

# A TAXONOMIC REVISION OF THE NEW WORLD SPECIES OF *SIRTHENEA* (HETEROPTERA: REDUVIIDAE: PEIRATINAE)

by

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Key words: Heteroptera; Reduviidae; *Sirthenea*; New World; key, species; new species.

The American species of *Sirthenea* are revised and keys to the 12 species and seven subspecies are given. Four new species and two new subspecies are described viz., *S. ater* (Brazil: Minas Geraes), *S. dubia* (Panama; Paraguay: Caaguazu. Argentina: Misiones; Entre Rios), *S. ferdinandi* (Argentina: Salta; Tucuman), *S. jamaicensis* (Jamaica), *S. peruviana orientalis* (Venezuela; Trinidad; Surinam; Brazil: Para) and *S. peruviana gracilis* (Brazil: Goias; Matto Grosso), whereas also some new combinations are proposed.

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## 1. INTRODUCTION

*Sirthenea* Spinola, 1840 is a rather poorly known genus of assassin bugs (Reduviidae) belonging to the subfamily Peiratinae.

Amyot and Serville (1843: 321) erected the Peiratinae under the name Piratides, placing them as "groupe" within the "tribus" Spongipedes. The name Piratides was based on a genus known as *Pirates*, originally described as *Peirates* by Serville in 1831. In 1835, however, Burmeister changed *Peirates* into *Pirates*, leaving the authorship to Serville, probably as to rectify the transcription from Greek into Latin characters. However correct this change from *Peirates* into *Pirates* may be grammatically, it must be considered a misspelling from a nomenclatural point of view (see also Kerzhner, 1974: 857). Thus the names *Peirates* and Peiratinae must be maintained on respectively the generic and subfamilial level.

Originally Amyot and Serville (1843) distinguished seven genera with 17 species in the Peiratina, only one of these, *Rasahus carinatus* Fabricius, 1798, being nowadays placed in *Sirthenea*. At this moment the Peiratinae are known to contain ca. 20 genera with approximately 250 species, *Peirates* being the largest genus with ca. 85 species.

The Peiratinae are worldwide in distribution, although mainly confined to the tropical areas, *Sirthenea* being the only genus known from the New as well as the Old World. In the Americas the Peiratinae are represented by seven genera with ca. 45 species: *Eidmannia* Taeuber, 1934 (1), *Melanolestes* Stål, 1866 (7), *Phorastes* Kirkaldy, 1900 (2), *Rasahus* Amyot & Serville, 1843 (17), *Sirthenea* (12), *Thymbreus* Stål, 1859 (3), and *Tydides* Stål, 1865 (4) (between brackets the number of species are given, partly after Wygodzinsky, 1949).

With the initial intention to describe the distribution pattern of species of Peiratinae from Surinam and eventually from the entire New World, it soon became apparent that before this could be realised some revisionary work had to be done, especially on *Melanolestes*, *Rasahus* and *Sirthenea*. Quite recently, taxonomic revisions have already been made for *Tydides* (Lent, 1955; Lent & Jurberg, 1967) and *Phorastes* (Lent & Jurberg, 1966, but see also van Doesburg, 1981).

For the present study about 1000 specimens belonging to New World species of *Sirthenea* were examined; except for *Sirthenea anduzei* Drake & Harris, 1945 (in this study considered a subspecies of *Sirthenea amazona* Stål, 1866) the study included all the type-material. For giving a reliable description of the genus *Sirthenea* and settling the problem of its intergeneric relationships, some more *Sirthenea* material (about 200 specimens representing 11

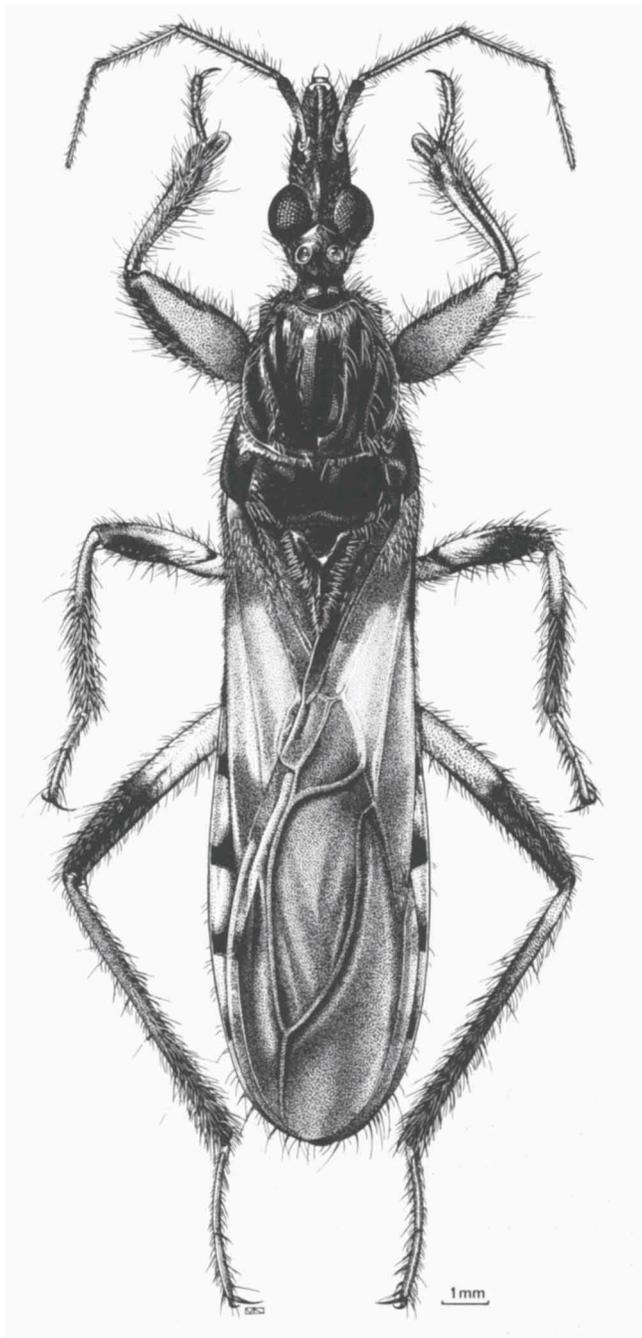


Fig. 1. *Sirthenea plagiata* Horváth, ♂ from Espírito Santo, Brazil (MNR).

species) from other parts of the world was examined.

Owing to the absence of well-defined morphological structures species used to be diagnosed mainly by their colour-pattern. Although the colour-pattern appears to contain reliable characters for recognising various taxa, I tried to find some more characters e.g. in the structures of the genitalia. As a result 12 species are distinguished here, including four new species and two new sub-species, whereas also some new combinations are being proposed. As the U.S.A., Surinam and Venezuela are the only countries well known as far as *Sirthenea* is concerned, more species may be found elsewhere e.g. in Central Brazil or Bolivia.

## 2. HISTORY OF THE GENUS

*Sirthenea* was established by Spinola in 1840 as a mono-specific genus for *Reduvius carinatus* Fabricius, 1798. In 1831, Serville had already placed this species in a separate division of *Peirates*, characterised by a porrect, anteriorly elongate head, an elongate slender body and rounded femora. The most important diagnostic character used by Spinola (1840: 100) for defining *Sirthenea* was the absence of fossae spongiosae on the medial tibiae. The taxonomic position of *Sirthenea* in the Peiratinae has since been beyond any doubt (although in some later papers species of *Sirthenea* were still placed in other genera), the absence of a fossa spongiosa on the medial tibiae still being the most important character to separate *Sirthenea* from all other genera of Peiratinae.

Stål (1872: 105, 1874: 57) distinguished eight species from all the major faunistic regions, while Lethierry & Severin (1896: 129) mentioned 14 species as belonging to *Sirthenea*. In 1909 Horváth published a survey of all the known species of *Sirthenea*, containing a key and a short description of every species. He distinguished 17 species, seven of which were described as new. Since this survey another 14 new species have been described (including the four species described in this paper and *Sirtheniana nigronitens* Miller, 1958).

Except for the original papers dealing with the descriptions of new species of *Sirthenea*, the literature concerning this genus is very limited, being almost confined to various papers giving faunistic data of the hemipterous fauna of certain restricted areas. Pictures or figures of *Sirthenea* specimens are scarcely found. Coloured figures of *Sirthenea* are given by Coquebert (1799: pl. 10 fig. 15) and Herrich-Schäffer (1848: pl. CCLXIX fig. 830). Black and white drawings of *Sirthenea* specimens or details of specimens were published by: Distant (1904: fig. 197); Miller (1948: fig. 40); Miller (1958: figs. 108-109); Vil-

liers (1948: figs: 403-404, 436-439); Villiers (1958: fig. 24); Villiers (1964: fig. 13) and Slater & Baranowski (1978: fig. 239).

### 3. TAXONOMIC CHARACTERS

Although at the generic level morphologically clearly defined by various characters, species of *Sirthenea* are as a rule very similar. Except for the colouration, showing unique patterns for most taxa, differences are only found in a limited number of characters. Before dealing with these taxonomic characters I first of all direct attention to the survey given below, which summarizes sexual dimorphism. They are explicitly mentioned here because special caution has to be taken before such characters are used as taxonomic characters.

	female	male
size .....	large <sup>1)</sup>	small
size of the eyes .....	small	large
ocelli .....	small	large
legs .....	robust	slender
hemelytra (in macropterous specimens) ...	reaching tip of the abdomen	slightly surpassing tip of the abdomen
shape of pronotum .....	in the female, especially the anterior lobe is more convex than in the male	
proportion between the length of the ..... antennal segments	in the female the second, third and fourth segment are shorter in relation to the first segment than in the male	

Size. — The length and width may vary among the various taxa although most show a considerable overlap in these characters.

Head. — Three proportional rates have been found which may be used as diagnostic characters namely: a. — the proportion between the length of the antennal segments especially the first and second one; b. — the proportion between the diameter of an eye and the interocular distance (in ventral aspect) (fig. 11); c. — the proportion between the length of the frons and the

<sup>1)</sup> indications as "large" in the sense of larger than in the other sex)

width of the head (figs. 12-13). Another character used is the length of the pubescence of the second and third antennal segments in the males (figs. 19-21).

Thorax. — The only diagnostic character used is the shape of the posterior margin (figs. 15-16).

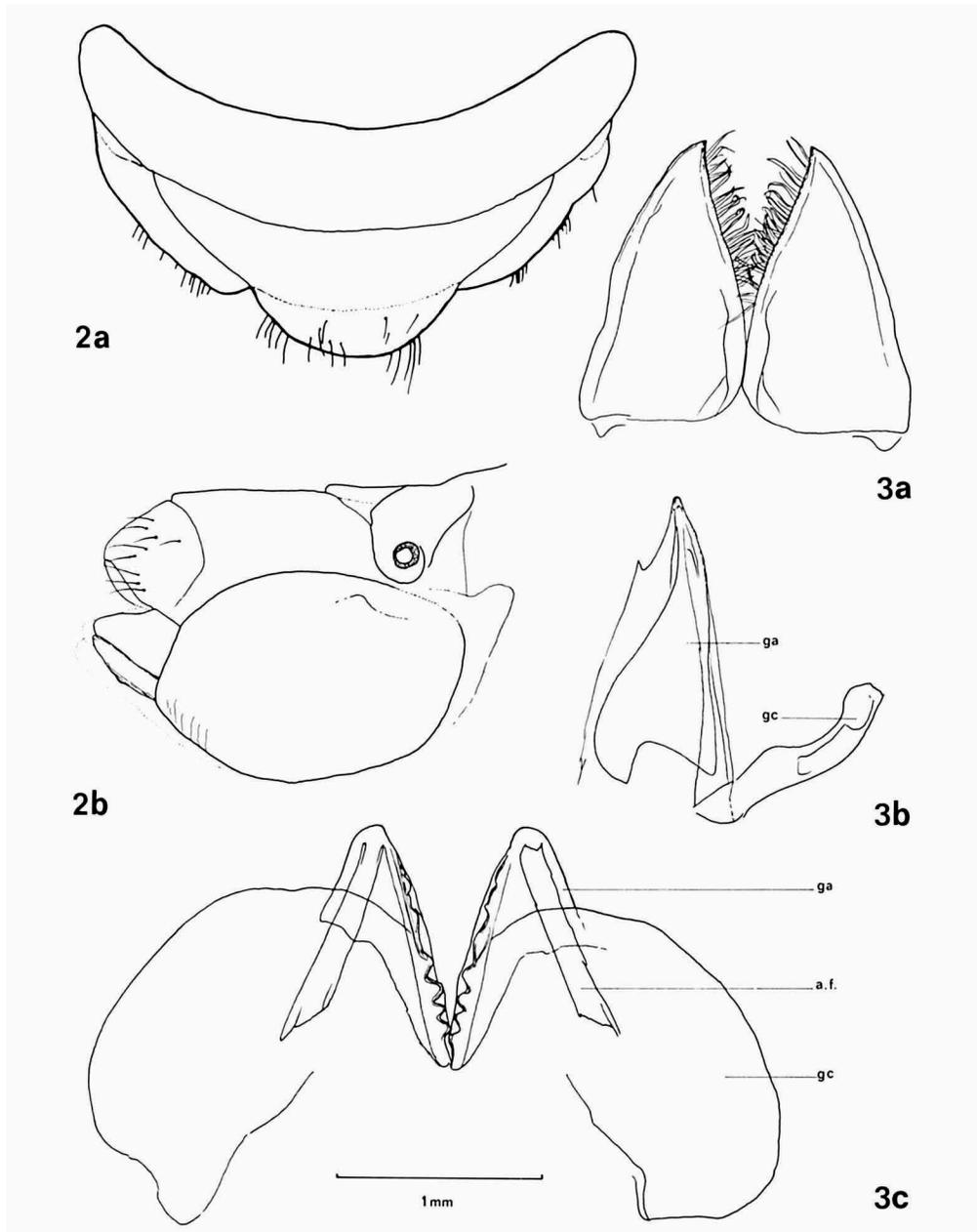
Legs. — Diagnostic characters provided by the legs are the length of the fossa spongiosa on the anterior tibiae (figs. 17-18) and the proportion between the length and width of the femora especially the posterior ones.

Hemelytra. — American species are either macropterous or brachypterous (figs. 30-31).

Abdomen. — Except for the genitalia the only diagnostic character found on the abdomen is the degree of pubescence which may be dense or sparse.

Genitalia. — For a general idea of the morphology of the genitalia, female as well as male in the Reduvoidea I refer to articles of Carayon (1944), Davis (1966), Gaillard (1935), Ghauri (1964), Singh-Pruthi (1925), and Scudder (1959). In the present study only the sclerotised parts of the genitalia of the American species have been thoroughly examined and as such described in the following account. The terminology used for the various parts of the genitalia is that proposed by Dupuis (1970).

Female genitalia. — The general appearance of the female genitalia of *Sirthenea*, as described by Davis (1966), in dorsal and lateral view is shown in figs. 2, 4a-b. The female genitalia consist of two pairs of gonocoxites, two pairs of gonapophyses and one pair of styloids. Female genitalia in *Sirthenea* are of the plate-shaped type (Dupuis, 1970: 203) with the laterotergites and gonocoxites fully developed, the four gonapophyses free from each other. The gonocoxites of the eighth segment (figs. 3c, 4e) are very large, forming the largest part of the female genitalia in ventral view, bearing at the inner (dorsal) side the gonapophyses of the eighth segment (figs. 3c, 4e) which show a distinct anterior fibula. The gonocoxites of the ninth segment (figs. 3b, 4c) are reduced, small, strap-like, anteriorly attached to the ventral margin of the paratergites of the ninth segment, posteriorly passing into the gonapophyses of the ninth segment (figs. 3b, 4c). The styloids (figs. 3a, 4d), at rest situated between the gonapophyses of the ninth segment and the tergite of the tenth segment, are more or less loosely attached to the gonocoxites of the ninth segment. Although the homologies of the various sclerotised parts of the female genitalia in the Heteroptera may, grosso modo, be clearly understood, the terminology for the various parts as used in the articles mentioned above, in particular for gonocoxites and styloids does not seem to confirm this. In the New World representatives of *Sirthenea* the female genitalia are rather uniform, even more than the male genitalia, not showing or bearing any structures that could be used as diagnostic characters.



Figs. 2-3. *Sirthenea stria* (Fabricius), ♀. — 2. Tip of the abdomen in *S. stria stria* (Fabricius): a. in dorsal view; b. in lateral view. — 3. Female genitalia in *S. stria carinata* (Fabricius): a. styloids; b. gonocoxites and gonapophyses of the ninth segment; c. gonocoxites and gonapophyses of the eighth segment. Abbreviations. — a. f.: anterior fibula. ga: gonapophysis. gc: gonocoxite.

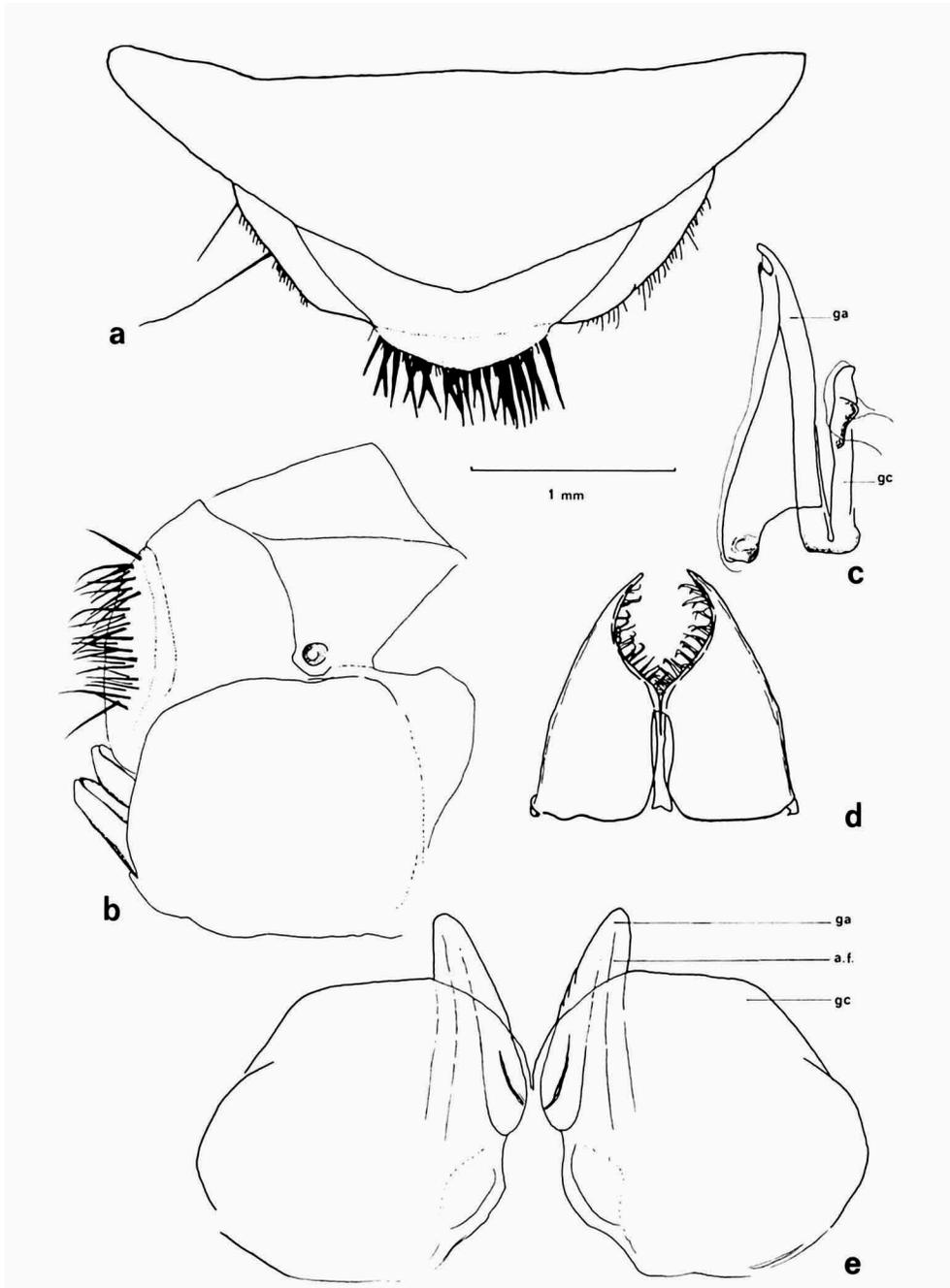
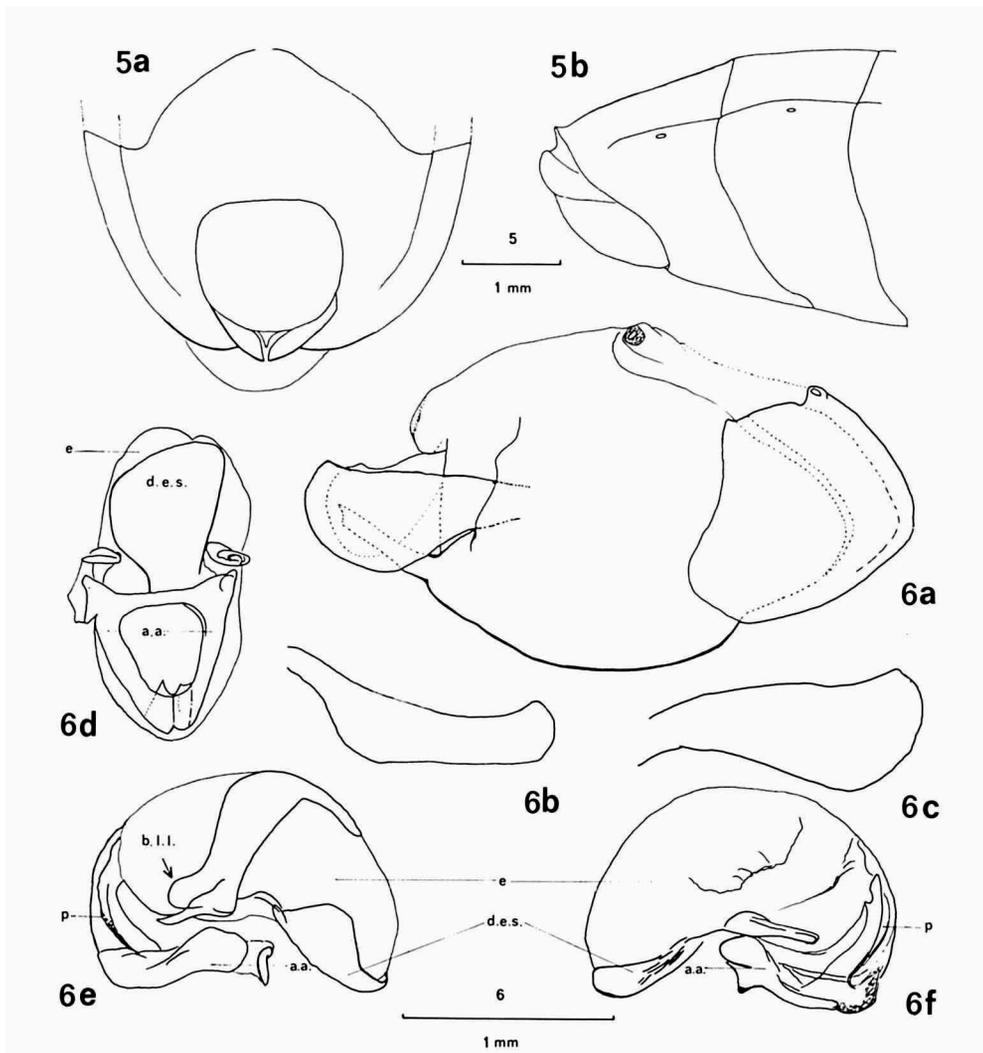
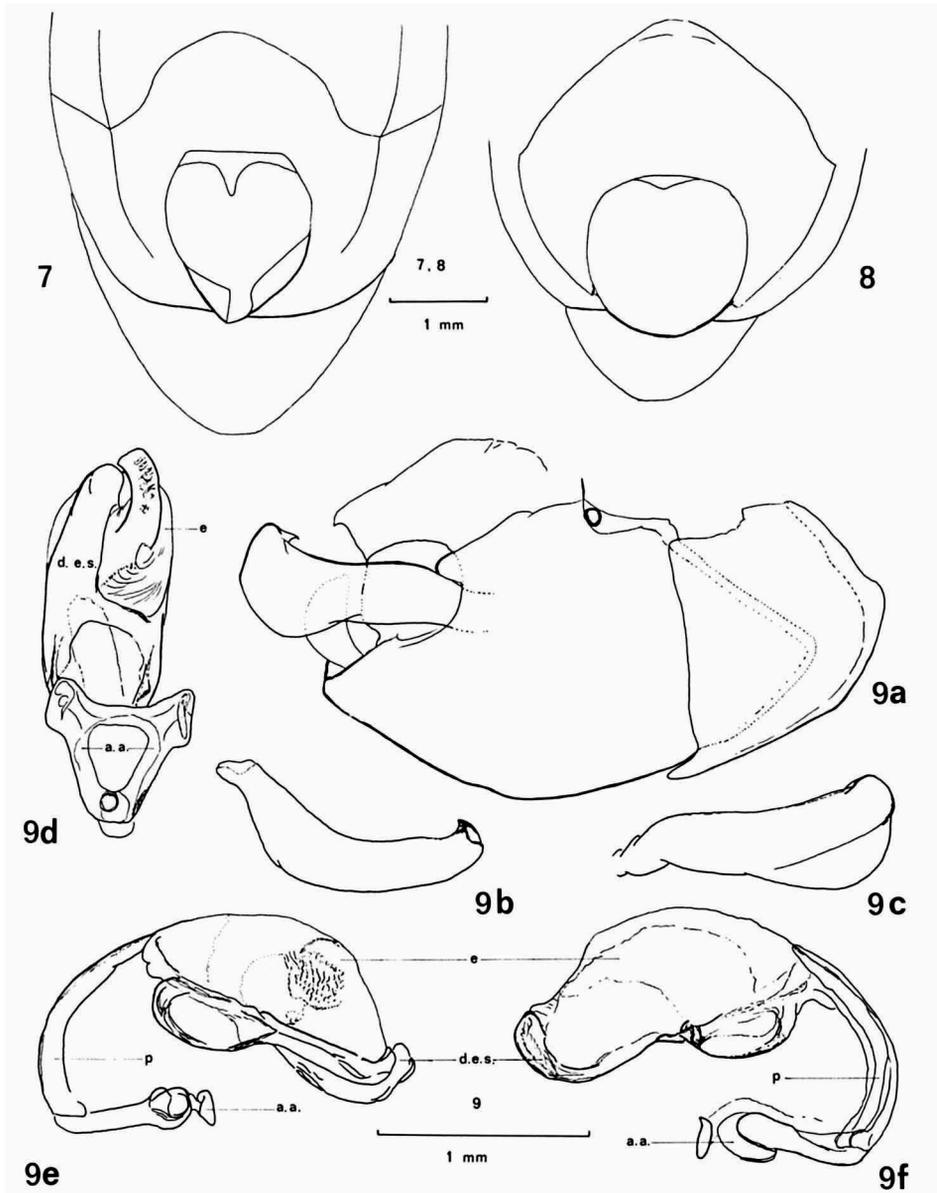


Fig. 4. *Sirthenea flavipes* (Stål), ♀. — a. tip of the abdomen in dorsal view; b. tip of the abdomen in lateral view; c. gonocoxites and gonapophyses of the ninth segment; d. styloids; e. gonocoxites and gonapophyses of the eighth segment. Abbreviations. — a. f.: anterior fibula. ga.: gonapophysis. gc: gonocoxite.



Figs. 5-6. *Sirthenea* spp., ♂. — 5. Tip of the abdomen in *S. pedestris* Horváth: a. in ventral view; b. in lateral view. — 6. Male genitalia in *S. stria stria* (Fabricius): a. pygophore and eighth abdominal segment in lateral view; b. left paramere in dorsal view; c. left paramere in extern view; d. phallus in dorsal view; e-f. phallus in lateral view. Abbreviations. — a. a.: articular apparatus. b. l. l.: basal lateral lobe (of the dorsal endosomal sclerite). d. e. s.: dorsal endosomal sclerite. e: endosoma. p: phallosoma.

Male genitalia. — The general appearance of the male genitalia, as described by Davis (1966), in lateral and ventral view is shown in figs. 5, 7-8, figs. 6a, 9a giving a lateral view of the male genitalia after being removed and boiled in 10% KOH. At rest, the segments forming the genitalia are more or



Figs. 7-9. *Sirthenea* spp., ♂. — 7. Tip of the abdomen in *S. laevicollis* Horváth in ventral view. — 8. Tip of the abdomen in *S. flaviceps* (Signoret) in ventral view. — 9. Male genitalia in *S. flavipes* (Stål): a. pygophore and eighth abdominal segment in lateral view; b. left paramere in dorsal view; c. left paramere in external view; d. phallus in dorsal view; e-f. phallus in lateral view. Abbreviations. — a. a.: articulatory apparatus. d. e. s.: dorsal endosomal sclerite. e: endosoma. p: phallosoma.

less telescoped into the seventh abdominal segment, the small part extending, in dorsal view, concealed by the hemelytra. The male genitalia are mainly formed by the ninth segment. The eighth segment is small, reduced and invisible in repose, being telescoped into the seventh segment, the stigmata placed dorsally at either side on a distal prolongation. The ninth segment or pygophore is cup-like; in its posterior part, the genital chamber, the euphallic organs are situated: the basis of the parameres, an articulatory apparatus and the phallus. The lateral and ventral parts of the genital chamber are sclerotised, the dorsal side membranous, terminally closed by a tube known as proctiger containing the anus; the posterior ventral margin medially with a slight asymmetric tooth-like projection, the hypandrium (*sensu* Dupuis, 1970: 191). Parameres (figs 6b-c, 9b-c, 33-48) as already noted by Davis (1966) simple, without any conspicuous (tooth-like) processes. The articulatory apparatus (figs. 6d-f, 9d-f), by means of ligaments connected with the bases of the parameres, horseshoe-shaped. It consists of two basal plates, dorsally united by the ponticulus transversalis. Ventrally of the articulatory apparatus, in repose, the phallus is found, consisting of a proximal phallosoma and a distal endosoma. The phallosoma (figs. 6e-f, 9e-f) is rather slender, tube-like, supported by ligamentary processes, also known as the basal plate prolongation (Singh-Pruthi, 1925: 135), surrounding the proximal part of the ductus seminis. Distally the phallosoma proceeds into the endosoma (figs. 6d-f, 9d-f) surrounding the distal part of the ductus seminis, being rather voluminous, cup-shaped and partly surrounded by asymmetric sclerotised parts. The struts, although apparently situated in the endosoma (phallotheca. — Davis, 1966: 920), are in fact external sclerotised parts, embedded in the endosoma.

These struts are proximally articulating with the phallosoma and distally attached to a sclerotised part, partly surrounding the endosoma: the dorsal endosomal sclerite. The phallosoma being curved and distally articulating with the endosoma makes it possible that at rest the articulatory apparatus (pontus transversalis) is situated against the base of the dorsal endosomal sclerite. During the copulation the phallus is bended sideways and turned into the direction of the head, implying that during the copulation male and female are parallel-sided. Taxonomic characters provided by the male genitalia are limited in number. The parameres, lacking any conspicuous process, can hardly be used as differential character between taxa, although there are minor differences to be found between some species. The phallus also tends to be rather uniform, although there is one little sclerotised part, called here the basal (lateral) lobe of the dorsal endosomal sclerite (fig. 6e) which shows distinct differences between various taxa.

Colouration. — The hemelytra (clavus, corium as well as the membrane),

the legs (coxae but especially the femora) and the abdomen (including connexivum) often show differences in colouration between taxa (see also figs. 22-29).

#### 4. METHODS

In the present study some measurements are given, which were taken as follows: body length – distance between the apex of the tylus and the tip of the abdomen; body width – greatest distance between the posterior lateral angles of the pronotum; interocular distance – shortest distance between the eyes in ventral view (fig. 11); width of an eye – greatest distance between the inner and outer margin of an eye in ventral view (fig. 11); length of an antennal segment – distance between the base of the short internodium and the apex of the segment; length of the femur – distance between the proximal edge at the dorsal margin and the knee lobe; width of the femur – greatest distance between the ventral and dorsal margin. For measuring proportions a zoom objective was used.

For dissection of the genitalia, specimens were first soaked in water for about 24 hours, after which the genitalia could easily be removed with a forceps. After being boiled in 10% KOH for about a minute the genitalia were placed in water for some minutes after which they were brought into a 50% glycerine solution. After examination, the genitalia, together with a drop of pure glycerine, were put in a short PVC-tube (van Doësborg, 1980) and pinned under the appropriate specimen.

Drawings of (parts of) genitalia were made while these were situated in a small cuvette (filled with a 50% glycerine solution) which had been fixed on a microslide. The bottom of the cuvette had been coated with vaseline so as to make it possible to fix the (parts of) genitalia in whatever position desired.

As grouping of the taxa according to their phylogenetic relationships is still not possible, the sequence in which these are dealt with is alphabetical.

Under every taxon a list of references is given (where appropriate with synonymy) followed by a list of the examined material, a diagnosis, a (re)description, data on the distribution, notes concerning whatever aspect may be of interest, and finally, a short discussion on the differential characters.

The literature mentioned under each taxon (except *Sirthenea*) is as complete as possible.

Under the heading "Material examined" only those specimens are mentioned that were properly labelled. Specimens with illegible labels, or those lacking any, have been omitted. For convenience only localities are

mentioned. Sparse information concerning ecology found on the labels is summarised under 7.3. Biology.

## 5. MATERIAL

Except for the rather limited material present in the Rijksmuseum van Natuurlijke Historie at Leiden, this study has also been based on material provided by various other institutions. A list of these with the abbreviations used throughout the text is given below. During the study a visit has been made to the Koninklijk Museum voor Midden Afrika (Musée Royal de l'Afrique Centrale) at Tervuren, Belgium to study some of the African representatives of *Sirthenea*. Altogether some 1200 specimens representing 23 species were examined.

### Alphabetical list of the sources of the material

AMNH	American Museum of Natural History, New York, U.S.A.
BMNH	British Museum (Natural History), London, England
CAS	California Academy of Sciences, San Francisco, U.S.A.
CMNH	Carnegie Museum of Natural History, Pittsburgh, U.S.A.
CN	Collection Dr. N. Nieser, Utrecht, The Netherlands
DZC	Departamento Zoologia de Unicamp, Campinas (Sao Paulo), Brazil
EDUQ	University of Queensland, Department of Entomology, Brisbane, Australia
FDA	Florida State Collection of Arthropods, Florida Department of Agriculture, Gainesville, U.S.A.
HNHM	Hungarian National History Museum, Budapest, Hungary
KMMA	Koninklijk Museum voor Midden-Afrika, Tervuren, Belgium
MACN	Museo Argentino de Ciencias Naturales "Bernardina Rivadavia", Buenos Aires, Argentina
MNP	Museum National d'Histoire Naturelle, Paris, France
MNR	Museu Nacional, Rio de Janeiro, Brazil
MZM	The University of Michigan, Museum of Zoology, Michigan, U.S.A.
NMNH	National Museum of Natural History (Smithsonian Institution), Washington, U.S.A.
NRS	Naturhistoriska Riksmuseet, Stockholm, Sweden
OSU	The Ohio State University, Columbus, U.S.A.
PSM	Ponce School of Medicine, Ponce, Puerto Rico
QM	Queensland Museum, Fortitude Valley, Australia
RMNH	Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands
UCV	Universidad Central de Venezuela, Facultad de Agronomía, Maracay, Venezuela
ZIL	Zoological Institute of the Academy of Sciences of the USSR, Leningrad, U.S.S.R.
ZMA	Instituut voor Taxonomische Zoologie (Zoologisch Museum), Universiteit van Amsterdam, Amsterdam, The Netherlands
ZMB	Zoologisches Museum (Humboldt – Universität), Berlin, D.D.R.
ZMC	Zoologisk Museum, København, Danmark
ZMH	Zoological Museum of the University, Helsinki, Finland
ZMW	Naturhistorisches Museum Wien, Austria

## 6. ACKNOWLEDGEMENTS

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I also want to express my gratitude to Dr. G. Schmitz for the possibility offered to study some African material of *Sirthenea* at the Koninklijk Museum voor Midden-Africa at Tervuren.

Special thanks and gratitude are due to Dr. P. H. van Doesburg Jr. who throughout this study kindly assisted and advised me in every way he could.

## 7. *Sirthenea* Spinola, 1840

(fig. 10)

*Sirthenea* Spinola, 1840: 100 (species typica: *Reduvius carinatus* Fabricius, 1798). Horváth, 1909: 362 (key to and enumeration of the species).  
*Sirtheneana* Miller, 1958: 72 Syn. nov.

### 7.1. Redescription

Body medium-sized to large, 13.5-28.0(-38.0) mm.

Head anteriorly elongated, (sub-)porrect, with a distinct transverse sulcus at the posterior margin of the eyes; ante-ocular part longer (about 1.5 times) than the remaining part, ventrally glabrous, Antennae, as a rule, inserted remotely from the eyes (figs. 12-13), 4-segmented, reaching or slightly surpassing the posterior margin of the pronotum; first segment shortest, reaching the tip of the head; second and third segment proximally with a short internodium. Ocelli, two, rarely reduced (in brachypterous forms). Rostrum slender, with three visible segments; first segment shortest.

Pronotal collar well-developed, smooth without tubercles. Anterior lobe of the pronotum except for a medial sulcus with or without lateral sulci; lateral margin rimmed, rarely indistinct; anterior margin with or without a rim. Posterior lobe shorter than the anterior lobe, in brachypterous forms somewhat

reduced. Legs robust, rarely slender; anterior coxae elongated, about twice the length of the medial and posterior coxae; anterior femora ventrally carinate; anterior tibiae apically with fossa spongiosa rarely occupying the entire ventral, apical half; medial tibiae (except in *S. laevicollis*) lacking a fossa spongiosa, apically spiny (fig. 14). Hemelytra fully developed, reaching or slightly surpassing the tip of the abdomen, or reduced, rarely surpassing the posterior margin of the second tergite, proximally (corium and clavus) pubescent.

Male genitalia asymmetric; parameres (figs. 6b-c, 9b-c, 33-48) without any conspicuous appendages, the inner side distally with or without a small dentiform projection; phallus with a short or more elongated, curved, phallosoma (figs. 6e-f, 9e-f) and a cup-shaped endosoma (figs. 6e-f, 9e-f). Female genitalia (figs. 3, 4c-e) symmetric; gonocoxite of the eighth segment large, semicircular; gonapophyse of the eighth segment triangular, inner side with or without lobiform projections; gonocoxite of the ninth segment inconspicuous, strap-like; gonapophyse of the ninth segment triangular; styloids triangular, inner side with a row of bristle-like hairs.

General colouration brown or blackish, usually with some yellow parts (hemelytra in American specimens often with reddish parts).

Notes. — During this study the opportunity was taken to compare the type (in fact the only known specimen hitherto) of *Sirtheneana nigronitens* Miller, 1958, a female from New Guinea, deposited in the RMNH with the material of *Sirthenea* at hand. It appeared that although some smaller morphological differences were found with species of *Sirthenea* these were too small to justify a separate generic status for this single species.

## 7.2. Distribution

Distributed world-wide (fig. 10), predominantly in tropical areas of America, Africa, South-East Asia (including the Indo-Malaysian Archipel) and Australia. As far as America is concerned, the data given below are predominantly based on the rather rich material at hand, for the remaining part of the area on data from literature and some material actually examined (as is indicated between brackets).

America. — Almost confined to Central and South America north of 35° S.; only one species (*Sirthenea stria* (Fabricius, 1794)) reaching the eastern part of North America up to 40° N. West Indies, known from Jamaica (*Sirthenea jamaicensis* sp. nov.) and some of the Windward Islands (*S. stria*); apparently lacking in the Bahamas, Cuba (Alayo, 1967: 5), Hispaniola, Porto

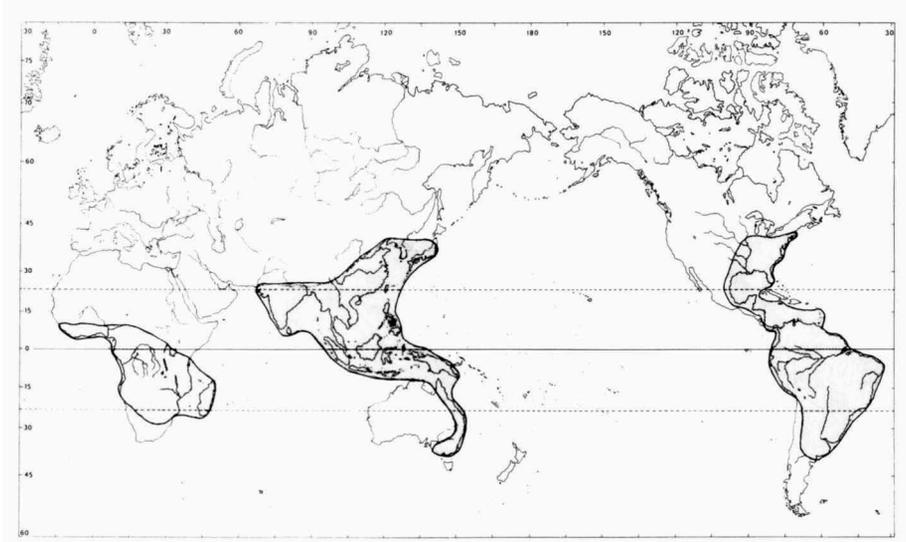


Fig. 10. Distribution of the genus *Sirthenea* Spinola, 1840.

Rico (Barber, 1939: 389), the northern Windward Islands and Leeward Islands (Cobben & Wygodzinsky, 1975: 14). For a survey of the distribution of the American species of *Sirthenea*, see table 1.

**Africa.** — From Sierra Leone (Horváth, 1909: 360), Liberia (RMNH), Malawi (KMMA), Cote d'Ivoire (KMMA; Villiers, 1948: 243) and Dahomey (Villiers, 1948: 243) in West Africa and Tchad (KMMA), Cameroun (Horváth, 1909: 360; Villiers, 1948: 243), Zaïre (KMMA, RMNH; Schouteden, 1912: 238, 435; Schouteden, 1931: 146, 147) and Burundi (KMMA) in Central Africa to Angola (Villiers, 1958: 36), Mozambique (Jeannel, 1919: 359) and Transvaal (Horváth, 1909: 254) in South Africa. Also known from Zanzibar (Jeannel, 1919: 254) and Madagascar (KMMA, RMNH, ZMA; Horváth, 1909: 361, 367; Signoret, 1860: 960; Villiers, 1968: 192).

**South-East Asia.** — Known from India (including Sri Lanka) (RMNH; Distant, 1904: 304; Horváth, 1909: 359) Cochinchine (Signoret, 1862: 125), Laos (RMNH), Vietnam (Horváth, 1909: 359 as "Annam") and China (China, 1940: 221; Distant, 1904: 304; Hsiao 1974: 323) including Formosa (Distant, 1904: 304; Horváth, 1911: 333) to Korea (Horváth, 1909: 359 as 1919 "Corea") and Japan (Distant, 1904: 304). Also known from the Indo-Malaysian Archipel from the islands Sumatra (RMNH, ZMW; Horváth, 1909: 359; Miller, 1948: 444), Java (RMNH, ZMW; Distant, 1904: 304; Horváth, 1909: 359), Borneo (RMNH; Distant, 1904: 304; Horváth, 1909: 359), the Philippines (Distant, 1904: 304; Horváth, 1909: 359; Stål, 1870: 692) the



Kei Islands (Horváth, 1909: 359 as "Key Tual") and New Guinea (RMNH; Miller, 1958: 72).

Australia. — Confined to the eastern part where it is known from Adelaide (Stål, 1866: 253), Sydney (Stål, 1866: 253), New South Wales (EDUQ; Horváth, 1909: 367) and Queensland (EDUQ, QM).

### 7.3. Biology

About the biology of the Peiratinae in general and that of *Sirthena* in particular, only little is known. The most "complete" survey of the biology of *Sirthena* is given by Readio (1927: 126, 143) from which some of the following remarks are derived.

Representatives of *Sirthena* are probably ground-dwellers, hidden away during daytime under stones, debris, leaves etc., during the night preying on other insects which also inhabit such places. Being nocturnal insects they are easily attracted to light (in fact numerous specimens examined have been caught at some kind of light source), a habit which may also explain their occasional presence in houses. When captured they seem to be fierce biters, inflicting a painful sting. Imagines of *Sirthena* may be found all through the year. Still there seems to be some seasonal fluctuation as most of the American imagines examined were captured in the months May and September, October, November whereas during the months February, March and June, July relatively few imagines were captured (based on data obtained from 639 specimens). The present data also indicate that species of *Sirthena* prefer lowland habitats below 600-800 m, the highest altitude at which representatives of *Sirthena* (*S. vidua* in Costa Rica) are known to occur being ca. 1800 m. Nothing is as yet known about their oviposition habits, the number of eggs laid, nor about the number and duration of the nymphal stages.

An interesting aspect of their biology not yet investigated is whether species of *Sirthena* live in a mimetic association with other insects, although at first thought such mimetic association seems rather illogical for nocturnal insects. Examples of such mimetic association are given by van Someren (1925) and Stride (1956). The former found representatives of Peiratinae in Africa (*Ectomocoris* Mayr, 1865, *Peirates* and *Phalantus* Stål, 1863) living together with other insects, predominantly Carabid beetles showing an identical colour-pattern as the bugs. Stride (1956) found a mimetic association between *Phonoc-tonus* (Reduviid bugs) and some Pyrrhocoridae (bugs on which *Phonoc-tonus* is known to prey). An interesting aspect of this question is the apparent fact that the colour-patterns of species of *Sirthena* from various parts of its dis-

tribution area show distinct differences which might be expected when assuming the colour-pattern to be related to the colour-pattern of the local insect fauna.

Finally a short remark as to the function of the fossa spongiosa. Except for various groups in the Reduviidae, fossae spongioseae are also found in Nabidae and Reduviidae (Villiers, 1948: 12). Although the question of the function of these organs is still not definitely settled, we may safely assume that primarily it has to be associated with the predacious way of life shown by these groups, meaning that fossae spongioseae serve as clinging organs for holding prey, whereas advantages offered by such organs for the locomotion are only random effects.

#### 7.4. Intergeneric dissimilarities

*Sirthenea* belongs to the subfamily Peiratinae and as such to the Reduviidae, a family of predacious bugs (but see also Stoner e.a., 1975) commonly known as assassin bugs. The main features of the Peiratinae are: ocelli present; pronotum constricted behind the middle; scutellum triangular; anterior coxae large, distinctly longer than wide, outer side flattened; anterior femora usually incrassate; anterior and as a rule the medial tibiae with fossa spongiosa; hemelytra with cubitus simple not forming an additional 4- to 6-angled cell between corium and membrane.

The Peiratinae are worldwide distributed although mainly confined to the tropics. Below is given a survey of the number of genera known from each faunistic region together with the number of endemic genera.

	Nearctic	Neotrop.	Palaearct.	Africa	Madagascar	Orient.	Austr.
number of genera	3	7	4	9	9	8	4
endemic genera		6	0	3	4	1?	0

Besides *Sirthenea* the Peiratinae contain another 20 genera. Diagnostic characters in which *Sirthenea* differs from the other peiratine genera are mentioned below.

*Sirthenea*

- 1: Head ventrally, except for a more or less pubescent interocular part, glabrous
- 2: Head (sub-)porrect, elongated, distinctly longer than high; anteocular part usually distinctly (ca. 1.5 times) longer than the remaining part; antennae placed remotely from and in front of the eyes
- 3: Rostrum slender, proportion of the length of the three segments 1 : 2 : 3 = 1.0 : 2.0-3.0 : ca. 1.5
- 4: Medial tibiae without fossa spongiosa (except in *S. laevicollis*)

## Other peiratine genera

- 1: Head ventrally entirely pubescent (in some genera e.g. *Melanolestes* this pubescence hardly visible)
- 2: Head subporrect, in most genera not elongated, not distinctly longer than high; anteocular part as long as or shorter than the remaining part, only seldom slightly longer; antennae placed between or directly anterior to the eyes
- 3: Rostrum more robust, second segment not more than twice the length of the first, the third segment shorter or equal in length compared with the first segment
- 4: Medial tibiae always with fossa spongiosa although in some genera these are very short (*Phalantus*) or differently shaped (*Rapites* Villiers, 1948)

Together these characters clearly group together the species as mentioned under 7.5. Like *Sirthenea* most peiratine genera are characterised by distinct striking features e.g. *Androclus* Stål, 1863 by flattened anterior and medial tibiae with distinct lateral carinae, *Rapites* by fossa spongiosa of an unusual construction, *Thymbreus* and *Lamotteus* Villiers, 1948 by the widely separated medial and posterior coxae and *Phalantus* Stål, 1863 by curved anterior tibiae. Altogether one gets the impression, when studying the Peiratinae, that this subfamily consists of a number of easily recognisable genera which lack any possible sister group.

## 7.5 Relationships within the genus

Horváth (1909) distinguished two subgenera within *Sirthenea* viz., *Monogmus* and *Sirthenea* s.s. The former included *atrocyanea* Horváth, 1909 and *picescens* Reuter, 1887 from Madagascar and *laevicollis* Horváth, 1909 from Australia. The latter contained *africana* Distant, 1905, *rapax* Horváth, 1909

and *leonina* Horváth, 1909 from Africa, *flaviceps* (Signoret, 1860) from Madagascar, *flavipes* (Stål, 1855) from the Oriental region and *carinata* (Fabricius, 1798) *stria* (Fabricius, 1794), *suturalis* Horváth, 1909, *ocularis* Horváth, 1909, *plagiata* Horváth, 1909, *vittata* Distant, 1902 and *vidua* Horváth, 1909 from America. Differences between these subgenera, according to Horváth (1909), are: the first antennal segment reaches the apex of the head in *Sirthenea* s.s., slightly exceeds it in *Monogmus*; the anterior pronotal lobe shows lateral sulci in *Sirthenea* s.s., but not so in *Monogmus*; the legs are rather robust in *Sirthenea* s.s. and rather slender in *Monogmus*.

Not having studied six (*angolana* Villier, 1968, *atrocyanea* Horváth, 1909, *clavata* Miller, 1948, *dimidiata* Horváth, 1911, *leonina* Horváth, 1909 and *picescens* Reuter, 1887) of the 29 species described in *Sirthenea* at this moment and not knowing its sistergroup, it is hardly possible from a cladistic point of view to provide arguments either to support or oppose the above mentioned characters used by Horváth as true indicators of phylogenetic relationships. Yet I would like to comment on five characters, each displaying two character states in the species of *Sirthenea* examined, which may prove to be such indicators.

The two states of the first character are the presence or absence of a fossa spongiosa on the medial tibiae. Except for *S. laevicollis*, which has a narrow, inconspicuous fossa spongiosa on the medial tibia, fossae spongiosae on the medial tibiae are lacking in all other species of *Sirthenea*. Assuming a fossa spongiosa to be a rather complex structure, and knowing that fossae spongiosae are present on the medial tibiae in all other genera of Peiratinae, it seems rather likely that the absence of fossae spongiosae on the medial tibiae is an apomorphous state, (a regression), its presence a plesiomorphous state.

A second character offering two distinct states in the species examined is the shape of the hind margin of the eighth abdominal ventrite in the male. In all Peiratinae, including *Sirthenea*, except for its American representatives, the hind margin is medially provided with a rounded or toothlike projection. In ventral view this projection is in fact the only visible part of this segment (figs. 7-8). The American representatives lack such a medial projection, the eighth abdominal ventrite in the male becoming invisible (fig. 5a). Using the outgroup argument (De Jong, 1980: 12) the possession of a medial projection may be considered plesiomorphous, its absence apomorphous.

The third character is the shape of the anterior margin of the pronotum. In *S. flaviceps*, the African and Oriental species including *S. nigronitens* (Miller, 1958), the anterior margin shows no rim, whereas species from America and Australia show a distinct rim. Being present in all other Peiratinae genera, the absence of such a structure must be considered apomorphous, while the presence of a rim is a plesiomorphous state.

The pubescence of the ventral side of the posterior margin of the pronotum is a fourth character showing two distinct states in the species examined. In the American and Australian representatives this pubescence is restricted to two short, densely pubescent parts on both sides of the scutellum. In *S. flaviceps* from Madagascar and the African and Oriental species, including *S. nigronitens*, this margin is entirely pubescent. Both character states are found in outgroups, although the latter to a much lesser extent, making it more likely that this represents an apomorphic state and the former the plesiomorphous one.

Finally, the fifth character is the upper margin of the metapleuron. In the American and Australian species this margin is formed by two equally well developed rims. In the species examined from Madagascar, Africa and the Oriental region the ventral-most rim is distinctly less developed or even lacking. All other Peiratinae examined displaying the former state, this is most likely to be the plesiomorphous one and the latter therefore the apomorphic one.

Summarising, it seems that the American species on the one side and the African (including *flaviceps* from Madagascar) and Oriental species (including *nigronitens* from New Guinea) on the other form two separate monophyletic groups. How these groups are related mutually as well as to the other species from Madagascar and the Australian representatives, remains obscure for the time being.

#### 7.6. Alphabetical list of species and subspecies

- |  |              |
|--|--------------|
| 1. <i>S. africana</i> Distant, 1905      | (Africa)     |
| 2. <i>S. amazona</i> Stål, 1866          | (America)    |
| subsp. <i>amazona</i> Stål, 1866         |              |
| <i>anduzei</i> Drake & Harris, 1945      |              |
| 3. <i>S. angolana</i> Villiers, 1968     | (Africa)     |
| 4. <i>S. atra</i> sp. nov.               | (America)    |
| 5. <i>S. atrocyanea</i> Horváth, 1909    | (Madagascar) |
| 6. <i>S. bequaerti</i> Schouteden, 1912  | (Africa)     |
| 7. <i>S. clavata</i> Miller, 1948        | (Oriental)   |
| 8. <i>S. collarti</i> Schouteden, 1931   | (Africa)     |
| 9. <i>S. dimidiata</i> Horváth, 1911     | (Oriental)   |
| 10. <i>S. dubia</i> sp. nov.             | (America)    |
| 11. <i>S. ferdinandi</i> sp. nov.        | (America)    |
| 12. <i>S. flaviceps</i> (Signoret, 1860) | (Madagascar) |

- |  |              |
|--|--------------|
| 13. <i>S. flavipes</i> (Stål, 1855)                | (Oriental)   |
| 14. <i>S. jamaicensis</i> sp. nov.                 | (America)    |
| 15. <i>S. laevicollis</i> Horváth, 1909            | (Australia)  |
| 16. <i>S. leonina</i> Horváth, 1909                | (Africa)     |
| 17. <i>S. leontovitchi</i> Schouteden, 1931        | (Africa)     |
| 18. <i>S. nigronitens</i> (Miller, 1958)           | (New Guinea) |
| 19. <i>S. obscura</i> Stål, 1866                   | (Australia)  |
| 20. <i>S. ocularis</i> Horváth, 1909               | (America)    |
| 21. <i>S. pedestris</i> Horváth, 1909 (comb. nov.) | (America)    |
| 22. <i>S. peruviana</i> Drake & Harris, 1945       | (America)    |
| subsp. <i>peruviana</i> Drake & Harris, 1945       |              |
| <i>gracilis</i> ssp. nov.                          |              |
| <i>orientalis</i> ssp. nov.                        |              |
| 23. <i>S. picescens</i> Reuter, 1887               | (Madagascar) |
| 24. <i>S. plagiata</i> Horváth, 1909               | (America)    |
| 25. <i>S. rapax</i> Horváth, 1909                  | (Africa)     |
| 26. <i>S. rodhaini</i> Schouteden, 1912            | (Africa)     |
| 27. <i>S. stria</i> (Fabricius, 1794)              | (America)    |
| subsp. <i>stria</i> (Fabricius, 1794)              |              |
| <i>carinata</i> (Fabricius, 1798)                  |              |
| 28. <i>S. vidua</i> Horváth, 1909                  | (America)    |
| 29. <i>S. vittata</i> Distant, 1902                | (America)    |

#### 7.7. Key to the New World species

1. Brachypterous, hemelytra not surpassing the posterior margin of the third tergite ..... 2
- Macropterous, hemelytra reaching or slightly surpassing the tip of the abdomen ..... 3
2. Hemelytra bicolorous, dark brown with a reddish costal margin, apically not touching each other (fig. 30); male not known ..... *jamaicensis*
- Hemelytra unicolorous dark brown, apically touching each other (fig. 31) ..... *vidua*
3. Proximal part of the corium (including costal margin) brightly coloured, reddish to yellowish (figs. 24-28) ..... 4
- Proximal part of the corium (including costal margin) dark coloured, brownish to blackish (figs. 22-23, 29) ..... 8
4. Eyes large, proportion between the interocular distance and the diameter of an eye (in ventral view) 2.0: 4.2-5.0 (in the males!); second antennal

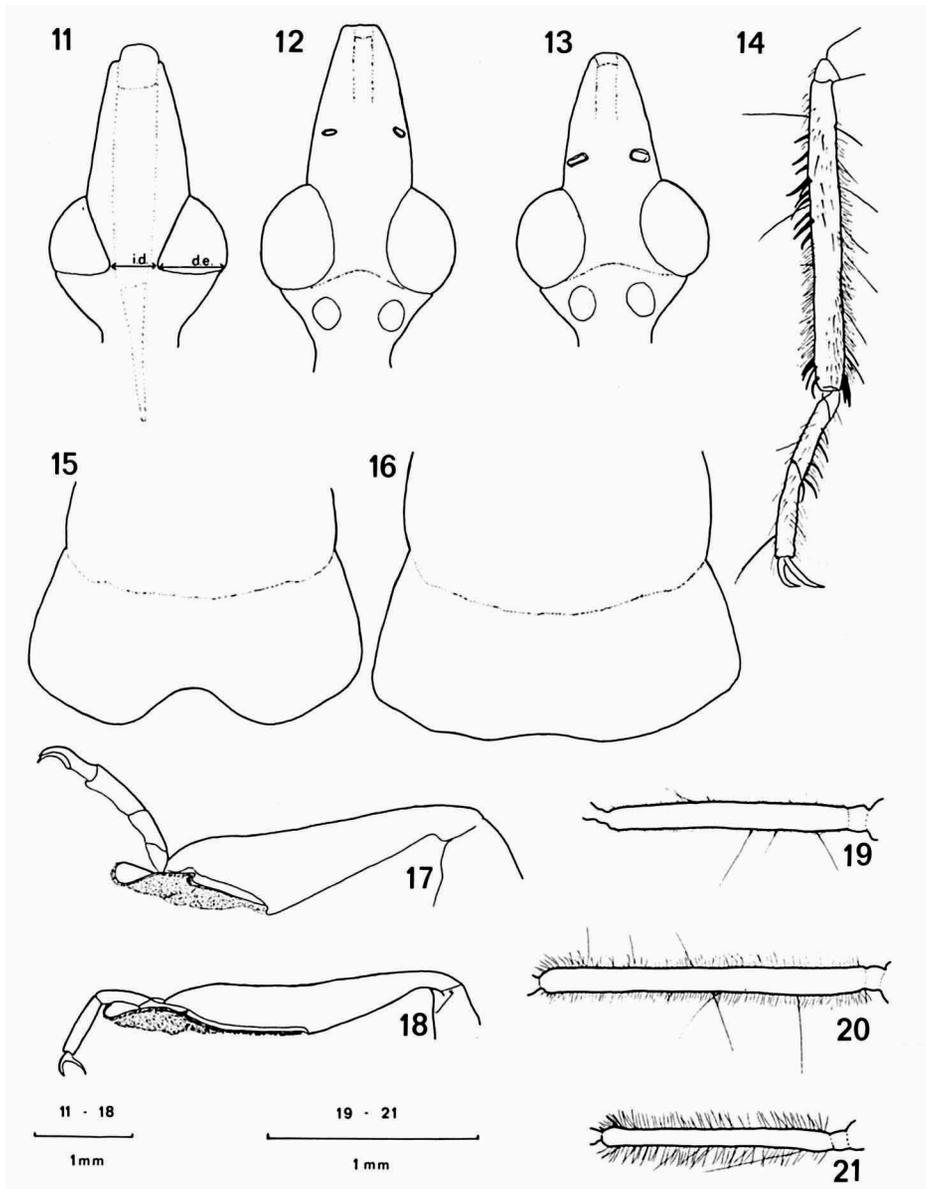
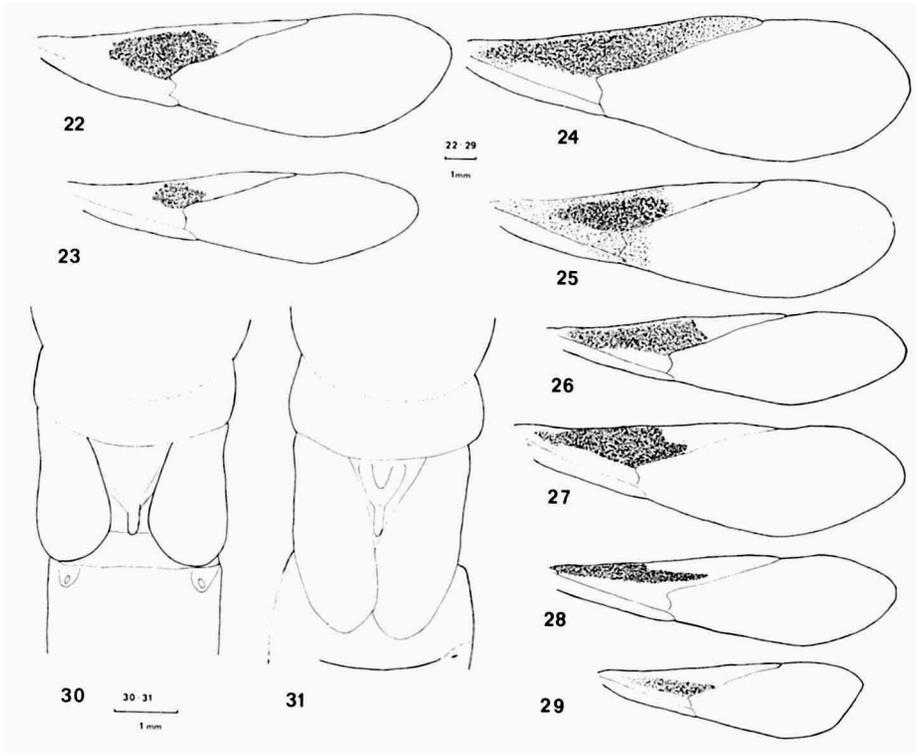


Fig. 11. Head of *Sirthenea* in ventral view. — Figs. 12-13. Head in dorsal view of: 12: *S. amazona* Stål; 13: *S. ocularis* Horváth. — Fig. 14. Medial tibia (inner side) of *S. stria* (Fabricius). — Figs. 15-16. Posterior pronotal lobe in dorsal view of: 15 *S. amazona* Stål; 16. *S. stria* (Fabricius). — Figs. 17-18. anterior tibiae in lateral view of: 17. *S. stria carinata* (Fabricius); 18 *S. atra* sp. nov. — Figs. 19-21. Second antennal segment in the male of: 19. *S. stria stria* (Fabricius); 20. *S. pedestris* Horváth; 21. *S. peruviana* Drake & Harris. Abbreviations. — d. e.: diameter of an eye. i. d.: interocular distance.

- segment in the males 2.4-2.9 times the length of the first segment; costal margin of the corium entirely brightly coloured (fig. 24); female not known ..... *ocularis*
- Eyes smaller, proportion between the interocular distance and the diameter of an eye (in ventral view) 2.0 : 1.3-3.9 (in the males!); second antennal segment in the males 1.5-2.3 times the length of the first segment; costal margin of the corium apically dark coloured (figs. 25-28) ..... 5
5. Posterior margin of the pronotum medially distinctly concave (fig. 15) ..... *amazona*
- Posterior margin of the pronotum medially not or slightly concave (fig. 16) ..... 6
6. Membrane of the hemelytra apically pale, whitish (fig. 25); legs and connexivum unicolorous pale yellow ..... *ferdinandi*
- Membrane of the hemelytra apically dark, brownish (figs. 26-28); legs bicolorous yellowish and brownish, if unicolorous then the connexivum bicolorous (yellowish and brownish) ..... 7
7. Males: erect pubescence of the second and third antennal segment long (fig. 20); the basal (lateral) lobe of the dorsal endosomal sclerite spiniform (fig. 56). Females: connexivum unicolorous dark brown; posterior femora except for a small spot at the base entirely dark brown ... *pedestris*
- Males: erect pubescence of the second and third antennal segment short (fig. 19); the basal (lateral) lobe of the dorsal endosomal sclerite more or less rounded (figs. 6e, 61). Females: connexivum unicolorous yellowish or bicolorous yellowish and brownish; posterior femora, at least in the basal half yellowish ..... *stria*
8. Eyes small, proportion between the interocular distance and the diameter of an eye (in ventral view) 2.0: 0.6-0.7 (in the males!); abdomen ventrally sparsely pubescent; legs very slender, posterior femora, in the males, 8.4-8.8 times longer than wide; female not known ..... *atra*
- Eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) 2.0: 1.2-3.2 (in the males!); abdomen ventrally densely pubescent; legs more robust, posterior femora, in the males, 5.6-8.5 times longer than wide ..... 9
9. Hemelytra unicolorous dark brown; legs relatively robust, posterior femora in the males 5.6-6.2 and in the females 4.5-4.8 times longer than wide ..... *dubia*
- Hemelytra bicolorous, brown with a yellowish or reddish spot in the corium; if unicolorous than legs slender, posterior femora in the males 7.5-8.5 and in the females 6.4-6.5 times longer than wide ..... 10
10. Anterior tibiae apically with a relatively long fossa spongiosa (fig. 18);



Figs. 22-31. Hemelytra of *Sirthenea* spp. — 22. *S. plagiata* Horváth. — 23. *S. peruviana orientalis* ssp. nov. — 24. *S. ocularis* Horváth. — 25. *S. ferdinandi* sp. nov. — 26. *S. amazona anduzei* Drake & Harris. — 27. *S. stria stria* var. *rosea* (Herrich-Schäffer). — 28. *S. stria stria* var. *stria* (Fabricius). — 29. *S. vittata* Distant. — 30. *S. jamaicensis* sp. nov. — 31. *S. vidua* Horváth.

- hemelytra dark brown or with a pale grey-orange streak-like spot in the corium (fig. 29) ..... *vittata*
- Anterior tibiae apically with a relatively short fossa spongiosa (fig. 17); hemelytra with a smaller or larger, rounded spot in the corium (figs. 22-23) ..... 11
11. Spot in the corium large (fig. 22), orange; erect pubescence of the second and third antennal segment in males long (fig. 20) ..... *plagiata*
- Spot in the corium small (fig. 23), yellowish to dark red; erect pubescence of the second and third antennal segment in males very long (fig. 21) ..... *peruviana*

## 7.8 New World species

**Sirthenea amazona** Stål, 1866

**Diagnosis.** — Macropterous, relatively small and slender. Eyes medium-sized; erect pubescence of antennae short (in both sexes). Pronotum with the posterior margin medially distinctly concave; legs robust; tibiae rounded, anterior pair with relatively short fossa spongiosa. Abdomen ventrally densely, appressedly pubescent; male genitalia, figs. 38, 41, 49-50. Proximal part of the corium (including costal margin) brightly coloured; membrane dark brown, apically slightly paler.

**Distribution.** — Widely distributed throughout South America but mainly confined to the northern and western part; also known from Trinidad.

## Key to the subspecies

1. Pronotum bicolorous, anterior lobe yellowish, posterior lobe dark brown; Argentina, north-eastern Brazil ..... *amazona amazona*
- Pronotum unicolorous dark brown; from the Guyanas and Venezuela to Bolivia ..... *amazona anduzei*

**Sirthenea amazona amazona** Stål, 1866

(figs. 12, 15, 32, 38, 49)

*Sirthenea amazona* Stål, 1866: 252 (terra typica: Brasilia borealis). Stål, 1872: 105. Horváth, 1909: 368. Wygodzinsky, 1949: 54.

*Pirates amazonus*: Walker, 1873: 100, 103.

Material examined: 5 ♂, 2 ♀. — Brazil. Para: Santarem (AMNH 1 ♀). Ceara: Independencia (AMNH 2 ♂). Rio Grande do Norte: Natal (MNR 1 ♀). Goyaz: River Araguay (MNP 1 ♂). not localised: Amazonas (NRS 1 ♂, holotype).

Argentina. Salta: Oran (MACN 1 ♂).

**Redescription.** — Medium-sized: length in males 16.0-18.0 mm, in females 20.5-22.0 mm; width in males 3.2-3.7 mm, in females 4.0-4.2 mm. Head relatively slender, longer than the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0: 2.4-2.8, in females 0.7-1.0; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0

: 1.8-2.0 : 1.6-1.9 : 1.8-1.9, in females 1.0 : 1.4-1.5 : 1.3 : 1.4, the first segment slender, slightly longer than the first segment of the rostrum, the erect pubescence of the second and third segment short (fig. 19). Thorax with the posterior margin of the pronotum distinctly concave (fig. 15); hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.5-2.7, 1.0 : 3.7-4.4 and 1.0 : 6.1-6.7 respectively and in females 1.0 : 2.2-2.3, 1.0 : 3.6-3.7 and 1.0 : 5.8-6.0; tibiae rounded, anterior pair apically with relatively short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the males, fig. 38; phallus, fig. 49, with the basal (lateral) lobe of the dorsal endosomal sclerite obtusely rounded almost rectangular.

Colouration. — Head bicolorous, the posterior part, at least the vertex dark brown, the remaining part including antennae and rostrum yellowish; the first segment of the antennae apically darkened. Thorax except for the brownish posterior lobe of the pronotum and scutellum in the males entirely brownish, in the females the metapleuron and medial part of the mesosternum are also brownish; clavus proximally and apically yellowish, in the median part brownish; corium for the largest part brightly coloured (fig. 26) only the apical most part brownish, the costal margin and eventually the cell adjoining the clavus yellowish, the remaining part orange-red; membrane brownish, proximally pale yellowish and in the apical part eventually also slightly paler; legs yellowish eventually with some brownish spots on the anterior tibiae and on the apices of the femora. Abdomen yellowish, the genital segments slightly darkened, connexivum maculate with only small brown patches.

Distribution. — Apparently very localised; only known from some localities in north-eastern Brazil and one locality in northern Argentina; see also fig. 32.

Notes. — The male from Argentina differs from the Brazilian specimens in being slightly larger, having larger eyes and slightly different colourmarkings (connexivum almost entirely yellowish and the cell adjoining the clavus brownish). Differences, however, which are comparable with the variation as found in other widespread taxa like *S. stria stria* or *S. pedestris* in the same characters.

***Sirthenea amazona anduzei* Drake & Harris, 1945**

(figs. 12, 15, 26, 32, 41, 50)

*Sirthenea anduzei* Drake & Harris, 1945: 55 (terra typica: Venezuela, Barinas). Froeschner, 1981: 84.

Material examined: 142 ♂, 42 ♀. — Colombia (MNP 1071-74 1 ♂; ZMB 3 ♂); Amazonas: 14 km N of Leticia (CAS 1 ♀). Boyaca: Muzo (CAS 1 ♂). Tolima: Coyaima (CAS 1 ♀). Choco: Taparal (AMNH 1 ♂). Antioquia: Medellin (NMNH 1 ♂). Magdalena: Rio Frio (MZM 1 ♂). Not localised: Florencia (AMNH 1 ♂); Rio Nikay (ZMB 1 ♂); Huasco (ZMA 1 ♂).

Venezuela. (CAS 1 ♂, 2 ♀; ZMB 1 ♀; MNP 1 ♂); Zulia: Mision el Rosario (UCV 1 ♂, 1 ♀); E. Tucuco (UCV 15 ♂, 3 ♀); Rio Agiovisa (UCV 1 ♂); Tres Bocas (UCV 1 ♂); Rasmera (UCV 1 ♂, 1 ♀). Yaracuy: La Hoya (UCV 2 ♂); Mina de Aroa (UCV 1 ♂); Yumare (UCV 5 ♂); Rio Yurubi, San Felipe (UCV 1 ♂). Carabobo: Tocuyo (PSM 9 ♂, 1 ♀); Vigerima (UCV 3 ♂, 1 ♀); Tacarigua (UCV 2 ♀); Campo Carabobo (UCV 1 ♀); La Araguata (UCV 1 ♀). Tachira: La Morita (UCV 1 ♂); Rio Frio (UCV 1 ♀); La Fria — Coloncito, Rio Orope (PSM 2 ♂). Barinas: Reserva Forestal, Ticoporo (UCV 2 ♂). Apure: Rio Cunaviche, La Soledad (UCV 1 ♂). Portuguesa: Guanara (CAS 1 ♂). Aragua: Cagua (UCV 1 ♀; PSM 1 ♂); Maracay (UCV 4 ♂, 1 ♀); El Limon (UCV 1 ♂, 2 ♀). Miranda: Capaya (UCV 1 ♂, 1 ♀). Monagas: Jusepin (UCV 10 ♂, 4 ♀); Rio Morichal, Largo Puente (UCV 1 ♂). Bolivar: Guri (UCV 1 ♂). Amazonas: Rio Orinoco, Puerto Ordaz (ZMA 1 ♀); Samariapo (PSM 1 ♂). Not localised: San Esteban (CAS 2 ♂, 1 ♀).

Trinidad. (CAS 1 ♂; MNP 1 ♂; AMNH 1 ♂); Arima Valley (AMNH 5 ♂, 1 ♀); North Range (AMNH 1 ♂); Siparia (RMNH 1 ♂).

Guyana. (AMNH 1 ♂); Bartica: (AMNH 1 ♂); Kartabo (AMNH 3 ♂); Penal settlement (AMNH 1 ♂); Demerara (AMNH 1 ♂; BMNH 1 ♂). Esquibo: Tumatumari (AMNH 1 ♂).

Surinam. (RMNH 1 ♂, 1 ♀); Paramaribo: Paramaribo (RMNH 3 ♂). Para: (RMNH 1 ♂). Not localised: leg. Leesberg (RMNH 1 ♂).

Brazil. Amazona: Manaus (AMNH 1 ♀); Atalaio do Norte (MNR 1 ♂); Sao Paulo de Olivenca (RMNH 1 ♀); Benjamin Constant (AMNH 3 ♂, 2 ♀).

Bolivia. Beni: Rurrenbaque (NMNH 1 ♂). Santa Cruz: Santa Cruz de la Szerra (ZMB 1 ♀).

Peru. Huanuco: Tingo Maria (AMNH 6 ♂; BMNH 1 ♀); Monzon Valley, Tingo Maria (CAS 7 ♂); Rio Huallaga, Tingo Maria (AMNH 3 ♂), San Martin: Achinamisa (AMNH 3 ♂). Loreto: Rio Ampiyacu (AMNH 1 ♂). Not localised: Yurac, 67 mi E of Tingo Maria (CAS 8 ♂, 1 ♀); Rio Santiago (AMNH 1 ♂, 2 ♀); Rio Abujao (AMNH 1 ♂).

Ecuador. Pastaza: 150 km SE Puyo (AMNH 1 ♀). Not localised: Santa Inez (ZMB 1 ♀); Zasayacu Oriente (PSM 1 ♀).

Redescription. — Medium-sized: length in males 15.5-19.0 mm, in females 19.5-23.0 mm; width in males 3.1-3.9 mm, in females 3.7-4.5 mm. Head relatively slender, longer than the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0 : 2.1-3.8, in females 2.0 : 0.7-1.1; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0 : 1.5-2.2 : 1.4-2.0 : 1.4-2.0, in females 1.0 : 1.4-1.9 : 1.3-1.5 : 1.3-1.5, the first segment slender, slightly longer than the first segment of the rostrum,

the erect pubescence of the second and third segment short (fig. 19). Thorax with the posterior margin of the pronotum in males distinctly concave, in females less so (fig. 15); hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.5-2.9, 1.0 : 3.5-4.5 and 1.0 : 5.6-7.2 respectively and in females 1.0 : 2.1-2.3, 1.0 : 2.9-3.6 and 1.0 : 5.1-5.7; tibiae rounded, anterior pair apically with relatively short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the males, fig. 41; phallus, fig. 50, with the basal (lateral) lobe of the dorsal endosomal sclerite obtusely rounded.

Colouration. — Head dark brown, tylus usually slightly paler; antennae paler than the head, first segment, especially apically and eventually also the second segment, pale brown, the remaining segments yellowish; rostrum yellow, proximally darkest, apically becoming paler. Thorax except for the yellowish meso- and metasternum and meso- and metaepicoxal lobes entirely brownish; clavus varying from yellow to brown; corium for the largest part brightly coloured, reddish, (fig. 26) only the apical most part brownish, the costal margin and a longitudinal stripe along the clavus yellowish; membrane brownish, proximally with a more or less extensive yellowish part; legs for the largest part yellow to pale yellow, the proximal part of the anterior coxae, elongated spot on the outer, dorsal and ventral side of the anterior femora, the apical half of the medial and posterior femora and the anterior tibiae brownish. Abdomen bicolorous, yellow and brown, at least the proximal segments medially yellowish: usually however, for the largest part yellowish with only the lateral and apical part brownish.

Distribution. — Widely distributed in the northern and western part of South America from the Guyanas via Venezuela, Colombia, Ecuador, Peru and the western part of Brazil to Bolivia; see also fig. 32.

Notes. — Intrasubspecific variation within *S. amazona anduzei* is almost confined to such obvious characters as size and various proportional rates. Still there are two more features showing some variation namely the shape of the posterior margin of the pronotum and the shape of the posterior margin of the mesopleuron. In the western part of the distribution area (Peru, Ecuador, western Brazil) the former is distinctly more concave medially than in the remaining part of the distribution area. The latter is more concave in specimens from the western part of the distribution area.

Interspecific dissimilarities. — *S. amazona* is at once recognised, and as such also distinguished from all other American species of *Sirthenea*, by the shape of the posterior margin of the pronotum which is medially distinctly concave. A species closely resembling *S. amazona* is *S. ferdinandi* which how-



Fig. 32. Distribution of *Sirthenea amazona* Stål, *S. plagiata* Horváth, *S. jamaicensis* sp. nov. and *S. vidua* Horváth (a ? indicates that the exact locality is not known).

ever is easily distinguished from *S. amazona* in being slightly larger, in having a pronotum with a straight posterior margin and in having different colour markings, the unicolorous pale yellow legs being the most striking one. From *S. stria*, with which it has long been confused, *S. amazona* is, except for the difference in the shape of the posterior margin of the pronotum, also separated by differences in colouration, *S. amazona* showing distinct yellowish parts on the corium and clavus, which are lacking in *S. stria*.

***Sirthenea atra* sp. nov.**

(figs. 18, 48, 51, 66)

Material examined: 4 ♂. — Brazil. Minas Geraes: Santa Barbara, Serra do Caraca (AMNH 1 ♂, holotype, 2 ♂, paratypes; RMNH 1 ♂, paratype).

**Diagnosis.** — Macropterous, relatively small and slender. Eyes small; erect pubescence of the antennae (in males) long. Pronotum with the posterior margin medially slightly convex; legs slender; medial and posterior tibiae sulcate, anterior pair with relatively long fossa spongiosa. Abdomen ventrally sparsely pubescent, almost glabrous; male genitalia, figs. 48, 51. Hemelytra, clavus, corium as well as the membrane entirely dark brown; female not known.

**Description.** — Relatively small and slender: length in males 14.0-15.0 mm, width in males 3.2-3.6 mm. Head very slender, distinctly longer than the anterior lobe of the pronotum; frons more than 1.5 times the width of the head; eyes small, proportion between the interocular distance and the diameter of the eyes (in ventral view) in males 2.0 : 0.6-0.7; antennae inserted well in front of the eyes (fig. 12) proportion between the length of the four antennal segments in males 1.0 : 2.0-2.2 : 1.5-1.8 : 1.6-2.2; the first segment slender, distinctly longer than the first segment of the rostrum, the erect pubescence of the second and third segment long (fig. 20). Thorax with the posterior margin of the pronotum medially slightly convex; hemelytra fully developed; legs slender, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 3.5-3.7, 1.0 : 5.5-6.0 and 1.0 : 8.4-8.8 respectively; tibiae flattened, on the inner and outer side with shallow sulci, anterior pair apically with rather long fossa spongiosa (fig. 18). Abdomen (excluding connexivum) sparsely pubescent, rather glabrous with only some rows of short or long erect hairs, the connexivum ventrally glabrous, dorsally appressedly pubescent; parameres of the males, fig. 48; phallus, fig. 51, with the lateral lobe of the dorsal endosomal sclerite reduced, basal lobe rounded.

**Colouration.** — Head dark brown, antennae proximally brownish, distally paler, the two distal segments pale yellow; rostrum ventrally brownish, dorsally slightly paler. Thorax (including pronotal collar) like the head entirely brownish; hemelytra, clavus, corium as well as membrane entirely dark brown; legs for the largest part brownish, the apical part of the coxae, the dorsal side of the femora, the inner side of the anterior femora, the proximal part of the inner side of the medial and posterior femora and the proximal dorsal part of the tibiae pale yellowish. Abdomen entirely brownish.

**Distribution.** — Only known from its type locality Santa Barbara in Minas Geraes, Brazil; see also fig. 66.

**Interspecific dissimilarities.** — Because of its small eyes, slender legs, sulcate medial and posterior tibiae, anterior tibiae with rather long fossa

spongiosa, and its almost glabrous abdomen *S. atra* is easily recognised and distinguished from all other American species of *Sirthenea* including *S. dubia* and *S. vittata*, which have a similar colourpattern.

***Sirthenea dubia* sp. nov.**

(figs. 34, 53-54, 67)

Material examined: 3 ♂, 3 ♀. — Panama. Fortuna (PSM 1 ♂, paratype).

Paraguay. Caaguazu: Estancia Primera (FD 1 ♂, holotype).

Argentina. Misiones: Loreto (ZIL 1 ♀, allotype). Entre Rios (MACN 1 ♂, paratype; RMNH 1 ♀, paratype; ZIL 1 ♀, paratype).

Diagnosis. — Macropterous, relatively small and slender. Eyes medium-sized; erect pubescence of the antennae long in the males, short in the females. Pronotum with the posterior margin medially slightly concave; legs robust; tibiae rounded, anterior pair with relatively short fossa spongiosa. Abdomen ventrally densely, appressedly pubescent; male genitalia, figs. 34, 53-54. Hemelytra, clavus, corium as well as the membrane entirely dark brown.

Description. — Relatively small and slender: length in males 16.5-17.5 mm, in females 18.5-20.0 mm; width in males 3.4 mm, in females 3.5-3.8 mm. Head relatively slender, slightly longer than the anterior lobe of the pronotum; frons slightly longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of the eyes (in ventral view) in males 2.0 : 1.3-1.4, in females 2.0 : 0.4-0.6; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0 : 2.0-2.2 : 1.7-1.8 : 1.8-1.9, in females 1.0 : 1.6 : 1.2 : 1.5; the first segment slender, longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment long in males (fig. 20), short in females (fig. 19). Thorax with the posterior margin of the pronotum medially slightly concave (fig. 16); hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.4-2.6, 1.0 : 3.6-4.4 and 1.0 : 5.6-6.2 respectively and in females 1.0 : 2.1-2.3, 1.0 : 3.1-3.3 and 1.0 : 4.5-4.8 respectively; tibiae rounded, anterior pair apically with relatively short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres in the males, fig. 34; phallus, figs. 53-54, with the basal (lateral) lobe of the dorsal endosomal sclerite rounded, semicircular.

Colouration. — Head including antennae and rostrum unicolorous brown, the distal segments of rostrum and antennae paler, yellowish. Thorax (including pronotal collar) except for the yellowish meso- and metaepicoxal lobes entirely brownish; hemelytra, clavus, corium as well as membrane entirely brownish; legs bicolorous, brown and yellow; coxae proximally brown, api-

cally yellowish; trochanters entirely yellow or brown; anterior femora on the outer side (except for a small medial part) and the proximal part of the inner side brownish, medial and posterior femora in the apical 0.5-0.7 part brownish, tibiae and tarsi brownish. Abdomen unicolorous brown, connexivum bicolorous, maculate yellowish and brown.

Distribution. — Disjunct, known from Panama in the north and Paraguay and northern Argentina in the south; see also fig. 67.

Interspecific dissimilarities. — *S. dubia* closely resembles, at first sight, *S. atra* and specimens of *S. vittata* with uni-colorous dark brown hemelytra. Having medium-sized eyes, robust legs, rounded tibiae, the anterior tibiae with relatively short fossa spongiosa and the abdomen densely appressedly pubescent, *S. dubia* is easily differentiated from *S. atra* which has small eyes, slender legs, the medial and posterior tibiae with shallow sulci and the anterior pair with relatively long fossa spongiosa and the abdomen almost glabrous. Having slender legs, the fossa spongiosa on the anterior tibiae relatively long and the basal (lateral) lobe of the dorsal endosomal sclerite acute, dark coloured specimens of *S. vittata* are also easily distinguished from *S. dubia*. From the remaining American species of *Sirthenea* only *S. stria*, *S. stria stria* in particular, resembles *S. dubia*. Striking differences between these two taxa are found in the pubescence of the antennae and in the colouration of the hemelytra, the corium in particular.

### ***Sirthenea ferdinandi* sp. nov.**

(figs. 25, 37, 52, 66)

Material examined: 3 ♂, 1 ♀. — Argentina. Salta: Peza Baya (AMNH 1 ♂, holotype; RMNH 1 ♂, paratype); Tucuman: Villa Padre Monti (AMNH 1 ♀, allotype; CAS 1 ♂, paratype).

Diagnosis. — Macropterous, medium-sized. Eyes medium-sized; erect pubescence of antennae short (in both sexes). Pronotum with the posterior margin medially slightly concave; legs robust, tibiae rounded, anterior pair with relatively long fossa spongiosa. Abdomen ventrally densely, appressedly pubescent; male genitalia, figs. 37, 52. Proximal part of the corium (including costal margin) brightly coloured; membrane brown, apically pale whitish.

Description. — Medium-sized: length in males 19.0-21.5 mm, in females 23.5 mm; width in males 3.9-4.4, in females 4.8 mm. Head slender, longer

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Maria). — 42. *S. plagiata* Horváth (Brazil, Bahia). — 43. *S. plagiata* Horváth (Brazil, Santa Catarina). — 44. *S. vidua* Horváth (Costa Rica). — 45. *S. peruviana peruviana* Drake & Harris (Peru, Tingo Maria). — 46. *S. peruviana gracilis* ssp. nov. (Brazil, Goias). — 47. *S. peruviana orientalis* ssp. nov. (Surinam). — 48. *S. atra* sp. nov. (Brazil, Minas Geraes).

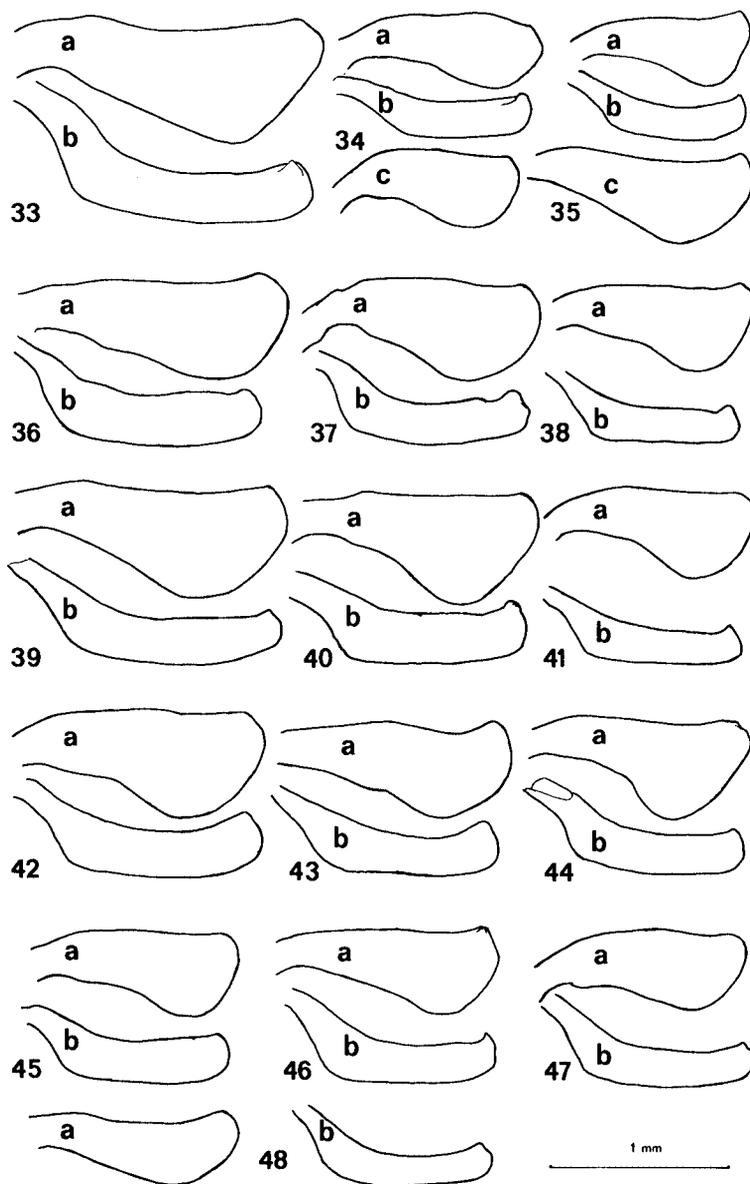
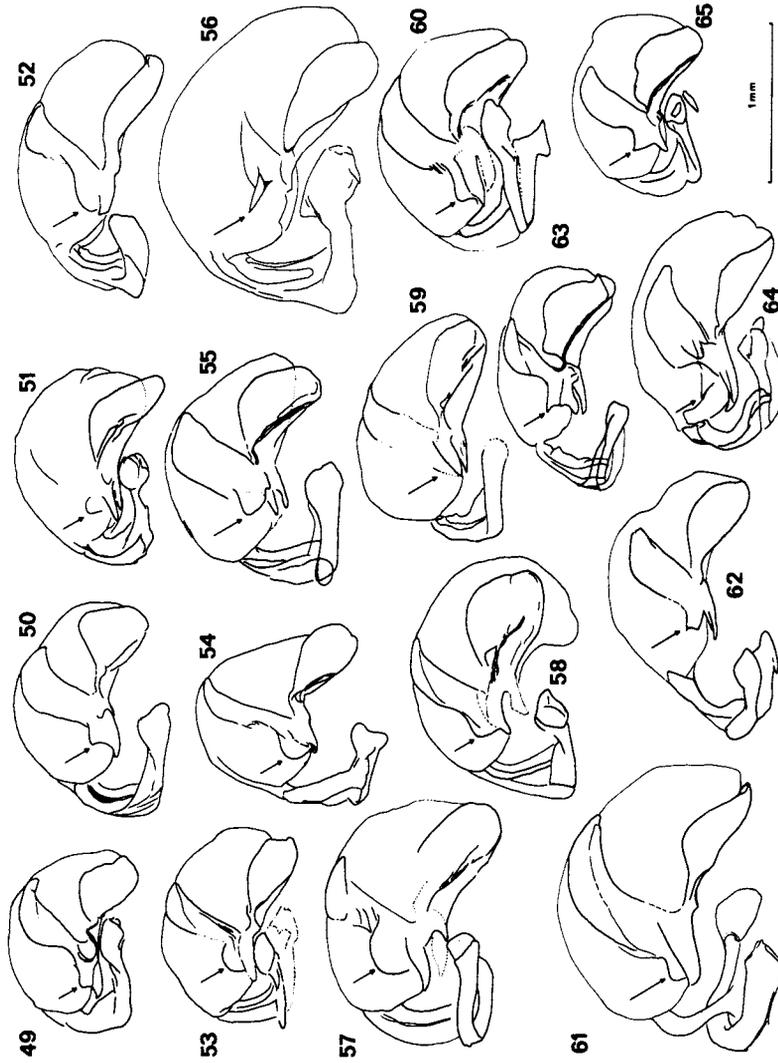


Fig. 33-48. Posterior (a, c) and dorsal (b) view of the left paramere of *Sirthenea* spp. — 33. *S. pedestris* Horváth (Brazil, Santa Catharina). — 34. *S. dubia* sp. nov. (a, b: Paraguay, holotype; c: Argentina). — 35. *S. vittata* Distant (a, b: Venezuela; c: Nicaragua). — 36. *S. pedestris* Horváth (Peru, Tingo Maria). — 37. *S. ferdinandi* sp. nov. (Argentina, Salta). — 38. *S. amazona amazona* Stål (Brazil, Independencia). — 39. *S. stria carinata* (Fabricius) (U.S.A., Florida). — 40. *S. ocularis* Horváth (Argentina, Misiones). — 41. *S. amazona anduzei* Drake & Harris (Peru, Tingo



Figs. 49-65. Phallus, right side, in lateral view of *Sirlhenea* spp. — 49. *S. amazona* Stål (Brazil, Independencia). — 50. *S. amazona anduzei* Drake & Harris (Peru, Tingo Maria). — 51. *S. atra* sp. nov. (Brazil, Minas Geraes). — 52. *S. ferdinandi* sp. nov. (Argentina, Salta). — 53. *S. dubia* sp. nov. (Paraguay, holotype). — 54. *S. dubia* sp. nov. (Argentina). — 55. *S. ocellaris* Horváth (Argentina, Misiones). — 56. *S. pedestris* Horváth (Brazil, Santa Catharina). — 57. *S. plagata* Horváth (Brazil, Bahia). — 58. *S. peruviana peruviana* Drake & Harris (Peru, Tingo Maria). — 59. *S. peruviana orientalis* sp. nov. (Surinam). — 60. *S. peruviana gracilis* sp. nov. (Brazil, Goiás). — 61. *S. siria carinata* (Fabricius) (U.S.A., Florida). — 62. *S. vidua* Horváth (Costa Rica). — 63. *S. vittata* Distant (Ecuador). — 64. *S. vittata* Distant (Nicaragua). — 65. *S. vittata* Distant (Venezuela).

than the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0 : 2.2-2.6, 2.0 : 0.7 in female; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0 : 1.8-1.9 : 1.6 : 1.5-1.6, in female 1.0 : 1.5 : 1.2 : 1.3, the first segment slender, slightly longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment short, in both sexes (fig. 19). Thorax with the posterior margin of the pronotum medially slightly concave (fig. 16); hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.8-2.9, 1.0 : 4.0-4.6 and 1.0 : 6.7-7.0 respectively, in female 1.0 : 2.3, 1.0 : 3.3 and 1.0 : 5.4; tibiae rounded, anterior pair apically with relatively short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the males, fig. 37; phallus, fig. 52. with the basal (lateral) lobe of the dorsal endosomal sclerite obtusely rounded, semicircular.

Colouration. — Head brownish, tylus and a medial longitudinal streak along the frons paler; antennae bicolorous, first segment yellowish the remaining segments brownish; rostrum yellow, the first and third segment darkened. Thorax (including pronotal collar) except for yellowish meta-epicoxal lobes entirely brownish; clavus yellowish, with some brownish streaks; corium with the cell adjoining the clavus yellow, the remaining part except for the brownish apical most part bright orange; membrane brown, the proximal most part yellowish and the apical part whitish (for the colouration of the hemelytra see also fig. 25); legs, except for the brownish ventral carina of the anterior femora and the proximal most part of the anterior coxae, entirely yellowish. Abdomen at least in the medial part yellowish, the lateral (ventral) parts and the genital capsule generally darker coloured, brownish; connexivum pale yellow.

Distribution. — Confined to the north-western part of Argentina: see also fig. 66.

Note. — *S. ferdinandi* is named with pleasure after my father Fer Willemse, by whom my interests towards entomology have been stimulated.

Interspecific dissimilarities. — *S. ferdinandi* closely resembles *S. amazona*, from which it can be distinguished by its size and the different shape of the posterior margin of the pronotum. The only other taxon with which *S. ferdinandi* might be confused is *S. stria carinata* (confined to the U.S.A.!), which, however, shows distinct differences in the colourpattern of the hemelytra and connexivum.



Fig. 66. Distribution of *Sirthenea atra* sp. nov., *S. ferdinandi* sp. nov., *S. pedestris* Horváth and *S. vittata* Distant (a ? indicates that the exact locality is not known).

***Sirthenea jamaicensis* sp. nov.**

(figs. 30, 32)

Material examined: 1 ♀. — Jamaica (BMNH 1 ♀, holotype).

**Diagnosis.** — Brachypterous, medium-sized. Eyes small; erect pubescence of antennae short (in the female). Pronotum with the posterior margin medially slightly convex; legs slender; tibiae rounded, anterior pair with relatively long fossa spongiosa. Abdomen appressedly pubescent. Proximal part of the corium (including costal margin) brightly coloured; membrane entirely brownish; male not known.

Description. — Medium-sized: length in the female 21.0 mm; width in the female 3.3 mm. Head rather slender, as long as the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes small, proportion between the interocular distance and the diameter of an eye (in ventral view) in the female 2.0 : 0.2; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in the female 1.0 : 1.9 : ? : ?, the first segment slender, slightly longer than the first segment of the rostrum, the erect pubescence of the second segment short (fig. 19). Thorax with the posterior margin of the pronotum medially slightly convex; hemelytra not fully developed, only just reaching the anterior margin of the second tergite and apically not touching each other (fig. 30); legs slender, proportion between the width and length of the anterior, medial and posterior femora in females 1.0 : 2.3, 1.0 : 4.0 and 1.0 : 7.0 respectively; tibiae rounded, anterior pair apically with relatively long fossa spongiosa (fig. 18). Abdomen (including connexivum) ventrally densely appressedly pubescent.

Colouration. — Almost entirely dark brown, the knees and proximal most part of the medial and posterior tibiae yellowish; corium along the costal margin with a reddish streak-like part.

Distribution. — Only known from the type specimen, a female from Jamaica; see also fig. 32.

Interspecific dissimilarities. — Being brachypterous *S. jamaicensis* is, except from *S. vidua*, easily distinguished from all other American species of *Sirthenea*. From *S. vidua* it is easily separated by the shorter wings, the reddish costal margin of the corium and its larger size.

***Sirthenea ocularis* Horváth, 1909**  
(figs. 13, 24, 40, 55, 67)

*Sirthenea ocularis* Horváth, 1909: 364 (terra typica: Brasilia, S. Paulo). Wygodzinsky, 1949: 54.

Material examined: 8 ♂. — Brazil. Sao Paulo: Sao Paulo (HNHM 1 ♂, holotype); Piracicaba (OSU 1 ♂).

Argentina. Misiones (MACN 1 ♂).

Bolivia. Sara (AMNH 5 ♂).

Diagnosis. — Macropterous, variable in size. Eyes large; erect pubescence of the antennae very long (in males). Pronotum with the posterior margin medially slightly concave; legs robust, tibiae rounded, anterior pair with relatively short fossa spongiosa. Abdomen ventrally densely, appressedly pubescent; male genitalia, figs. 40, 55. Corium for the largest part (including its entire costal margin) brightly coloured; membrane unicolorous brown; female not known.

Redescription. — Size variable: length in males 17.5-22.5 mm; width in males 3.6-4.7 mm. Head relatively compact only slightly longer than the anterior lobe of the pronotum; frons about equally long as the width of the head (fig. 13); eyes large, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0 : 4.2-5.0; antennae inserted just in front of the eyes (fig. 13), proportion between the length of the four antennal segments in males 1.0 : 2.4-2.9 : 2.3-2.6 : 2.1-2.3, first segment robust, equally long as the first segment of the rostrum, the erect pubescence of the second and third antennal segment very long in males (fig. 21). Thorax with the posterior margin of the pronotum medially slightly concave; hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.4-2.9, 1.0 : 3.6-4.5 and 1.0 : 6.0-7.0 respectively; tibiae rounded, anterior pair apically with relatively short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the males, fig. 40; phallus, fig. 55, with the basal (lateral) lobe of the dorsal endosomal sclerite obtusely rounded almost forming a straight angle; female not known.

Colouration. — Head dark brown; tylus paler, yellowish; antennae brown to yellow, third and fourth segment paler than the first and second segment; rostrum paler than the head, brown to yellow. Thorax (including the pronotal collar) except for the yellowish metaepicoxal lobes entirely unicolorous brown; clavus brown to yellow; corium, except for the largest part of the cell adjoining the clavus which is dark brown, reddish, the costal margin and the apical part rather yellowish; membrane entirely dark brown (for the colouration of the hemelytra see also fig. 24); legs variable, ranging from almost entirely yellow to almost entirely dark brown, at least the apical part of the coxae, the proximal part of the medial and the posterior femora and tibiae and the inner side and a small streak on the outer side of the anterior femora brown, at the utmost the entire legs, except the proximal parts of the coxae brown. Abdomen unicolorous pale to dark brown; connexivum unicolorous yellowish or maculate, yellow and brown.

Distribution. — Confined to the southern part of the distribution area of *Sirthenea* in South America, from Sao Paulo in the East to the Sara province (Bolivia) in the West; see also fig. 67.

Notes. — Although only a small number of specimens has been examined quite some characters were found which showed considerable variation: 1) the pubescence of the antennae is longer in the specimens from Brazil than in the specimens from Bolivia; 2) the size, specimens from Brazil are distinctly larger than the specimens from Bolivia and 3) the colouration, in particular the colouration of the legs and the abdomen.

Interspecific dissimilarities. — *S. ocularis* may be distinguished from all other American species of *Sirthenea* by the relatively short, compact head with the large, protruding eyes, the proportion of the antennal segments and the colouration of the corium of which the entire costal margin is brightly coloured. The species most closely resembling *S. ocularis*, namely *S. stria*, is apart from the above mentioned characters also easily distinguished from *S. ocularis* by the difference in the pubescence of the antennae.

***Sirthenea pedestris* Horváth, 1909**

(figs. 5, 20, 33, 36, 56, 66)

*Sirthenea stria* var. *pedestris* Horváth, 1909: 363 (terra typica: Brasilia, Montagne des Orgues).

Material examined: 65 ♂ 24 ♀. — Venezuela. Zulia: Rio Catatumbo (UCV 1 ♀); El Rosario (UCV 1 ♀). Carabobo: Valencia (UCV 1 ♀). Monagas: Jusepin (UCV 1 ♀); Rio Morichal, Largo Puente (UCV 4 ♂, 1 ♀).

Surinam. Surinam: Paramaribo (RMNH 1 ♀).

French Guyana. Guyana: env. de Saint-Georges- de l'Oyapock (MNP 1 ♀).

Brazil. Amazonas: Sao Paulo de Olivenca (RMNH 1 ♂); Manaus (RMNH 1 ♂). Para: Jacareocanga (MNR 1 ♂). Bahia: Encruzilhada (MNR 2 ♀). Minas Geraes: Pedra Azul (AMNH 4 ♂). Mato Grosso: Campo Grande (AMNH 2 ♂). Espirito Santo: Linhares (AMNH 1 ♀). Rio de Janeiro: Rio de Janeiro (MNP 2 ♂); Montagnes des Orgues, Massif de la Tuuca (MNP 1 ♂, holotype); Sernambitiba (MNR 1 ♂); Duque de Caxias, Saracuruna (MNR 1 ♂); Ataruama, Juturnaiba (MNR 1 ♂). Sao Paulo: Barueri (MNR 5 ♂, 1 ♀); Cosmopolis (AMNH 1 ♀); Sao Paulo (ZMB 1 ♂); Piracicaba (OSU 3 ♂, 1 ♀; DZC 1 ♀; PSM 1 ♀); Campinas (DZC 2 ♂, 2 ♀); Valinhos (DZC 1 ♂). Santa Catharina: Santa Catharina (ZIL 1 ♀); Corupa (AMNH 4 ♂); Rio Vermelho (AMNH 1 ♂); Nova Teutonia (AMNH 1 ♂; UCV 1 ♂, 1 ♀).

Uruguay. Cerro Largo: Sierra de Vaz (AMNH 1 ♂).

Argentina. Misiones: Loreto (ZIL 1 ♂, 1 ♀). Not localised: env. de San-Ignacio, Villa Lutezia (MNP 1 ♀); Villarica (MZH 1 ♂).

Paraguay. Caaguazu: (AMNH 1 ♀); Estancia Primera (MZM 7 ♂, 2 ♀).

Peru. Huanuco: Tingo Maria (BMNH 13 ♂, 1 ♀); Monzon Valley, Tingo Maria (CAS 1 ♂). Not localised: Rio Santiago (AMNH 1 ♀).

Ecuador. Napo: Limoncocha (FDA 1 ♂).

Diagnosis. — Macropterous, relatively large and robust. Eyes medium-sized; erect pubescence of antennae long in males, short in females. Pronotum with the posterior margin medially only very slightly concave; legs robust, tibiae rounded, anterior pair with relatively short fossa spongiosa (fig. 17). Abdomen ventrally densely appressedly pubescent; male genitalia, figs. 33, 36, 56. Proximal part of the corium (including costal margin) brightly coloured; membrane except for a proximal yellowish spot entirely brownish.

Redescription. — Relatively large and robust: length in males 19.5-25.0 mm, in females 24.5-28.0(-38.0) mm; width in males 4.1-5.5 mm, in females

5.0-5.6 mm. Head relatively slender, longer than the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0 : 1.3-2.4, in females 2.0 : 0.3-0.6; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0 : 1.8-2.3 : 1.5-2.0 : 1.5-2.0, in females 1.0 : 1.5-1.7 : 1.1-1.5 : 1.4-1.5, the first segment slender, slightly longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment long in males (fig. 20), short in females (fig. 19). Thorax with the posterior margin of the pronotum medially very slightly concave (fig. 16); hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.4-3.0, 1.0 : 3.9-4.9 and 1.0 : 5.9-7.3 respectively and in females 1.0 : 2.1-2.5, 1.0 : 3.2-4.2 and 1.0 : 5.0-6.2; tibiae rounded, anterior pair apically with relatively short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the males, figs. 33, 36; phallus, fig. 56 with the basal (lateral) lobe of the dorsal endosomal sclerite elongated into a distinct spiniform process.

Colouration. — Head unicolorous dark brownish; antennae brownish, in males the first segment darkest, the apical segments paler becoming yellowish, in females the first and second segment equally dark in colour, the third and fourth segment paler rather yellowish; rostrum brown, in the apical part slightly paler. Thorax, except for the yellowish meso- and metaepicoxal lobes, entirely brownish; clavus dark brown, proximally reddish to yellowish; corium, except for a dark brown apical part and a stripe along the clavus, reddish (fig. 27); membrane brown, proximally eventually with a small yellowish spot; legs bicolorous, yellow and brown — in males — coxae in the proximal half or almost entirely brownish, trochanters entirely brownish, anterior femora in the proximal and apical part and a dorsal and ventral streak brown, medial and posterior femora in the apical 0.5-0.7 part brownish, tibiae apically darkening, brownish — in females — legs almost entirely dark brown, the apical part of the coxae and the proximal part of the femora yellowish. Abdomen unicolorous brown, connexivum unicolorous brown or bicolorous yellow and brown.

Distribution. — Widely distributed throughout the largest part of South America, from Venezuela in the north to Uruguay and Argentina in the south; see also fig. 66.

Notes. — Being 38.0 mm in length a female among the AMNH material from Caaguazu province, Paraguay was very conspicuous because of its enormous size. However, except for its size, no other differences were found.

Intraspecific variation in *S. pedestris* is especially apparent in the males which show small differences in their colour pattern and also in the shape of the parameres. Variation in the colour pattern is mainly caused by small differences in the shape and colour of the brightly coloured part of the corium besides smaller differences in the colouration of the legs and the connexivum. The colour of the bright part of the corium varies from pale orange to dark red, whereas its shape may vary from a rather wide, triangular-like spot to a rather narrow streak-like spot comparable to the variation in this character found in *S. stria stria*. In the legs the coxae vary from unicolorous brown to bicolourous brown and yellow whereas the brownish part of the femora may cover a smaller or larger part. The connexivum may be entirely brown or bicolours, brown and yellow. The variation found in the shape of the paramers is shown in figs. 33, 36. Most of the variation mentioned above seems to be geographically fixed as is indicated below.

males	group 1	group 2	group 3
connexivum	unicolorous	bicolorous	bicolorous
bright spot corium	(dark)red	(dark)red	pale orange
coxae	unicolorous	bicolorous	bicolorous
parameres	as in fig. 36	as in fig. 33	
distribution	northern and western South America	southern Brazil, Paraguay, Uruguay, Argentina	Brazil: Minas Geraes and Espirito Santo

Future investigations based on more material, in particular from the central part of Brazil, have to reveal whether these groups may be given a separate infraspecific status, or whether the characters mentioned above tend to show a clinal variation.

Interspecific dissimilarities. — Originally described as a variety of *S. stria*, it is not surprising that *S. pedestris* closely resembles *S. stria*, especially its South American subspecies *S. stria stria*. Differences, however, between these two taxa are apparent, *S. pedestris* being as a rule larger, has different colour-markings whereas the males show differences in the pubescence of the antennae and in the shape of the basal (lateral) lobe of the dorsal endosomal sclerite.

#### *Sirthenea peruviana* Drake & Harris, 1945

Diagnosis. — Macropterous, medium-sized. Eyes medium-sized; erect



Fig. 67. Distribution of *Sirthenea peruviana* Drake & Harris, *S. dubia* sp. nov. and *S. ocularis* Horváth (a ? indicates that the exact locality is not known).

pubescence of the antennae very long in the males short in the females. Pronotum with the posterior margin medially slightly concave; legs robust; tibiae rounded or sulcate, anterior pair with relatively short fossa spongiosa. Abdomen ventrally densely covered with rather long hairs; male genitalia, figs. 45-47, 58-60. Corium medially with a brightly coloured spot, the costal margin dark coloured; membrane unicolorous brown.

Distribution. — Confined to South America, from northern Brazil to Surinam, Venezuela and Trinidad in the East and from Ecuador and Bolivia in the West to Paraguay and central Brazil in the South.

## Key to the subspecies

1. Legs relatively slender, anterior femora (in males) at least 3.0 times longer than wide; inter-ocular part ventrally densely pubescent; inner and outer side of the medial and posterior tibiae sulcate (female not known); Brazil: Goias, Matto Grosso ..... *peruviana gracilis* ssp. nov.
- Legs relatively robust, anterior femora (in males) at the most 2.9 times longer than wide; inter-ocular part ventrally only with a few hairs; inner and outer side of the medial and posterior tibiae more or less rounded . 2
2. Eyes relatively small, proportion between the inter-ocular distance and the diameter of an eye (in ventral view) in males 2.0 : 1.5-2.2, in females 2.0 : 0.4-0.5; central spot of the corium pale yellowish; Trinidad, Venezuela, Surinam, north-eastern Brazil ..... *peruviana orientalis* ssp. nov.
- Eyes relatively large, proportion between the inter-ocular distance and the diameter of an eye (in ventral view) in males 2.0 : 1.9-3.2, in females 2.0 : 0.6-0.8; central spot of the corium variable from yellowish to dark red, usually orange; from Ecuador to Bolivia and Paraguay ..... *peruviana peruviana*

***Sirthenea peruviana peruviana* Drake & Harris, 1945**

(figs. 21, 45, 58, 67)

*Sirthenea peruviana* Drake & Harris, 1945: 57 (terra typica: Peru: Rio Pichio, Puerto Bermudez).  
Wygodzinsky, 1949: 54.

Material examined: 15 ♂, 4 ♀. — Paraguay. Not localised: Pastorea (AMNH 1 ♀).

Bolivia. Not localised: Cochabamba, Chapare, Cristalmayu (AMNH 3 ♂).

Peru. Pasco: Rio Pichio, Puerto Bermudez (NMNH 1 ♂, holotype). Huanaco: Tingo Maria (BMNH 4 ♂, 3 ♀); Monzon Valley, Tingo Maria (CAS 1 ♂). Cusco: Quince Mil (AMNH 1 ♂).

Ecuador. Zamora: 35 mi ESE Loja (AMNH 1 ♂); Cumbaratza (PSM 1 ♂). Coca: (PSM 1 ♂); Rio Napo (AMNH 1 ♂). Not localised: Libertad (AMNH 1 ♂).

**Redescription.** — Medium sized: length in males 15.5-21.0 mm, in females 17.5-23.5 mm; width in males 3.1-4.1 mm, in females 3.3-4.5 mm. Head relatively slender, longer than the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0 : 1.9-3.2, in females 2.0 : 0.6-0.8; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0 : 2.1-2.3 : 1.6-2.0 : 1.5-2.0, in females 1.0 : 1.6-1.8 : 1.3 : 1.3, the first segment slender, distinctly longer than the first segment of the rostrum, the

erect pubescens of the second and third segment very long in males (fig. 21), short in females (fig. 19) Thorax with the posterior margin of the pronotum medially slightly concave (fig. 16); hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.5-2.9, 1.0 : 3.9-4.5 and 1.0 : 5.9-6.7 respectively and in females 1.0 : 2.1-2.4, 1.0 : 3.2-3.6 and 1.0 : 4.9-5.6 respectively; tibiae rounded, anterior pair apically with relatively short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent with relatively long hairs; parameres of the males, fig. 45; phallus, fig. 58, with the basal (lateral) lobe of the dorsal endosomal sclerite rounded.

Colouration. — Head dark brown, anteriorly slightly paler; antennae brownish, distally becoming paler, the third (females) and fourth (males and females) segment for the largest part yellowish; rostrum brown, third segment paler. Thorax (including pronotal collar) entirely brownish; clavus brown; corium, including costal margin brownish, centrally with a somewhat irregularly shaped orange-reddish spot (fig. 23); membrane brown; legs brown, the apical part of the coxae, parts of the medial and posterior trochanters, the inner side, a dorsal streak and an elongated spot on the outer side of the anterior femora, the proximal part of the medial and posterior femora and the dorsal side of the tibiae (at least proximally) yellowish. Abdomen brown; connexivum bicolorous yellow and brown maculate or unicolorous brown.

Distribution. Confined to the western part of South America from Ecuador via Peru and Bolivia to Paraguay; see also fig. 67.

Note. — Infrasubspecific variation if found in the size, the female from Paraguay being conspicuously smaller than females examined from Tingo Maria, Peru and in the colouration especially of the central spot of the corium which is yellow in the specimen from Quince Mil, deep red in the specimen from Libertad and orange-red in the other specimens.

***Sirthenea peruviana orientalis* ssp. nov.**

(figs. 21, 23, 47, 59, 67)

*Sirthenea vittata* Distant, 1902: 286 (pro parte). Horváth, 1909: 365.

Material examined: 7 ♂, 6 ♀. — Venezuela. Not localised (PSM 1 ♀, paratype).

Trinidad. (BMNH 1 ♀, paratype; paralectotype of *S. vittata* Distant, 1902).

Surinam. Surinam: estate "De Morgenstond" (RMNH 6 ♂, 2 ♀, holo-, allo- and paratypes). Paramaribo: Combé (RMNH 1 ♀, paratype). Commewijne: estate "Berlijn" (RMNH 1 ♂, paratype).

Brazil. Para: Belem Utinga (MNR 1 ♀, paratype).

Description. — Medium-sized: length in males 17.0-19.0 mm, in females

20.5-22.0 mm; width in males 3.4-3.9 mm, in females 4.1-4.3 mm. Head relatively slender, longer than the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0 : 1.5-2.2, in females 2.0 : 0.4-0.5; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0 : 2.0-2.2 : 1.5-1.9 : 1.5-1.9, in females 1.0 : 1.5-1.7 : 1.1-1.5 : 1.2-1.6, the first segment slender, longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment very long in males (fig. 21), short in females fig. 19). Thorax with the posterior margin of the pronotum medially slightly concave (fig. 16); hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.5-2.8, 1.0 : 4.1-4.6 and 1.0 : 5.6-6.4 respectively and in females 1.0 : 2.2-2.4, 1.0 : 3.4-3.7 and 1.0 : 5.1-5.1 respectively; tibiae rounded, anterior pair apically with rather short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely pubescent with relatively long erect hairs; parameres of the males, fig. 47; phallus, fig. 59 with the basal (lateral) lobe of the dorsal endosomal sclerite rounded forming an obtuse angle.

Colouration. — Head dark brown; antennae brownish, paler than the head, apical part of the third segment and the fourth segment pale yellowish; rostrum dark brown, distal segment paler. Thorax (including the pronotal collar) entirely dark brown; clavus dark brown; corium brown, centrally with a pale yellowish spot (fig. 23); membrane dark brown; legs brown, the apical part of the coxae, part of the trochanters, the inner side and streaks on the dorsal and outer side of the anterior femora, the proximal part of the medial and posterior femora and the dorsal part of the tibiae yellowish. Abdomen unicolorous brown; connexivum bicolorous, yellow and brown maculate.

Distribution. — Confined to the north-eastern part of South America where it is known from Trinidad, Surinam, Venezuela and Brazil; see also fig. 67.

Note. — Distant (1902) described *S. vittata* from the northern part of South America. For his description he had two specimens at his disposal, a male from Cali (Colombia) and a female from Trinidad. Horváth (1909) used the female from Trinidad only, for his description of *S. vittata*. Both specimens kept at BMNH were examined. Differing in the shape of their legs, the length of the fossa spongiosa on the anterior tibiae and in the shape of the spot in the corium it appeared that these two specimens belong to two separate although similar species. As the female from Trinidad is here considered to belong to a subspecies of *S. peruviana* the solution for this problem giving least problems

is to attach the epitheton "vittata" to the male from Cali (Columbia), which is consequently designated as lectotype of *S. vittata*. The female from Trinidad has been designated paralectotype of *S. vittata* (according to recommendation 74E of the Code).

***Sirthenea peruviana gracilis* ssp. nov.**

(figs. 21, 46, 60, 67)

Material examined: 5 ♂. — Brazil. Goias: Jatai (AMNH 4 ♂, holotype and paratypes). Matto Grosso: Sipos (AMNH 1 ♂, paratype).

Description. — Medium-sized: length in males 17.5-20.0 mm; width in males 3.7-4.1 mm. Head relatively slender, longer than the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0 : 1.8-2.0; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0 : 2.0-2.4 : 1.6-1.9 : 1.6-1.9, the first segment slender, distinctly longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment very long in males (fig. 21). Thorax with the posterior margin of the pronotum medially slightly concave (fig. 16); hemelytra fully developed; legs slender, proportion between the width and length of the anterior, medial and posterior femora in males 10 : 3.0-3.1, 1.0 : 4.7-5.0 and 1.0 : 6.5-7.0 respectively; medial and posterior tibiae sulcate, anterior pair apically with rather short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely pubescent with rather long hairs; parameres of the males, fig. 46; phallus, fig. 60, with the basal (lateral) lobe of the dorsal endosomal sclerite rounded, rectangular; female not known.

Colouration. — Head brown; antennae brownish, distally becoming paler, the fourth segment yellowish; rostrum brown, distally paler. Thorax (including pronotal collar) entirely brownish; clavus brown; corium, including the costal margin brownish, centrally with a dirty pale yellowish spot (fig. 23); membrane brown; legs for the largest part brownish, the apical part of the coxae, part of the trochanters, the inner and streaks on the dorsal and outer side of the anterior femora, the proximal part of the medial and posterior femora and the dorsal part of the tibiae yellowish. Abdomen brown, slightly paler in the medial part; connexivum bicolorous with brown and yellow parts.

Distribution. — Only known from the central part of Brazil (Goias and Matto Grosso); see also fig. 67.

Interspecific dissimilarities. — The species most closely resembling *S. peru-*

*viana* (*S. peruviana peruviana* in particular) because of its similar colour-pattern is *S. plagiata*. Differences between these taxa are found in the size of the central spot in the corium (large in *S. plagiata*, small in *S. peruviana*), the erect pubescence of the antennae in the males (long in *S. plagiata*, very long in *S. peruviana*) and in the male genitalia. *S. vittata*, having slender legs, rather long fossa spongiosa on the anterior tibiae, the erect pubescence of the antennae in males being long, the spot in the corium (if present) streak-like and slightly different male genitalia, is also easily distinguished from *S. peruviana*.

***Sirthenea plagiata* Horváth, 1909**  
(figs. 1, 22, 32, 42-43, 57)

*Sirthenea plagiata* Horváth, 1909: 364 (terra typica: Brasilia, S. Catharina). Wygodzinsky, 1949: 54).

Material examined: 9 ♂, 7 ♀. — Surinam. Nickerie: Kabalebo (RMNH 1 ♂).

French Guyana. Not localised: Rivière Lunier (MNP 1 ♀).

Brazil. (MNP 1 ♀, paralectotype; ZMB 1 ♀); Bahia: Divisa (AMNH 1 ♂). Espirito Santo: (MZM 1 ♀); Santa Teresa (MNR 1 ♂). Minas Geraes: Pedra Azul (AMNH 1 ♀). Sao Paulo: Piracicaba (OSU 1 ♂; PSM 3 ♂). Santa Catharina: (HNHM 1 ♀, lectotype); Corupa (AMNH 2 ♂).

Argentina. Misiones: Panambi (AMNH 1 ♀).

**Diagnosis.** — Macropterous, relatively large. Eyes medium-sized; erect pubescence of antennae long in males, short in females. Pronotum with posterior margin medially slightly concave; legs robust, tibiae rounded, anterior pair apically with relatively short fossa spongiosa. Abdomen ventrally densely, appressedly pubescent; male genitalia, figs. 42-43, 57. Proximal part of the corium (including costal margin) dark coloured; membrane unicolourous brown.

**Redescription.** — Relatively large: length in males 16.5-22.5 mm, in females 21.0-27.5 mm; width in males 3.1-3.6 mm, in females 4.1-5.1 mm. Head relatively slender, distinctly longer than the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0: 1.8-3.0, in females 2.0: 0.7-1.0; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0: 1.6-1.9: 1.4-1.7: 1.6-1.7, in females 1.0: 1.4-1.6: 1.2-1.3: 1.3-1.4, the first segment slender, slightly longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment long (fig. 20) in males, short (fig. 19) in females. Thorax with the posterior margin of the pronotum medially slightly concave (fig. 16);

hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.5-2.8, 1.0 : 4.1-4.8 and 1.0 : 6.4-7.3 respectively, in females 1.0 : 2.3-2.6, 1.0 : 3.4-4.1 and 1.0 : 5.7-6.5 respectively; tibiae rounded, anterior pair apically with relatively short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the males as shown in figs. 42-43; phallus, fig. 57, with the basal (lateral) lobe of the dorsal endosomal sclerite obtusely rounded, semicircular.

Colouration. — Head brownish; antennae slightly paler, first segment apically darkened, the fourth segment yellowish; rostrum variable, with darker and paler parts. Thorax (including the pronotal collar) except for the yellowish meso- and metaepicoxal lobes entirely brownish; clavus unicolorous dark brown; corium dark brown with a central large orange (-red) spot (fig. 22) which may or may not reach the costal margin; membrane unicolorous brown; legs brown, coxae and trochanters except for the proximal most part, the anterior femora on the inner side, the medial and posterior femora in the proximal half and the tibiae proximally and in dorsal aspect yellowish. Abdomen unicolorous brown; connexivum bicolorous with yellow and brown parts.

Distribution. — Confined to the eastern part of South America from northern Argentina and Brazil (S. Catharina, Sao Paulo, Minas Geraes, Espirito Santo and Bahia) to French Guyana and Surinam; see also fig. 32.

Notes. — For his original description of *S. plagiata* Horváth had before him three specimens, two of which are now deposited at the HNHM and one at the MNP. Two of these syntypes have been examined, one from the MNP and one from the HNHM. The specimen from the HNHM being in a better condition is here designated as lectotype, the other specimen according to recommendation 74E has been given the designation of paralectotype.

The male from Surinam, being 16.5 mm in length, is strikingly smaller than the males examined from Brasil, the smallest of these being 20.5 mm in length. Consequently the female from French Guyana being 21.0 mm in length is also considerably smaller than females from more southern localities, 23.5 mm being here the smallest length measured.

Except for the variation in size which seems to be geographically set no other striking infraspecific dissimilarities were found in *S. plagiata*. Yet the female examined from Minas Geraes (Pedra Azul) offered some difficulties. In this specimen the central brightly coloured spot in the corium is laterally extended to the costal margin and in proximal direction to the very base of the hemelytra, its shape thus resembling the shape of the bright coloured part of the corium in *S. stria stria* var. *rosea*. Consequently when trying to identify this specimen with the key presented in this article, one would find this speci-

men to belong to either *S. amazona*, *S. ferdinandi*, *S. pedestrias*, or *S. stria*. However, the posterior margin of the pronotum being straight in the medial part it can not be *S. amazona* nor does it belong to *S. ferdinandi* or *S. pedestris* because of significant differences in the colour-pattern, whereas it differs from *S. stria* in its size (24.5 mm) and in the colour of the bright coloured part in the corium, which is in *S. stria* red or deep dark red and in the specimen from Minas Gereaes rather orange. Therefore, because of the overall resemblance with *S. plagiata*, only differing in the shape of the bright-coloured part in the corium the specimen has been placed in this species, although it still remains a rather arbitrary decision.

Interspecific dissimilarities. — Because of the large orange(-red) spot of the corium *S. plagiata* is easily recognised, the only species with which it may be confused being *S. peruviana*. Differences between these two taxa are found in the size, the shape of the spot on the corium and the length of the erect pubescence of the antennae in the males whereas there are also some minor differences to be detected between their genitalia (see also under *S. peruviana*).

### **Sirthenea stria** (Fabricius, 1794)

Diagnosis. — Macropterous, variable in size. Eyes medium-sized; erect pubescence of antennae short (in both sexes). Pronotum with the posterior margin medially slightly concave; legs robust; tibiae rounded, anterior pair with relatively short fossa spongiosa. Abdomen ventrally densely, appressedly pubescent; male genitalia, figs. 6b-f, 39, 61. Proximal part of the corium (including the costal margin) brightly coloured; membrane apically unicolorous dark brown.

Distribution. — Widely distributed in North and South America, ranging from ca. 40° N. in the eastern part of the U.S.A. to ca. 35° S. in Uruguay and Argentina; also known from the West Indies.

### Key to the subspecies

1. Legs unicolorous, entirely yellowish; confined to the U.S.A. .... *stria carinata*
- Legs bicolorous, pale yellowish and dark brown; from Texas (U.S.A.) to Argentina ..... *stria stria*

**Sirthenea stria stria** (Fabricius, 1794)

(figs. 2, 6, 14, 19, 27-28, 68)

*Reduvius stria* Fabricius, 1794: 201 (terra typica: Cajennae). Fabricius, 1803: 276.*Pirates roseus* Herrich-Schäffer, 1846: 62, pl. 269 fig. 830 (terra typica: Brasilien). Stål, 1868: 120.*Sirthenea stria*: Stål, 1872: 105. Berg, 1879: 161. Uhler, 1894: 209. Champion, 1899: 220 (pro parte). Horváth, 1909: 362. Pennington, 1921: 23. Fracker & Bruner, 1924: 164. Haviland, 1931: 144. Lima, 1940: 213. Wygodzinsky, 1949: 54.*Pirates stria*: Walker, 1873: 103*Sirthenea suturalis* Horváth, 1909: 363 (terra typica: Paraguay).

Material examined: 313 ♂, 110 ♀. — U.S.A. Texas: Zapata (FDA 1 ♂).

Mexico. (ZMW 1 ♀); Veracruz: Lake Catemaco (FDA 2 ♂, 1 ♀).

Belize. (BMNH 2 ♂); Toledo: Columbia Forests sta. (FDA 1 ♀). Not localised: Rio Temash (BMNH 3 ♂); Rio Grande (BMNH 1 ♂); Punta Gorda (ZIL 1 ♀).

Honduras. Bonacca Isld. (AMNH 1 ♂); La Ceiba (CAS 1 ♀); Lancetilla (AMNH 1 ♂).

Guatemala. (OSU 1 ♂; ZIL 1 ♂).

Nicaragua. Tipitapa (PSM 1 ♀).

Panama. Portobelo (CAS 1 ♂); Lino (ZMA 1 ♂); Gatun Lake (CAS 6 ♂); Madden Dam (CAS 1 ♂); Barro Colorado Isld. (CAS 1 ♀); Fort Amador (PSM 2 ♂).

West Indies. Martinique: (AMNH 1 ♂); Absalon (AMNH 1 ♂); Morne Rouge (RMNH 1 ♀). St. Lucia (BMNH 1 ♀); Cul-de-Sac Valley (CAS 1 ♂). Guadeloupe: Prise d'Eau (MNP 1 ♀).

Trinidad. (PSM 1 ♀); San Fernando (PSM 1 ♂); Arima Valley (RMNH 1 ♂); Majaro Bay (AMNH 1 ♂); Mocaripe (AMNH 1 ♂); Port of Spain (AMNH 1 ♂).

Venezuela. Zulia Rio Catatumbo (UCV 1 ♀); El Tucuo (UCV 1 ♀); Santa Barbara (UCV 1 ♀). Falcon: Represa, El Isiro (UCV 1 ♂); Sanare, Finca Tillerias (UCV 1 ♀). Yaracuy: La Hoya (UCV 1 ♂). Tachira: La Fria — Coloncito, Rio Orope (PSM 1 ♂ 2 ♀). Carabobo: Valencia (CAS 1 ♂); Tacarigua (UCV 2 ♀). Barinas: Reserva Forestal Capar-Camp, Cachicamos (UCV 6 ♂, 1 ♀). Portuguesa: San Nicolas, 56 km de Guanara (UCV 3 ♂). Cojedes, Hda. Mata Clara, El Baul (UCV 2 ♂, 1 ♀). Aragua: Cagua (UCV 4 ♂, 1 ♀; PSM 1 ♂); El Limon (UCV 1 ♀). Caracas: Caracas (RMNH 1 ♀). Miranda: Rio Negro, Capaya (UCV 1 ♀). Guarico: Cabruta, Cano Caribe (UCV 1 ♂). Sucre: Pozotes, Pilar (UCV 1 ♂). Monaga: Jusepin (UCV 1 ♂, 5 ♀); Rio Morichal, Largo (Puente) (UCV 3 ♂, 2 ♀); Uverito (UCV 1 ♂, 2 ♀). Bolivar: Lag. Aricagua (UCV 1 ♂); Alto Caura, Kanarakuni (UCV 1 ♂); Alto Caura, Cuchime (UCV 1 ♀); El Pao (UCV 1 ♂, 1 ♀). Amazonas: San Carlos de Rio Negro (UCV 4 ♂).

Colombia. Boyaca: Muzo (ZMA 1 ♂). Huila: San Agostin (AMNH 1 ♂). Choco: Bahia-Solano (CAS 1 ♂). Not localised: Rio Yurumanguí (MNP 1 ♂).

Guyana. Bartica: Bartica (AMNH 1 ♂); Penal Settlement (AMNH 1 ♀). Not localised: Sunatunari (BMNH 1 ♀).

Surinam. Paramaribo: Paramaribo (AMNH 1 ♀; CN 8 ♂; MACN 1 ♂; RMNH 41 ♂, 16 ♀; ZMA 1 ♂; ZMB 3 ♂, 1 ♀). Commewijne: Mapane Kreek (RMNH 30 ♂, 1 ♀); Berlijn estate (RMNH 19 ♂, 4 ♀). Marowijne: Langamankondre. (AMNH 1 ♂). Suriname: Clevia estate (RMNH 1 ♂); Domburg (RMNH 2 ♂). Para: Carolinakreek (RMNH 1 ♂, 1 ♀); Zanderij (RMNH 1 ♀); Republiek (RMNH 3 ♂, 1 ♀). Brokopondo: Ganzee (RMNH 1 ♂); Djoemoe (RMNH 3 ♂); Brokopondo (RMNH 2 ♂, 2 ♀; ZMA 1 ♂, 1 ♀); Botopassie River (RMNH 1 ♂); Sarakreek (RMNH 1 ♂). Nickerie: Kabo (RMNH 1 ♂); Matapi, Corantijn River (RMNH 1 ♂); Wageningen (RMNH 1 ♂). Saramacca: Tafelberg (RMNH 1 ♂). Not localised: Suriname Exped. 1948-1949 (RMNH 1 ♂); Okrodam (RMNH 1 ♂).

French Guyana. (MNP 2♂, 1♀); Guyana: Sinnamary (MNP 1♀); St. Jean du Maroni (MNP 1♀).

Brazil. Amazona: Manaus, Uypiranga (AMNH 1♂, 1♀; MACN 1♀). Para: Ananindéua (AMNH 2♂); Rio Trombetas (RMNH 1♀); Obidos (RMNH 1♂). Amapa: Tartarugalzinho (UCV 4♂). Ceara: Independencia (AMNH 2♂, 1♀). Pernambuco: Recife (PSM 1♂). Bahia: (RMNH 2♀; CAS 1♂); Encruzilhada (AMNH 2♂); Galatea (ZMC 1♂). Minas Geraes: Lagoa Santa (MNR 1♂, 3♀; ZMC 4♂); Sta. Leopoldina (AMNH 1♂); Sete Lagoas (BMNH 1♂); Sierra Gerae (ZMB 1♂); Pedra Azul (AMNH 2♂, 2♀). Espirito Santo: (RMNH 2♂); Conceicao da Barra (AMNH 2♂, 3♀); Linhares (AMNH 1♂; MNR 2♂, 2♀); Mateus Barra Seca (MNR 2♂); Santa Teresa (MNR 1♂); Vitoria (MNR 1♂, 1♀). Rio de Janeiro: Rio de Janeiro (AMNH 1♂; BMNH 1♀; MNR 1♂; ZIL 1♂; ZMB 4♂, 1♀); Guanabara (AMNH 1♂); Guanabara, Represa, Rio Grande (AMNH 1♂); Guanabara, Jacarepagua (AMNH 1♂); Teresopolis (PSM 1♂); Conceicao de Macabu (AMNH 1♂); Embarie (MNR 1♀); Campos (MNR 1♂); Itaguaí (MNR 1♂, 1♀); Dugue de Caxias (MNR 4♂, 1♀). Sao Paulo: Barueri (MNR 5♂); Piracicaba (AMNH 1♂, 3♀; ZIL 1♀); Campinas (DZC 2♂); Ubatuba (DZC 1♀); Jaboticabal (DZC 1♂); Santos (AMNH 1♀). Santa Catharina: Jaragua (ZMB 2♂); Corupa (AMNH 4♂); Nova Teutonia (UCV 7♂, 2♀). Rio Grande do Sul (AMNH 3♂; ZIL 1♂; ZMW 1♂); Pelotas (AMNH 2♂; BMNH 1♂; ZMB 1♀).

Ecuador. Napo: (MACN 1♂); Not localised: Cachabi (BMNH 1♂); S. Carlos (ZMB 1♂).

Peru. Cajamarca: Jaen (CAS 1♂).

Paraguay. (ZMW 1♂, holotype *S. suturalis* Horváth); Villarica: (PSM 1♀; MZM 1♀; ZMH 1♂); Independencia (MZM 2♂). Caaguazu: (AMNH 1♀). Not localised: Mohines (ZMH 1♂).

Argentina. Misiones: Panambi (AMNH 2♂); Santa Anna (RMNH 1♂). Formosa: Gran Guardia (RMNH 1♂). Entre Rios: Pronuntiamente (RMNH 1♂; PSM 2♂); Salto Grande (MACN 1♀); Concordia (MACN 1♂). Cordoba: Embalse (MACN 1♂). Santiago del Estero: Rio Salado (MNP 1♂); Rio Dulce (RMNH 1♂). Mendoza: Pedregal (ZMC 2♂, 1♀). Buenos Aires: V. Dominico (MACN 1♂). Santa Fe: Villa Ana (BMNH 1♂, 2♀). Not localised: Misiones dos de Mayo (RMNH 1♂, 1♀).

Uruguay. Maldonado: Punta del Este (BMNH 1♀).

**Redescription.** — Variable in size: length in males 16.0-21.5 mm, in females 20.0-24.0 mm; width in males 3.4-4.5 mm, in females 4.0-4.8 mm. Head relatively slender, longer than the anterior lobe of the pronotum; frons slightly longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0 : 1.4-3.3 (-3.9), in females 2.0 : 0.5-0.9; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0 : 1.6-2.0 : 14-1.7 : 1.4-1.9, in females 1.0 : 1.4-1.6 : 1.2-1.5 : 1.3-1.7, the first segment slender, slightly longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment short (fig. 19) in both sexes. Thorax with the posterior margin of the pronotum medially almost straight (fig. 16); hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and

posterior femora in males 1.0 : 2.3-2.8, 1.0 : 3.5-4.6 and 1.0 : 5.7-7.1, respectively, and in females 1.0 : 2.0-2.5, 1.0 : 2.9-3.6 and 1.0 : 4.7-5.7, respectively; tibiae rounded, anterior pair apically with relatively short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the males, fig. 6b-c; phallus, fig. 6d-f, with the basal (lateral) lobe of the dorsal endosomal sclerite obtusely rounded.

Colouration. — Head brownish, ventrally paler; antennae brownish, the two distal most segments paler; rostrum brownish, ventrally paler, yellowish. Thorax (including the pronotal collar) except for the yellowish meso- and metaepicoxal lobes entirely brownish; clavus dark brown, proximally paler; corium except for a dark brownish apical part and a stripe along the clavus reddish (fig. 27-28); membrane dark brown, proximally a small yellowish spot may be present; legs bicolorous, coxae yellowish, the proximal part of the inner side of the anterior and eventually a small proximal rim on the medial and posterior coxae brownish; trochanters yellowish or brownish; femora for the largest part yellowish, anterior femora brownish in the proximal and distal most part and with brownish streaks along the dorsal and ventral side; tibiae proximally with yellowish parts or streaks apically becoming dark brown. Abdomen unicolorous brown or with yellowish parts on the medial ventral side; connexivum unicolorous brown or maculate brown and yellow; colouration in the female as in the male, the brownish parts more extended; the abdomen always entirely brown with the connexivum maculate.

Distribution. — Widely distributed from Texas (U.S.A.) in the north via the eastern part of Central America to Argentina and Uruguay in the south. In South America mainly confined to the eastern part. Also known from Trinidad and some of the Leeward Islands (Martinique, Grenada, Guadeloupe and St. Lucia); see also fig. 68.

Notes. — The holotype (kept at ZMC) examined is only labelled with a piece of paper with a handwritten "stria". Being in a very bad condition (antennae, rostrum, corium of the right elytron and all the legs, except for the posterior coxae and femora, missing, the pronotum broken and head and abdomen attacked by larvae of *Anthrenus* sp.) it is even impossible to ascertain its sex.

Infrasubspecific variation within *S. stria stria* is especially evident in the colouration in which three distinct patterns may be distinguished. Below a survey is given of the differences in colouration between the groups showing these three patterns.

	group 1	group 2	group 3
reddish part of the corium	small, not widened apically (fig. 28)	broad, widening apically (fig. 27)	broad, widening apically (fig. 27)
connexivum	♂ : bicolorous ♀ : bicolorous	♂ : unicolorous ♀ : unicolorous	♂ : bicolorous ♀ : bicolorous
abdomen	♂ : small median part yellowish ♀ : entirely brown	♂ : broad median part yellowish ♀ : entirely brown	♂ : entirely brown ♀ : entirely brown
legs	for the larger part brown	for the larger part yellow	for the larger part yellow

Groups 1 and 2 simply are to be considered local colour-varieties. Specimens showing a colour-pattern as mentioned under group 1 were until now known as *S. suturalis* Horváth, 1909. Comparison of the type-specimens of *S. stria* and *S. suturalis*, however, revealed that both taxa are identical showing also the same colour-pattern. This group 1 may thus be known as *S. stria stria* var. *stria*. A second, more common, colour-variety is shown by the specimens until now in the literature mentioned under *S. stria*, the reddish part of the corium widening apically, making it easily distinguishable from the first mentioned colour-variety. The group showing such colour-pattern may be named *S. stria stria* var. *rosea*, based on *Peirates roseus* Herrich-Schäffer, 1848 which is the only junior synonym (of *S. stria*) available. As the type-specimen of *Peirates roseus* has been lost, a neotype is designated here labelled: "Brasil PA Obido IV. 1978 A. C. Domingo", deposited at the RMNH.

Whereas the first two groups occur throughout the largest part of the distribution area of *S. stria stria*, the group showing the third colour-pattern is restricted to Central America and the north-western most part of South America up to Ecuador. Having the reddish part of the corium apically widened, this group may be differentiated from *S. stria stria* var. *rosea* by the maculate connexivum and the unicolorous brown abdomen. Situated between populations of *S. stria carinata* and *S. stria stria*, this group might be given sub-specific rank. However, differences being so few and the boundaries not very well known, it was decided not to do so.

***Sirthenea stria carinata* (Fabricius, 1798)**  
(figs. 3, 17, 39, 61, 68)

*Reduvius carinatus* Fabricius, 1798: 545 (terra typica: Carolina). Coquebert, 1799: 42, pl. 10 fig. 15. Fabricius, 1803: 278. Lepeletier & Serville, 1825: 278. Spinola, 1840: 100.

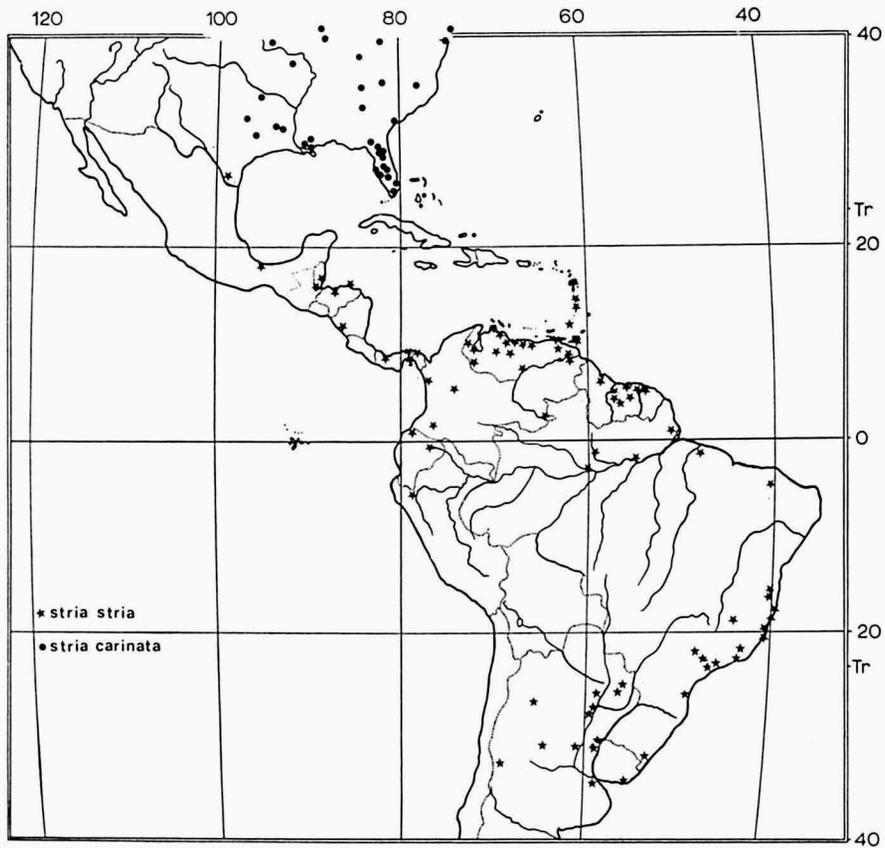


Fig. 68. Distribution of *Sirthenea stria* (Fabricius).

*Peirates carinatus*: Serville, 1831: 221.

*Rasahus carinatus*: Amyot & Serville, 1843: 326. Stål, 1862: 458. Mayr, 1866: 156.

*Sirthenea carinata*: Stål, 1866: 252. Stål, 1868: 120. Stål, 1872: 105. Uhler, 1876: 329. Uhler, 1886: 25. Lethierry & Severin, 1896: 129. Torre Bueno & Brimley, 1907: 437. Horváth, 1909: 361. Van Duzee, 1909: 176. Van Duzee, 1917: 750. Blatchley, 1926: 560. Readio, 1927: 143. Wygodzinsky, 1949: 54. Slater & Baranowski, 1978: 129.

*Pirates carinatus*: Walker, 1873: 96, 97.

*Sirthenia carinata*: Summers, 1891: 87.

*Sirthenea stria*: Champion, 1899: 220 (pro parte). Smith, 1910: 155. Fracker, 1912: 233. Barber, 1914: 505.

Material examined: 126 ♂, 31 ♀. — U.S.A. New Jersey: Westwood (AMNH 1 ♂). Maryland: Baltimore (ZMW 1 ♂). Ohio: Clifton G. (FDA 1 ♂); Athens (RMNH 1 ♂). Michigan: Washtenaw Co. (MZM 1 ♂). Indiana: Grantsburg (FDA 3 ♂). Illinois: Union Co. (FDA 1 ♂); Piatt Co. (FDA 2 ♂, 4 ♀); Champaign Co. (FDA 1 ♂); Pope Co. (FDA 2 ♂). Missouri: Benton Co. (FDA 1 ♀); Vernon Co. (FDA 1 ♂, 1 ♀); Kansas City (ZMA 1 ♂). Kentucky: Shelbyville (PSM 1 ♀). Carolina: (MNP 1 ♀, holotype; ZMB 1 ♀). North Car-

olina: Clayton (FDA 1 ♂); Murphy (MZM 1 ♂); Black Mountains (BMNH 1 ♂); Raleigh (PSM 1 ♀). South Carolina: (ZMB 1 ♂). Georgia: Lowndes Co. (FDA 5 ♂, 1 ♀); Savannah (AMNH 1 ♀); Atlanta (AMNH 1 ♂; CMNH 1 ♂); Florida: Alachua Co. (FDA 4 ♂); Alachua Co., Gainesville (FDA 29 ♂, 6 ♀; MZM 1 ♀); Alachua Co., Lochloosa (CMNH 1 ♂); Highlands Co., Parker Isl. (AMNH 3 ♂); Highlands Co., Archbold Biol. Stat. (AMNH 1 ♂); Leon Co. (FDA 3 ♂); Levy Co. (FDA 1 ♂); Santa Rosa Co., Lake Carr (FDA 1 ♀); Liberty Co., Torreya St. Park (FDA 1 ♂); Manatee Co., Oneco (FDA 2 ♂); Okaloosa Co., Blackwater St. Park (AMNH 1 ♂); Lake Co., Leesburg (AMNH 1 ♂); Marion Co., Lake Eaton (FDA 1 ♂); Sebrin (AMNH 1 ♂); Fort Lauderdale (AMNH 1 ♂, 1 ♀); Orlando (AMNH 1 ♂; FDA 1 ♀); Winter Park (FDA 1 ♂); Winter Haven (FDA 1 ♂); Welaka (FDA 1 ♂); Lakeland (MZM 1 ♂; FDA 1 ♂); Monticello (FDA 1 ♂); Lake City (FDA 1 ♂); Homestead (FDA 3 ♂); Plant City (FDA 5 ♂, 1 ♀); Titusville (FDA 1 ♂). Louisiana: (MNP 1 ♀); Loveauville (MZH 1 ♂); Edgard (FDA 13 ♂, 2 ♀); Ruston (FDA 2 ♂); Monroe (FDA 1 ♀); New Orleans (MNP 1 ♂; RMNH 1 ♀); New Iberia (AMNH 1 ♂); Sunshine (FDA 10 ♂, 1 ♀). Oklahoma: Latimer Co., near Red Oak (FDA 1 ♂). Texas: Dallas Co., Salazar (FDA 1 ♀); College Sta. (AMNH 1 ♂); Brazos Co. (AMNH 1 ♂, 1 ♀); Norco (AMNH 1 ♂).

**Redescription.** — Large: length in males 20.0-23.5 mm, in females 21.0-25.0 mm; width in males 3.9-4.8 mm, in females 4.1-5.1 mm. Head relatively slender, longer than the anterior lobe of the pronotum; frons slightly longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in males 2.0 : 1.3-2.1, in females 2.0 : 0.4-0.6; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in males 1.0 : 1.7-2.0 : 1.3-1.8 : 1.6-1.9, in females 1.0 : 1.4-1.7 : 1.1-1.5 : 1.4-1.7, the first segment slender, slightly longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment short (fig. 19) in both sexes. Thorax with the posterior margin of the pronotum medially slightly concave (fig. 16); hemelytra fully developed; legs robust, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 2.3-2.6, 1.0 : 3.1-3.9 and 1.0 : 5.4-6.4 respectively and in females 1.0 : 2.0-2.3, 1.0 : 3.1-3.9 and 1.0 : 4.4-5.6 respectively; tibiae rounded, anterior pair apically with rather short fossa spongiosa (fig. 17). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the males fig. 39; phallus, fig. 61, with the basal (lateral) lobe of the dorsal endosomal sclerite obtusely rounded.

**Colouration.** — Head dark brown, ventrally paler; tylus paler, brown or yellowish; antennae distally darkening, first segment yellow, second brown, the third and fourth segment dark brown; rostrum dark yellow. Thorax (including the pronotal collar) except eventually for the yellowish epicoxal lobes, entirely brownish; clavus dark brown, proximally with a yellow or reddish streak; corium, except for a dark brownish apical part and a stripe along the clavus, orange-red; membrane dark brown with a small pale yellow spot on

the inner proximal margin; legs entirely unicolorous yellow. Abdomen brownish, ventrally paler; connexivum maculate brownish and yellowish.

Distribution. — Widely distributed in the eastern part of the U.S.A. where it is known from New Jersey, Maryland, Ohio, Michigan, Indiana, Illinois, Kansas, Missouri, Kentucky, N. Carolina, S. Carolina, Georgia, Florida, Louisiana, Oklahoma and Texas: see also fig. 68.

Notes. — Among the RMNH material two females were found bearing apparently wrong labels: one specimen from Santarem, Brazil and one from Marinha Grande, Portugal (!). Both labels carry the name E. le Moul, a commercial dealer.

Uhler (1876) recorded *S. stria carinata* also from California and Mexico, data also to be found in some more recent articles; records presumably caused by misinterpretations of older literature, in which this taxon is mentioned as occurring in the southern states of the U.S.A. Present data at least do not confirm these records.

Interspecific dissimilarities. — *S. stria*, *S. stria stria* in particular, closely resembles *S. pedestris*. Differences between these taxa were already dealt with under *S. pedestris*. *S. stria carinata* resembles to a large extent *S. ferdinandi* from which it may be differentiated by some minor differences in the genitalia and some colour markings, *S. ferdinandi* having yellowish parts in the corium and the apex of the membrane whitish (brown in *S. stria carinata*). From *S. amazona*, especially *S. amazona anduzei* (with which *S. stria* has long been confused), *S. stria* is easily distinguished by the shape of the posterior margin of the pronotum (medially concave in *S. amazona*, straight in *S. stria*).

***Sirthenea vidua* Horváth, 1909**  
(figs. 31-32, 44, 62)

*Sirthenea vidua* Horváth, 1909: 365 (terra typica: Costa Rica, San Carlos). Wygodzinsky, 1949: 54.

Material examined: 1 ♂, 3 ♀. — Costa Rica. San Carlos (HNHM 1 ♀, holotype); La Carpintera, Candelaria Mts. (AMNH 1 ♂).  
Panama. Chiriqui: Boquete (MZM 2 ♀).

Diagnosis. — Brachypterous, relatively small and slender. Eyes small; erect pubescence of antennae short (in both sexes). Pronotum with the posterior margin medially slightly concave; legs slender; tibiae rounded, anterior pair with relatively long fossa spongiosa. Abdomen ventrally densely appressedly pubescent; male genitalia figs. 44, 62. Hemelytra, clavus, corium as well as membrane entirely brownish.

Redescription. — Small and slender: length in the male 15.0 mm, in females 17.0-19.0 mm; width in the male 2.6 mm, in the females 2.8-3.1 mm. Head slender, distinctly longer than the anterior lobe of the pronotum; frons distinctly longer than the width of the head (fig. 12); eyes small, proportion between the interocular distance and the diameter of an eye (in ventral view) in the male 2.0 : 0.6, in females 2.0 : 0.2-0.3; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in the male 1.0 : 2.2 : 2.1 : ?, in females 1.0 : 1.7-1.8 : 1.5-1.6 : 2.0, first segment slender, distinctly longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment short (fig. 19) in both sexes. Thorax with the posterior margin of the pronotum medially almost straight; hemelytra not fully developed, only reaching the second tergite, apically touching each other (fig. 31); legs slender, proportion between the width and length of the anterior, medial and posterior femora in the male 1.0 : 3.2, 1.0 : 5.2 and 1.0 : 8.0 respectively, in females 1.0 : 2.7-3.0, 1.0 : 4.2-4.9 and 1.0 : 7.0-7.2 respectively; tibiae rounded, anterior pair apically with rather long fossa spongiosa (fig. 18). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the male, fig. 44; phallus, fig. 62, with the basal (lateral) lobe of the dorsal endosomal sclerite rectangular, spinolate.

Colouration. — Almost entirely brownish, the distal segments of the antennae, the apical part of the coxae, a longitudinal streak on the outer side of the anterior femora, the dorsal side of the medial femora and the proximal part of the posterior femora yellowish.

Distribution. — Confined to Central America where it is known from Costa Rica and Panama; see also fig. 32.

Interspecific dissimilarities. — Being brachypterous, with small eyes, slender legs and relatively long fossa spongiosa on the anterior tibiae, *S. vidua* is easily recognised; the only species with which it might be confused is *S. jamaicensis*. For differences between these two species, see under *S. jamaicensis*.

### ***Sirthenea vittata* Distant, 1902**

(fig. 29, 35, 63-66)

*Sirthenea vittata* Distant, 1902: 286 (pro parte) (terra typica lectotype: Colombia, Cali). Wygodzinsky, 1949: 54.

Material examined: 9 ♂, 2 ♀. — Nicaragua. (ZMB 1 ♂). Not localised: Sta. Rita Boaca (PSM 1 ♂).

Panama. Canal Zone: Fortuna (PSM 3 ♂).

Venezuela. Zulia: Tres Bocas (UCV 1 ♀). Carabobo: Valencia (ZMB 1 ♂). Aragua: Cagua (PSM 1 ♂).

Colombia. Valle del Cauca: Cali (BMNH 1 ♂, lectotype). Not localised: Rio Magdalena, Presidio (ZIL 1 ♀).

Ecuador. Guayas: Balao Chico (AMNH 1 ♂).

**Diagnosis.** — Macropterous, relatively small and slender. Eyes medium-sized; erect pubescence of antennae long in males, short in females. Pronotum with the posterior margin medially slightly concave; legs slender; tibiae rounded, anterior pair with relatively long fossa spongiosa. Abdomen ventrally densely, appressedly pubescent; male genitalia, figs. 35, 63-65. Proximal part of the corium (including the costal margin) darkly coloured; membrane unicolorous dark brown.

**Redescription.** — Small and slender: length in males 13.5-17.5 mm, in females 16.0-18.0 mm; width in males 2.8-3.5 mm, in females 3.1-3.5 mm. Head slender, distinctly longer than the anterior lobe of the pronotum; frons longer than the width of the head (fig. 12); eyes medium-sized, proportion between the interocular distance and the diameter of an eye (in ventral view) in the males 2.0 : 1.2-1.9, in the females 2.0 : 0.4-0.6; antennae inserted well in front of the eyes (fig. 12), proportion between the length of the four antennal segments in the males 1.0 : 2.2-2.3 : 1.7-2.1 : 2.1-2.2, in the females 1.0 : 1.7-1.8 : 1.3-1.4 : 1.6, first segment slender, longer than the first segment of the rostrum, the erect pubescence of the second and third antennal segment long (fig. 20) in males and short (fig. 19) in females. Thorax with the posterior margin of the pronotum medially slightly concave (fig. 16); hemelytra fully developed; legs slender, proportion between the width and length of the anterior, medial and posterior femora in males 1.0 : 3.1-3.3, 1.0 : 5.2-6.1 and 1.0 : 7.5-8.5, respectively, and in females 1.0 : 2.6-2.8, 1.0 : 4.1-4.7 and 1.0 : 6.4-6.5, respectively; tibiae rounded, anterior pair apically with long fossa spongiosa (fig. 18). Abdomen (including connexivum) ventrally densely appressedly pubescent; parameres of the males, fig. 35; phallus, figs. 63-65, with the basal (lateral) lobe of the dorsal endosomal sclerite acute.

**Colouration.** — Head brownish; antennae brownish, distally paler, the fourth segment yellowish; rostrum brownish, distally paler. Thorax (including the pronotal collar) except for the yellowish meso- and metaepicoxal lobes entirely unicolorous, brownish, clavus unicolorous brownish; corium unicolorous brown or with a narrow, streak-like pale grey-orange spot in the central part (fig. 29); membrane unicolorous brown; legs bicolorous, brown, the apical half of the coxae, the outer side of the anterior coxae, the anterior femora on the inner side and some streaks on the outer side, the proximal and dorsal side of the medial femora, the proximal 0.3-0.5 part of the posterior femora and the dorsal aspect of the tibiae for the largest part yellowish. Abdomen brownish, medially paler; connexivum maculate, brown and yellow.

Distribution. — Known from Central America (Nicaragua and Panama) and the northern (Colombia and Venezuela) and north-eastern (Ecuador) part of South America; see also fig. 66.

Notes. — As Distant used two specimens for the original description of *S. vittata* a lectotype is designated here, being the male from Cali, Colombia. A justification for this choice was already given under *S. peruviana orientalis*. *S. vittata* appears to contain two colour varieties, one in which the corium is completely dark brown, another in which the central part of the corium is provided with an elongate grey-orange streak, as found in the lectotype.

Interspecific dissimilarities. — *S. vittata* in some ways resembles *S. atra*, *S. dubia* and *S. peruviana*. From the first it may be separated by its larger eyes, its rounded tibiae and its densely pubescent abdomen. From *S. dubia* it is separated by its slender legs and relative long fossa spongiosa on the anterior tibiae. The latter character also separates it from *S. peruviana*, whereas the specimens having a bicolorous corium in *S. vittata* are easily distinguished from all other American species by the shape of the brightly coloured part in the corium.

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## ADDENDA

1. During the preparation of this paper, unfortunately, an article by Maldonado Capriles (1955) has been overlooked, in which a new species of *Sirthenea*, *S. venezolana*, is described from Venezuela (Amazonas: Samariapo, 45 km south of Puerto Ayacucho). The type material, holo-, allotype and 1 ♂ paratype, in fact the only known specimens of this species, has not been examined. Having hemelytra with a blackish brown corium, centrally with a large, suboval, stramineous spot, *S. venezolana* closely resembles *S. peruviana*. It can be separated from *S. peruviana* by its smaller size (male: 11.1 mm) and its relatively compact head with the frons about equally long as the width of the head.
2. Recently, Maria del Carmen Coscarón (1983) published some new faunistic data on 20 species of Peiratinae from the New World. Among these are some new and interesting data concerning the distribution of *Sirthenea* spp.:

<i>S. amazona anduzei</i>	Panama. Chirique Guyana. Bartica: Esequibo.
<i>S. ocularis</i>	Brazil. Amazonas: Rio Negro.
<i>S. peruviana</i>	Argentina. Catamarca: El Rodeo.
<i>S. stria carinata</i>	U.S.A. Virginia: Framville.
<i>S. stria stria</i>	Guatemala. Chiquimula: Chiquimula. Costa Rica. San Carlos.
<i>S. vidua</i>	Paraguay. Concepción: Horqueta.

All data mentioned here derived from material deposited at the United States National Museum of Natural History, Washington.

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