PROCEEDINGS OF THE BIOLOGICAL SOCIETY OF WASHINGTON
119(2):279–286. 2006.

New species and records of Neotropical Sisyridae with special reference to *Sisyra* (Insecta: Neuroptera)

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Abstract.—New figures of the male genitalia and wings of *Sisyra elongata* Penny & Rafael are shown and the species is newly reported from Peru. Additional distributional data are given for *S. amazonica* (Brazil, Guyana, Paraguay), *S. apicalis* (Peru, Panama), *S. minuta* (Brazil), and *S. panama* (Brazil, Bolivia). A new Brazilian species of spongilla fly, *Climacia punctulata* is described and figured. New records of *C. amalla* (Peru), *C. carpenteri* (Brazil), *C. insolita* (Brazil), and *C. townesi* (Brazil) are presented. *Climacia basalis* Navás, 1933, is synonymized with *C. basalis* Banks, 1913.

In 1998 I reported upon the Neotropical sisyrid genus *Climacia*, describing and recording new material for most of its species. That paper did not touch upon the Neotropical representatives of the more nearly worldwide genus *Sisyra*. This paper treats the Neotropical species of *Sisyra* and records a new species and new material of *Climacia*. A complete checklist of New World Sisyridae, with summary distributions, is also provided.

Methods

The terminology used herein is the same as that used in Flint (1998), and derived from the same sources. The sectorial cross-vein in the fore wing runs between R_{2+3} and R_{4+5}, and cuts off a "discoidal" cell basally. The genitalic terminology of *Sisyra* is based on Aspöck et al., 1980, figs. 358–359, and that of *Climacia* on the usage in Flint (1998).

I have given the locality data as on the labels, but rearranged into a standard manner. If I have presented an interpretation of an abbreviation, it is placed within [ ].

Systematics

Sisyra amazonica Penny 1981

The species was described (Penny 1981) from males and females taken at two sites near Manaus on the Amazon River. The new records enlarge its known distribution in the Manaus region, and extend its range to the north into central Guyana and far to the south into central Paraguay.

Material examined.—BRAZIL: Amazonas: Manaus, 15 Nov 1980, N.D. Penny, 1 ♀ (INPA); Manaus, 60 km N à Res[erva] Campinas, 3 Mar 1977, N.D. Penny, 1 ♂ (INPA); Res[erva] Ducke, 26 km E Manaus, 1–5 Feb 1979, O.S. Flint, Jr., 2 ♂, 1 no abdomen (NMNH); Am[azonas, route number] 010, km 246, 20 km W Itacoatiara, 12–15 Jul 1979, J. Arias, et al., 3 ♂, 2 ♀ (NMNH, UMSP); Paraná Costa da Ilha de Curarí (Rio Solimões), 03°25′S–060°15′W, 3 Aug 1979—Varzea, CANOPY FOGGING PROJECT TRS#04, Tray #266, Adis, Erwin, Montgomery et al., 1 ♀ (NMNH); Rio Negro, 100–110 km above Manaus, 7 Oct 1960, E.J. Fittkau, A32, 1 ♀

(NMNH); Cachoeira do Gigante, 3 Jul 1961, E.J. Fittkau, A200, 1 ♀ (NMNH).

GUYANA: Dubulay Ranch, Warniabo Cr[eek], 5°39.8′N, 57°53.4′W, 10–11 Apr 1994, O.S. Flint, Jr., 1 ♀ (NMNH); CEIBA [field station of Conservation of Ecological Interactions and Biotic Associations], ca. 40 km S Georgetown, 6°29.9′N, 58°13.1′W, 13 Apr 1994, W.N. Mathis, 1 ♀ (NMNH); Esseq[uibo], 6 mi S Wineperu, Picrewana Is[land], 8–16 Mar 1969, Duckworth & Dietz, 1 ♀ (NMNH); Esseq[uibo], Wineperu, 18–24 Mar 1969, Duckworth & Dietz, 1 ♀ (NMNH); Esseq[uibo], Rockstone, 11 Mar 1969, Duckworth & Dietz, 2 ♀ (NMNH).

PARAGUAY: 3.9 km South Villarica, 2 Dec 1973, O.S. Flint, Jr., 2 ♀, 1 no abdomen (NMNH).

Sisyra apicalis Banks, 1908

This species was originally described from Cuba and later recorded (Parfin & Gurney 1956) from southeastern USA and Panama. Penny (1981) extended its known range into central Amazonas State, Brazil. The new records confirm its presence in Panama and Amazonas, and extend its range into the eastern foothills of the Andes in Peru and south into east-central Brazil.

Material examined.—BRAZIL: Minas Gerais: Estação Ecológica de Peti, Córrego Brucutu, 19°52.995′S, 43°22.452′W, 29 Sep 1998, Paprocki, 2 ♂, 1 ♀ (UMSP, NMNH).

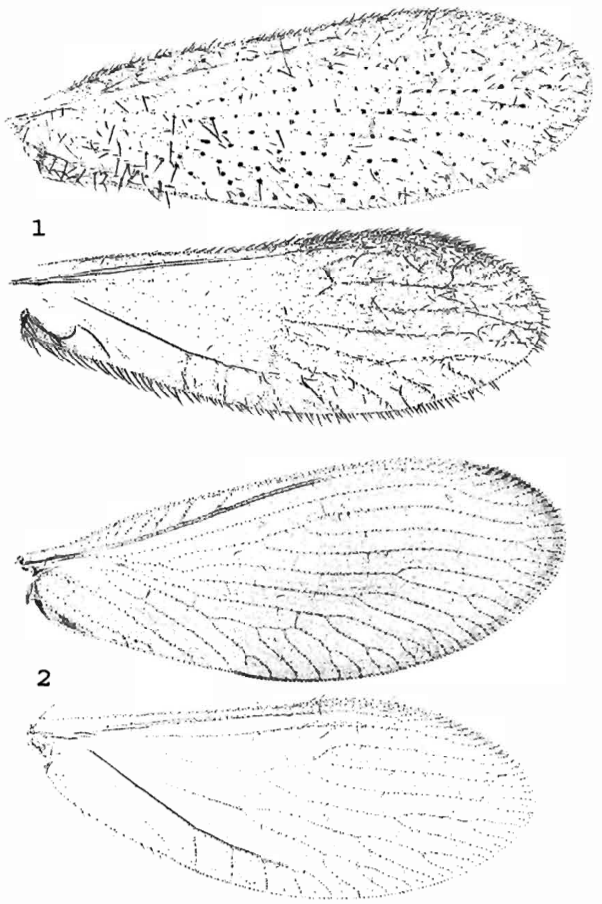
PERU: Madre de Dios: Rio Tambopata Res[erve], 30 air km SW Pto. [Puerto] Maldonado, 290 m, 2-5 Nov 1979, J.B. Heppner, subtropical moist forest, 19 ♂, 14 ♀ (NMNH); same, but 6-10 Nov 1979, 26 ♂, 29 ♀ (NMNH); same, but 11-15 Nov 1979, 31 ♂, 15 ♀ (NMNH); same, but 16-20 Nov 1979, 20 ♂, 18 ♀ (NMNH); same, but 21-29 Nov 1979, 22 ♂, 27 ♀ (NMNH); same, but 26-30 Nov 1979, 6 ♂, 2 ♀ (NMNH); Manu, Pakitza, 12°7′S, 70° 58′W, 250 m, 11 Sep 1988, O. Flint & N. Adams, trail 1, 1st stream UV light, 1 ♂ (NMNH).

PANAMA: Panama: Barro Colorado Island, Poacher's Peninsula, Windowpane trap 2A, 5–9 Jan 1987, H. Wolda, 1 ♂ (NMNH); same, but trap 1B, 7–11 Mar 1988, 1 ♀ (NMNH); same, but trap 1B, 25–30 Mar 1986, 1 ♀ (NMNH); same, but trap 3B, 20–25 May 1986, 1 ♂ (NMNH); same, but trap 3A, 6–11 Jun 1986, 1 ♂ (NMNH); same, but trap 1B, 13–18 Jun 1986, 1 ♂ (NMNH); same, but trap 1B, 20–25 Jun 1986, 1 ♂ (NMNH); same, but trap 1B, 27 Jun–2 Jul 1986, 1 ♀ (NMNH); same, but trap 1B, 14–18 Jul 1986, 1 ♂ (NMNH); same, but trap 4A, 21–25 Sep 1986, 1 ♂ (NMNH); same, but trap 2A, 28 Jul–1 Aug 1986, 1 ♂ (NMNH); same, but trap 1B, 11–14 Aug 1986, 1 ♂ (NMNH); same, but trap 2B, 11–15 Aug 1986, 1 ♂ (NMNH); same, but trap 3A, 22–26 Aug 1988, 1 ♂ (NMNH); same, but trap 1A, 7–11 Sep 1987, 1 ♂ (NMNH); same, but trap 2A, 8–12 Sep 1986, 1 ♂ (NMNH); Barro Colorado Island, Snyder-Molino marker 3 Trap level—1, 22–28 Apr 1987, H. Wolda, 2 ♂, 1 ♀ (NMNH); same, but 6–12 July 1988, 3 ♀ (NMNH); same, but 8–14 July 1987, 3 ♂ (NMNH).

Sisyra elongata Penny & Rafael, 1982
Figs. 2, 3, 4

This species was described by Penny & Rafael (1982) from types collected close to Manaus in Amazonas State, Brazil. New figures and descriptive material are presented here to supplement the original description.

The species is clearly related to *S. apicalis* Banks and *S. amazonica* Penny. All three species have virtually identical venation and elongate coxopodites, but differ in the exact shape of this structure and in its inner basal armature. Only *S. elongata* has an enlarged apical third of



Figs. 1–2. Fore- and hind-wings. 1, *Climacia punctulata*. 2, *Sisyra elongata*.

the coxopodite bearing a dense apicomesal brush of setae.

Body.—Color in alcohol, nearly uniformly golden-brown. Longest antenna (seemingly entire) of 33 flagellar segments, last three pale (antennae of most specimens examined incomplete).

Wings.—Length of forewing, male: 3.7–4 mm, female 4 mm. Forewing golden-brown, with faint darker streaks centrally in cells, especially noticeable toward base of wing. With two radial crossveins, no sectorial crossvein.

Male genitalia.—Epiproct large and U-shaped. Gonarcus a dark band connecting bases of coxopodites. Parameres with a short dorsal arm connecting to gonarcus at inner margin of coxopodite, another short arm extending mesad, almost touching arm from other paramere, and a longer arm extending to ventral base of coxopodite (much as shown in Parfin & Gurney, 1956, fig. 16b for *S. apicalis*). Ninth sternum bulging, with many strong setae. Coxopodite lateral view 8 times as long as width at narrowest part (midlength), slightly enlarged basally and apically with apical margin obliquely truncate; in dorsal view nearly terete, curved mesad apically, enlarged basally, with a short projection from inner margin bearing a strong, apical spine and a longer process extending ventromesally from inner, ventral margin also ending in a stout spine (this process extending beneath coxopodite in lateral view); inner apical margin with 1 or 2 very short teeth and a brush of long setae.

Material examined.—PERU: Loreto: Callicebus Res[earch] Station, Mishana, Rio Nanay, 25 km SW Iquitos, 120 m, 10–17 Jan 1980, J.B. Heppner, tropical wet forest, 2 ♂, 2 ♀ (NMNH).

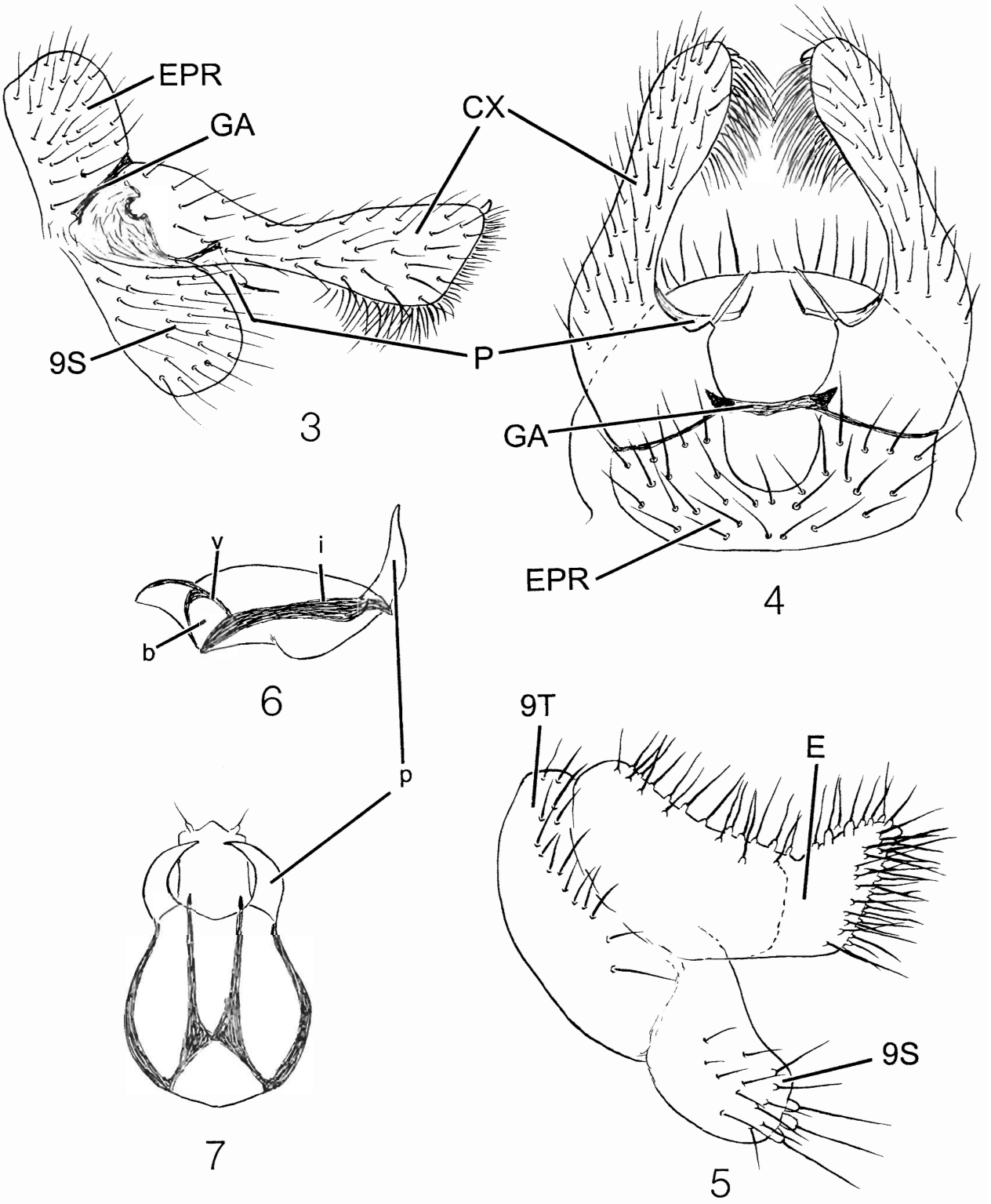
Sisyra minuta Esben-Petersen, 1935

The species was described from a unique male taken near Santarem, Brazil. Penny (1981) recorded it from a number of localities all in the general vicinity of Manaus. This new record is also from the Manaus region.

Material examined.—BRAZIL: Amazonas: Rio Tarumã Mirím, 2 km from Rio Negro, 03°02′S, 060°17′W, 27 Jul 1979, Igapo, CANOPY FOGGING PROJECT TRS #01, Malaise #001, Adis, Erwin, Montgomery, et al., 2 ♂ (NMNH).

Sisyra panama Parfin & Gurney, 1956

The species was based on a male and a female taken near the Canal Zone in Panama. Penny (1981) recorded a few specimens from Manaus in the central Amazon Basin of Brazil. This new Brazilian material is also from the Manaus



Figs. 3–7. Male genitalia. *Sisyra elongata*: 3, lateral; 4, dorsal. *Climacia punctulata*: 5, lateral; 6, gonarcal complex, lateral; 7, gonarcal complex, dorsal (CX = coxopodite, E = ectoproct, EPR = epiproct, GA = gonarcus, P = paramere, 9S = ninth sternum, 9T = ninth tergum, b = basal lacuna of gonarcal complex, i = inner spine of same, p = paramere of same, v = vertical wall of same).

region. Because these examples are all females, some might be the superficially similar species, *S. ariasi* Penny. The Bolivian examples extend the known range of the species far to the south.

Of the New World species, this one and the very closely related *S. ariasi* are the only known ones to have sectorial cross-veins, creating closed discoidal cells.

Material examined.—BRAZIL: Am [azonas]: Rio Solimões, Lago do José, near Manaus, 9 Aug 1979, J. Adis et al., fumigação [fogging], 1 ♀ (INPA); Rio Preto da Eva, 17 Feb 1988, Leite, S.S., 1 ♀ (INPA); Paraná do Xiboreninho, 03°15′S, 060°00′W, 5 Aug 1979, mixed water, CANOPY FOGGING PROJECT TRS#05, Tray#303, Adis, Erwin, Montgomery, et al., 1 ♀ (NMNH); Rio Branquinho, beim Cachoeira, 21 Jul 1961, E.J. Fittkau, A209a light 18:30–19:30, 1 ♀ (NMNH).

BOLIVIA: Beni: 40 km E San Borja, Estacion Biologica Beni, Estancia El Porvenir, 6 Sep 1987, M.G. Pogue, island forest, 03-13-01-22, blacklight trap, 3 ♂, 2 ♀ (NMNH); same, but 6–8 Sep 1987, W. E. Steiner, at black light, open grass savanna and marsh, 2 ♂ (NMNH); 40 km E San Borja, Estacion Biologica Beni, Palm Camp, 1 Sep 1987, M.G. Pogue, inundation forest, blacklight trap, 2 ♂, 3 ♀ (NMNH); same, but 13 Sep 1987, inundation forest, 01-13-21-11, blacklight trap, 3 ♂, 2 ♀ (NMNH, UMSP)

Climacia amalla Flint, 1998

The new specimen reported below is only the second example of this species known. The holotype was from San Carlos de Río Negro in Amazonas State, Venezuela. The new example extends the known range considerably south and west.

Material examined.—PERU: Loreto: Callicebus Res[earch] Station, Mishana, Rio Nanay, 25 km SW Iquitos, 120 m, 10–17 Jan 1980, J.B. Heppner, tropical wet forest, 1 ♀ (NMNH).

Climacia basalis Banks, 1913

Banks described *C. basalis* on the basis of thirteen female specimens from Bartica, British Guiana. Parfin and Gurney (1956) redescribed the species, established a lectotype, figured the genitalia, and presented a photo of the wings of a lectoparatype. They also listed a Navás, 1933, paper in the synonymy of the species and declared that they were unable to obtain his specimen from the Hamburg Museum where it was supposedly deposited. It is assumed that this example was destroyed with most of the rest of the Hamburg collection when the museum was bombed in the Second World War.

In the original paper of Navás, the description is headed "Climacia basalis sp. nov." The example is listed from "Brasil: Corumba, Matto Grosso. Mus. de Hamburgo." I assume that he intended this to be a description of a new species, and not a reference to the *C. basalis* of Banks. Fortunately he presents a rather good figure of the forewing, with color pattern. Upon comparison with the Navás figure and the Parfin & Gurney photo (plate 2 figure 8) of the lectoparatype of Banks's *C. basalis*, one is struck by their great similarity. The similarities of the radiomedial streaks, the darkening of the gradates, and the dark streaks in the anal area are striking, and totally unlike any other known species in the genus. Navás does not show any darkening in the center of the cells in the apical half of the wing, which is apparent in the photo. Possibly the Navás specimen was faded as these streaks are often inconspicuous in related species.

Based on the above evidence, I am here synonymizing *Climacia basalis* Navás, 1933 with *Climacia basalis* Banks, 1913.

Climacia carpenteri Parfin & Gurney, 1956

Originally described from two females from Paraguay, the male was more recently described (Flint 1998) and the range extended into southern Brazil (Santa Catarina State) and more widely over Paraguay. These new records extend the range much farther north into east-central Brazil.

Material examined.—BRAZIL: Minas Gerais: Rio Paraúna, 3 km S Santana do Riacho, 19°10.986′S, 43°43.485′W, 650 m, 11 Nov 2001, Holzenthal et al., 2 ♂, 7 ♀ (UMSP, NMNH); Rio Santo Antônio, downstream from Morro do Pilar, 19°08.134′S, 43°21.256′W, 530 m, 17 Oct 2000, Paprocki & Ferreira, 3 ♀ (UMSP); Parque Estadual do Rio Preto, Rio Preto, 18°07.161′S, 43°20.459′W, 830 m, 14 Nov 2001, Blahnik & Amarante, 4 ♀, 1 no abdomen (UMSP, MZUSP).

Climacia insolita Flint, 1998

The species is known from several localities in northeastern Argentina (Misiones) and southern Brazil (Santa Catarina, Paraná). This new record extends the known range much farther north into east-central Brazil.

Material examined.—BRAZIL: Minas Gerais: Rio Paraúna, 3 km S Santana do Riacho, 19°10.986′S, 43°43.485′W, 650 m, 11 Nov 2001, Holzenthal et al., 2 ♂, 6 ♀ (UMSP, NMNH, MZUSP).

Climacia punctulata, new species
Figs. 1, 5–7

This species appears to be related to *C. carpenteri* Parfin & Gurney and *C. insolita* Flint, on the basis of the angulate dorsal margin of the ectoproct and dangling, bulbous ninth sternum. In coloration it is unlike either of these in that it lacks any dark fasciae on the forewing. Thus, the coloration is like *C. chilena* Parfin & Gurney, from which it differs greatly in the shape of the ectoproct.

Body.—Head, thorax and appendages pale, yellowish-brown, with darker brown mesal band on head and pronotum, becoming broader and more diffuse on meso- and metanota. Antenna with scape darkened, basal flagellar segments pale brown, segments beyond progressively darker apicad.

Wings.—Forewing length 4–4.5 mm. Color pale, yellowish-brown; dark spots at setal bases on longitudinal veins from Rs posteriad; all crossveins darkened. Hindwing with radial crossveins darkened, otherwise immaculate.

Male genitalia.—Ectoproct with dorsal margin angled slightly ventrad for basal ⅔, apical ⅓ curved dorsad; apex straight with apicodorsal angle projecting beyond apicoventral angle; most setae on enlarged bases. Ninth tergum indistinct, with a row of setae near posterior margin. Ninth sternum large, pendulous, apex bulbous with several setae on enlarged bases. Gonarcal complex in lateral aspect with basal lacuna small; vertical wall, curved posteriad dorsally; inner spine extends full length of complex; parameres elongate, erect, tips pointed and curved mesad.

Holotype.—Male: BRAZIL: Minas Gerais: P[arque] E[stadual] de São Gonçalo de Rio Preto, Córrego das Éguas, 18°08.716′S, 43°22.157′W, 891 m, 14 Oct 2000, Paprocki, Amarante & Isaac (MZUSP). Paratypes: Same data, 7 ♂, 11 ♀ (UMSP, NMNH, MZUSP); Parque Estadual do Rio Preto, Rio Preto, 18°07.161′S, 43°20.459′W, 830 m, 14 Nov 2001, Blahnik & Amarante, 2 ♂, 5 ♀ (UMSP, NMNH).

Etymology.—From the Latin *punctula*, diminutive of spot, in allusion to the small spots along most of the forewing veins.

Climacia townesi Parfin & Gurney, 1956

The species was originally described from a number of females collected along

the Amazon River from Iquitos, Peru to the region of Santarem in Brazil. It was later recorded (Penny 1981) from the Manaus area, and a description of the male was included. Flint (1998) extended its known range into southern Guyana and Venezuela. These new records fill in the distribution around the central Amazon.

Material examined.—BRAZIL: Amazonas: Pq. Nac.[Parque Nacional] do Jaú, Rio Jaú—Meriti M.E., 2°18′S, 64°39′W, 4–5 Jun 1994, C.S. Motta et al., Luz mista mercurio, Luz negra BL e BLB, Lençol [mercury vapor light, black light bulb BL and BLB, sheet], 1 ♂, 2 ♀ (INPA); Manaus, 29 Jul 1978, N.D. Penny, 1 ♀ (INPA); same, but 6 Aug 1978, 1 ♀ (INPA); P. Figueredo, Estr[ada] para Balbina, km-24, 023521S 600655W [2°35′21″S, 60°06′55″W], 24-25 Oct 2003, J.A. Rafael, F.F. Xavier Filho & A.S. Filho, Arm. Luz (lençol) [light trap, sheet], 1 ♀ (INPA).

Check-list and Distributions of the New World Sisyridae (type country first listed)

Climacia amalla Flint Venezuela, Peru
Climacia antillana Alayo Cuba
Climacia areolaris (Hagen) U.S.A., Canada, Mexico
Climacia basalis Banks Guyana, Brazil
Climacia bifasciata Penny & Rafael Brazil
Climacia bimaculata Banks Guyana, Brazil, Suriname
Climacia californica Chandler U.S.A., Mexico
Climacia carpenteri Parfin & Gurney Paraguay, Brazil
Climacia chapini Parfin & Gurney U.S.A., Mexico
Climacia chilena Parfin & Gurney Chile, Argentina
Climacia doradensis Flint Venezuela
Climacia insolita Flint Argentina, Brazil
Climacia lemniscata Flint Argentina
Climacia negrensis Penny Brazil, Guyana
Climacia nota Parfin & Gurney Venezuela, Bolivia, Brazil, Guyana
Climacia punctulata, new species Brazil
Climacia striata Parfin & Gurney Panama
Climacia tenebra Parfin & Gurney Honduras
Climacia townesi Parfin & Gurney Brazil, Guyana, Peru, Venezuela
Climacia triplehorni Flint Argentina, Brazil
Climacia versicolor Flint Argentina
Sisyra amazonica Penny Brazil, Guyana, Paraguay
Sisyra apicalis Banks Cuba, Brazil, Mexico, Nicaragua, Panama, Peru, U.S.A.
Sisyra ariasi Penny Brazil
Sisyra elongata Penny & Rafael Brazil, Peru
Sisyra minuta Esben-Petersen Brazil
Sisyra nigra (Retzius) Denmark, Holarctic formerly *fuscata* (Fabricius)
Sisyra nocturna Navás Belize
Sisyra panama Parfin & Gurney Panama, Bolivia, Brazil
Sisyra vicaria (Walker) U.S.A., Canada

Acknowledgments

I would like to thank those who searched, often unsuccessfully, in the collections under their care for Sisyridae: Augusto Henriques and J. A. Rafael at Instituto Nacional de Pesquisas da Amazônia, Manaus (INPA), Luciane Marinoni at Universidade Federal do Paraná, Curitiba, C. G. Froehlich at Universidade de São Paulo at Riberão Preto, Riberão Preto, and Sergio Vanin at Museu de Zoologia, Universidade de São Paulo (MZUSP), all in Brasil; Ralph W. Holzenthal at University of Minnesota, St. Paul (UMSP), precipitated this project by asking me to identify material his group had collected in recent years. These sources have been supplemented by material at the National Museum of Natural History, Washington, DC (NMNH). I am indebted to Dr. John D. Oswald and an anonymous reviewer for their valuable suggestions.

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Associate Editor: Wayne N. Mathis

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Bibliography of the Neuropterida Reference number (r#):
11913

Reference Citation:
Flint, O. S., jr. 2006 [2006.07.11]. New species and records of Neotropical Sisyridae with special reference to Sisyra (Insecta: Neuroptera). Proceedings of the Biological Society of Washington 119:279-286.

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