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ZYGAENIDAE FROM FRENCH GUIANA, WITH A KEY TO THE NARROW-WINGED ZYGAENIDAE GENERA OF THE NEW WORLD

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ABSTRACT. New data on Zygaenidae from French Guiana are provided together with a checklist and key to genera and species. Seven species are newly described: ***Pampa hermieri*** (Tarmann & Drouet), **new species**, ***Pampa pseudovenata*** (Tarmann & Drouet), **new species**, ***Stylura guyanensis*** (Tarmann & Drouet), **new species**, ***Monalita faurei*** (Tarmann & Drouet), **new species**, ***Monalita laguerrei*** (Tarmann & Drouet), **new species**, ***Seryda gallardi*** (Tarmann & Drouet), **new species**, and ***Seryda confusa*** (Tarmann & Drouet), **new species**. All species are discussed in detail and their habitus and genitalia are figured. A key to the narrow-winged genera of American Zygaenidae and all species of French Guiana is provided.

Additional key words: French Guiana, *Pampa, Stylura, Harrisinopsis, Monalita, Pycnonctena, Seryda*, checklist, dichotomous key to genera and species, barcoding tree.

The zygaenid fauna of French Guiana ('Guyane francaise', South America) has never been examined sufficiently. However, some material is available but this has never been determined properly. As a consequence, the second author has tried to compile all the available material of Zygaenidae from French Guiana collected by Daniel Camus, Jean Cerda, Denis Faure, Christophe Faynel, Jean-Yves Gallard, Bernard Hermier, Pierre Jauffret (†), and Michel Laguerre. The first author had started a revision of the American Zygaenidae in the early 1970s, based on earlier publications, especially those of Hering (1924, 1925, 1928, 1932, 1941) and Alberti (1954), and on the available type material. This work was interrupted by the great flood disaster in Innsbruck in 1985. Many of the original files were lost but a substantial part survived and has been restored. Consequently we are now able to compare the Zygaenidae material from French Guiana with the type material that was examined in the 1970s. A generic revision of the American Zygaenidae has already been published (Tarmann 1984) and a new checklist is in preparation (Efetov & Tarmann, in prep.). For the present paper, which is only a first attempt to summarize information, this knowledge was essential. We hope that it can help to draw attention to this very interesting group of little known Lepidoptera in South America.

METHODS

The treatment of the material had to be based on morphology, as an attempt to sequence all specimens within the framework of BOLD unfortunately failed. Normally Zygaenidae of the subfamily Procridinae provide good results and even allowed to identify some cryptic species (Efetov 2012, Efetov, Hofmann & Tarmann 2014, Efetov & Tarmann 2014). Although we decided for the more expensive failure tracking primers from the 26 samples sent for barcoding we received only twelve sequences. Only 8 of them have the full length of 658 base pairs, two have 307bp, one has 288bp and one 269bp. However, a tree from this poor result is published (Fig. 47) to give at least a first idea of the genetic distances. The two sequences below 300bp are not used for the tree (Fig. 47). As most of the examined specimens were collected quite recently and are not taken from historical collections we conclude that the specimens may have been transported and stored after collecting too long under humid conditions in the tropical environment of French Guiana. This experience should emphasize to future collectors to store at least one or two unprepared specimens under dry conditions for genetic analysis. In our BOLD project ZYGMO (Zygaenid Moths of the World) the Sample ID is given as a special acronym that enables one to identify the original determination of the specimen from which the leg for sequencing was taken. This acronym is added in this paper with each specimen under 'material examined'. Moreover, we also give the results from BOLD that readers can see which specimens are used for compiling the tree. We provide here an example to make later identifications easier: 'BOLD ZYGMO PPPam#sma#001-result 658bp' means 'BOLD project ZYGMO, subfamily Procridinae, tribe Procridini, genus

Pampa, # (no subgenus), species smaragdina, # (no subspecies), 001 (specimen 001 of that species that was sent for sequencing), result from BOLD is 658 base pairs (=full length).

Checklist of Zygaenidae of French Guiana

Family Zygaenidae Latreille, 1809: 189, 211 (as Zygaenides)
[Type genus: *Zygaena* Fabricius, 1775: 550]

Subfamily Procridinae Boisduval, [1828]: 38 (as Procridae)
[Type genus: *Procris* [Fabricius in Illiger], 1807, l. c.: 289] (see Taeger & Gaedike, 2001: 87)

Tribe Procridini Boisduval, [1828]: 38 (as Procridae)
[Type genus: *Procris* [Fabricius in Illiger], 1807, l. c.: 289] (see Taeger & Gaedike, 2001: 87)

Genus *Pampa* Walker, 1854: 238
[Type species: *Euchromia mystica* Walker, 1854: 239, by subsequent designation by Kirby, 1892: 112]
Nesace Kirby, 1892: 112 (unnecessary objective replacement name for *Pampa* Walker, 1854: 238)
[Type species: *Euchromia mystica* Walker, 1854: 239, by subsequent designation by Kirby, 1892: 112]

1. *P. smaragdina* (Hering, 1941: 111) (*Harrisina*)

2. *P. hermieri* sp. nov.

3. *P. pseudovenata* sp. nov.

Genus: *Stylura* Burmeister, 1878: 391
[Type species: *Laemocharis forficula* Herrich-Schäffer, [1855]: pl. 54, by monotypy]

4. *St. guyanensis* sp. nov.

Genus: *Harrisinopsis* Jordan, 1913: 26
[Type species: *Harrisinopsis robusta* Jordan, 1913: 26, by original designation and monotypy]

5. *H. robusta* Jordan, 1913: 26
tessmanni Hering, 1928: 281

Genus *Monalita* Tremewan, 1973: 134
[Type species: *Lamontia calibana* Kaye, 1923: 997, by monotypy]
Lamontia Kaye, 1923: 997 (a junior homonym of *Lamontia* Kirk, 1895: 289 – Spongida. The objective replacement name is *Monalita* Tremewan, 1973: 134)
[Type species: *Lamontia calibana* Kaye, 1923: 997, by monotypy]

6. *M. faurei* sp. nov.

7. *M. laguerrei* sp. nov.

Genus *Pycnoctena* Felder, 1874: pl. 83
[Type species: *Pycnoctena angustula* Felder, 1874: pl. 83, by monotypy]

8. *P. angustula* Felder, 1874; pl. 83

Genus *Seryda* Walker, 1856: 1598
[Type species: *Seryda cincta* Walker, 1856: 1598, by monotypy]

9. *S. gallardi* sp. nov.

10. *S. confusa* sp. nov.

11. *Pampa* (?) sp. or **spp.**

Key to narrow-winged genera of American Zygaenidae and Zygaenidae of French Guiana

Remark. We have no comprehensive French Guiana Lepidoptera fauna (Brulé & Tourroult, 2014). French Guiana is poorly explored and the genera and species mentioned in this paper may only represent a part of its Zygaenidae fauna. To enable easier research in future a complete key to the narrow-winged genera of Zygaenidae that occur in adjacent countries of South America and in the Caribbean Islands is provided. Most of these species inhabit tropical rain forest. The broad-winged Zygaenidae genera are not mentioned as they all occur in mountainous areas and on high plateaus in Central and South America; therefore, it is most unlikely that any species of that group can be found in French Guiana. The genera and species that occur in **French Guiana are cited in bold.** This key is primarily based on an earlier key published in German by Tarmann (1984) and on unpublished revisionary work that has been undertaken by the first author during the last 30 years.

Key to genera

1 Frenulum represented by one large bristle that inserts into a retinaculum and which forms a curved process situated at base of vein Sc: male …..... **2**
- Frenulum represented by 1 or 2 smaller bristles that insert into a retinaculum formed from specialized scales situated near base of vein CuP: female: **9**

Male

2 Genitalia symmetrical (e.g. Figs 30a, 35a, 38a, 45a) **3**

- Genitalia asymmetrical (Fig. 46a) ..... *Harrisina* Packard,1864

(So far no species is known from French Guiana but this genus is widely distributed in the Americas and therefore may occur in the former country. 9 species are currently known: *H. americana* (Guérin-Méneville, [1844]) (type species) (USA), *H. coracina* (Clemens, 1861) (USA, Mexico), *H. metallica* Stretch, 1885 (= *brillians* Barnes & McDunnough, 1910) (USA, Mexico), *H. charax* Druce, 1896 (Mexico), *H. draudti* Hering, 1925 (Mexico), *H. guatemalena* (Druce, 1884) (Guatemala), *H. tergina* Jordan, 1913 (Colombia), *H. infernalis* (Hering, 1925) (Brazil), *H. longicaulis* Hering, 1925) (Venezuela)).

3 Subcostal vein in hindwing free, rr and m_1 absent, cell therefore very small, the medial stem representing the anterior part of cell; small species ..... *Urodopsis* Jordan, 1913

(So far no species is known from French Guiana. 4 species are currently known: *U. subcaerulea* (Dognin, 1910) (type species) (Colombia), *U. dryas* Jordan, 1915 (Brazil), *U. pusilla* (Walker, 1854) (Venezuela, Brazil), *U. melaenella* (Hampson, 1919) (Brazil)).

- Sc in hindwing not free, rr present **4**

4 Genitalia: Valva short, simple, rounded, uncus broad, short, with small, pointed distal hook, tegumen with small distal tooth laterally, aedeagus large, short, very stout, without cornuti (Figs 45a, b) ..... *Triprocris* Grote, 1873

(So far no species is known from French Guiana. 9 species are currently known: *T. smithsoniana* (Clemens, 1861) (type species) (USA), *T. yampai* Barnes, 1905 (USA), *T. cyanea* Barnes & McDunnough, 1910 (USA), *T. lustrans* Beutenmüller, 1894 (USA), *T. ruemelii* (Druce, 1884) (Mexico), *T. rosetta* Dyar, 1918 (Mexico), *T. similissima* Tarmann, 1984 (Mexico), *T. auchenochrysa* (Dyar, 1912) (Mexico), *T. flavipuncta* Tarmann, 1984 (Brazil)).

- Genitalia: Valva with process, with special structures, slightly twisted or elongate-ovoid, aedeagus not large, short and very stout, with cornuti, ridges or crests (e.g. Figs 30a, b; 34a, b; 36a, b; 38a, b) **5**

5 Posterior margin of forewing parallel to vein A1+A2 for half or less than half length of forewing, hindwing broad, subquadrate (Figs 16–21) **6**

- Posterior margin of forewing parallel to vein A1+A2 for more than half length of forewing, hindwing narrow, ovoid (Figs 1–15) **7**

6 Forewing densely scaled and opaque proximally, weakly scaled and translucent distally, (Figs 18–21). Genitalia: Uncus short but well developed, tegumen without sclerotized processes (Figs 36a, 37a, 38a) ..... ***Monalita* Tremewan, 1973**

(3 species are currently known: *M. calibana* (Kaye, 1923) (type species) (Trinidad), ***M. faurei* sp. nov.** (French Guiana), ***M. laguerrei* sp. nov.** (French Guiana)).

- Both wings opaque, without translucent parts (Figs 16, 17). Genitalia: Uncus reduced to a small triangular structure, tegumen with a pair of strongly sclerotized processes distally on each side of uncus (Figs 34a, 35a)..... ***Harrisinopsis* Jordan, 1913**

(1 species is currently known: ***H. robusta*** Jordan, 1913 (French Guiana, Brazil, Peru))

7 Last abdominal pleurites strongly enlarged, forming a tube-like prolongation of the abdomen and resembling a forked tail (Figs 12–15) ..... ***Stylura* Burmeister, 1878**

(4 species are currently known: *S. forficula* (Herrich-Schäffer, 1855) (type species) (Brazil), ***S. guyanensis*** sp. nov. (French Guiana), *S. brasiliensis* Costa Lima, 1928 (Brazil), *S. cirama* (Druce, 1896) (Guatemala, Costa Rica)).

- Without a forked tail **8**

8 Small species with very narrow wings and black and white pattern, wing venation strongly reduced .....*Setiodes* Herrich-Schäffer, 1866

(1 species is currently known: *S. nana* Herrich-Schäffer, 1866 (Bahamas, Cuba)).

- Species with *Harrisina*-habitus but with symmetrical genitalia that exhibit various special structures (Figs 1–11, 26, 27, 30a) ..... ***Pampa* Walker, 1854**

(31 species are currently known: *P. anisa* (Hering, 1924) (Brazil), *P. boliviensis* (Hering, 1924) (Bolivia), *P. approximata* (Hering, 1924) (Colombia), *P. tersa* (Druce, 1899) (Mexico), *P. mystica* (Walker, 1854) (type species) (Honduras), *P. venata* (Jordan, 1913) (Brazil), ***P. pseudovenata*** sp. nov. (French Guiana), *P. peritta* (Hering, 1924) (Brazil), *P. erythrogramma* (Hering, 1924) (Uruguay), *P. virescens* (Hampson, 1907) (Brazil), *P. erroris* Tarmann, 1984 (Brazil), *P. rubroventralis* (Hering, 1932) (Brazil), *P. splendens* (Jordan, 1913) (Peru), ***P. smaragdina*** (Hering, 1941) (French Guiana, Colombia), *P. janeira* (Schaus, 1892) (Brazil), *P. lepta* (Jordan, 1913) (Colombia), *P. mephisto* (Jones, 1921) (Brazil), ***P. hermieri*** sp. nov. (French Guiana), *P. aidae* Tarmann, 1984 (Brazil), *P. eminens* (Schaus, 1892) (Brazil), *P. incredibilis* Tarmann, 1984 (Brazil), *P. esperanzae* Tarmann, 1984 (Brazil), *P. zikani* (Hering, 1932) (Brazil), *P. anamariae* Tarmann, 1984 (Brazil), *P. pseudoeminens* Tarmann, 1984 (Brazil), *P. proeminens* (Jörgensen, 1932) (Paraguay), *P. fulvinota* (Butler, 1876) (Brazil), *P. brevistrigata* (Hering, 1924) (Brazil), *P. seitzi* (Hering, 1932) (Brazil), *P. innocens* (Hering, 1925) (Brazil), *P. ricara* (Jörgensen, 1932) (Paraguay)).

The genus ***Seryda* Walker, 1856**, is excluded from this key as its type-species *Seryda cincta* Walker, 1856, has not been traced so far and has not been examined. Moreover, the holotype of *S. cincta* is a female. The other three species (*S. actinota* Walker, 1856 (Colombia), *A. isa* Jordan, 1913 (Ecuador), and *S. glaucotis* (Hampson, 1907) (Guatemala)) that were included into this genus by Tarmann (1984: 41) had only been placed there provisionally. They may belong to other genera. The two species newly described in this paper are therefore also only provisionally placed in *Seryda*.

The same situation has to be accepted for the genus ***Pycnoctena* Felder, 1874**. Its type species is *Pycnoctena angustula* Felder, 1874. So far, only three female specimens of this species are known. The

other three species, all occurring in Brazil (*P. invaria* (Walker, 1984), *P. tristis* Hering, 1932, and *P. dantasi* (Schaus, 1892)), which were included in this genus by Tarmann (1984: 41) had only been placed provisionally and may belong to other genera.

Female

9 Frenulum consisting of 1 large bristle …… **12**
- Frenulum consisting of 2 bristles ……. **10**

10 Wing venation in forewing with all veins free from cell; small species with very narrow wings (Figs 22, 23) ……..***Pycnoctena* Felder, 1874**
- Wing venation in forewing with r_3+r_4 stalked, large species, hindwing broad, subquadrate (Figs 16–21)…….**11**

11 Forewing long, densely scaled and opaque proximally, weakly scaled and translucent distally (Figs 18–21) …… ***Monalita* Tremewan, 1973**
(3 species: see key to male)
- Both wings opaque, without translucent parts (Figs 16, 17) ……... ***Harrisinopsis* Jordan, 1913**
(1 species: see key to male)

12 Genitalia: Praebursa absent, ductus bursae simple, without strong sclerotization, not forming a prominent antrum…….**13**
- Genitalia: Praebursa present, or ductus bursae with at least strongly sclerotized parts, often forming an antrum ……**14**

13 Genitalia: Ductus bursae tube-like. Frenulum also in female in the position where it is normally in male, i.e. inserted into a retinaculum situated at base of Sc (!) (there is only one single female known and it cannot be excluded that this is an aberrant character) ……..... *Zikanella* Hering, 1932
(1 species: Z. *rubrivitta* Hering, 1932 (Brazil)
- Genitalia: Ductus bursae short, with a proximal globular enlargement. Subcostal vein in hindwing free, rr and m_1 absent, cell therefore very small, the medial stem representing the anterior part of cell; small species ……..…… *Urodopsis* Jordan, 1913
(4 species: see key to male)

14 Opening of female genitalia situated symmetrically in middle axis of abdomen ..…..... **15**
- Opening of female genitalia situated asymmetrically, not in middle axis of abdomen. Genitalia: Ostium ovoid, situated sidewards in a large, sclerotized, dish-like plate that bears various dentations and which is fused with the 8th sternite; ductus bursae and corpus bursae small, translucent, without sclerotization ……..... *Harrisina* Packard, 1864
(9 species: see key to male)

15 Small species with very narrow wings and black and white pattern, wing venation strongly reduced ……..... *Setiodes* Herrich-Schäffer, 1866
(1 species: see key to male)
- Without black and white pattern, wing venation not strongly reduced ……..……. **16**

16 Last abdominal pleurites strongly enlarged, forming a tube-like prolongation of the abdomen and resembling a forked tail (Figs 12–15) …… ***Stylura* Burmeister, 1878**
(4 species: see key to male)
- Without a forked tail ……..…. **17**

17 Wing venation in forewing with (r_2+r_3) stalked or arising from one point, never (r_1+(r_2+r_3) stalked, r_5 absent, hindwing with well-developed medial stem and vein ax. 2nd abdominal sternite without lateral branch of apophysis ……..... *Triprocris* Grote, 1873
(9 species: see key to male)

(Remark: There are two different types of female genitalia known in this genus: 1. With praebursa well developed and separated from the corpus bursae, inserting into the ductus bursae laterally with a ring-like sclerotization with tooth-like structures, corpus bursae small and translucent; 2. Praebursa and corpus bursae fused to form a large spherical structure with translucent walls but with a strongly sclerotized ring-like structure that bears rows of teeth and spines and with a pair of sclerotized, tooth-bearing plates)
- Wing venation with (r_1+(r_2+r_3) stalked, r_5 mainly present, medial stem in hindwing reduced, vein ax reduced. Genitalia very variable in shape and sclerotization, praebursa well developed with different special structures. 2nd abdominal sternite with lateral branch of apophysis..... ..... ***Pampa* Walker, 1854**
(31 species: see key to male)

The genus ***Seryda* Walker, 1856**, is excluded from this key (see comment under males).

Key to the species from French Guiana belonging to the genus *Pampa* Walker, 1854

1 Wings opaque, forewing strongly shiny, greenish blue, hindwing blackish violet with a slight greenish blue sheen, fringe violet (Fig. 1) ……. ***P. smaragdina*** (Hering, 1941)
- Wings semitranslucent with well-visible dark veins, without sheen, fringe black **2**

2 Apex of wings white (Figs 2–5) ……..…… ***P. hermieri* sp. nov.**
- Wings uniform, without white apex (Figs 6–11, 26, 27) ……..…… **3**

3 Aedeagus (phallus) short and stout, with one large comma-shaped and one small tooth-shaped cornutus (Fig. 30b) …..……..... ***P. pseudovenata*** **sp. nov.**

- Aedeagus (phallus) small and slender, with one or two small, straight cornuti (Fig 43b) ……..... ***Pampa*** sp. (not described)

Key to the species from French Guiana belonging to the genus *Monalita* Tremewan, 1973

1 Uncus pointed distally, sacculus with a prominent, distally pointed process at half length of valve ventrally, pulvinus not prolongated, without a pair of long. slightly curved, strongly sclerotized movable projections with pointed apex and with a hairy base situated on top of juxta (Fig. 36a) ……..... ***Monalita faurei*** **sp. nov.**

- Uncus rounded distally, sacculus without process, pulvinus prolongated to form a strongly sclerotized finger that bears short tooth-like setae distally; with a pair of long, slightly curved, strongly sclerotized movable projections with pointed apex and with a hairy base situated on top of juxta (Fig. 38a) ……..... ***Monalita laguerrei*** **sp. nov.**

List of Abbreviations

BMNH = Natural History Museum, London, U.K.
ED = Eric Drouet, Gap, France
GMT = Gerhard M. Tarmann, Innsbruck, Austria
TLMF = Tiroler Landesmuseen, Ferdinandeum, Innsbruck, Austria
ZMHB = Zoologisches Museum der Humboldt Universität zu Berlin, Germany

Systematic part

Genus: *Pampa* Walker, 1854

General remarks.

The genus *Pampa* is one of the most diverse zygaenid genera in the Americas. As far as is known most species inhabit tropical rain forest and the larvae live on climbing vines (e.g. *Cissus*). There is substantial material in collections but the determination of specimens is difficult. Twenty-nine described taxa are considered to represent valid species. However, the whole genus needs to be revised. The number of species already available in collections is significantly higher than the number of described species. The difficulty is that these small black individuals have only limited external characters. Often we do not have a clear picture to which females the males belong and vice versa when only one sex is known. Many species are only known from their type specimens. In the 1970s and 1980s GMT examined and dissected almost all the types of the described taxa. A large number of undescribed species have already been examined. The treatment of *Pampa* in this paper is based on our entire knowledge of the above-mentioned material. We realize that decisions about species in *Pampa* should be made on series of males and females, but unfortunately this has hardly ever been possible. It is not different with the available material from French Guiana. Nevertheless, we describe two new species where we are convinced that our decision is justified even if one of these descriptions is based on one sex only. So far we have only DNA barcoding results of three species of *Pampa*. But even based on this poor information we can see that the species currently accommodated in this genus may have to be rearranged and it is clear that in the future, based on sufficient material, it might turn out that one or the other decision has to be corrected.

1. ***Pampa smaragdina*** (Hering, 1941) (Fig. 1)

Material examined

COLOMBIA: Holotype ♀: "Columbia" (Gen. prep. GMT Z 640) (ZMHB); **FRENCH GUIANA:** 1 ♀, French Guyana, Montagne des Chevaux, (N 4° 43' 30'' / W 52° 24' 30''), 31.iii.1997, (*B. Hermier* leg.) (ex Coll. *B. Hermier*, n° 12253) (Coll. TLMF) (Gen. prep. GMT Z 3629) (BOLD ZYGMO PPPam#sma#001-no result) (Figs 1, 28).

General remarks.

The female Holotype of *P. smaragdina* was described by M. Hering as a ♂. This type is deposited in ZMHB and was examined and dissected by GMT in 1976 (Gen. prep GMT Z 640). The fact that the antenna is strongly pectinated may be the reason that Hering described this female as a male. There is no significant difference between the holotype and our specimen from French Guiana.

Redescription (based on the holotype and the female from French Guiana).

Head, thorax and abdomen unicolorous, black, with violet and bluish green sheen (depending on the angle of the refractive light). Length of body: 10.2 mm, length of forewing: 12.9 mm, breadth of forewing: 3.8 mm, length of hindwing: 7.1 mm, breadth of hindwing: 2.6 mm, both antennae broken. Forewing densely covered with scales that are arranged in the form of roofing tiles, some bifurcate or even trifurcate distally but ovoid scales also

present, surface of forewing strongly shiny, greenish blue, hindwing blackish violet with a slight greenish blue sheen, fringe violet. Scales on hindwing ovoid, surface of hindwing also shiny. Head in lateral view with almost flat frons that is slightly projected dorsally; frons 1.2× broader than compound eye in frontal view; compound eye black, chaetosemata chocolate brown, triangular, projected anteriorly as in specimens belonging to the tribe Artonini of Procridinae (distributed in Asia, Africa and Australia), filling the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 1.8× broader than diameter of ocellus. Labial palps short, porrect. Proboscis blackish brown. Antenna bipectinate, with dorsoventrally compressed shaft, pectinations with length ca 3.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) extremely short.

Legs concolorous with thorax except for a narrow yellowish streak along foreleg ventrally, foreleg without epiphysis, hindtibia with a pair of very small triangular spurs.

Wing venation in forewing with r_3+r_4 stalked, in hindwing all veins free from cell, m_1 absent, medial stem reduced in forewing, weakly developed distally in hindwing. Frenulum developed as a single spine.

Female genitalia (Fig. 28).

Both examined females do not show any variation in genitalia.

Ostium approximately half as broad as length of the strongly sclerotized antrum, the latter with smooth surface ventrally and with a very characteristic groove-like structure dorsally that looks like a 'ladder', distal end of antrum closed, with a translucent, strongly folded, bag-like structure; the insertion of the translucent ductus bursae into the antrum is situated dorso-laterally at the distal end of the 'ladder'-like groove; the short translucent part of the ductus bursae opens into a large, translucent, spherical praebursa that has a ring-like structure; the translucent and strongly folded ductus intrabursalis inserts at the centre of this ring-like structure in the middle of the praebursa; corpus bursae small, ovoid, translucent; insertion of ductus seminalis at the point where the ductus intrabursalis enters the corpus bursae. Papillae anales small with short setae, apophyses posteriores 1.8× longer than length of papillae anales; 8th sternite translucent, apophyses anteriores very short, translucent; 8th sternite with a narrow sclerotization.

Differential diagnosis.

P. smaragdina can be confused with many *Pampa* species of the same size and habitus. In *Pampa* the genitalia are extremely diverse although these characters seem to be constant within one species. Therefore any determination has to be based on genitalia structures. There is no other species known with genitalia similar to those of *P. smaragdina*. The groove-like dorsal structure with 'ladder'-like appearance in the antrum can be found in at least two other species (*P. pseudoeminens* Tarmann, 1984, and *P. anamariae* Tarmann, 1984) but these two species differ from *P. smaragdina* in having a characteristic yellowish pattern on the blackish blue wings.

Phenology and bionomics. Unknown.

Distribution. Colombia, French Guiana.

2. *Pampa hermieri* sp. nov. (Figs 2–5)

Material examined

FRENCH GUIANA: Holotype ♀: French Guyana, Patawa camp, Kaw, (N 4° 32' 30'' / W 52° 9'), 21.iv.1996, light trap, (*J. Cerda* leg.) (ex Coll. B. Hermier, n° 10162) (Coll. TLMF) (BOLD ZYGMO PPPam#her#001-no result) (Fig. 2); **Paratypes:** 1 ♀, French Guyana, Patawa camp, Kaw,(N 4° 32' 30'' / W 52° 9'), 08.x.1994, light trap, (J. *Cerda* leg.) (ex Coll. B. Hermier, n° 7190) (Coll. TLMF) (BOLD ZYGMO PPPam#her#002-no result) (Fig. 3); 1 ♀, French Guyana, Montagne de Kaw, pk 37.5 (N 4°35'55'' / W 52°08'43''), 03.v.2003, light trap, (D. *Faure* leg.) (Coll. ED) (BOLD ZYGMO PPPam#her#003-result 658bp) (Fig. 4); 1 ♀, French Guyana, road N2, pk 54, (N 4° 33'30'' / W 52° 24'), 27.iv.1997, light trap (*B. Hermier* leg.) (ex Coll. B. Hermier, n° 12422) (Coll. TLMF) (Gen. prep. GMT Z 3630) (BOLD ZYGMO PPPam#her#004-no result) (Figs 5, 29).

General remarks.

Only females are known so far. There is only one other species of *Pampa* known (an undescribed species from Costa Rica with different genitalia) that has a habitus similar to that of *P. hermieri* sp. nov. The white apex on the forewing is characteristic for both *P. hermieri* sp. nov. and the undescribed species from Costa Rica.

Description

Female.

Head, thorax and abdomen unicolorous black, opaque, sometimes with a very slight violet sheen (depending on the angle and intensity of the refractive light). Length of body: 9.3–10.9 mm, length of forewing: 11.4–12.0 mm, breadth of forewing: 3.1–3.7, length of hindwing: 6.3–7.6 mm, breadth of hindwing: 2.3–2.6 mm, length of antenna: 5.1–5.2 mm. Fore- and hindwings black, densely covered with narrow scales, forewing with white apex on upper- and underside, surface of both wings on

upper- and underside opaque, matt, without sheen, fringe black. Head in lateral view with almost flat frons that is slightly projected dorsally; frons 1.2× broader than compound eye in frontal view; compound eye black, chaetosemata chocolate brown, triangular, projected anteriorly as in Artonini, filling the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 1.5× broader than diameter of ocellus. Labial palps short, porrect. Proboscis brown. Antenna short, with 33 segments, bipectinate, tapering to and bluntly pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 3.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) extremely short.

Legs concolorous with thorax, foreleg without epiphysis, hindtibia with a pair of very small triangular spurs.

Wing venation in forewing with r_3+r_4 stalked, in hindwing all veins free from cell, m_1 absent, medial stem absent in both wings. Frenulum developed as a single spine.

Female genitalia (Fig. 29).

Ostium broad, slit-shaped, approximately half as broad as length of the strongly sclerotized antrum, the latter tapering distally, with smooth surface ventrally and dorsally, without a central groove-like structure dorsally, distal end of antrum closed with a translucent, strongly folded, small, bag-like structure; the insertion of the translucent ductus into the antrum is situated dorso-laterally in the middle of antrum; no separately developed praebursa visible, the ductus bursae and corpus bursae are fused to form a long, translucent tube-like structure that has a bag-like ending distally; the fact that the ductus seminalis inserts at about 1/3 length of this tube shows us this fusion because normally the ductus intrabursalis inserts at the proximal edge of the corpus bursae. Papillae anales small with short setae, apophyses posteriores 1.2× longer than papillae anales; 8th sternite and 8th tergite fused to form a ring-like structure, apophyses anteriores extremely short, almost absent.

Differential diagnosis.

The habitus and the genitalia of *P. hermieri* sp. nov. are unique. The second *Pampa* species with a white apex originating from Costa Rica awaits description. However, the latter has the abdominal segments 1–3 red ventrally and laterally whereas these are uniformly black in *P. hermieri* sp. nov.

Phenology and bionomics. Unknown.

Distribution. French Guiana.

Derivatio nominis. This species is named after Bernard Hermier (Rémire-Montjoly, French Guiana, F) who is undertaking substantial research on Heterocera and Hesperiidae in French Guiana.

3. *Pampa pseudovenata* sp. nov. (Figs 6–11, 30a–c)

Material examined

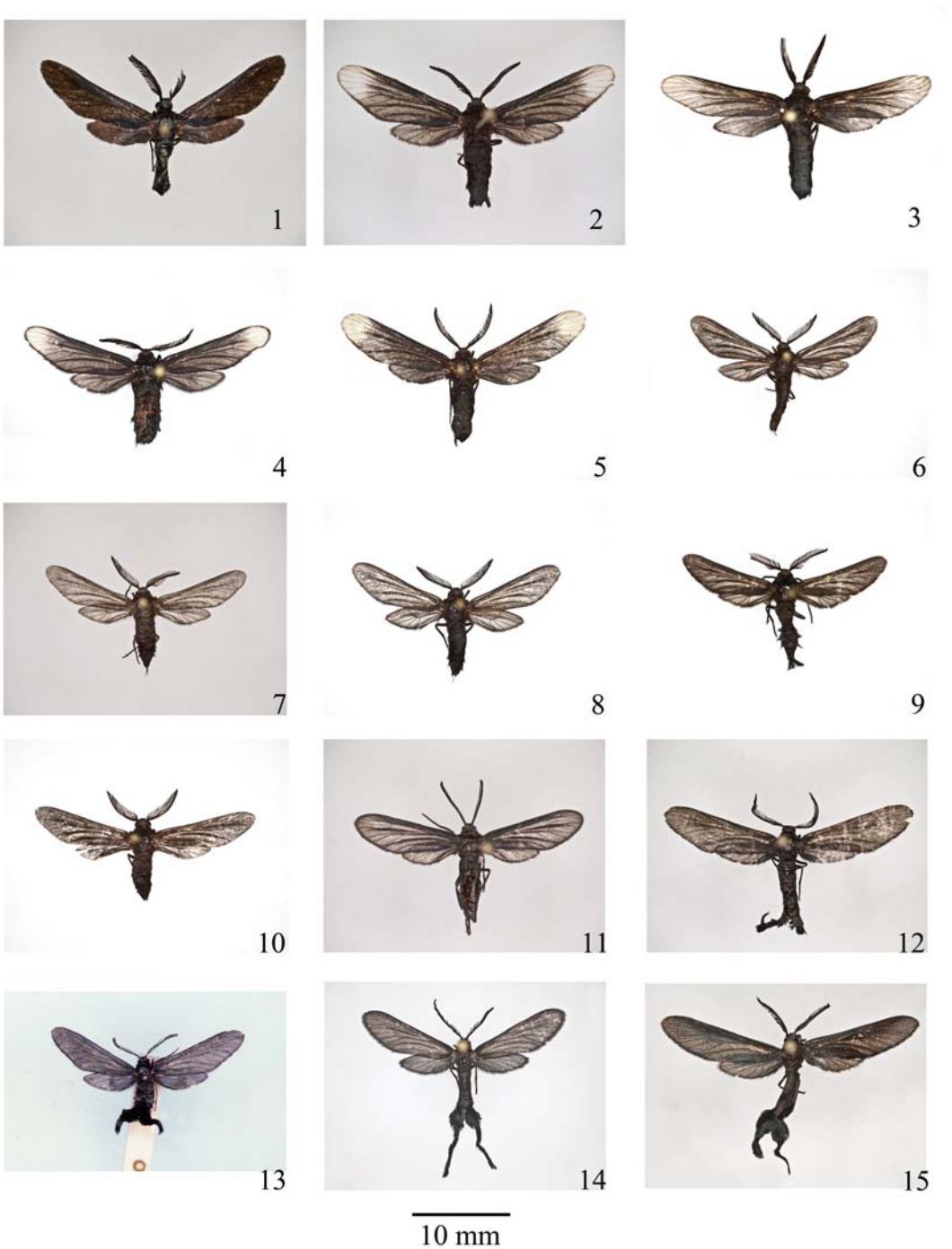
FRENCH GUIANA: Holotype ♂: French Guyana, road N2, pk 79, (N 4° 24'52" / W 52° 18' 30"), 30.iv.1997, light trap (B. Hermier leg.) (ex Coll. *B. Hermier*, n° 12364) (Coll. TLMF) (Gen. prep. GMT Z 3631) (Coll. TLMF) (BOLD ZYGMO PPPam#pse#001-no result) (Fig. 6, 30a, b). **Paratypes:** 1♂, French Guyana, road N2, pk 79, (N 4° 24'52" / W 52° 18' 30"), 30.iv.1997, light trap (*B. Hermier* leg.) (ex Coll. *B. Hermier*, n° 12411) (Coll. TLMF) (BOLD ZYGMO PPPam#pse#002-no result) (Fig. 7); 1♂, French Guyana, Route forestière de Coralie, pk 10,2 (N 4°30'30" / W 52° 26' 00"), 13.ix.1996, light trap (B. Hermier leg.) (ex Coll. *B. Hermier*, n° 11002) (Coll. TLMF) (BOLD ZYGMO PPPam#pse#003-no result) (Fig. 8); 1♂, French Guyana, Camp Patawa [Roura] (N 4° 32'30" / W 52° 09' 00"), 27.iv.1993, light trap (*J. Cerda* leg.) (Coll. *B. Hermier*, n° 7189) (BOLD ZYGMO PPPam#pse#004-no result) (Fig. 9); 1♂, French Guyana, Piste de Changement, pk 7 (N 4°30'18" / W 52°24'11"), 12.ii.1997, light trap (*B. Hermier* leg.) (ex Coll. *B. Hermier*, n° 12042) (Coll. TLMF) (BOLD ZYGMO PPPam#pse#005-no result) (Fig. 10); 1♀, French Guyana, Sinnamary, [Route de Saint-Elie, Piste de la] crique Toussaint (N 5° 21' 29.6" / W 53° 0' 15.3") 12.i.1999, on flower (*C. Faynel* leg.) (Coll. ED) (Gen. prep. GMT Z 3632) (BOLD ZYGMO PPPam#pse#006-no result) (Fig. 11, 30c).

General remarks.

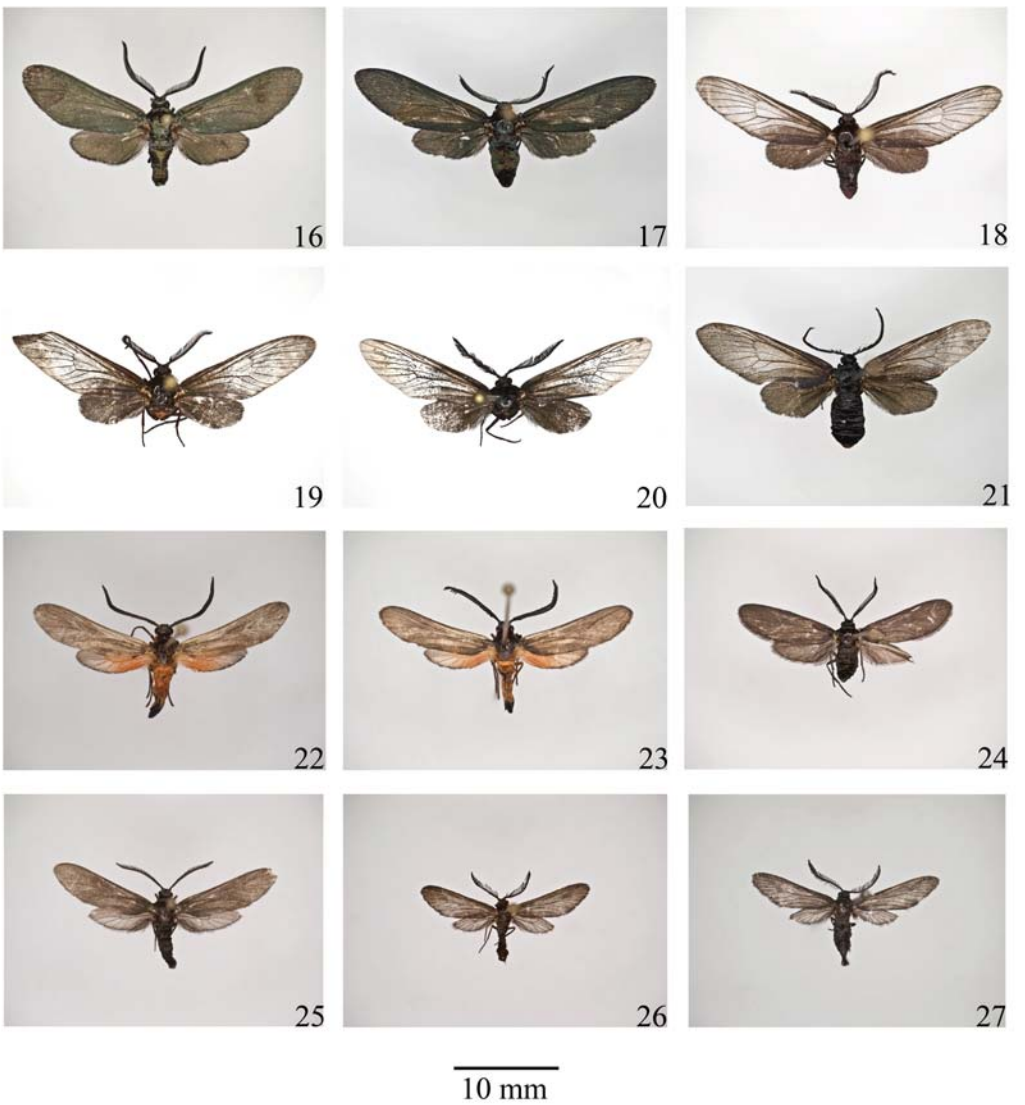
This species is externally similar to a group of small *Pampa* species in which the wing venation is strongly pronounced and visible as dark lines, but the wings of *P. pseudovenata* sp. nov. are more translucent.

Description.

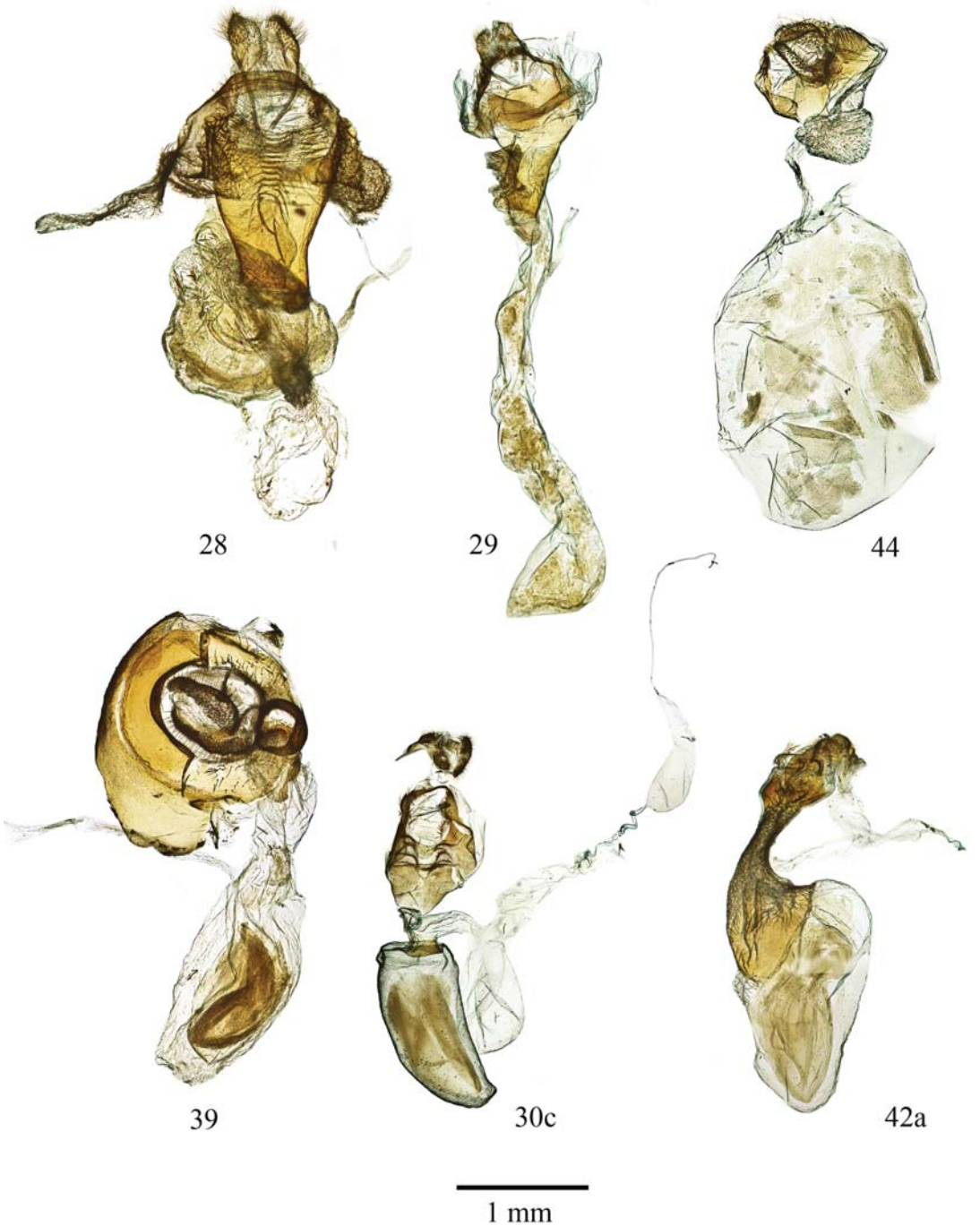
Head, thorax and abdomen unicolorous greyish black, without sheen. Length of body: 8.5–9.1 mm in male, 10.2 mm in female, length of forewing: 9.0–10.0 mm in male, 10.4 mm in female, breadth of forewing: 2.9–3.1 mm in male, 3.4 mm in female, length of hindwing: 5.6–5.7 mm in male, 6.1 mm in female, breadth of hindwing: 2.2 mm in male, 2.3 mm in female, length of antenna: 4.4–4.5 mm in male, 5.2 mm in female. Both wings black, slightly translucent, weakly covered with very narrow scales, the veins stronger scaled and therefore well visible. Head in lateral view with almost flat frons that is slightly projected dorsally; frons 1.2× broader than compound eye in frontal view; compound eye black, chaetosemata chocolate brown, triangular, projected anteriorly as in Artonini, filling the space between compound eye and ocellus; ocellus small, distance



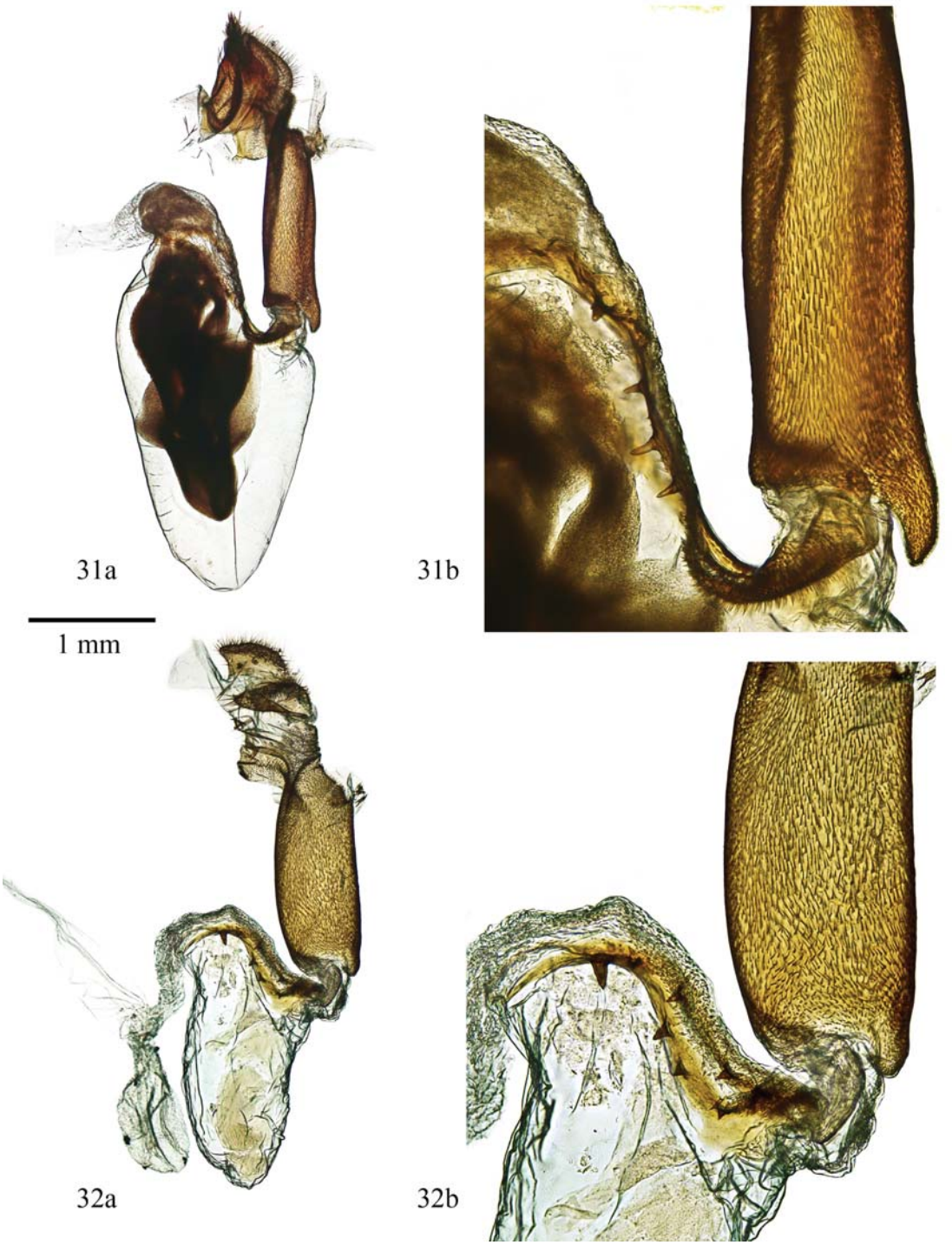
FIGS. 1–27. **1.** *Pampa smaragdina* (Hering, 1941), ♀. French Guyana, Montagne des Chevaux, 31.iii.1997 (*B. Hermier* leg.) (ex Coll. *B. Hermier*, n° 12253) (Coll. TLMF) (Gen. prep. GMT Z 3629). **2.** ***Pampa hermieri* sp. nov.**., Holotype ♀. French Guyana, Patawa camp, Kaw, 21.iv.1996 (*J. Cerda* leg.) (ex Coll. *B. Hermier*, n° 10162) (Coll. TLMF). **3.** ***Pampa hermieri* sp. nov.**., Paratype ♀. French Guyana, Patawa camp, Kaw, 08.x.1994, light trap (*J. Cerda* leg.) (Coll. *B. Hermier*, n° 7190) (Coll. TLMF). **4.** ***Pampa hermieri* sp. nov.**., Paratype ♀. French Guyana, Montagne de Kaw, pk 37.5, 03.v.2003 (*D. Faure* leg.) (Coll. ED). **5.** ***Pampa hermieri* sp. nov.**., Paratype ♀. French Guyana, road N2, pk 54, 27.iv.1997 (*B. Hermier* leg.) (Coll. *B. Hermier*, n° 12422) (Coll. TLMF) (Gen. prep. GMT Z 3630). **6.** ***Pampa pseudovenata* sp. nov.**. Holotype ♂. French Guyana, road N2, pk 79, 30.iv.1997 (*B. Hermier* leg.) (ex Coll. *B. Hermier*, n° 12364) (Coll. TLMF) (Gen. prep. GMT Z 3631). **7.**. ***Pampa pseudovenata* sp. nov.**. Paratype ♂. French Guyana, road N2, pk 79, 30.iv.1997 (*B. Hermier* leg.) (Coll. *B. Hermier*, n° 12411) (Coll. TLMF). **8.** ***Pampa pseudovenata* sp. nov.**. Paratype ♂. French Guyana, Route forestière de Coralie pk 10.2, 13.ix.1996 (*B. Hermier* leg.) (Coll. *B. Hermier*, n° 11002) (Coll. TLMF). **9.** ***Pampa pseudovenata* sp. nov.**. Paratype ♂. French Guyana, Camp Patawa [Roura], 27.iv.1993 (*J. Cerda* leg.) (Coll. *B. Hermier*, n° 7189) (Coll. TLMF). (caption continued on next page...)



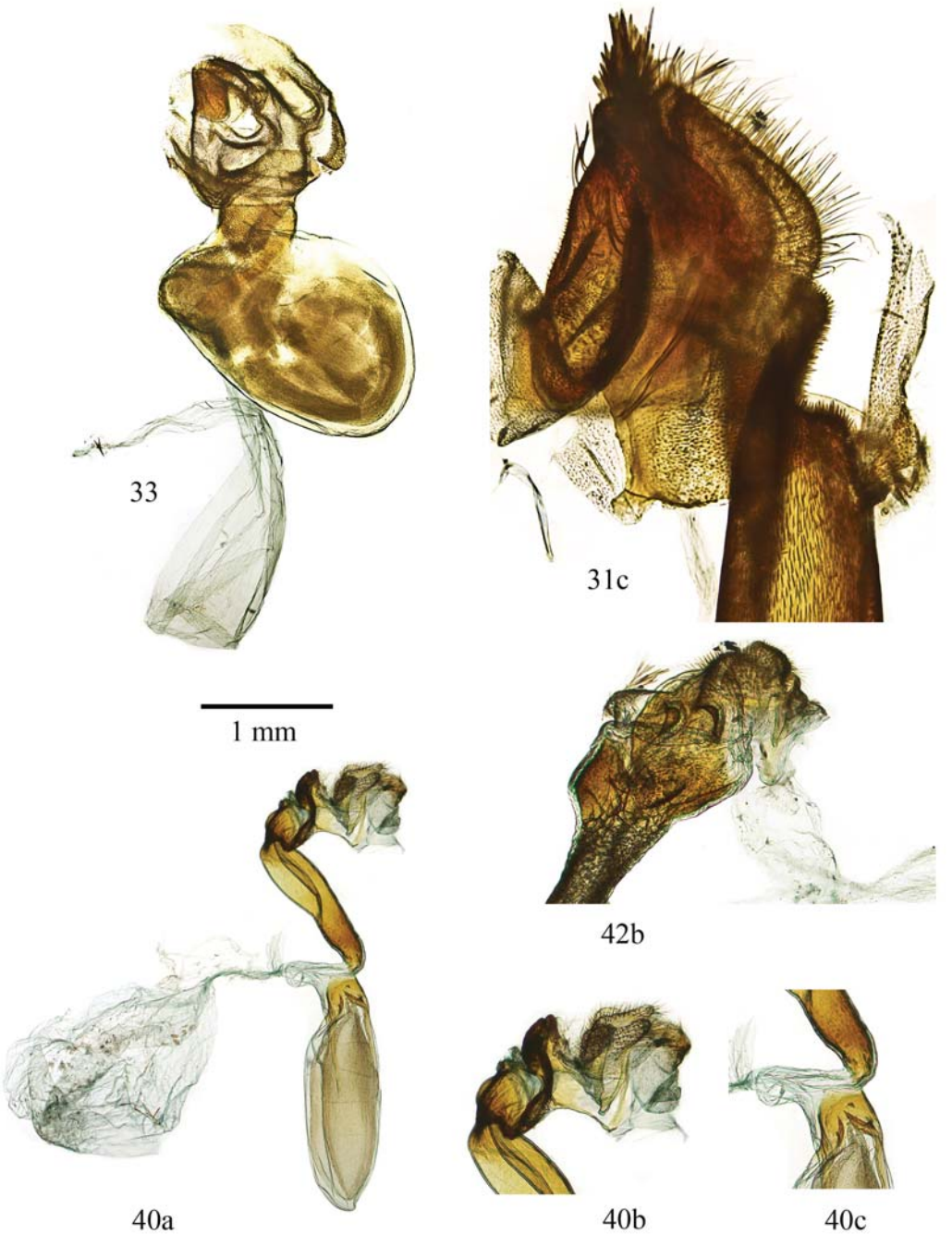
FIGS. 1–27 (continued) **10.** ***Pampa pseudovenata*** **sp. nov.** Paratype ♂. French Guyana, Piste de Changement pk 7, 12.ii.1997 (*B. Hermier* leg.) (Coll. *B. Hermier*, n° 12042) (Coll. TLMF). **11.** ***Pampa pseudovenata*** **sp. nov.** Paratype ♀. French Guyana, Sinnamary, [Route de Saint-Elie, Piste de la] crique Toussaint, 12.i.1999 (*C. Faynel* leg.) (Coll. ED) (Gen. prep. GMT Z 3632). **12.** *Stylura* cf. *forficula* Herrich-Schäffer, [1855] ♀. Pará, Route de Vigia, [on the road from Santo Antonio de Tauá to Vigia, vic. Bom Jesus, 18 m], xii.2002 (*P. Jauffrey* leg.) (Coll. ED) (Gen. prep. GMT Z 3628). **13.** *Stylura cirama* (Druce, 1896) ♂. Costa Rica, Guanacaste province, Santa Rosa National Park, 290 m (*D. H. Janzen* leg.) (82.SRNP.589) (Coll. TLMF) (Gen. prep. GMT Z 3254) . **14.** *Stylura* cf. *brasiliensis* Costa-Lima, 1928 ♀. Department Central, Asuncion, 100 m, 07.iv.2012 (*U. Drechsel* leg.) (Coll. TLMF) (Gen. prep. GMT Z 3685). **15.** ***Stylura guyanensis*** **sp. nov.**. Holotype ♀. [Sinnamary, Route de Saint-Elie, Piste de la] crique Toussaint, 12.i.1999 (*C. Faynel* leg.) (Coll. TLMF) (Gen. prep. GMT Z 3627). *Harrisinopsis robusta* Jordan, 1913 ♂. French Guyana, road N2 pk 41, 09.v.1997 (*B. Hermier* leg.) (Coll. *B. Hermier*, no 12617) (Coll. TLMF) (Gen. prep GMT Z 3621). **17**. *Harrisinopsis robusta* Jordan, 1913 ♂. French Guyana, Kaw, pk 38.5, 08.viii.2002 (D. Camus leg.) (ex Coll. *J. Cerda*) (Coll. ED) (Gen. prep GMT Z 3624). **18.** ***Monalita faurei*** **sp. nov.**. Holotype ♂. Kaw, pk 37, 07.vii.2000 (*D. Faure* leg.) (Coll. TLMF) (Gen. prep GMT Z 3625). **19.** ***Monalita faurei*** **sp. nov.**. Paratype ♂. French Guyana, route de l'Anse, Sinnamary, 24.ii.2000 (*C. Faynel* leg.) (Coll. ED) (Gen. prep GMT Z 3622). **20.** ***Monalita laguerrei*** **sp. nov.**. Holotype ♂. piste de Kaw, pk 40+2, 260m, 24.vii.–01.viii.2003 (M. Laguerre leg.) (Coll. TLMF) (Gen. prep GMT Z 3623). **21.** ***Monalita laguerrei*** **sp. nov.**. Paratype ♀. French Guyana, Papinabo, Kourou, 28.vii.2003 (*D. Faure*) (Coll. ED) (Gen. prep GMT Z 3626). **22.** *Pycnoctena angustula* Felder, 1874 ♀. French Guyana, Kaw, pk 42, 190 m, 28.vii.1987 (*J. Cerda* leg.) (ex Coll. *J. Cerda*) (Coll. TLMF) (Gen. prep. GMT Z 3638). **23.** *Pycnoctena angustula* Felder, 1874 ♀. French Guyana, Piste Soumourou, Kourou, 11m, xii.2002 (*D. Faure* leg.) (ex Coll. *J. Cerda*) (Coll. ED). **24.** ***Seryda gallardi*** **sp. nov.**. Holotype ♂. Kaw, pk 8, 165 m, 09.ii.2000 (J. Y. Gallard leg.) (Coll. TLMF) (Gen. prep. GMT Z 3633). **25.** ***Seryda confusa*** **sp. nov.**. Holotype ♀. Route forestière de Coralie, pk 10,2, 14.ii.1999 (*B. Hermier* leg.) (ex Coll. *B. Hermier* 16151) (Coll. TLMF) (Gen. prep. GMT Z 3634). **26.** *Pampa* (?) sp. ♂. Route forestière de Coralie, pk 10,2, 13.ix.1996, light trap (*B. Hermier* leg.) (ex Coll. *B. Hermier* 11515) (Coll. TLMF) (Gen. prep. GMT Z 3635). **27.** *Pampa* (?) sp. ♂. Piste de Kaw, pk 12, 24.vii.2000 (*M. Laguerre* leg.) (Coll. TLMF) (Gen. prep. GMT Z 3636).



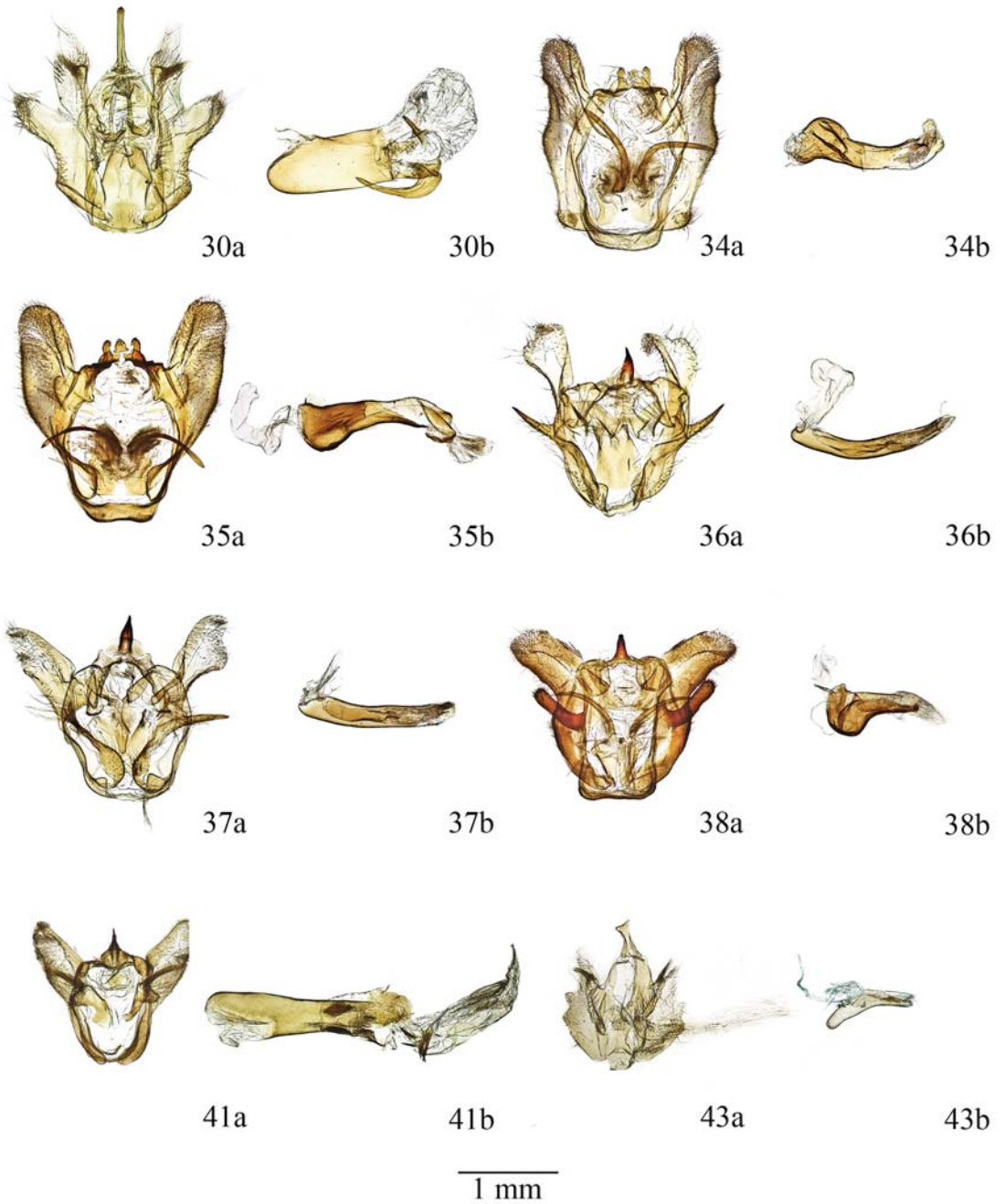
FIGS. 28, 29, 30c, 39, 42a, 44. **28.** *Pampa smaragdina* (Hering, 1941), genitalia ♀ (data see Fig. 1). **29**. ***Pampa hermieri* sp. nov.**, Paratype, genitalia ♀ (data see Fig. 5). **30c**. ***Pampa pseudovenata* sp. nov.** Paratype, genitalia ♀ (data see fig. 11). **39**. ***Monalita laguerrei* sp. nov.** Paratype, genitalia ♀ (data see Fig. 21). **42a**. ***Seryda confusa* sp. nov.** Holotype, genitalia ♀ (data see Fig. 25). **44**. *Pampa* (?) sp., genitalia ♀ (data as for male Fig. 26).



FIGS. 31, 32. **31**. *Stylura* cf. *forficula* Herrich-Schäffer, [1855] genitalia ♀ (data see Fig. 12). **31a**, overview; **31b**, detail, antrum and dentation on praebursa. **32**. *Stylura* cf. *brasiliensis* Costa-Lima, 1928, genitalia ♀ (data see Fig. 14). **32a**, overview; **32b**, detail, antrum and dentation on praebursa.



FIGS. 31c, 33, 40, 42b. **31c**. *Stylura* cf. *forficula* Herrich-Schäffer, [1855] genitalia ♀, detail, ostium with papillae anales (data see Fig. 12). **33.** ***Stylura guyanensis*** **sp. nov.** Holotype, genitalia ♀ (data see Fig. 15). **40.** *Pycnoctena angustula* Felder, 1874, genitalia ♀ (data see Fig. 22). **40a**, overview; **40b**, detail, ostium with papillae anales; 40c, detail, antrum and dentations on praebursa. **42b**. ***Seryda confusa*** **sp. nov.** Holotype, genitalia ♀, detail, ostium with papillae anales (data see Fig. 25).



FIGS. 30, 34–38, 41, 43. **30**. ***Pampa pseudovenata*** **sp. nov.** Holotype, genitalia ♂ (data see fig. 6). **30a**, uncus, tegumen, valvae; **30b**, aedeagus (phallus). **34**. *Harrisinopsis robusta* Jordan, 1913, genitalia ♂ (data see Fig. 16). **34a**, uncus, tegumen, valvae; **34b**, aedeagus (phallus). **35**. *Harrisinopsis robusta* Jordan, 1913, genitalia ♂ (data see Fig. 17). **35a**, uncus, tegumen, valvae; **35b**, aedeagus (phallus). **36**. ***Monalita faurei*** **sp. nov.** Holotype, genitalia ♂ (data see Fig. 18). **36a**, uncus, tegumen, valvae; **36b**, aedeagus (phallus). **37**. ***Monalita faurei*** **sp. nov.** Paratype, genitalia ♂ (data see Fig. 19). **37a**, uncus, tegumen, valvae; **37b**, aedeagus (phallus). **38**. ***Monalita laguerrei*** **sp. nov.** Holotype, genitalia ♂ (data see Fig. 20). **38a**, uncus, tegumen, valvae; **38b**, aedeagus (phallus). **41**. ***Seryda gallardi*** **sp. nov.** Holotype, genitalia ♂ (data see Fig. 24). **41a**, uncus, tegumen, valvae; **41b**, aedeagus (phallus). **43**. *Pampa* (?) sp., genitalia ♂ (data see Fig. 26). **43a**, uncus, tegumen, valvae; **43b**, aedeagus (phallus).

between ocellus and dorsal edge of compound eye approximately 1.5× broader than diameter of ocellus. Labial palps short, porrect. Proboscis brown. Antenna short, consisting of 30 segments, bipectinate, tapering to and bluntly pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 4.5× breadth of shaft at segment 12 in male, 0.9× in female; sensillae on pectinations (flagellomeres) very long in male and short in female.

Legs concolorous with thorax, foreleg without epiphysis, hindtibia with a pair of very small triangular spurs.

Venation of forewing with r_3+r_4 stalked, in hindwing all veins free from cell, m_1 absent, medial stem absent in both wings. Frenulum developed as a single spine in both sexes.

Male genitalia (Figs 30a, b)

Uncus long and slender, pointed at apex, tegument ca 1.3× longer than uncus, vinculum narrow, broadly rounded, without saccus, valve double-lobed distally, very translucent dorsally, stronger sclerotized ventrally, sacculus developed as a strongly sclerotized crest, pulvinus developed as a long band with setae of medium length, at the apex with a bundle of longer setae present, juxta broad, of same length as tegumen, without spines and other structures. Aedeagus stout, 2.5× longer than broad, vesica with one large, curved and one short, straight cornutus.

Female genitalia (Fig 30c).

The broad ostium and the triangular antrum are formed from a translucent ventral part that arises from the intersegmental skin of the 8th sternite and of the sclerotized part of the 8th sternite that forms a ring with the 8th tergite; the surface of the inner part of the ostium and antrum area is formed by the 8th sternite and has a very spiny surface with a wave-like structure that is reminiscent of the 'ladder'-like structure found in other *Pampa* species (see above under *P. smaragdina*); the distal part of antrum narrows into a short, translucent ductus that inserts into a prominent praebursa, the proximal part of the praebursa bears a sclerotization; at that sclerotization the translucent ductus intrabursalis is inserted; corpus bursae translucent, ovoid. Papillae anales small with short setae, apophyses posteriores as long as papillae anales, apophyses anteriores absent.

Differential diagnosis.

Externally similar to *P. venata* (Jordan, 1913) (from Brazil) but the genitalia are different. In *P. pseudoventata* the aedeagus is broader and has two prominent cornuti whereas *P. venata* has an aedeagus without such cornuti. The genitalia of *P. anisa* (Hering 1924) (only female holotype from Brazil is known) and *P. boliviensis* (Hering, 1924) (only male holotype from Bolivia is known) are also similar. The praebursa in *P. anisa* is broader and shorter and has a prominent ring-like sclerotization and the aedeagus of *P. boliviensis* is shorter, proximally narrower than distally, with only one, strongly curved cornutus.

Phenology and bionomics. Unknown.

Distribution. French Guiana.

Derivatio nominis. This species is externally similar to *Pampa venata* (Jordan, 1913).

Genus: *Stylura* Burmeister, 1878

General remarks.

This genus also needs revision. *Stylura* is characterized by the long tails at the abdominal end (prolongations of the 8th pleurites) in both males and females, but the function of these is still unknown. The wing shape is the same as in *Pampa* Walker, 1854, and *Harrisina* Packard, 1864. Foretibia with epiphysis. The male genitalia are symmetrical (as in *Pampa*; in *Harrisina* they are strongly asymmetrical); the valva is strongly encaved distally or is even split into 2–3 smaller parts. The female genitalia have a prominent antrum with a spiny inner surface (at least dorsally), a large praebursa and a characteristic sclerotized crest that is connected to the dorsal wall of the antrum; this crest can be narrow or broad and can have a spiny surface or bear small, pointed cornuti.

Three species have been described so far in the genus *Stylura*, viz. *S. forficula* (Herrich-Schäffer, 1855) (type species of genus) (Brazil), *S. brasiliensis* Costa Lima, 1928 (Brazil), and *S. cirama* (Druce, 1896) (Guatemala, Costa Rica). Herrich-Schäffer's type specimen has not been traced and according to O. H. H. Mielke (Curitiba, Brazil), it does not exist anymore (in litteris via H. Thöny, Poté, Brazil, 10.08.1996). M. Hering determined specimens in the ZMHB as *Stylura forficula* and used them for his key on American Zygaenidae (Hering, 1925). At that time *Stylura* was supposed to be a monotypic genus with one species only, occurring from Mexico to southern Brazil. However, in 1928 Costa Lima described a second species, viz. *Stylura brasiliensis* Costa-Lima,

1928, based on a single 'male' specimen from Brazil. The type is deposited in Instituto Oswaldo Cruz in Rio de Janeiro (Mielke & Casagrande, 1999, 2001). So far it has not been possible to examine and dissect this type-specimen. While undertaking revisional work in the BMNH, another *Stylura* species was recognised by GMT, viz. *S. cirama* (Druce, 1896) (described as *Harrisina*). The male holotype from Guatemala has been examined. A second specimen of this species was found in Costa Rica by D. Janzen (Fig. 13). It is a male as is the holotype. Two additional female specimens of *Stylura*, one collected in Brazil (Pará) in 2002 by C. Faynel and one in Paraguay by Ulf Drechsel (Asuncion) in 2011, have been examined. As a consequence it can be said that none of the females of *Stylura* dissected so far, including the specimens determined by Hering as *S. forficula*, are identical with the specimen from French Guiana.

One female specimen is deposited in the collection of ED which could be conspecific with Herrich-Schäffer's *Laemocharis forficula*. We therefore provide a short description and figure of this specimen and its genitalia.

***Stylura* cf. *forficula* Herrich-Schäffer, [1855]** (Fig. 12, 31a–c)

Material examined

BRAZIL: 1 ♀: Pará, Route de Vigia, [on the road from Santo Antonio de Tauá to Vigia, vic. Bom Jesus, 18 m], xii.2002, during day (*P. Jauffrey* leg.) (Gen. prep. GMT Z 3628) (Coll. ED) (BOLD ZYGMO PPSty#for#001- result 658bp) (Fig. 12, 31a–c).

General remarks.

This female specimen from Brazil could be the true *Stylura forficula*. However, as the type of this species has never been examined no one can say what *S. forficula* really is. As already stated by Tarmann (1984:135), the designation of a neotype is necessary, but for that a series of males and females is needed. So far all examined specimens of *Stylura* represent different species or their conspecificity cannot be proved because they are of different sexes.

Description.

Female.

Head, thorax and abdomen unicolorous black, with a slight greenish sheen, especially on head and thorax. The characteristic tails at the abdominal end are broken. Length of body: 9.3 mm, length of forewing: 11.8 mm, breadth of forewing: 3.7, length of hindwing: 6.4 mm, breadth of hindwing: 2.0 mm, length of antenna: 5.0 mm. Both wings black, densely covered with narrow scales, fringe black. Head in lateral view with almost flat frons that is slightly projected dorsally; frons 2.0× broader than compound eye in frontal view; compound eye black, chaetosemata greyish brown, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 2.0× broader than diameter of ocellus. Labial palps short, porrect. Proboscis brown. Antenna with 39 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 3.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) extremely short.

Legs concolorous with thorax, with a few yellowish scales laterally, foreleg with epiphysis, hindtibia with a pair of very small triangular spurs.

Venation of forewing with r_3+r_4 stalked, in hindwing all veins free from cell, m_1 absent, medial stem absent in both wings. Frenulum developed as one spine.

Female genitalia (Figs 31a–c).

Ostium ovoid, almost slit-shaped, the strongly sclerotized antrum long and slender, with a nose-like prolongation ventro-distally, the surface of the ostium and the whole antrum densely covered with small spines; the antrum inserts into the large, translucent, heart-shaped praebursa with a band-like dorsal structure that continues as a sclerotized crest which bears four small teeth; ductus intrabursalis translucent; corpus bursae absent (cut off during preparation). Papillae anales with short setae, apophyses posteriores as long as papillae anales; 8th sternite and 8th tergite both strongly sclerotized, forming a ring-like structure, apophyses anteriores extremely short, almost absent.

Discussion.

A differential diagnosis and comparison with other described species is impossible as the types of *S. forficula* and *S. brasiliensis* have never been examined and it is not even known whether they are males or females. From *S. cirama*, the third described species, we only know of two males. There is a strong difference between *S. guyanensis* sp. nov. (described below) and all other *Stylura* species where we know females in the female genitalia. There is one female in ZMHB determined by M. Hering (Gen. prep. GMT Z 693) as *S. forficula* (Herrich-Schäffer, 1855) which has a similar character combination as the specimen from French Guiana described above, but the antrum is much

shorter and the crest that bears small teeth (only spines in *S. guyanensis* sp. nov.) is more pronounced and longer. The two specimens cannot be conspecific. The same structural combination is again known from a female in the ZMHB which M. Hering determined as *Harrisina innocens* Hering, 1925. According to its genitalia this specimen is clearly a *Stylura* species (Gen. prep. GMT Z 718), but it is different from the two specimens mentioned above. Fortunately, Hering did not include this specimen in the type-series of *H. innocens*. Obviously he already had doubts of its conspecificity with that species. Moreover, the female described below from Paraguay is also rather similar in genitalia structure. All other specimens of *Stylura* examined so far are males. In the case of *S. cirama* (Druce, 1896), both known males are smaller and have broader wings. Conspecificity with other males so far examined can be excluded because of the huge genitalia differences. Conspecificity of *S. cirama* with one of the examined females is most unlikely.

The female from Paraguay in the collection of TLMF is possibly conspecific with *Stylura brasiliensis* Costa-Lima, 1928. We therefore provide a short description of this specimen and figure its habitus and genitalia.

Phenology and bionomics of *S. forficula*. Unknown.

Distribution of *S. forficula*. Unknown.

Stylura* cf. *brasiliensis Costa-Lima, 1928 (Figs 14, 32a, b)

Material examined
PARAGUAY: 1 ♀: Department Central, Asuncion, 100 m (W 57°37' / S 25°17'), 07.iv.2012 (*U. Drechsel* leg.) (Gen. prep. GMT Z 3685) (Coll. TLMF) (BOLD ZYGMO PPSty#bra#001- result 658bp) (Figs 14, 32 a, b).

General remarks.

Externally similar to and perhaps conspecific with *S. brasiliensis* Costa Lima, 1928, and in accordance with the original description of that species.

Description.

Head, thorax and abdomen unicolorous. Tails broad proximally, slender distally, length of extended tail embedded in Euparal on the genitalia slide preparation: 10.5 mm. Length of body: 7.8 mm, length of forewing: 10.0 mm, breadth of forewing: 2.9 mm, length of hindwing: 5.5 mm, breadth of hindwing: 1.9 mm, length of antenna: 4.9 mm. Both wings black, densely covered with narrow scales, fringe black. Head in lateral view with almost flat frons that is slightly projected dorsally; frons ca 2.0× broader than compound eye in frontal view; compound eye black, chaetosemata black, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 2.5× broader than diameter of ocellus. Labial palps short, porrect. Proboscis blackish brown. Antenna with 30 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 2.5× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) extremely short.

Legs concolorous with thorax, foreleg with epiphysis, hindtibia with a pair of very small triangular spurs.

Venation of forewing with $r_2+(r_3+r_4)$ arising from one point at cell, r_3+r_4 stalked, in hindwing all veins free from cell, asymmetrical, m_1 absent in left wing but present as a vein for 0.75× its length on right hindwing, medial stem present as a short vein in cell distally in the prolongation of m_2, absent in hindwing. Frenulum developed as a single spine.

Female genitalia ((Figs 32a, b).

Ostium ovoid, with inner surface of dorsal wall (part of 8th sternite) densely covered with small spines; antrum strongly sclerotized, tube-like, 3× as long as broad, with strongly spiny inner surface, with a short prolongation ventrally; connection to praebursa developed as a very short, translucent, folded tube; praebursa ovoid with a band-like dorsal structure proximally and one larger and six smaller, short pointed teeth; ductus intrabursalis translucent, folded; corpus bursae small, ovoid, translucent. Papillae anales with short setae, apophyses posteriores small, shorter than length of papillae anales; 8th sternite and 8th tergite weakly sclerotized, almost translucent, apophyses anteriores absent.

In this specimen the glandula sebacea is very long, tube-like and spirally curled and Petersen's gland is very well developed, forming a pair of narrow tubes that end in ovoid, sack-like bulbs.

Differential diagnosis.

Externally similar to and perhaps conspecific with *S. brasiliensis* Costa Lima, 1928, and in accordance with the original description of that species. At present its conspecificity cannot be proved because the holotype of *S. brasiliensis* could not be dissected. Moreover, the latter may be a male as stated in the original description. According to the female genitalia the ground structure is remarkably similar to that of the *Stylura* species described above, but that specimen is much larger and in the genitalia the antrum 4× as long as broad, the ventro-distal prolongation is much

more pronounced and the band-like sclerotized structure in the praebursa bears only 4 very small pointed teeth. Rather similar are the two females in ZMHB (Gen. prep. GMT Z 693 and Gen. prep. GMT Z 718) (see also above), but they are also clearly different in the genitalia.

Phenology and bionomics of *S. brasiliensis*. Unknown.

Distribution of *S. brasiliensis*. Unknown.

4. *Stylura guyanensis* sp. nov. (Figs 15, 33)

Material examined
FRENCH GUIANA: Holotype ♀: [Sinnamary, Route de Saint-Elie, Piste de la] crique Toussaint (N 5° 21' 29.6'' / W 53° 0' 15.3''), 12.i.1999, on flower, (C. Faynel leg.) (Gen. prep. GMT Z 3627) (Coll. TLMF) (BOLD ZYGMO PPSty#guy#001- no result) (Figs 15, 33).

General remarks.

This female specimen from French Guiana is significantly different in genitalia characters from all *Stylura* specimens examined so far. We do not believe that it is conspecific with any of the known species and therefore it is here newly described.

Description.

Head, thorax and abdomen unicolorous. Tails broad proximally, slender distally, length of the extended tail embedded in Euparal on the genitalia slide preparation: 11.0 mm. Length of body: 11.4 mm, length of forewing: 12.7 mm, breadth of forewing: 3.6 mm, length of hindwing: 7.2 mm, breadth of hindwing: 2.4 mm, length of antenna: 5.6 mm. Fore- and hindwings black, densely covered with narrow scales, fringe black. Head in lateral view with frons almost flat, slightly projected dorsally; frons ca 2.0× broader than compound eye in frontal view; compound eye black, chaetosemata greyish brown, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 2.0× broader than diameter of ocellus. Labial palps short, porrect. Proboscis dark brown. Antenna with 42 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 2.5× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) extremely short.

Legs concolorous with thorax, foreleg with epiphysis, hindtibia with a pair of very small triangular spurs.

Wing venation of forewing with r_3+r_4 stalked, in hindwing all veins free from cell, m_1 absent, medial stem present as a short vein in cell distally in the prolongation of m3, absent in hindwing. Frenulum developed as a single spine.

Female genitalia (Fig. 33).

Ostium ovoid, almost slit-shaped, with the inner surface densely covered with small spines; antrum very short, sclerotized, with smooth surface ventrally but with strongly spiny inner surface dorsally; praebursa ovoid with a band-like dorsal structure that can be considered as a continuation of the spiny dorsal sclerotization of the antrum; ductus intrabursalis translucent; corpus bursae ovoid, translucent. Papillae anales with short setae, apophyses posteriores small, shorter than papillae anales; 8th sternite and 8th tergite weakly sclerotized, forming a ring-like structure that is entirely covered with small spines, apophyses anteriores absent.

Differential diagnosis.

As large as and externally similar to *S.* cf. *forficula* (Herrich-Schäffer, [1855]) (Fig. 12). *S. cirama* (Druce, 1896) (Fig. 13) and *S. brasiliensis* Costa-Lima, 1928, are smaller in size. The former also has broader wings (comparison of the genitalia is not possible as only males are known), while the latter is different in genitalia. Other species of the same size that are already known from South America differ in genitalia. There is no other *Stylura* known so far that has a completely spiny abdominal end (8th sternite and tergite) and a band-like spiny sclerotization that extends from the ostium through the antrum to the praebursa dorsally.

Phenology and bionomics. Unknown.

Distribution. French Guiana.

Derivatio nominis. Named after is origin, French Guyana (spelling in French language).

Genus: *Harrisinopsis* Jordan, 1913

General remarks.

The monotypic genus *Harrisinopsis* is characterised as follows: habitus similar to *Pampa* Walker, 1854, *Harrisina* Packard, 1864, and especially *Monalita* Tremewan, 1973, but with slightly less narrow wings than in the two former genera and without any translucent parts on the wings and longer hindwings compared with the last-mentioned genus. The proboscis is reddish orange. The frenulum of the

female consists of two bristles whereas both *Pampa* and *Harrisina* have only one bristle in the female. The genitalia of the male are characterised by a small uncus that consists of a central hook and is accompanied by a pair of strongly sclerotized socii that exceed the length of the uncus; valve without projections, vinculum very broad, without saccus, pulvinus well developed. The most striking character is a pair of long, slightly curved, strongly sclerotized movable projections with pointed apex and with a hairy base situated on a translucent folded diaphragm on top of the juxta. Aedeagus slender, strongly sclerotized basally, with a sclerotization on vesica.

According to the DNA barcoding results (Fig. 47) and based on the comparison of male genitalia characters (Figs 34a, b, 35a, b, 36a, b, 37a, b, 38a, b) it is doubtful whether the two genera *Harrisinopsis* and *Monalita* can be treated as different genera. Several characters that were so far thought to be characteristic for *Harrisinopsis* (see above) are shared with at least one of the known species of *Monalita*. However, at the moment there is simply too little information available for a clear decision (e.g. only one sex known, no information on the early instars, no larva host-plants known). We therefore treat *Harrisinopsis* and *Monalita* here still as two genera following Tarmann (1984).

5. *Harrisinopsis robusta* Jordan, 1913 (Figs 16–17, 34a, b, 35a, b)

Material examined
BRAZIL: Holotype ♂, 'Amazonas' (BMNH), 1♂ Paratype, 'Amazonas' (BMNH); 1♀, Lower Amazonas, Rio Manés, Massauary (*Hahnel* leg.) (Gen. prep. GMT Z 696) (ZMHB) published as ♂ by Hering (1924: 277); 1♀, Brazil, Villa Bella (*Hahnel* leg.) (determined and labelled as 'Typus ♀' by M. Hering) (ex Coll.Staudinger) (ZMHB). **PERU:** 1♂, Holotype of *H. tessmanni*, SE Peru, Mt. Allegre, Rio Pachitea (*G. Tessmann* leg.) (Gen. prep. GMT Z 629) (Coll. ZMHB). **FRENCH GUIANA:** 1♂, French Guyana, road N2 pk 41 (N 4°38' / W 53°22'), 09.v.1997, light trap (*B. Hermier* leg.) (ex Coll. *B. Hermier*, no 12617) (Coll. TLMF) (Gen. prep GMT Z 3621) (BOLD ZYGMO PPHsn#rob#001-no result) (Fig. 16, 34a, b); 1 ♂, French Guyana, Kaw, pk 38.5 (W 52°07'07"/ N 4°31'32"), 08.viii.2002, light trap (*D. Camus* leg.) (ex Coll. *J. Cerda*) (Coll. ED) (Gen. prep GMT Z 3624) (BOLD ZYGMO PPHsn#rob#002- result 658bp) (Fig. 17, 35a, b).

Description of the two males from French Guiana.

Head, thorax and abdomen unicolorous, dark greenish brown, with a brilliant sheen. Length of body: 8.0–9.5 mm, length of forewing: 12.0–14.0 mm, breadth of forewing: 4.0 mm (in both males!), length of hindwing: 6.0–7.0 mm, length of antenna: 6.0–7.0 mm.

Head, thorax and abdomen densely covered with scales arranged in the form of roofing tiles, scales not bifurcate distally but with a denticulate margin.

Head in lateral view with almost flat frons that is slightly projected dorsally; frons 1.5× broader than compound eye in frontal view; compound eye black, chaetosemata triangular, chocolate brown; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 2× broader than diameter of ocellus. Labial palps short, curved upwards, parallel to and almost touching the head capsule. Proboscis orange. Antenna bipectinate, pointed distally, tapering towards apex, with dorsoventrally compressed shaft, length of pectinations ca 3.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) of medium length, 2× broader than diameter of the shaft of the flagellomeres; number of antennal segments 45–47.

Legs concolorous with thorax, foreleg with epiphysis, hindtibia with a pair of very small triangular spurs.

Wings opaque, densely covered with scales, dark greenish brown, with a brilliant sheen on both wings and on upper- and underside; venation of forewing with r3+r4 stalked, in hindwing all veins free from cell, medial stem developed in both wings. Frenulum developed as a very strong spine, retinaculum very prominent. Fringe dark brown with green sheen, consisting of long slender scales, longer at the anal part of hindwing.

Male genitalia (Figs 34a, b: 35a, b).

See under "general remarks' above.

Female genitalia. The only female dissected so far had an abdomen that was partly eaten by *Anthrenus* sp. (Coleoptera). As a consequence, only the papillae anales and some translucent tubes are preserved and a description is not possible.

Phenology and bionomics.

Both specimens from French Guiana were taken in light-traps, one of the latter with a MV lamp.

Distribution. Brasil, Peru, French Guiana.

Genus *Monalita* Tremewan, 1973

General remarks.

Monalita Tremewan, 1973, is a replacement name for *Lamontia* Kaye, 1923 (preoccupied). The type species is *Lamontia calibana* Kaye, 1923. Only the holotype is known but this has not been traced. In the original description it is not stated whether it is a male or a female. However, the type specimen is figured on pl. 1, fig. 18, in the original description and shows a habitus typical of the female and with

slender antennae. We therefore conclude it is a female.

In our examinations we surprisingly found that the three males from French Guiana, which have a more or less identical habitus, represent two different species. The only female available from French Guiana can be specifically associated based on the DNA barcoding result. However, there is no proof that one of them is not conspecific with *M. calibana* from Trinidad. Nevertheless, although there is a minor risk that one of the two species is in fact *M. calibana*, we describe them below.

Monalita is characterized by *Harrisinopsis*-like wingshape with very long, distally pointed forewings, very short hindwings and a short body. However, in *Monalita* the forewings are partly translucent in the male and at least semitranslucent in the female, the translucent parts weakly covered with very narrow, needle-like scales, the darker parts with broader, more densely arranged scales. This character combination provides the specimens with the characteristic *Monalita* habitus which was already mentioned in the original description by Kaye (1923). In the female the frenulum consists of two bristles, as in *Harrisinopsis*. In the two different species mentioned in this paper one has an epiphysis developed on the foretibia like *Harrisinopsis*, in the other the epiphysis is absent. In the forewing r3+r4 are stalked, in the hindwing m_1 is reduced; a medial stem is present as a vein, at least distally, in both wings.

6. *Monalita faurei* sp. nov. (Figs 18, 19, 36a, b, 37a, b)

Material examined

FRENCH GUIANA: Holotype ♂: Kaw, pk 37 (W 52°07'40"/ N 4°32'01"), 07.vii.2000, light trap (*D. Faure* leg.) (Gen. prep GMT Z 3625) (Coll. TLMF) (BOLD ZYGMO PPMon#fau#001- result 658bp) (Figs 18, 36a, b). **Paratype** ♂: French Guyana, route de l'Anse, Sinnamary (N 05°22'33" / E 52°57'47"), 24.ii.2000, during the day (*C. Faynel* leg.) (Coll. ED) (Gen. prep GMT Z 3622) (BOLD ZYGMO PPMon#fau#002- result 658bp) (Figs 19, 37a, b).

General remarks.

This species has a well-developed epiphysis on the foretibia (see also 'general remarks' under genus *Monalita*)

Description.

Head and thorax black, with slightly violet tinge; abdomen unicolorous black. Length of body: 7.1–7.2 mm, length of forewing: 12.9–13.0 mm, breadth of forewing: 3.4–3.9 mm, length of hindwing: 5.8–6.0 mm, breadth of hindwing: 3.0–3.1 mm, length of antenna: 5.5–5.7 mm. Forewing black, but only the proximal part between costa, subcosta and r_1, the base of the cell, and the space caudad of CuP is densely covered with narrow scales, the rest of the wing is very weakly scaled with needle-shaped scales giving the specimen the translucent appearance in the distal part of the wing, a characteristic habitus of Monalita, fringe black. Head in lateral view with almost flat frons that is projected dorsally; frons ca 1.5× broader than compound eye in frontal view; compound eye black, chaetosemata greyish black, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus of medium size, distance between ocellus and dorsal edge of compound eye approximately as broad as diameter of ocellus. Labial palps short, porrect. Proboscis yellowish brown. Antenna with 40 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 4.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) of medium length (approximately as long as breadth of shaft of flagellomeres).

Legs concolorous with thorax, foreleg with epiphysis, hindtibia with a pair of very small triangular spurs.

Venation of forewing with r_3+r_4 stalked, r_2 and (r_3+r_4) arising from one point at cell, in hindwing all veins free from cell, m_1 absent, medial stem present as a full vein in both wings.

Male genitalia (Figs 36a, b, 37a, b).

Uncus short with broad base, pointed distally, a well-developed, tongue-shaped gnathos present; tegumen double lobed, the lobes somewhat quadrangular, vinculum narrow, without pronounced saccus; distal part of valva translucent medially, slightly sclerotized dorsally and ventrally, sacculus strongly sclerotized, a prominent, distally pointed process at half length of valve ventrally, pulvinus well developed, with a row of long setae; transtilla well developed as a bridge-like structure with a narrow central ridge; juxta long, approximately half length of valve. Aedeagus long and slender (approximately 8.5× longer then broad), almost straight, only slightly curved upwards, vesica with a sclerotized structure that is half the length of the aedeagus, consisting of a complicated shape. 8th sternite of abdomen with a characteristic, double-pointed, sclerotized distal end.

Differential diagnosis:

Externally very similar to *M. laguerrei* sp. nov. (see Figs 20, 38a, b), but clearly different in the male

genitalia. Moreover, *M. laguerrei* sp. nov. lacks the tibial epiphysis, the antennal pectinations are longer and the 8th abdominal sternite is trapezoid and without a double-pointed sclerotization.

Phenology and bionomics. unknown.

Distribution. French Guiana.

Derivatio nominis. This species is named after Denis Faure (Kourou, French Guiana, F) who collected the holotype.

7. *Monalita laguerrei* sp. nov. (Figs 20, 21, 38a, b, 39)

Material examined
FRENCH GUIANA: Holotype ♂: piste de Kaw, pk 40+2, 260m (N 4°32'53" / E 52°07'49"), 24.vii.–01.viii.2003 (*M. Laguerre* leg.) (Coll. TLMF) (Gen. prep GMT Z 3623) (BOLD ZYGMO PPMon#lag#001- result 658bp) (Figs 20, 38a, b). **Paratype** ♀: 1♀, French Guyana, Papinabo, Kourou (N 05°09'47" / E 52°38'38"), 28.vii.2003, light trap (*D. Faure*) (Coll. ED) (Gen. prep GMT Z 3626) (BOLD ZYGMO PPMon#sp1#001- result 307bp) (Figs 21, 39).

General remarks.

This species lacks the epiphysis on the foretibia (see also 'general remarks' under genus *Monalita*)

Description.

Male.

This specimen is worn. Head, thorax and abdomen unicolorous, black. Length of body: 7.0 mm, length of forewing: 12.2 mm, breadth of forewing: 3.7, length of hindwing: 6.3 mm, breadth of hindwing: 3.2 mm, length of antenna: 5.9 mm. Forewing black proximally, densely covered with narrow scales, the rest of the wing very weakly scaled with needle-shaped scales giving the specimen a translucent appearance in the distal part of the wing characteristic of the habitus of *Monalita*, fringe (as far as visible) black. Head in lateral view with almost flat frons that is projected dorsally; frons ca 1.5× broader than compound eye in frontal view; compound eye black, chaetosemata greyish black, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus of medium size, distance between ocellus and dorsal edge of compound eye approximately as broad as diameter of ocellus. Labial palps short, porrect. Proboscis yellow. Antenna with 41 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 5.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) of medium length (approximately as long as breadth of shaft of flagellomeres).

Legs concolorous with thorax, foreleg without epiphysis, hindtibia with a pair of very small triangular spurs.

Wing venation in forewing with r3+r4 stalked, in hindwing all veins free from cell, m_1 absent, medial stem present as a full vein in both wings.

Male genitalia (Figs 38a, b).

Uncus short with broad base, rounded distally, gnathos not developed; tegumen double lobed, the lobes short and rectangular, vinculum narrow, without pronounced saccus; valva strongly sclerotized, only slightly translucent medially, sacculus without process, pulvinus prolongated to form a strongly sclerotized finger that bears short tooth-like setae distally; transtilla well developed; the most surprising character is the similar pair of long, slightly curved, strongly sclerotized movable projections with pointed apex and with a hairy base situated on top of the juxta, as found in *Harrisinopsis* (see above) but with the difference that at the base of these processes there is a group of long spines (that are easily shed during preparation). Aedeagus short, strongly sclerotized, with a ball-shaped proximal and a slender distal part (only 2× longer then broad), vesica with one cornutus that is half length of aedeagus and with a broad proximal and slender distal part. 8th sternite of abdomen with a 'normal' trapezoid sclerite (without a double-pointed sclerotization as in *M. faurei* sp. nov., see above).

Female.

Larger than the male and with broader wings. The scales on the translucent parts of the forewing are slightly broader than in the male and more densely arranged. Therefore the wing is more semitranslucent in these areas compared with the males. Head, thorax and abdomen unicolorous, black. Length of body: 9.8 mm, length of forewing: 15.5 mm, breadth of forewing: 4.9 mm, length of hindwing: 7.9 mm, breadth of hindwing: 4.6 mm, length of antenna: 6.8 mm. Head in lateral view with almost flat frons that is slightly projected dorsally; frons ca 2.0× broader than compound eye in frontal view; compound eye black, chaetosemata blackish brown, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 2.0× broader than diameter of ocellus. Labial palps short, porrect. Proboscis light brown. Antenna with 40 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 2.0× breadth of shaft at segment 12;

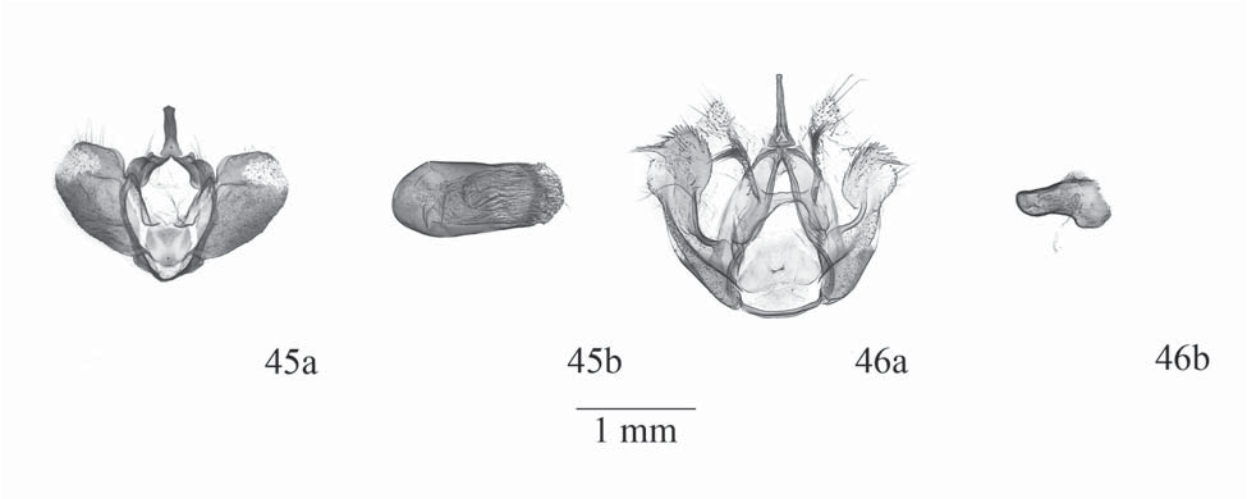


FIG. 45–46. **45.** Examples of ♂ genitalia of *Triprocris* species. **45a**, *Triprocris cyanea* Barnes & McDunnough, 1910 (USA), uncus, tegumen, valvae part. **45b**, *Triprocris auchenochrysa* (Dyar, 1912) (Mexico), aedeagus (phallus). **46.** Example of ♂ genitalia of *Harrisina metallica* Stretch, 1885 (USA). **46a**, uncus, tegumen, valvae part.**46b**, aedeagus (phallus).

sensillae on pectinations (flagellomeres) extremely short.

Legs concolorous with thorax, foreleg without epiphysis, hindtibia with a pair of very small triangular spurs.

Wing venation strongly asymmetrical in both wings. Forewing with r3+r4 stalked, left forewing with an additional cross vein between Cu1 and Cu2, hindwing with Sc free, connected to cell by a very short cross vein, right hindwing with all veins free from cell, m_1 absent, left hindwing with Sc+rr stalked; medial stem present. Frenulum developed as two spines.

Female genitalia (Fig. 39).

Ostium rounded, with a sclerotized ring-like structure, no sclerotized antrum developed; ductus bursae translucent, broad, leading directly into the translucent, ovoid corpus bursae, no praebursa; 8th sternite and 8th tergite very strongly sclerotized, forming a broad ring around the papillae anales and the anus, just interrupted by the ostium ring; papillae anales large, with short setae, apophyses posteriores narrow, as long as length of papillae head, apophyses anteriores absent.

Differential diagnosis.

Externally very similar but clearly different in the male genitalia from *M. faurei* sp. nov. (see Figs 36a, b). *M. laguerrei* sp. nov. lacks the tibial epiphysis, the antennal pectinations are longer and the 8th abdominal sternite is trapezoid and without a double-pointed sclerotization.

Phenology and bionomics. Unknown.

Distribution. French Guiana.

Derivatio nominis. This species is named after Michel Laguerre (Léognan, F) who is a specialist of Arctiinae and who collected the holotype.

Genus *Pycnoctena* Felder, 1874

General remarks.

This genus includes some small species with very narrow wings which are externally similar to species of the genera *Urodopsis* Jordan, 1913, and *Pampa* Walker, 1854. The wings are densely scaled and can be uniformly black, or black and brown with a yellow pattern. Wing venation in forewing with all veins free from cell, with a full set of veins or with r_5 or m_1 reduced; the distal margin of the cell is developed as a full cross vein (often reduced and 'open' in *Urodopsis*); medial stem absent, a prominent anal loop present. In the hindwing m_1 reduced, with only two anal veins in the type species *P. angustula* Felder, 1874, but with three veins in all other known species (vic. *P. invaria* (Walker, 1854); *P. tristis* Hering, 1932; *P. dantasi* (Schaus, 1892), should they turn out to be really congeneric.

In Tarmann (1984: 144) only a provisional diagnosis of the male genitalia was given as the type species *P. angustula* Felder, 1874, was known only from the female holotype. Following Hering (1925, 1932), the other three species were provisionally placed together

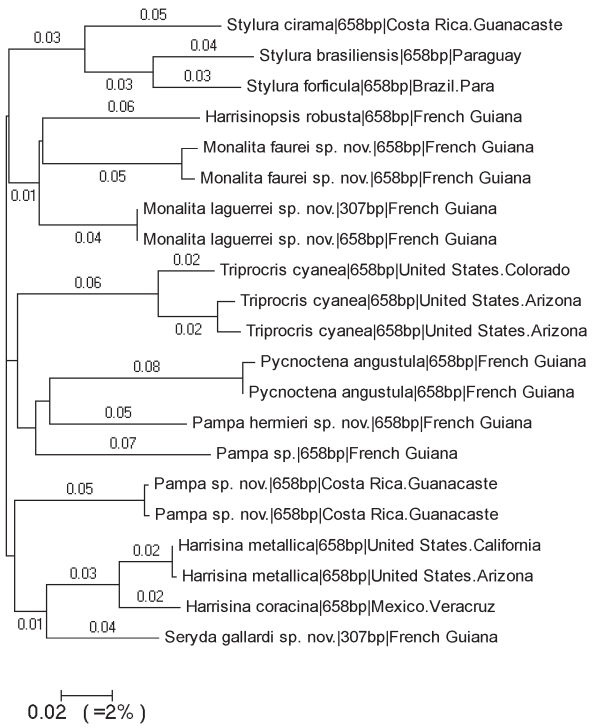


FIG. 47. Neighbour joining tree (K2P) of COI gene divergences among different species of narrow-winged American Zygaenidae including all results from French Guiana.

with *P. angustula*. The diagnosis of the female genitalia, based on the holotype of *P. angustula* in Tarmann (1984: 145), is incorrect. The two additional specimens from French Guiana show that the female of this species has not only a very complicated praebursa but also a well developed corpus bursae (that is obviously lost in the holotype). The female genitalia have a strongly sclerotized antrum with a constriction where it is inserted into the long and slender praebursa; at that point two bracelet-shaped sclerotizations are developed; corpus bursae large, spherical and translucent. As in all the allied genera the spermatophore is deposited in the praebursa, as can be seen on one of the genitalia slide preparations.

8. *Pycnoctena angustula* Felder, 1874 (Figs 22, 23, 40a–c)

Material examined

[BRAZIL]: Holotype ♀: 'Amazonenstrom', (Felder collection; Rothschild Bequest B.M. 1939–1) (Gen. prep GMT Z 1104, BMNH No. 1325) (Coll. BMNH); **FRENCH GUIANA:**1 ♀, French Guyana, Kaw, pk 42, 190 m (N 4°31'08" / W 52°05'21"), 28.vii.1987, malaise trap, (*J. Cerda* leg.) (ex Coll. *J. Cerda*) (Coll. TLMF) (Gen. prep. GMT Z 3638) (BOLD ZYGMO PPPyc#ang#001- result 658bp) (Fig. 22); 1♀, French Guyana, Piste Soumourou, Kourou, 11m (N 5°07'18" / W 52°43'55"), xii.2002, malaise trap, (*D. Faure* leg.) (ex Coll. *J. Cerda*) (Coll. ED) (BOLD ZYGMO PPPyc#ang#002- result 658bp) (Fig. 23);

General remarks.

All characters of the two specimens from French Guiana agree with those of the holotype.

Redescription.

Length of body: 9.0 mm, length of forewing: 10.7–11.0 mm, breadth of forewing: 2.8–2.9 mm, length of hindwing: 5.2 mm, length of antenna: 7.4–8.0 mm.

Head, thorax and abdomen densely covered with scales of different breadth, arranged in the form of roofing tiles, scales partly slightly bifurcate distally or with a denticulate margin; scales on hindwing needle-shaped, producing a semitranslucent hindwing.

Head with a flat brown occiput and in lateral view with almost a flat whitish frons that is only slightly projected dorsally; frons 1.2× broader than compound eye in frontal view; compound eye black, chaetosemata triangular, brown, extending between compound eye and ocellus, as found in the tribe Artonini; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 1.2× broader than diameter of ocellus. Labial palps yellow, short, slightly curved upwards. Proboscis yellow. Antenna brown, with a bluish sheen, bipectinate, pointed distally, tapering towards apex, with dorsoventrally compressed shaft, length of pectinations ca 2.5× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) very short and only present on the ventral side, as broad as diameter of the shaft of the flagellomeres; number of antennal segments 33.

Thorax brown dorsally, yellow ventrally. Legs brown laterally, yellow centrally, foreleg without epiphysis, hindtibia with one longer and one shorter small triangular spurs.

Forewing opaque, densely covered with scales, brown, with a yellow costal streak proximally in the two specimens from French Guiana and a more yellow central field in the holotype. Hindwing semitranslucent, yellow proximally, brown distally. Wing venation as described in generic diagnosis above. Frenulum developed as a single spine. Fringe dark brown.

Female genitalia. Ostium lip-shaped, sclerotized, antrum strongly sclerotized, S-folded proximally, with a constriction at the insertion into the long and

slender praebursa; at that point a bracelet-shaped sclerotization consisting of two needle-shaped spines with a dart-head like tip that is directed towards the opening of the praebursa (Figs 40a, 40c); ductus intrabursalis short and translucent, with a well-developed, large, spherical translucent corpus bursae. Papillae anales small with short setae, apophyses posteriores very short; 8th sternite sclerotized, fused with the ostium, apophyses anteriores very short, translucent; 8th sternite translucent except for a small sclerotization on top of the papillae anales.

Phenology and bionomics. Both specimens were taken in malaise traps.

Distribution. Brazil, French Guiana.

Genus *Seryda* Walker, 1856

General remarks.

Tarmann (1984: 146) only treated this genus provisionally, as the female holotype of the type species *Seryda cincta* could not be dissected. This type specimen should be deposited in Coll. Saunders in the Oxford University Museum of Natural History (vide Jordan, 1913: 26) but it has still not been traced. Without comparing the structures of the female holotype with our material we cannot be certain that the following species belongs to *Seryda*. Tarmann (1984) included the following species in *Seryda*: *S. cincta* Walker, 1856, *S. actinota* Jordan, 1913, *S. isa* Jordan, 1913, and *S. glaucotis* (Hampson, 1907). There is no clear generic diagnosis available.

In our material from French Guiana there is a male and a female that have the wing shape and venation of *Seryda* (sensu Tarmann 1984). Initially we thought these two specimens represent the male and female of one species but a detailed examination of the external characters shows that they belong to two different species. The genitalia of each are very characteristic and were previously unknown to the authors. We therefore provisionally place these two new species in the genus *Seryda*.

As a provisional diagnosis of the genus we describe the following characters that are present in these two specimens and which do not disagree with the characters mentioned by Walker (1856), Jordan (1913), Hering (1925), Alberti (1954) and Tarmann (1984):

Small species with narrow wings, hindwings approximately 2/3 length of forewings; head with strongly pectinated antenna in male, weakly pectinated antenna in female; fore tibia with or without epiphysis; wings with full number of veins in forewing, in hindwing m_1 reduced, all veins free from cell, medial stem in forewing absent, in hindwing present as a short vein in cell distally; male frenulum consisting of a single large spine, female frenulum consisting of two smaller bristles. Male genitalia with short, slender uncus, a double-lobed tegumen, a valva without processes on sacculus, a slender, rounded vinculum without a prominent saccus and a well-developed pulvinus with long setae; aedeagus straight, tube-like, vesica with various spines and spicules. Female genitalia with strongly sclerotized antrum but without praebursa; the spermatophore is therefore deposited in the corpus bursae.

9. *Seryda gallardi* sp. nov. (Figs 24, 41a, b)

Material examined

FRENCH GUIANA: Holotype ♂: Kaw, pk 8, 165 m (N 4°40'38" / W 52°18'19"), 09.ii.2000, during day (J.-Y. Gallard leg.) (Gen. prep. GMT Z 3633) (Coll. TLMF) (BOLD ZYGMO PPSer#gal#001 – result 307bp) (Fig. 24).

General remarks. See under genus *Seryda*.

Description.

Head and thorax black, with slightly violet tinge; abdomen unicolorous black. Wings black, with a few violet scales scattered in the proximal part of the wing. Length of body: 5.9 mm, length of forewing: 9.0 mm, breadth of forewing: 3.1, length of hindwing: 5.1 mm, breadth of hindwing: 2.3 mm, length of antenna: 5.2 mm. Head capsule in lateral view flat, not projected dorsally; frons ca 1.2× broader than compound eye in frontal view; compound eye black, ventrally slightly narrower to each other in frontal view than dorsally; chaetosemata greyish black, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 2.0× broader than diameter of ocellus. Labial palps very short. Proboscis yellowish brown. Antenna with 42 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 3.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) of medium length (approximately as long as breadth of shaft of flagellomeres).

Legs concolorous with thorax, foreleg with epiphysis, hindtibia with a pair of very small triangular spurs. Frenulum consisting of a single large bristle.
Venation in forewing and hindwing with all veins free from cell, m_1 absent in hindwing, medial stem absent in forewing, present in hindwing.

Male genitalia (Figs 41a, b).
Uncus short with broad base, pointed distally, the distal part at first broader, then vertically interrupted and ending tooth-like distally; tegumen double lobed, vinculum narrow, without pronounced saccus; valva rounded distally, translucent medially, slightly sclerotized dorsally and ventrally, sacculus not strongly pronounced, without process; pulvinus well developed, shortly stalked, with a row of long setae; juxta with a pair of ovoid patches bearing small spines and a row of spines medio-distally (seen in figure with aedeagus!). Aedeagus approximately 4.5× longer then broad, almost straight, vesica with various other spines of different lengths. 8th sternite of abdomen triangular.

Differential diagnosis.
This species differs from S. cincta (only female holotype known) and S. isa (only male holotype known) by the uniformly black abdomen (partly red in S. cincta and S. isa), from S. isa also in male genitalia (S. isa with strongly pointed valva), and from S. actinota (only female holotype known) by the lack of prominently visible black veins because of the presence of additional scales. S. glaucotis (only male holotype known) has a shiny black proboscis whereas that of S. gallardi sp. nov. is yellowish brown. S. confusa sp. nov. is separated by the lack of a foretibial epiphysis.

Phenology and bionomics. Unknown.

Distribution. French Guiana.

Derivatio nominis. This species is named after Jean-Yves Gallard (Cayenne, French Guiana, F) who collected the holotype.

10. *Seryda confusa* sp. nov. (Figs 25, 42a, b)

Material examined
FRENCH GUIANA: Holotype♀: Route forestière de Coralie, pk 10,2 (N 4°30'30" / W 52°26'), 14.ii.1999, light trap, (*B. Hermier* leg.) (ex Coll. *B. Hermier* 16151) (Coll. TLMF) (Gen. prep. GMT Z 3634) (BOLD ZYGMO PPSer#con#001 – no result) (Fig. 25).

General remarks. See under genus *Seryda*.

Description.
Head, thorax and abdomen unicolorous black, with a tinge of blue on head, thorax and at base of wings. Forewing black, opaque, hindwing also black, but more translucent because of needle-shaped and not so densely arranged scales. Length of body: 7.8 mm, length of forewing: 10.0 mm; breadth of forewing: 3.4 mm; length of hindwing: 6.1 mm, breadth of hindwing: 2.5 mm; length of antenna: 5.3 mm. Head capsule in lateral view with slightly protruding frons that is not projected dorsally; frons ca 1.2× broader than compound eye in frontal view; compound eye black; chaetosemata brown, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 2.0× broader than diameter of ocellus. Labial palps short, porrect. Maxillary palps well visible; eye lash and maxillary palps with white scales. Proboscis dark brown. Antenna with 28 segments, bipectinate, basal segments beginning with short pectinations that become progressively longer until the 11th segment where they reach 1.5× breadth of shaft, segments 11 to 20 equal in length, 21 to 28 tapering to and pointed at apex, shaft dorsoventrally compressed; sensillae on pectinations (flagellomeres) extremely short, more or less indiscernable.
Legs concolorous with thorax, foreleg without epiphysis, hindtibia with a pair of very small triangular spurs.
Venation in forewing and hindwing with all veins free from cell, m_1 absent in hindwing, medial stem absent in forewing, present as a short vein in distal part of cell in hindwing. Frenulum consisting of two bristles.

Female genitalia (Figs 42a, b).
Ostium ovoid, sclerotized, antrum cup-shaped, strongly sclerotized, leading into a strongly folded ductus bursae that ends in a broad plate that is fused with the translucent corpus bursae; ductus seminalis inserted into that sclerotization. Papillae anales of medium size, fused dorsally, with short setae, without apophyses posteriores; 8th sternite with a pair of very characteristic ovoid grooves at dorsal edge of ostium; 8th sternite weakly sclerotized.

Differential diagnosis.
S. confusa sp. nov. differs from all other *Seryda* species by the absence of a foretibial epiphysis. From *S. cincta* (only female holotype known) and *S. isa* (only male holotype known) it differs also by the uniformly black abdomen (partly red in *S. cincta* and *S. isa*), and from *S. actinota* (only female holotype

known) by the lack of prominently visible black veins because of the additional scales and by the female genitalia. From *S. gallardi* sp. nov. it is also separated by the semitranslucent hindwings and shorter antennae.

Phenology and bionomics. Uunknown.

Distribution. French Guiana.

Derivatio nominis. This species is named after the confusing situation regarding the genus *Seryda* Walker, 1856.

Addition.

There are three further specimens in the material examined that cannot be determined at the moment. They are externally very similar and share most external characters. The two males are figured and all three specimens are described below. According to the male genitalia they should belong to *Pampa* Walker, 1854, but these are somewhat deformed, aberrant or damaged and a clear diagnosis is impossible. It is also not possible to decide whether these three specimens are conspecific or represent two or three different species.

11. *Pampa* (?) sp. or spp. (Figs 26, 27, 43a, b, 44)

Material examined

FRENCH GUIANA: 1 ♂, Route forestière de Coralie, pk 10,2 (N 4°30'30" / W 52°26'), 13.ix.1996, light trap, (*B. Hermier* leg.) (ex Coll. *B. Hermier* 11515) (Coll. TLMF) (Gen. prep. GMT Z 3635) (BOLD ZYGMO PPpam#sp1#001- no result) (Fig. 26); 1 ♂, Piste de Kaw, pk 12, (N 4°38'35" / W 52°70'47"), 24.vii.2000 (*M. Laguerre* leg.) (Coll. TLMF) (Gen. prep. GMT Z 3636) (BOLD ZYGMO PPpam#sp1#002- result 269bp) (Fig. 27); 1♀, Route forestière de Coralie, pk 7.5 (N 4°29'47" / W 52°23'34") 25. vii. 2003 (*M. Laguerre* leg.) (Coll. TLMF) (BOLD ZYGMO PPpam#sp1#003- result 658bp) (Gen. prep. GMT Z 3637).

Description.

Small species.

Male 1 (Figs 26, 43a, b).

Head, thorax and abdomen unicolorous brownish black. Wings black. Length of body: 7.1 mm, length of forewing: 8.0 mm, breadth of forewing: 2.7, length of hindwing: 4.9 mm, breadth of hindwing: 2.1 mm, length of antenna: 4.6 mm. Head capsule in lateral view flat, slightly projected dorsally; frons ca 1.5× broader than compound eye in frontal view; compound eye black; chaetosemata greyish brown, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 1.5× broader than diameter of ocellus. Labial palps short. Proboscis dark brown. Antenna with 26 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 5.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) very long (approximately longer than breadth of shaft of flagellomeres).

Legs concolorous with thorax, foreleg without epiphysis, hindtibia with a pair of very small triangular spurs. Frenulum consisting of a single large bristle.

Venation of forewing with $r_2+(r_3+r_4)$ stalked, hindwing with all veins free from cell, m_1 absent, medial stem absent in both wings.

Male genitalia with distal end of uncus broad, tegumen long and slender, vinculum band-like (partly broken), valva with a double-lobed distal end, with sclerotized, broad sacculus, pulvinus developed as a long band-like structure with setae and an extra bundle of longer setae distally; aedeagus slender (approximately 7× longer than broad), slightly bent downwards, vesica with two short cornuti.

Male 2 (Fig. 27).

Head, thorax and abdomen unicolorous brownish black. Wings black. Length of body: 7.7 mm, length of forewing: 8.0 mm, breadth of forewing: 2.7 mm, length of hindwing: 4.9 mm, breadth of hindwing: 2.1 mm, length of antenna: 4.7 mm. Head capsule in lateral view flat, slightly projected dorsally; frons ca 1.5× broader than compound eye in frontal view; compound eye black; chaetosemata greyish brown, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 1.5× broader than diameter of ocellus. Labial palps short. Proboscis dark brown. Antenna with 26 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 5.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) very long (approximately longer than breadth of shaft of flagellomeres).

Legs concolorous with thorax, foreleg without epiphysis, hindtibia with a pair of very small triangular spurs. Frenulum consisting of a single large bristle.

Wing venation in forewing with $r_2+(r_3+r_4)$ stalked, hindwing with all veins free from cell, m_1 absent, medial stem absent in both wings.

Genitalia damaged. Uncus long and slender, pointed distally, tegumen and vinculum, destroyed, valva with double-lobed distal end, with sclerotized sacculus, pulvinus developed as a long band-like structure with

setae and an extra bundle of longer setae distally; aedeagus slender (approximately 7× longer than broad), slightly bent downwards, vesica with one cornutus.

Female (Fig. 44)

Head, thorax and abdomen unicolorous brownish black. Wings black. Length of body: 7.7 mm, length of forewing: 8.5 mm, breadth of forewing: 2.4 mm, length of hindwing: 4.8 mm, breadth of hindwing: 2.1 mm, length of antenna: 4.8 mm. Head in lateral view flat, slightly projected dorsally; frons ca 2.0× broader than compound eye in frontal view; compound eye black; chaetosemata greyish brown, triangular, projected anteriorly, filling half the space between compound eye and ocellus; ocellus small, distance between ocellus and dorsal edge of compound eye approximately 2.5× broader than diameter of ocellus. Labial palps short. Proboscis dark brown. Antenna with 25 segments, bipectinate, tapering to and pointed at apex, with dorsoventrally compressed shaft, length of pectinations ca 2.0× breadth of shaft at segment 12; sensillae on pectinations (flagellomeres) very long (approximately longer than breadth of shaft of flagellomeres).

Legs concolorous with thorax, foreleg without epiphysis, hindtibia with a pair of very small triangular spurs. Frenulum consisting of one small bristle.

Venation of forewing with $r_2+(r_3+r_4)$ stalked, hindwing with all veins free from cell, m_1 absent, medial stem absent in both wings.

Genitalia with translucent, ovoid ostium, antrum also translucent, spherical, strongly folded, ductus bursae very slender, translucent, no praebursa, corpus bursae ovoid, translucent, papillae anales of medium size with short apophyses posteriores, 8th sternite and 8th tergite sclerotized, apophyses anteriores invisible.

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