. differs by the form of the single spot (which is triangular in *L. witti* sp. nov.) and black thorax (thorax of *L. witti* sp. nov. is orange).

Biology: Studied material was collected at altitudes ranging from 1500 to 2700 m a.s.l. The imago flies from November to March.

Distribution: Ecuador.

Etymology: This new species is named in honor of Dr. Marina N. Artamonova in gratitude for supporting of me and my research.

***Langucys cardinal* Volkova, sp. nov.** (Figures 14, 30-31, 56, 60)

Material: Holotype ♂, PERU, Salvación, Río Alto de Madre de Dios, Manu Park, dep. Madre de Dios, ca 550 m. Jan-Feb 1998 (GU 30798, MWM). Allotype: ♀, PERU, prov. Junin Satipo, 650 m, 28-XII-1994 - 7- I-1995, Hác z and Juhách leg. (GU 30799, MWM).

Paratypes: PERU, dep. Cusco, Chontachaca, Manu-Park, 800 m, 2 ♂♂, I-1999, R Marx; Madre de Dios, Río Alto de Madre de Dios, Manu Park, dep. Madre de Dios, ca 550 m, 1 ♂, Jan.-Feb.-1998; Dep. Amazonas, El Paraíso, 2400 m, 1 ♂, Oct.-Nov.-2006, R. Marx; Dep. Madre de Dios, Malinosque, 800 m, 1 ♂, Jan.-Feb.-2006, R. Marx; Prov. Junin Satipo, 650 m, 1 ♂, 28-XII-1994-7-I-1995, Hác z & Juhách leg.; Madre de Dios, Manu-National Park, Río Carbón, 1200 m, Camicanta-Chico, 1 ♂, Jul.-Aug.-1997, R. Marx (all in MWM); Madre de Dios, 55 km on 254° from Puerto Maldonado, 12° 44,5' S 69° 38,8' W, 1 ♂, 05-12-2010, H=286 m, V. and S. Sinyaev + Y. Bezverkhov (CVSM).

Adult (Figures 30-31): Medium sized moths, wingspan of males 38-42 mm, length of forewing 21 mm, of hindwing - 11 mm. Wingspan of a single female 56 mm, length of forewing 32 mm, of hindwing - 17 mm. Head, antennae, thorax, and apex of abdomen are black. Base of abdomen is cinnabar-red. Forewings are black with field of cinnabar-red scales. Inside this field there are seven spots, forming a concave vertical row. Size of this spots is increased closer to the basal edge of the wing. Behind this line, closer to the costal area, there are three unequal sized spots. First spot of this group is small and located closer to the apex of the wing. The size of this spot is three times larger than other ones. The next spot merges with costa and twice as large as the previous spot. Size of the third spot is equal to the first spot. Hindwings are black with cinnabar-red fascia along the margin of the wing. The male wing pattern is fully consistent of wing pattern of females.

Male genitalia (Fig 56): Uncus forms an isosceles triangle. Cucullus band-shaped, setose. Vinculum processes are triangular with swollen outer margin.

Female genitalia (Fig 68): Papillae anales squared, with protruding triangular tips. Pregenital segments covered of modified setae. Ductus bursae membranous, shot. Bursa is ovoid, three times larger than the genital complex. The seminal duct situated dorsally on the cranial part of the bursa.

Diagnosis: This species differs from the majority of congeners by the strongly setose cucullus and the large corpus bursa. The cinnabar-red wing color and pattern of forewings (three unequal spots) are unique to this species.

Biology: Studied material was collected at altitudes ranging from 500 to 2400 m a.s.l. The imago flies from October to February in tropical montane forests.

Distribution: South-East Peru, Colombia.

Etymology: The species is named due to its similarity to the of color of the robes of a cardinal.

***Langucys vadimi* Volkova, sp. nov.** (Figures 32-33, 57)

Material: Holotype ♂, PERU, prov. Satipo Junin, Calabaza, ca. 2350 m, Juni 1998 (MWM, GU 29633); Allotype: ♀, [PERU] Chanchamayo, Thamm leg. (ZMHB).

Paratype: PERU, prov. Satipo Junin, Calabaza, ca. 2350 m, 1 ♂, Juni-1998 (MWM).

Adult (Figures 32-33): Medium sized moths, wingspan of males 32-35 mm, length of forewing 14 mm, of hindwing 10 mm. Wingspan of female 46 mm, length of forewing 19 mm, of hindwing 13 mm. Head, antenna and abdomen are black. Thorax is black with small admixture of orange-red scales. Forewings are black with field of orange-red scales. Inside this field there are eight spots as a vertical chain. Behind this line, closer to the costal area, is a single round spot. The size of this spot is five times

larger than other spots. Hindwings are black with small amount of orange-red scales at the upper part. Between the males and females are no real gender differences in wing pattern and coloration.

Male genitalia (Figure 57): Uncus triangular, basally expanded. Cucullus tongue-shaped, setose. Vinculum processes are triangular concave distally and convex proximally.

Diagnosis: This species is differentiated from others in the genus by the size of the single spot and row of eight spots on the wings. The color of the wing pattern (orange-red) and shape of vinculum processes (concave distally and convex proximally) are both unique to this species.

Biology: This is a high montane species. Studied material was collected at an altitude of 2300 m a.s.l. in June.

Distribution: South-West Peru.

Etymology: This new species is named in honor of late Dr. Vadim V. Zolotuhin, my dear teacher and friend, for his support, helping and for many years of friendship.

Discussion: Thus, the genus *Edebessa* is separated into two genera - *Edebessa* with four species, two of which are new, and *Langucys* with ten species (six of which are new). Diagnostically, for species of *Edebessa* the coloration of the thorax, abdomen, forewings, and hindwings is sufficient for recognizing this genus. In the male genitalia, the shape of the uncus, valvae, vinculum processes, the size of the cornutus are all diagnostic of *Edebessa*. Typically for species of *Langucys*, the wing pattern (namely, the form and size of spots of the forewings, the color and form of fascia and concentric circles), color of forewings (from crimson red to orange and cinnabar red) are all diagnostic of this genus. The male genitalia can be recognized by the shape of the uncus, valvae and vinculum processes, whereas in the female, the shape of the corpus bursae is diagnostic. No doubt, additional new species from both genera will be found in the future, and images of some are already present on the Internet, but for which the material has not yet been made available for study.

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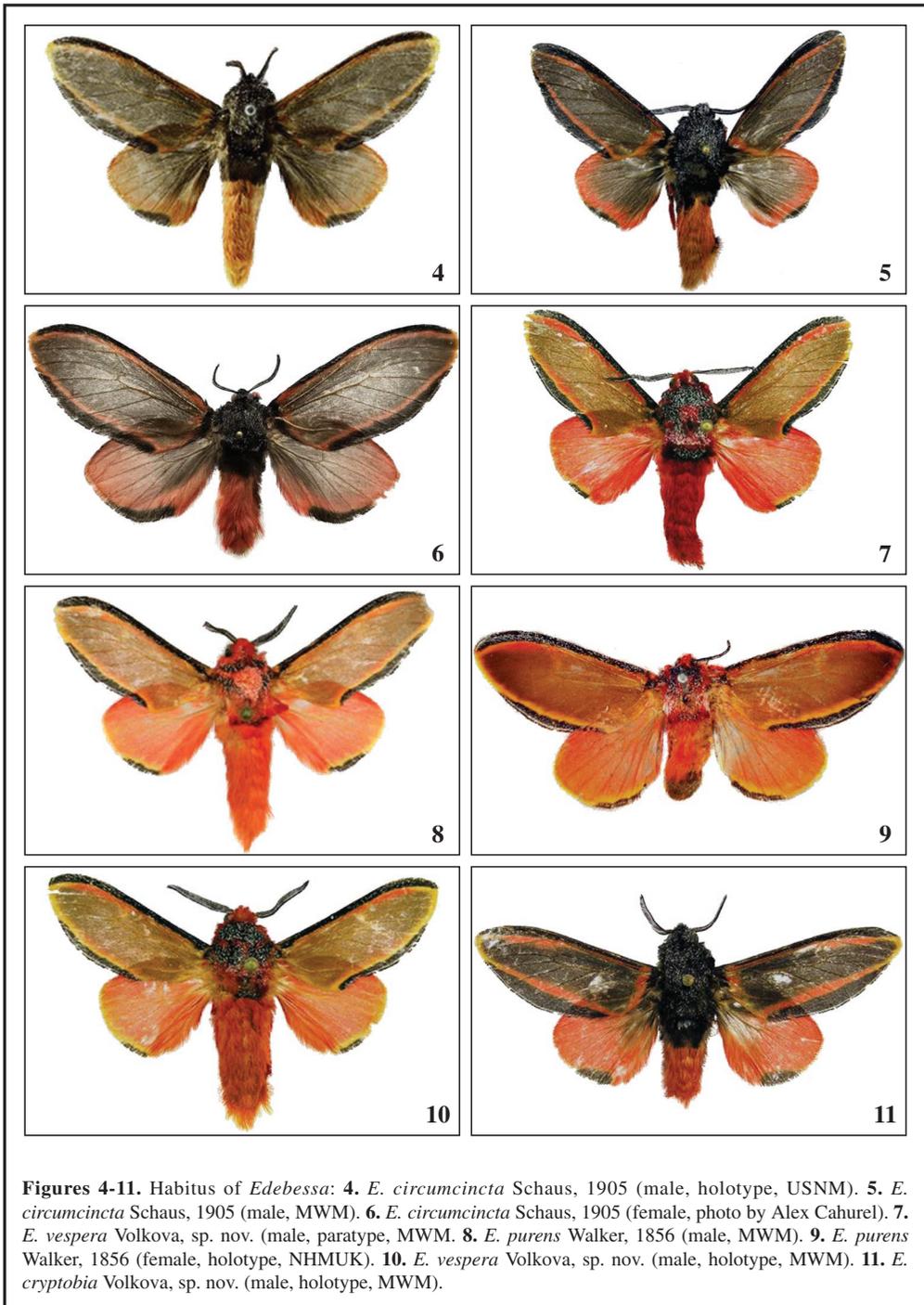
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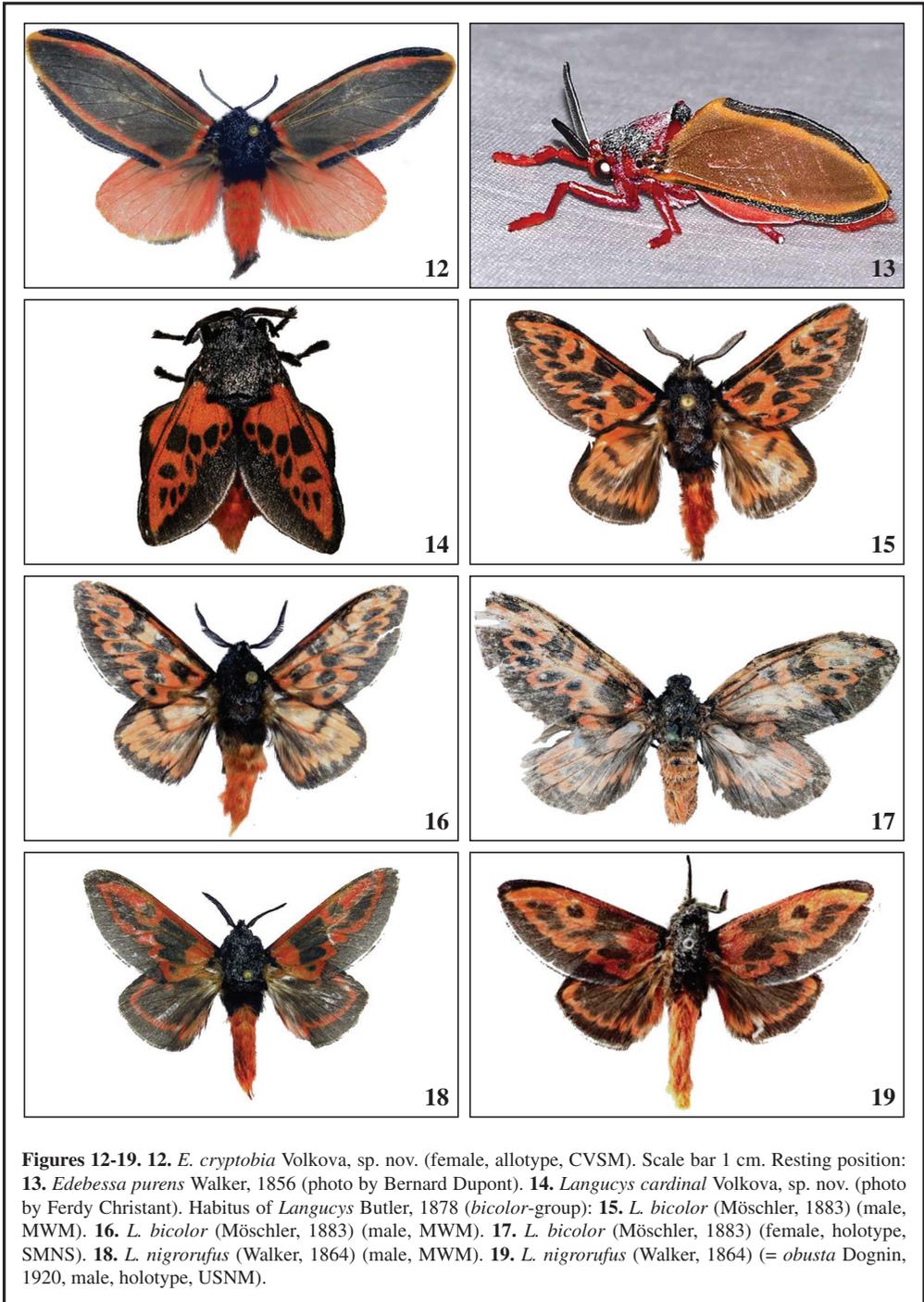
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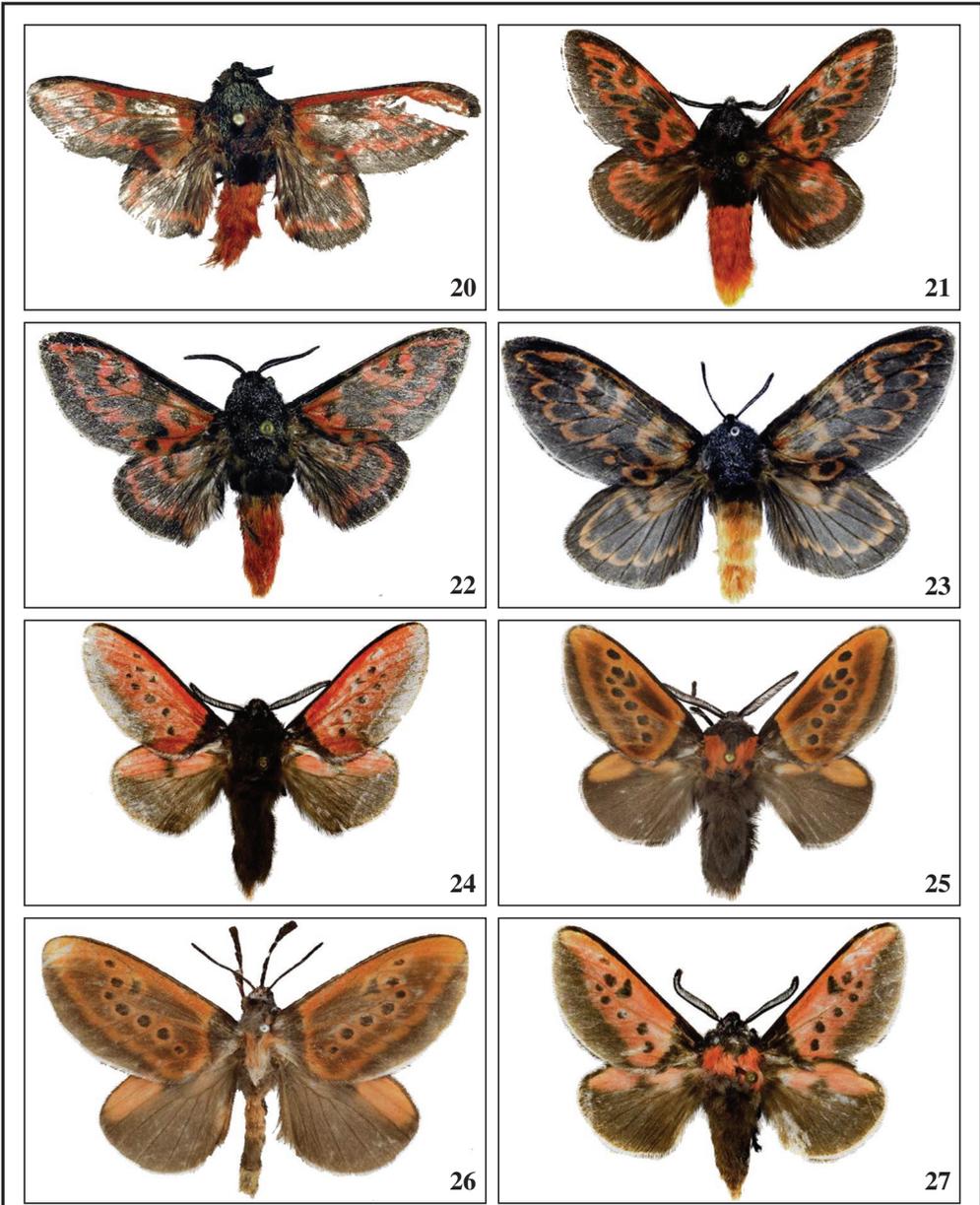
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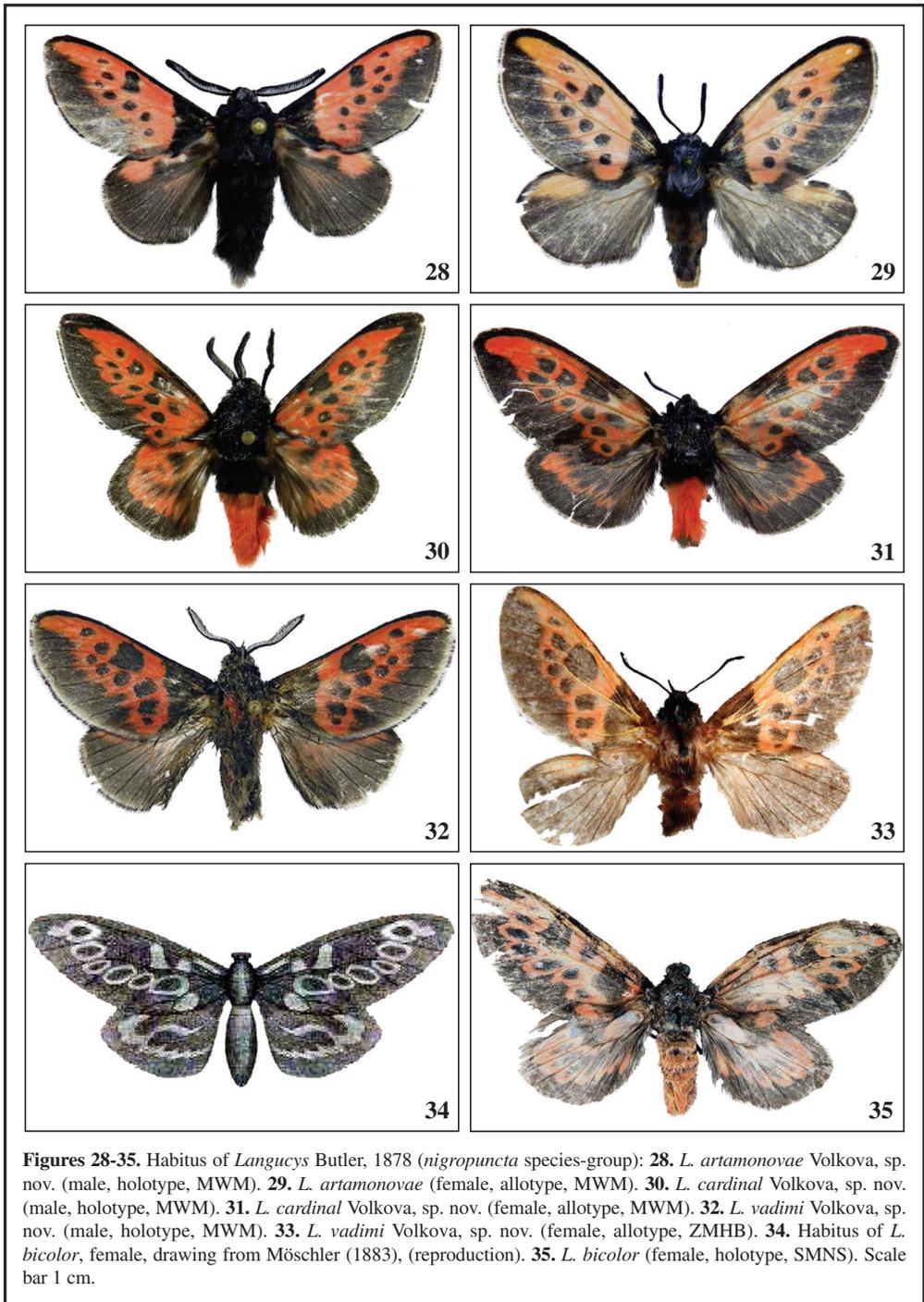
Figures 4-11. Habitus of *Edebeessa*: **4.** *E. circumcincta* Schaus, 1905 (male, holotype, USNM). **5.** *E. circumcincta* Schaus, 1905 (male, MWM). **6.** *E. circumcincta* Schaus, 1905 (female, photo by Alex Cahurel). **7.** *E. vespera* Volkova, sp. nov. (male, paratype, MWM). **8.** *E. purens* Walker, 1856 (male, MWM). **9.** *E. purens* Walker, 1856 (female, holotype, NHMUK). **10.** *E. vespera* Volkova, sp. nov. (male, holotype, MWM). **11.** *E. cryptobia* Volkova, sp. nov. (male, holotype, MWM).

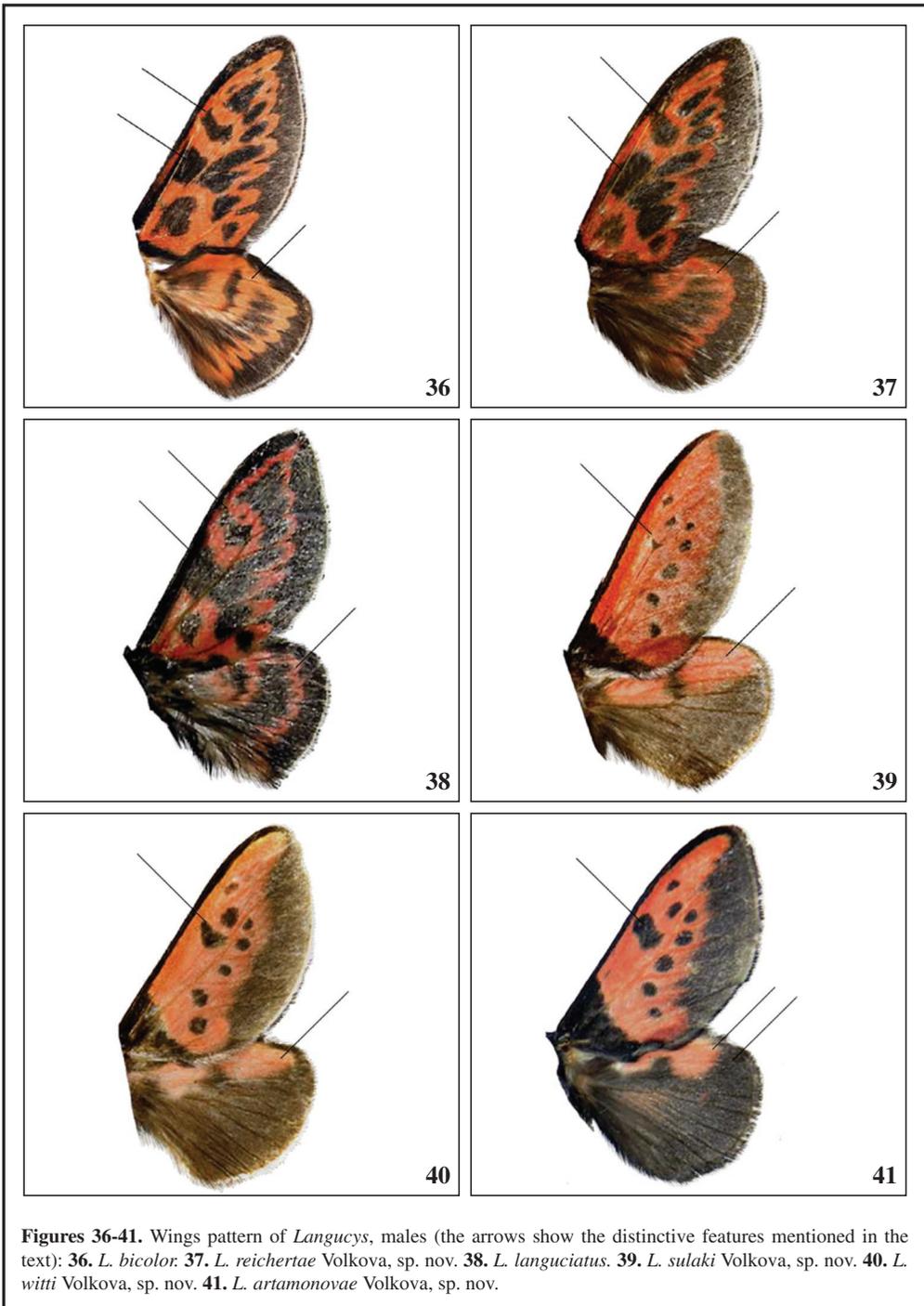


Figures 12-19. **12.** *E. cryptobia* Volkova, sp. nov. (female, allotype, CVSM). Scale bar 1 cm. Resting position: **13.** *Edebessa purens* Walker, 1856 (photo by Bernard Dupont). **14.** *Langucys cardinal* Volkova, sp. nov. (photo by Ferdy Christant). Habitus of *Langucys* Butler, 1878 (*bicolor*-group): **15.** *L. bicolor* (Möschler, 1883) (male, MWM). **16.** *L. bicolor* (Möschler, 1883) (male, MWM). **17.** *L. bicolor* (Möschler, 1883) (female, holotype, SMNS). **18.** *L. nigrorufus* (Walker, 1864) (male, MWM). **19.** *L. nigrorufus* (Walker, 1864) (= *obusta* Dognin, 1920, male, holotype, USNM).



Figures 20-27. 20. *L. nigrorufus* (Walker, 1864) (male, holotype, NHMUK). 20. *L. reichertae* Volkova, sp. nov. (male, holotype, MWM). 22. *L. languciatus* (Schaus, 1905) (male, MWM). 23. *L. languciatus* (Schaus, 1905) (female, holotype, USNM). Scale bar 1 cm. Habitus of *Langucys* Butler, 1878 (*nigropuncta* species-group): 24. *L. sulaki* Volkova, sp. nov. (male, holotype, MWM). 25. *L. nigropuncta* Druce, 1909 (male, MWM). 26. *L. nigropuncta* Druce, 1909 (female, holotype, NHMUK). 27. *L. witti* Volkova, sp. nov. (male, holotype, MWM).





Figures 36-41. Wings pattern of *Langucys*, males (the arrows show the distinctive features mentioned in the text): **36.** *L. bicolor*. **37.** *L. reichertae* Volkova, sp. nov. **38.** *L. languciatus*. **39.** *L. sulaki* Volkova, sp. nov. **40.** *L. witti* Volkova, sp. nov. **41.** *L. artamonovae* Volkova, sp. nov.

