

# Ephemeroptera (Insecta) from Pernambuco State, northeastern Brazil

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ABSTRACT. Ephemeroptera (Insecta) from Pernambuco State, northeastern Brazil. The first list of the species of Ephemeroptera from Pernambuco State, Northeastern Brazil, is presented. The survey was based on collections from numerous rivers and streams of 17 counties. A total of five families, 28 genera, and 38 species were recorded, including 22 genera and 31 species newly recorded from Pernambuco State. Moreover, *Farrodes tepui* Domínguez, Molineri & Peters, 1996, *Lisetta ernsti* Thomas & Dominique, 2005, and *Simothraulopsis (Maculognathus) sabalo* Kluge, 2007 are recorded for the first time to Brazil.

KEYWORDS. Mayflies; Neotropical; survey; taxonomy.

RESUMO. Ephemeroptera (Insecta) do Estado de Pernambuco, nordeste do Brasil. É apresentada a primeira lista de espécies da ordem Ephemeroptera do Estado de Pernambuco, Região Nordeste do Brasil. O levantamento foi baseado em coletas em vários rios e riachos de 17 municípios. Foram registrados cinco famílias, 28 gêneros e 38 espécies, incluindo 22 novos gêneros e 31 espécies novas para o Estado de Pernambuco. Além disso, *Farrodes tepui* Domínguez, Molineri & Peters, 1996, *Lisetta ernsti* Thomas & Dominique, 2005 e *Simothraulopsis (Maculognathus) sabalo* Kluge, 2007 são registrados pela primeira vez para o Brasil.

PALAVRAS-CHAVE. Efermerópteros; levantamento, Neotropical, taxonomia.

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The taxonomic knowledge about Ephemeroptera in the Northeastern Region can still be considered incipient, especially when compared to the Southern and Southeastern regions of Brazil. Based on the list of species of Ephemeroptera recorded from Brazil (Salles *et al.* 2004), northeastern Brazil was considered the least studied region of the country with only two species recorded at that time. Much of this divergence was caused by the lack of researchers and faunistic inventories in this region, since only one inventory was made for this region, being restricted to just one family and to one state (see Lima *et al.* 2010).

According to Salles *et al.* (2012) there are 256 species recorded from Brazil, distributed in 10 families and 68 genera, with 55 species formally recorded from Northeastern Brazil. Although recent studies have contributed to the knowledge about the distribution of the group in this region (Dias *et al.* 2008; Lima *et al.* 2010; Mariano 2010, Salles *et al.* 2010; Cruz *et al.* 2011; Boldrini *et al.* 2012), until this study, only eight species were recorded from the state of Pernambuco: *Hermanella froehlichii* Ferreira & Domínguez, 1992, *Hermanella maculipennis* (Ulmer, 1920), *Hydrosmilodon gilliesae* Thomas & Péru, 2004, *Hydrosmilodon plagatus* Lima, Nascimento & Salles, 2012, *Leentvaaria palpalis* Demoulin, 1966, *Needhamella ehrhadii* (Ulmer, 1920), *Traverhyphes (Traverhyphes) frevo* Lima, Salles & Pinheiro, 2011 and *Tricorythopsis spongicola* Lima, Salles & Pinheiro, 2011 (Lima *et al.* 2011, 2012).

In this paper we provide the first inventory of Ephemeroptera from the State of Pernambuco, as well as new records from the Northeastern Region and Brazil.

## MATERIAL AND METHODS

The State of Pernambuco is located in the Northeastern Region of Brazil and has an area of 98.311km<sup>2</sup>. The state is divided into three regions according to the physical environment: Zona da Mata (11%), located on the eastern part of the state and characterized by humid climate and Atlantic Forest vegetation; Agreste (19%), a transition zone dominated by semi-arid conditions; and Sertão (70%), centralwestern part of the state and characterized by semi-arid climate and caatinga vegetation (Carvalho 2008).

The material was collected in 34 localities of 17 municipalities located at Zona da Mata (Fig. 1), between March/2009 and February/2011. Nymphs were collected in several submerged substrates (stones, gravels, bedrocks, macrophytes, leaves, woody debris) of each environment by manually picking the specimens or using a D-net. Adults were caught on light traps right after sunset.

Dissected parts of the specimens studied were mounted on microscope slides using Canada Balsam as mounting media. All material was preserved in ethanol 80%. The identifications were based in Domínguez *et al.* (2006) and Salles (2006), aided by pertaining papers to each taxon. For information about the geographical distribution of species were consulted Domínguez *et al.* (2006) and the list of species of Ephemeroptera recorded from Brazil on the website “Ephemeroptera do Brazil” updated frequently (Salles *et al.* 2012).

To analyze the records of the species in river basins, we adopted the classification of the Agência Nacional de Águas.



Fig. 1. Study area showing the map of Pernambuco State with the respective collecting localities.

Records of Brazilian states follow official state abbreviations. The material is deposited in the following institutions: Coleção Zoológica Norte Capixaba (CZNC) and Coleção Entomológica da Universidade Federal de Pernambuco (UFPE).

## RESULTS AND DISCUSSION

Five families were found in this study (Baetidae, Caenidae, Leptohyphidae, Leptophlebiidae and Polymitarcyidae) distributed among 28 genera and 38 species. In this total 22 genera and 31 species are reported for the first time from the state, whereas the first record of *Farrodes tepui* Domínguez, Molineri & Peters, 1996, *Lisetta ernsti* Thomas & Dominique, 2005, and *Simothraulopsis (Maculognathus) sabalo* Kluge, 2007 are presented for Brazil. These results increased from 55 to 66 the number of species recorded from the Northeastern Region. Below we provide a list of all mayfly species recorded for the state. For each species listed data on geographical distribution are provided, and comments are made when necessary.

### List of species

#### Baetidae

##### *Americabaetis alphus* Lugo-Ortiz & McCafferty, 1996

Previous distribution. BRAZIL: Amazon Basin (AM, RR), Araguaia-Tocantins Basin (MT), Atlântico Leste Basin (BA, SE), Atlântico Nordeste Oriental Basin (AL), Atlântico Sudeste Basin (ES, RJ, SP), Atlântico Sul Basin (RS), Paraná River Basin (GO, MG, PR, SP), Parnaíba River Basin (PI), and Uruguai River Basin (SC). ARGENTINA, BOLIVIA, CHILE, and PARAGUAY.

Material. PERNAMBUCO: Amaraji (Rio Amaraji próximo à Usina Amaraji, 8°21'48.9"S 35°28'49.0"W, 320m), 12 nymphs, 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Amaraji, (Rio Amaraji, Cachoeira do Rio Morto, 8°20'59.1"S 35°30'21.0"W), 1 nymph, 363m, 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Bonito (Rio Verde, Camping Bonito Ecoparque, 8°31'58.6"S 35°43'26.3"W), 28/i/2010, 3 nymphs, Lima L.R.C. Lima, G. Nicacio, cols. (CZNC); Cabo de

Santo Agostinho (Rio Pirapama, 8°16'58.1"S 35°03'46.6"W, 30m), 8 nymphs, 18.VIII.2010, L.R.C. Lima, col. (CZNC); Camaragibe, (Rio Besouro, 7°59'06.4"S 35°00'13.9"W, 66m), 3 nymphs, 02.VII.2009, L.R.C. Lima coll. (UFPE); same as preceding except 3 nymphs, 2 ♂ (light trap), 1 ♀ (light trap), 08.VII.2009 (UFPE); Jaboatão dos Guararapes, (Rio Capibaribe, próximo a Transpetro, 8°02'47.4"S 34°59'41.9"W, 51m), 7 nymphs, 24.X.2009, L.R.C. Lima, G. Nicacio, cols. (CZNC); Primavera, (Cachoeira do Urubu, 8°18'12.6"S 35°21'21.9"W), 23 nymphs, 31.X.2009, L.R.C. Lima, C.C. Nobre cols. (CZNC); Recife (Parque Dois Irmãos, Açude do Prata, 8°00'28.5"S 34°56'54.3"W), 7 nymphs, 12.IX.2009, L.R.C. Lima, G. Nicacio cols. (CZNC); Ribeirão, (Rio Amaraji, Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124m), 12 nymphs, 21.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Rio Formoso, (Fazenda São Manuel, 8°43'21.51"S 35°10'12.65"W, 50m), 18 nymphs, 3 ♂ (reared), 23/ix/2009, L.R.C. Lima coll. (UFPE); same as preceding except 6 nymphs, 04.V.2010 (UFPE); São Benedito do Sul (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 1 ♂ (light trap), 13.XII.2009, L.R.C. Lima, G. Nicacio cols. (UFPE); Tamandaré, (Reserva Biológica de Saltinho, Rio Mamucabas, 8°43'52.7"S 35°10'24.8"W, 38m), 5 nymphs, 23.IX.2009, L.R.C. Lima coll. (CZNC); same as preceding except 3 ♂ (light trap), (Córrego da Sede, 8°43'53.7"S 35°10'25.8"W) (UFPE); Vitória de Santo Antão, (Fazenda Esperança, 8°5'59.51"S 35°17'49.6"W), 34 nymphs, 09.VIII.2009, L.R.C. Lima, G. Nicacio, R.P. Salomão (CZNC); same as preceding except 10 nymphs, 2 ♂ (light trap), 2 ♀ (light trap), 30.VIII.2009 (CZNC).

##### *Americabaetis labiosus* Lugo-Ortiz & McCafferty, 1996

Previous distribution. BRAZIL: Atlântico Leste Basin (BA), Atlântico Sudeste Basin (ES, RJ, SP), Atlântico Sul Basin (RS), Paraná River Basin (MG, PR, SP), and Uruguai River Basin (SC). PARAGUAY and URUGUAY.

Material. PERNAMBUCO: Amaraji, (Rio Amaraji próximo a Usina Amaraji, 8°21'48.9"S 35°28'49.0"W, 320m), 1 nymph, 2 ♀ (reared), 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Amaraji (Cachoeira do Rio Morto, 8°20'59.1"S 35°30'21.0"W, 363m), 1 nymph, 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Ribeirão, (Rio Amaraji, Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124m), 4 nymphs, 21.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Tamandaré, (Reserva Biológica de Saltinho, Rio Mamucabas, 8°43'21.6"S 35°11'14"W, 90m), 5 nymphs, 1 ♂ (reared), 22.IX.2009, L.R.C. Lima coll. (CZNC); same as preceding except 17 nymphs, 3 ♂ (light trap), 24.IX.2009 (CZNC).

***Apobaetis fiuzai* Salles & Lugo-Ortiz, 2002**

Previous distribution. BRAZIL: Amazon Basin (RR), Atlântico Leste Basin (BA) Atlântico Sudeste Basin (ES, RJ, SP), Paraguai River Basin (MT), Parnaíba River Basin (MA), Paraná River Basin (MG), and São Francisco River Basin (MG).

Material. PERNAMBUCO: São Benedito do Sul (Cachoeira Poço do Caboclo, 8°45'53.4"S, 35°55'16.1"W, 532m), 1 nymph, 23.II.2010, L.R.C. Lima, G. Nicacio, U.S. Pinheiro cols. (UFPE).

***Aturbina beatrixae* Gillies, 2001**

Previous distribution. BRAZIL: Atlântico Leste Basin (BA), Atlântico Nordeste Oriental (RN), Atlântico Sudeste Basin (ES, MG), Paraná River Basin (PR, SP), and Uruguai River Basin (SC). ARGENTINA and URUGUAY.

Material. PERNAMBUCO: Camaragibe, (Rio Besouro, 7°59'06.4"S 35°00'13.9"W, 66m), 1 nymph, 2 ♀ (light trap), 02.VII.2009, L.R.C. Lima coll. (UFPE); same as preceding except 1 nymph, 2 ♀ (light trap), 1 ♂ (light trap), 08.VII.2009 (CZNC); same as preceding except 3 ♀ (light trap), 5 ♂ (light trap), 28.II.2010 (CZNC); Ribeirão, (Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124 m), 2 nymphs, 21.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532 m), 2 nymphs, 26.II.2011, L.R.C. Lima, F.F. Salles cols. (UFPE); Vitória de Santo Antão, (Fazenda Esperança, 8°5'59.51"S 35°17'49.6"W), 2 ♂ (light trap), 2 ♀ (light trap), 30.VIII.2009, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE).

***Baetodes santateresa* Salles & Polegatto, 2008**

Previous distribution. BRAZIL: Paraná River Basin (SP).

Material. PERNAMBUCO: Bonito, (Cachoeira do Engenho Barra Azul, 8°30'39.3"S 35°43'21.0"W), 2 nymphs, 28.I.2010, L.R.C. Lima, G. Nicacio cols. (CZNC); Bonito, (Cachoeira Vêu da Noiva II, 8°32'51.3"S, 35°43'30.7"W), 3 nymphs, 29.I.2010, L.R.C. Lima, G. Nicacio cols. (CZNC); Bonito, (Rio Verde, Camping Bonito Ecomparque, 8°31'58.6"S 35°43'26.3"W), 1 nymph, 27.I.2010, L.R.C. Lima, G. Nicacio cols. (CZNC); Cabo de Santo Agostinho, (Rio Pirapama, 8°16'58.1"S 35°03'46.6"W, 30m), 6 nymphs, 18.VIII.2010, L.R.C. Lima, cols. (UFPE); same as preceding except 37 nymphs, Rio Pavão (CZNC); Jaqueira, Rio Pirangi, PE-126 próximo a ponte (8°44'53"S 35°48'51.1"W, 189m), 13 nymphs, 12.XII.2009, L.R.C. Lima, G. Nicacio cols. (CZNC); same as preceding except 5 nymphs, 17.IV.2010 (CZNC); Primavera, (Riacho da Bica, estrada para a Cachoeira do Urubu, 8°18'30.7"S 35°21'27.8"W, 162m), 8 nymphs, 31.X.2009, L.R.C. Lima, C.C. Nobre cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Soldado, 8°45'52.9"S, 35°53'06.1"W, 321m), 2 nymphs, 12.XII.2009, L.R.C. Lima, G. Nicacio cols. (CZNC); São Benedito do Sul, (Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 3 nymphs, 28.VIII.2010 L.R.C. Lima, G. Nicacio cols (UFPE); São Benedito do Sul, (Cachoeira Peri-peri, 8°47'23.96"S 35°54'22.5"W, 420m), 6 nymphs, 13.XII.2009, L.R.C. Lima, G. Nicacio cols. (CZNC); Vitória de Santo Antão, (Bica do Oiteiro, 8°4'42.6"S, 35°18'16.4W), 1 nymph, 09.VIII.2009, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE).

***Callibaetis gonzalezi* Navás, 1934**

Previous distribution. BRAZIL: Atlântico Leste Basin (BA). ARGENTINA, BOLÍVIA, and PARAGUAY.

Material. PERNAMBUCO: Rio Formoso, (Fazenda São Manuel, 8°43'21.51"S 35°10'12.65"W, 50m), 1 nymph, 23.IX.2009, L.R.C. Lima

coll. (UFPE); Vitória de Santo Antão, (Fazenda Esperança, 8°5'59.51"S 35°17'49.6"W), 5 nymphs, 1 ♀ (reared), 30.VIII.2009, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE);

***Callibaetis guttatus* Navás, 1920**

Previous distribution. BRAZIL: Atlântico Sudeste Basin (ES, RJ). ARGENTINA.

Material. PERNAMBUCO: Araçoiaba, (Açude Campo Grande, 7°50'13.3"S 35°6'39.6W, 133m), 3 nymphs, 1 ♂ (reared), 07.XI.2009, L.R.C. Lima, G. Nicacio cols. (UFPE); same as preceding except 2 nymphs, 1 ♀ (reared), 2 ♂ (reared), 26.XI.2010 (UFPE); Itamaracá (brejo da estrada para a Lagoa Azul, 7°46'41.66"S 34°51'3.74"W, 32m), 6 nymphs, 1 ♀ (reared), 24.V.2009, L.R.C. Lima coll. (UFPE); same as preceding except 3 nymphs, 1 ♂ (reared), 31.V.2009 (UFPE); Recife, (Açude do Prata, 8°00'28.5"S 34°56'54.3"W, 31m), 1 ♀ (reared), 12.IX.2009, L.R.C. Lima coll. (UFPE).

***Callibaetis pollens* Needham & Murphy, 1924**

Previous distribution. BRAZIL: Atlântico Leste Basin (BA), (GO), Atlântico Nordeste Ocidental Basin (MA), Atlântico Nordeste Oriental Basin (CE), Parnaíba River Basin (PI), Paraguai River Basin (MS), and São Francisco River Basin (BA, GO). ARGENTINA.

Material. PERNAMBUCO: Ribeirão, (Rio Amaraji, Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124m), 1 nymph, 1 ♀ (reared), 1 ♂ (reared), 21.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Rio Formoso (Fazenda São Manuel, 8°43'21.51"S 35°10'12.65"W, 50m), 2 nymphs, 1 ♂ (reared), 05.V.2010, L.R.C. Lima coll. (UFPE); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532 m), 1 nymph, 26.II.2011, L.R.C. Lima, F.F. Salles cols. (UFPE) São Benedito do Sul (Cachoeira Poço do Soldado, 8°45'52.9"S 35°53'06.1"W, 321m), 4 nymphs, 23.II.2010, L.R.C. Lima, G. Nicacio cols. (UFPE).

***Camelobaetidius billi* Thomas & Dominique, 2001**

Previous distribution. BRAZIL: Atlântico Leste Basin (BA), Atlântico Sudeste Basin (ES), Amazon Basin (AM), and São Francisco River Basin. FRENCH GUIANA.

Material. PERNAMBUCO: Amaraji, (Rio Amaraji próximo a usina Amaraji, 8°21'48.9"S 35°28'49.0"W, 320m), 2 nymphs, 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Amaraji, (Cachoeira do Rio Morto, 8°20'59.1"S 35°30'21.0"W, 363m), 2 nymphs, 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Bonito, (Rio Verde, Camping Bonito Ecomparque, 8°31'58.6"S 35°43'26.3"W), 8 nymphs, 27.I.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); Bonito, (Rio Verde, Camping Acampamento do Mágico, 8°30'46.8"S 35°43'14"W), 6 nymphs, 28.I.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); Bonito, (Cachoeira do Engenho Barra Azul, 8°30'39.3"S 35°43'21.0"W), 7 nymphs, 28.I.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); Bonito, (Cachoeira Vêu da Noiva II, 8°32'51.3"S 35°43'30.7"W), 27 nymphs, 1 ♂ (reared), 29.I.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); Cabo de Santo Agostinho, (Rio Pavão, 8°17'51.5"S 35°03'57.1"W, 58m), 1 nymph, 18.VIII.2010, L.R.C. Lima cols. (UFPE); Camaragibe, (Rio Besouro, 7°59'06.4"S, 35°00'13.9"W, 66m), 23 nymphs, 21.VI.2009, L.R.C. Lima coll. (CZNC); same as preceding except 8 nymphs, 1 ♀ (reared), 02.VII.2009 (UFPE); same as preceding except 5 nymphs, 08.IX.2009 (UFPE); Jaqueira, (Rio Pirangi, PE-126 próximo a ponte, 8°44'53"S 35°48'51.1"W, 189m), 18 nymphs, 12.XII.2009, L.R.C. Lima, G. Nicacio cols. (UFPE); Primavera, (Cachoeira do Urubu, 8°18'12.6"S 35°21'21.9"W), 27 nymphs, 31.X.2009, L.R.C. Lima C.C. Nobre cols.

(UFPE); same as preceding except 4 nymphs, 28.VIII.2010 (UFPE); Ribeirão, (Rio Amaraji, Cachoeira do Amor, 8°26'34.1"S, 35°24'22.1"W, 124m), 2 nymphs, 21.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 6 nymphs, 13.XII./2009, L.R.C. Lima, G. Nicacio cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Soldado, 8°45'52.9"S 35°53'06.1"W, 321m), 5 nymphs, 12.XII.2009, L.R.C. Lima, G. Nicacio cols. (UFPE); Tamandaré, (Reserva Biológica de Saltinho, Rio Mamucabas próximo ao açude, 8°43'21.6"S 35°11'14"W, 90m), 5 nymphs, 24.IX.2009, L.R.C. Lima coll. (CZNC); Vitória de Santo Antão, (Bica do Oiteiro, 8°4'42.6"S 35°18'16.4"W), 14 nymphs, 09.VIII.2009 L.R.C. Lima, G. Nicacio, R.P. cols. (UFPE); same as preceding except 1 nymph, 30.VIII.2009 (UFPE).

### *Camelobaetidius cayumba* (Traver & Edmunds, 1968)

Previous distribution. BRAZIL: Amazon Basin (RR, RO), Araguaia-Tocantins Basin (GO), Atlântico Nordeste Ocidental Basin (MA), Atlântico Nordeste Oriental Basin (CE), and Parnaíba River Basin (PI). COLOMBIA, FRENCH GUIANA, and PERU.

Material. PERNAMBUCO: Amaraji, (Rio Amaraji próximo a usina Amaraji, 8°21'48.9"S 35°28'49.0"W, 320m), 1 nymph, 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Amaraji, (Cachoeira do Rio Morto, 8°20'59.1"S 35°30'21.0"W, 363m), 1 nymph, 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Barra de Guabiraba, (Cachoeira do Galo, 8°25'05.5"S 35°39'48.2"W, 502m), 3 nymphs, 20.III.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); Cabo de Santo Agostinho, (Rio Pirapama, 8°16'58.1"S 35°03'46.6"W, 30m), 1 nymph, 18.VIII.2010, L.R.C. Lima, coll. (UFPE); same as preceding except Rio Pavão, 1 nymph (UFPE); Camaragibe, (Rio Besouro, 7°59'06.4"S 35°00'13.9"W, 66m), 1 ♀ (reared), 02.VII.2009, L.R.C. Lima coll. (CZNC); same as preceding 1 nymph, 08.VII.2009 (CZNC); Cortês, (Banho da Ilha, 8°30'06.5"S 35°31'28.6"W, 223m), 10 nymphs, 20.III.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); Jaboatão dos Guararapes, (Rio Capibaribe próximo a Transpetro, 8°02'47.4"S 34°59'41.9"W, 51m), 9 nymphs, 24.X.2009 (CZNC); same as preceding except 2 nymphs, 08.IV.2010 (CZNC); Jaqueira, (Rio Pirangi, PE-126 próximo a ponte, 8°44'53"S 35°48'51.1"W, 189m), 3 nymphs, 12.XII.2009, L.R.C. Lima, G. Nicacio cols. (UFPE); 3 nymphs, same as preceding except 17.IV.2010 (UFPE); Primavera, (Cachoeira do Urubu, 8°18'12.6"S 35°21'21.9"W), 2 nymphs, 31.X.2009, L.R.C. Lima, C.C. Nobre cols. (UFPE); Ribeirão, (Rio Amaraji, Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124m), 14 nymphs, 1 ♀ (reared), 21.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Ribeirão, (Rio Amaraji próximo ao Engenho Bastiões, 8°30'49.9"S 35°24'02.2"W, 114m), 28 nymphs, 05.II.2011, L.R.C. Lima, G. Nicacio cols. (UFPE).

Remarks. The nymphs of *C. cayumba* showed a large variation in the body length (3.6 – 6.2 mm) in which differ the original description by Traver & Edmunds (1968) and the redescription made by Thomas *et al.* (2001), in which nymphs showed 3.5 mm body length. The distinct pattern of tergal markings also varied, being slightly distinguishable or absent in some individuals. Due the shape of the mouthparts, the number of the tarsal claw denticles, among other characteristics was possible to identify the species.

### *Camelobaetidius francischettii* Salles, Andrade & Da-Silva, 2005

Previous distribution. BRAZIL: Atlântico Leste Basin (BA), Atlântico Nordeste Oriental Basin (AL), and Atlântico Sudeste Basin (RJ, ES).

Material. PERNAMBUCO: Amaraji, (Cachoeira do Rio Morto, 8°20'59.1"S 35°30'21.0"W, 363m), 3 nymphs, 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Bonito, (Camping Bonito Ecoparque, 8°31'58.6"S 35°43'26.3"W), 2 nymphs, 27.I.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); Bonito, (Camping Acampamento do Mágico 8°30'46.8"S 35°43'14"W), 7 nymphs, 28.I.2010, L.R.C. Lima, G. Nicacio cols. (CZNC); Bonito, (Cachoeira do Engenho Barra Azul, 8°30'39.3"S 35°43'21.0"W), 6 nymphs, 28.I.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); Bonito, (Cachoeira Vêu da Noiva II, 8°32'51.3"S 35°43'30.7"W), 3 nymphs, 29.I.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); São Benedito do Sul, (Cachoeira Peri-peri, 8°47'23.96"S 35°54'22.5"W, 420m), 1 ♀ (reared), 1 ♂ (reared), 13.XII.2009, L.R.C. Lima, G. Nicacio cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Soldado, 8°45'52.9"S 35°53'06.1"W, 321m), 3 nymphs, 12.XII.2009, L.R.C. Lima, G. Nicacio cols. (UFPE).

### *Camelobaetidius lassance* Salles & Serrão, 2005

Previous distribution. Brazil: Atlântico Leste Basin (BA), Paraná River Basin (SP), and São Francisco River Basin (MG).

Material. PERNAMBUCO: Barra de Guabiraba, (Cachoeira do Galo, 8°25'05.5"S 35°39'48.2"W, 502m), 1 nymph, 20.III.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); Cortês, (Banho da Ilha, 8°30'06.5"S 35°31'28.6"W, 223m), 1 ♀ (reared), 05.II.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); same as preceding except 5 nymphs, 20.III.2011 (UFPE).

### *Cloeodes hydatation* McCafferty & Lugo-Ortiz, 1995

Previous distribution. BRAZIL: Araguaia-Tocantins Basin (MT), Atlântico Sudeste Basin (ES), and São Francisco River Basin (MG).

Material. PERNAMBUCO: Primavera, (Cachoeira do Urubu, 8°18'12.6"S 35°21'21.9"W), 3 nymphs, 31.X.2009, L.R.C., C.C. Nobre cols. (UFPE); Vitória de Santo Antão, (Fazenda Esperança, 8°5'59.51"S 35°17'49.6"W), 2 nymphs, 09.VIII.2010, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE).

### *Cloeodes irvingi* Waltz & McCafferty, 1987

Previous distribution. BRAZIL: Atlântico Nordeste Oriental Basin (CE), Araguaia-Tocantins Basin (MT), Atlântico Sudeste Basin (ES), and São Francisco River Basin (GO, MG). PARAGUAY.

Material. PERNAMBUCO: São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W), 1 nymph, 13.XII.2009, L.R.C. Lima, G. Nicacio (UFPE); São Benedito do Sul, (Cachoeira Poço do Soldado, 8°45'52.9"S 35°53'06.1"W), 4 nymphs, 12.XII.2009, L.R.C. Lima, G. Nicacio (UFPE).

### *Cloeodes* sp.

Material. PERNAMBUCO: Rio Formoso, (Riacho da Gameleira, Reserva Biológica de Saltinho, 8°43'12.3"S 35°10'32.9"W, 47m), 6 nymphs, 24.IX.2009, L.R.C. Lima col. (CZNC); Tamandaré, (Rio Mamucabas, Reserva Biológica de Saltinho, 8°43'52.7"S 35°10'24.8"W, 38 m), 1 ♂ (reared), 21.IX.2009, L.R.C. Lima col. (CZNC); same as preceding except 21.IX.2009, Córrego da Sede, 1 ♀ (reared), (CZNC); same as preceding except 22.IX.2009, 1 nymph, 1 ♀ (reared) (CZNC); same as preceding except 2 nymphs, 2 ♀ (reared), 13.V.2010 (UFPE); same as preceding except

1 ♂ (reared), 14.V.2010 (CZNC); same as preceding except 1 ♂ (reared), 08.VIII.2010 (CZNC).

Remarks. *Cloeodes* sp. is a new species and its description will be submitted in another study.

### *Cryptonympha dasilvai* Salles & Francischetti, 2004

Previous distribution. BRAZIL: Atlântico Leste Basin (BA), Atlântico Sudeste Basin (ES, RJ, SP), and Paraná River Basin (SP).

Material. PERNAMBUCO: Camaragibe, (riacho de 1° ordem, 7°56'28.01"S 34°59'7.32"W), 5 nymphs, 28.II.2010, L.R.C. Lima coll. (UFPE); Igarassu, (Refúgio Charles Darwin, Riacho Jacocá, 7°48'57.5"S 34°57'19.1"W, 37m), 11 nymphs 22.II.2010, L.R.C. Lima coll. (UFPE); same as preceding except 3 nymphs, 05.III.2010 (UFPE); Ribeirão (Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124 m), 2 nymphs, 21.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532 m), 4 nymphs, 13.XII.2009, L.R.C. Lima, G. Nicacio cols. (UFPE).

### *Harpagobaetis gulosus* Mol, 1986

Previous distribution. BRAZIL: Amazon Basin (RR) and Araguaia-Tocantins Basin (GO, MA, MT). SURINAME.

Material. PERNAMBUCO: Amaraji, (Rio Amaraji próximo a Usina Amaraji, 8°21'48.9"S, 35°28'49.0"W, 320m), 1 nymph, 20.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE); Jaqueira, (Rio Pirangi, PE-126 próximo a ponte, 8°44'53"S 35°48'51.1"W, 189 m), 1 nymph, 17.IV.2010, L.R.C. Lima, G. Nicacio (UFPE); Ribeirão, (Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124 m), 4 nymphs, 21.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols (UFPE).

### *Paracloeodes* sp.

Material. PERNAMBUCO: Ribeirão (Cachoeira do amor, 8°26'34.1"S 35°24'22.1"W, 124m), 2 nymphs, 1 ♀ (reared), 21.I.2011, L.R.C. Lima, G. Nicacio, R.P. Salomão cols (UFPE).

Remarks. Based on nymphs, *Paracloeodes* sp. could be identified as *P. charrua* Nieto & Emmerich, 2009 from Uruguay. However, for confirmation of this species, more specimens should be obtained.

### *Waltzoyphius fasciatus* McCafferty & Lugo-Ortiz, 1995

Previous distribution. BRAZIL: Amazon Basin (AM, PA), Araguaia-Tocantins Basin (MT, PA), Atlântico Leste Basin (BA), Atlântico Nordeste Oriental Basin (PA), Atlântico Sudeste Basin (ES, RJ, MG), Paraná River Basin (SP), and São Francisco River Basin (GO, MG). COLOMBIA and PARAGUAY.

Material. PERNAMBUCO: Camaragibe, (Rio Besouro, S07°59'06.4" W035°00'13.9", 66m), 1 nymph, 02/vii/2009, Lima LRC coll. (UFPE); same as preceding except 2 nymphs, 28.II.2010 (UFPE); Igarassu, (Refúgio Charles Darwin, Riacho Jacocá, 7°48'57.5"S 34°57'19.1"W, 37m), 1 nymph, 05.III.2010, Lima LRC coll. (CZNC); Tamandaré, (Reserva

Biológica de Saltinho, Córrego da Sede, 8°43'48.3"S 35°10'35.3"W, 46m), 1 nymph, 21/ix/2009, Lima LRC coll. (UFPE).

### *Zelus principalis* Lugo-Ortiz & McCafferty, 1998

Previous distribution. BRAZIL: Amazon Basin (AM, PA, RR), Araguaia-Tocantins Basin (MT), Atlântico Leste Basin (BA), Atlântico Sudeste Basin (ES, MG, RJ), and Paraná River Basin (MG, SP). COLOMBIA.

Material. PERNAMBUCO: Araçoiaba, (Açude Campo Grande, 7°50'13.3"S, 35°6'39.6"W, 133 m), 1 nymph, 09.VII.2009, L.R.C. Lima cols. (UFPE); Rio Formoso, (Fazenda São Manuel, 8°43'21.51"S 35°10'12.65"W, 50m), 4 nymphs, 23.IX.2009, L.R.C. Lima coll. (CZNC); Rio Formoso, (Riacho da Gameleira, Reserva Biológica de Saltinho, 8°43'12.3"S 35°10'32.9"W, 47m), 1 nymph, 07.VIII.2010, L.R.C. Lima coll. (UFPE); Tamandaré, (Reserva Biológica de Saltinho, Rio Mamucabas P2, 8°43'52.7"S 35°10'24.8"W, 38m), 2 nymphs, 22.IX.2009, L.R.C. Lima coll. (CZNC); Tamandaré, (Reserva Biológica de Saltinho, Córrego da Sede, 8°43'48.3"S 35°10'35.3"W, 46m), 2 nymphs, 04.V.2010, L.R.C. Lima coll. (CZNC).

### Caenidae

#### *Caenis* sp.

Material. PERNAMBUCO: Araçoiaba, (Açude Campo Grande, 7°50'13.3"S 35°6'39.6"W, 133m), 1 nymph, 09.VII.2009, L.R.C. Lima coll. (UFPE); Camaragibe, (Rio Besouro, 7°59'06.4"S 35°00'13.9"W, 66m), 5 nymphs, 16.VII.2009, L.R.C. Lima coll. (UFPE); Igarassu, (Refúgio Charles Darwin, Riacho Jacocá, 7°48'57.5"S 34°57'19.1"W, 37m), 5 nymphs, 22.II.2010, L.R.C. Lima coll. (UFPE); Recife, (Parque Dois Irmãos, 8°00'28.5"S 34°56'54.3"W), 2 ♂ (reared), 12.IX.2009, L.R.C. Lima, G. Nicacio cols. (UFPE); same as preceding except 7 nymphs, 22.VIII.2009 (UFPE); same as preceding except 2 nymphs, 1 ♂ (reared), 17.III.2010 (UFPE); Recife, (Riacho da UFRPE – Universidade Federal Rural de Pernambuco, 8°00'57.4"S 34°56'46.4"W, 48m), 4 nymphs, 17.III.2010, L.R.C. Lima coll. (UFPE).

Remarks. Based on nymphs, *Caenis* sp. could be identified as *Caenis pflugfelderi* Malzacher, 1990, which was previously recoded from AM (Brazil), but a confirmation of this identification was not possible because male specimens reared had damaged genitalia. However, it appears that forceps in these specimens are apically sharp, while in *C. pflugfelderi* they are rounded. Possibly, in this case, it is a new species, but for confirmation of this species, adult specimens should be obtained from or associated with nymphs.

### Leptohiphidae

#### *Leptohiphes petersi* Allen, 1967

Previous distribution. BRAZIL: Atlântico Leste Basin (BA). PERU.

Material. PERNAMBUCO: Bonito, (Camping Acampamento do Mágico, 8°30'46.8"S 35°43'14"W), 1 nymph, 28.I.2010, L.R.C. Lima; G. Nicacio cols. (UFPE); Bonito, (Cachoeira do Engenho Barra Azul, 8°30'39.3"S 35°43'21.0"W), 2 nymphs, 28.I.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); Bonito, (Cachoeira Vêu da Noiva II, 8°32'51.3"S 35°43'30.7"W), 1 nymph, 29.I.2010, L.R.C. Lima, G. Nicacio cols (UFPE); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532 m), 7 nymphs, 26.II.2011, L.R.C. Lima, F.F. Salles cols. (UFPE).

***Traverhyphes (Mocoiphyphes) edmundsi* (Allen, 1973)**

Previous distribution. BRAZIL: Araguaia-Tocantins Basin (GO), Atlântico Leste Basin (BA), Atlântico Sul Basin (PR, RS, SC), Paraná River Basin (PR, SP), and Parnaíba River Basin (MA). ARGENTINA.

Material. PERNAMBUCO: São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 2 ♂ (light trap), 13.XII.2009, L.R.C. Lima, G. Nicacio cols. (UFPE).

***Traverhyphes (Traverhyphes) frevo* Lima, Salles & Pinheiro, 2011**

Previous distribution. BRAZIL: Atlântico Nordeste Oriental Basin (PE).

Material. PERNAMBUCO: Bonito, (Camping Bonito Ecoparque, 8°31'58.6"S 35°43'26.3"W), 6 ♂ (light trap), 29.I.2010, L.R.C. Lima coll. (5 at CZNC, 1 at UFPE).

***Traverhyphes (Traverhyphes) pirai* Molineri, 2001**

Previous distribution. BRAZIL: Atlântico Sudeste Basin (RJ).

Material. PERNAMBUCO: Camaragibe, (Rio Besouro, 7°59'06.4"S 35°00'13.9"W, 66m), 2 ♂ (light trap), 08.VII.2009, L.R.C. Lima coll. (UFPE); same as preceding except 6 ♂ (light trap), 28.II.2010, L.R.C. Lima coll. (UFPE); Jaqueira, (Rio Pirangi, PE-126 próximo a ponte, 8°44'53"S 35°48'51.1"W, 189m), 2 ♂ (light trap), 17.IV.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 2 ♂ (light trap), 13.XII.2009, L.R.C. Lima, G. Nicacio cols. (UFPE); Tamararé, (Reserva Biológica de Saltinho, Córrego da Sede, 8°43'48.3"S 35°10'35.3"W, 46m), 3 ♂ (light trap), 21.IX.2009, L.R.C. Lima coll. (UFPE).

***Tricorythodes mirca* Molineri, 2002**

Previous distribution. BRAZIL: Atlântico Nordeste Ocidental (MA), Atlântico Sudeste Basin (ES), and Parnaíba River Basin (PI). BOLÍVIA.

Material. PERNAMBUCO: Vitória de Santo Antão, (Fazenda Esperança, 8°5'59.51"S 35°17'49.6"W), 10 nymphs, 09.VIII.2009, L.R.C. Lima, G. Nicacio, R.P. Salomão (UFPE); same as preceding except 4 nymphs, 30.VIII.2009 (UFPE).

***Tricorythopsis spongicola* Lima, Salles & Pinheiro, 2011**

Previous distribution. BRAZIL: Atlântico Nordeste Ocidental Basin (MA), Atlântico Nordeste Oriental Basin (PE), and Atlântico Sudeste (ES).

Material. PERNAMBUCO: Cortês, (Banho da Ilha, 8°30'06.5"S, 35°31'28.6"W, 223m), 11 nymphs, 20.III.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); same as preceding except 4 nymphs, 05.II.2011; Jaqueira, (Rio Pirangi, PE-126 próximo a ponte, 8°44'53.0"S 35°48'51.1"W, 189m), 9 nymphs, 23.II.2010, L.R.C. Lima coll. (seven at CZNC, two at UFPE); same as preceding except 7 ♂ (light trap), 17.IV.2010 (CZNC); Ribeirão,

(Rio Amaraji próximo ao Engenho Bastiões, 8°30'49.9"S 35°24'02.2"W, 114m), 2 nymphs, 05.II.2011, L.R.C. Lima, G. Nicacio cols. (UFPE).

**Leptophlebiidae*****Farrodes tepui* Domínguez, Molineri & Peters, 1996**

(Figs. 2–5)

Previous distribution. VENEZUELA.

Material. PERNAMBUCO: Bonito, (Rio Verde, Camping Acampamento do Mágico, 8°30'46.8"S 35°43'14"W), 16 ♂ (light trap), 28.I.2010, L.R.C. Lima, G. Nicacio cols. (CZNC); Camaragibe, (Rio Besouro, 7°59'06.4"S 35°00'13.9"W, 66m), 2 ♂ (light trap), 02.VII.2009, L.R.C. Lima coll. (CZNC); same as preceding except 5 ♂ (light trap), 08.VII.2009 (CZNC); Jaqueira, (Rio Pirangi, PE-126 próximo a ponte, 8°44'53.0"S 35°48'51.1"W, 189m), 9 ♂ (light trap), 17.IV.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); Tamararé, (Reserva Biológica de Saltinho, Córrego da Sede, S8°43'48.3", W35°10'35.3", 46m), 16 ♂ (light trap), 23.IX.2009, L.R.C. Lima coll. (CZNC); same as preceding except 6 ♂ (light trap), 16.XI.2009 (UFPE); same as preceding except 1 ♂ (reared), 04.V.2010 (CZNC); same as preceding except 2 ♂ (reared), 08.VIII.2010 (CZNC); Vitória de Santo Antão, (Bica do Oiteiro, 8°4'42.6"S 35°18'16.4"W), 1 ♂ (reared), 30.VIII.2009, L.R.C. Lima, G. Nicacio, R.P. Salomão cols. (UFPE).

Remarks. First record of this species from Brazil.

***Fittkaulus cururuensis* Savage, 1986**

Previous distribution. Brazil: Amazon Basin (PA), Araguaia-Tocantins Basin (MT), and Atlântico Sudeste Basin (ES).

Material. PERNAMBUCO: Igarassu, (Refúgio Charles Darwin, Riacho Jacocá 7°48'57.5"S 34°57'19.1"W, 37m), 2 nymphs, 22.I.2010, L.R.C. Lima coll. (UFPE); same as preceding except 2 nymphs, 22.II.2010 (UFPE); same as preceding except 2 nymphs, 05/III/2010 (UFPE); same as preceding except 1 nymph, 22.III.2010 (CZNC); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 1 nymph, 26.II.2011, L.R.C. Lima, F.F. Salles cols. (UFPE)

Remarks. Due to lack of adult specimens, this species identification was based only by the abdominal color pattern of a mature female nymph.

***Hermanella froehlichii* Ferreira & Domínguez, 1992**

Previous distribution. BRAZIL: Atlântico Nordeste Oriental Basin (PE), Atlântico Sudeste Basin (ES), and Paraná River Basin (SP).

Material. PERNAMBUCO: Amaraji, (Rio Amaraji, 8°21'48.9"S 35°28'49.0"W, 320m), 2 ♂ (reared), 1 ♀ (reared), 11 nymphs, 20.I.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); Amaraji, (Cachoeira do Rio Morto, 8°26'34.1"S 35°24'22.1"W, 363m), 5 nymphs, 20.I.2011, L.R.C. Lima coll. (UFPE).

***Hermanella maculipennis* (Ulmer, 1920)**

Previous distribution. BRAZIL: Atlântico Nordeste Oriental Basin (PE), Atlântico Sul Basin (SC), and Paraná River Basin (PR). ARGENTINA.



Figs. 2–5. *Farrodes tepui* Domínguez, Molineri & Peters, 1996. 2, male imago l.v.; 3, abdomen d.v.; 4, abdomen l.v.; 5, Genitalia v.v. (d.v. dorsal view; l.v. lateral view; v.v. ventral view).

Material. PERNAMBUCO: São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 3 nymphs, 28.VIII.2010, L.R.C. Lima col. (UFPE); same as preceding except 1 nymph, 26.II.2011, L.R.C. Lima, F.F. Salles cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Soldado, 8°45'52.9"S 35°53'06.1"W, 321m), 2 nymphs, 4 ♂ (light trap), 12.XII.2009, LRC Lima col. (CZNC).

#### *Hydrosmilodon gilliesae* Thomas e Péru, 2004

Previous distribution. BRAZIL: Atlântico Nordeste Oriental Basin (PE); Atlântico Sudeste Basin (ES). FRENCH GUIANA.

Material. PERNAMBUCO: Amaraji, (Rio Amaraji próximo a Usina Amaraji, 8°21'48.9"S, 35°28'49.0"W, 320m), 2 nymphs, 20.I.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); Amaraji, (Cachoeira do Rio Morto, 8°26'34.1"S 35°24'22.1"W, 363m), one nymph, 20.I.2011, L.R.C. Lima

coll. (UFPE); Bonito, (Rio Verde, Camping Bonito Ecoparque, 8°31'58.6"S 35°43'26.3"W), 14 nymphs, 28.I.2010, L.R.C. Lima coll. (UFPE); Cabo de Santo Agostinho, (Rio Pavão, 8°17'51.5"S 35°03'57.1"W, 58m), two nymphs, 18.VIII.2010, L.R.C. Lima coll. (UFPE); Jaqueira, (Rio Pirangi, PE-126 próximo a ponte 8°44'53.0"S 35°48'51.1"W, 189m), 13 nymphs, 12.XII.2009, L.R.C. Lima coll. (UFPE); same as preceding except 6 nymphs, 23.II.2010 (UFPE); same as preceding except 3 nymphs, 17.IV.2010 (UFPE); Ribeirão, (Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124m), 1 nymph, 21.I.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 7 nymphs, 13.XII.2009, L.R.C. Lima coll. (UFPE).

#### *Hydrosmilodon plagatus* Lima, Nascimento & Salles, 2012

Previous distribution. BRAZIL: Atlântico Nordeste Oriental Basin (PE); Atlântico Sudeste Basin (ES).

Material. PERNAMBUCO: Jaqueira, (Rio Piranji, 8°44'53.0"S 35°48'51.1"W, 189m), 3 nymphs, 12.XII.2009, L.R.C. Lima coll. (UFPE); same as preceding except 2 nymphs, 23.II.2010 (UFPE); same as preceding except 24 nymphs, 1 ♂ (light trap), 17.IV.2010 (CZNC).

***Leentvaaria palpalis* Demoulin, 1966**

Previous distribution. BRAZIL: Atlântico Nordeste Oriental Basin (PE). SURINAME.

Material. PERNAMBUCO: Jaqueira, (Rio Piranji, 8°44'53.0"S 35°48'51.1"W, 189m), 1 nymph, 12.XII.2009, L.R.C. Lima coll. (UFPE); same as preceding except one nymph, 23.II.2010; same as preceding except 2 nymphs, 17.IV.2010 (UFPE); Ribeirão, (Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124m), 11 nymphs, 21.I.2011, L.R.C. Lima, G. Nicacio cols. (UFPE).

***Lisetta ernsti* Thomas & Dominique, 2005**

(Figs. 6–12)

Previous distribution. FRENCH GUIANA.

Material. PERNAMBUCO: São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 1 nymph, 13.XII.2009, L.R.C. Lima coll. (UFPE).

Remarks. First record of the genus and consequently of the species from Brazil.

***Miroculis (Miroculis) fittkai* Savage & Peters, 1983**

Previous distribution. BRAZIL: Amazon Basin (PA) and Atlântico Sudeste Basin (ES). SURINAME and VENEZUELA.

Material. PERNAMBUCO: Camaragibe, (Rio Besouro 7°59'06.4"S 35°00'13.9"W, 66m), 1 nymph, 08.VII.2009, L.R.C. Lima coll. (CZNC); same as preceding except 3 nymphs, 1 ♀ (reared), 08.IX.2009 (UFPE); same as preceding except 1 nymph, 28.II.2010 (CZNC); Rio Formoso, (Riacho da Gameleira, Reserva Biológica de Saltinho, 8°43'12.3"S 35°10'32.9"W, 47m), 6 nymphs, 24.IX.2009, L.R.C. Lima Coll. (UFPE); same as preceding except 1 nymph, 07.VIII.2010 (UFPE); Tamandaré, (Reserva Biológica de Saltinho, Córrego da Sede S8°43'48.3", W35°10'35.3", 46m), 3 nymphs, 16.XI.2009, L.R.C. Lima coll. (CZNC); same as preceding except 1 ♀ (reared), 13.V.2010 (CZNC); same as preceding except 1 nymph, 2 ♂ (reared), 8 ♀ (reared), 08.VIII.2010 (CZNC).

***Miroculis* sp. Savage & Peters, 1983**

Material. PERNAMBUCO: Amaraji, (Rio Amaraji próximo a Usina Amaraji, 8°21'48.9"S 35°28'49.0"W, 320m), 1 ♂ (light trap), 20.I.2011, L.R.C. Lima (UFPE); same as preceding except 1 ♂ (light trap), 21.IV.2012, L.R.C. Lima (UFPE); same as preceding except 2 ♂ (light trap), 28.IV.2012, L.R.C. Lima (UFPE).

Remarks. Using the key to male imagos proposed by Domínguez *et al.* (2006), *Miroculis* sp., would key out in couplet 7(6), which includes *Miroculis (Miroculis) marauiaie* Savage & Peters, 1983 and *Miroculis (Miroculis) rossi* Edmunds, 1963. Nevertheless, *Miroculis* sp. differs from *M. (M.) rossi* by the size of penes (0.8x the length of forceps segment I in *Miroculis* sp., 2.0–2.2 in *M. (M.) rossi*), as well

as the number of facets in male compound eyes (14 facets in *Miroculis* sp., 6 facets in *M. (M.) rossi*). Regarding *M. (M.) marauiaie*, the shape of penes (not apically hooked in *Miroculis* sp.) and posteromedian margin of styliiger plate (excavated medially in *Miroculis* sp.) clearly distinguishes them. It probably represents an undescribed species.

***Needhamella ehrhadi* (Ulmer, 1920)**

Previous distribution. Brazil: Atlântico Nordeste Oriental Basin (PE); Atlântico Sudeste Basin (RJ), Atlântico Sul Basin (RS), Paraná River Basin (GO, PR), and Uruguai River Basin (SC, RS). ARGENTINA and URUGUAY.

Material. PERNAMBUCO: Amaraji, (Rio Amaraji, 8°21'48.9"S, 35°28'49.0"W, 320m), 3 ♂ (light trap), 20.I.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); Amaraji, (Cachoeira do Rio Morto, 8°26'34.1"S, 35°24'22.1"W, 363m), 1 nymph, 20.I.2011, L.R.C. Lima coll. (UFPE); Jaqueira, (Rio Pirangi, PE-126 próximo a ponte, 8°44'53.0"S 35°48'51.1"W, 189m), 1 ♂ (light trap), 12.XII.2009, L.R.C. Lima (UFPE); same as preceding except 14 nymphs, 1 ♂ (reared), 17.IV.2010 (UFPE); Ribeirão, (Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124m), 1 nymph, 21.I.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); same as preceding except 4 ♂ (light trap), 05.II.2011 (UFPE); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532 m), 30 nymphs, 26.II.2011, L.R.C. Lima, F.F. Salles cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Soldado, 8°45'52.9"S, 35°53'06.1"W, 321m), 1 ♂ (light trap), 12.XII.2009, L.R.C. Lima coll. (CZNC).

***Simothraulopsis (Maculognathus) sabalo* Kluge, 2007**

(Figs. 13–18)

Previous distribution. PERU.

Material. PERNAMBUCO: Camaragibe, (Rio Besouro, 7°59'06.4"S 35°00'13.9"W, 66m), 2 nymph, 08.IX.2009, L.R.C. Lima coll. (UFPE); Jaqueira, (Rio Pirangi, PE-126 próximo a ponte, 8°44'53.0"S 35°48'51.1"W, 189m), 5 ♂ (light trap), 12.XII.2009, L.R.C. Lima coll. (CZNC); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 5 nymphs, 5 ♂ (light trap), 13.XII.2009, L.R.C. Lima coll. (UFPE); same as preceding 4 nymphs, 26.II.2011, L.R.C. Lima, F.F. Salles cols. (UFPE); Tamandaré, (Reserva Biológica de Saltinho, Rio Mamucabas, 8°43'21.6"S 35°11'14"W, 90m), 2 ♂ (light trap), 08.VIII.2010, L.R.C. Lima coll. (UFPE); Tamandaré, (Reserva Biológica de Saltinho, Córrego da Sede, S8°43'48.3", W35°10'35.3", 46m), 7 nymphs, 2 ♀ (light trap), 1 ♂ (light trap), 04.V.2010, L.R.C. Lima coll. (UFPE); Amaraji, (Rio Amaraji próximo a Usina Amaraji, 8°21'48.9"S 35°28'49.0"W, 320m), 6 nymphs, 6 ♂ (light trap), 20.I.2011, L.R.C. Lima, G. Nicacio cols. (UFPE).

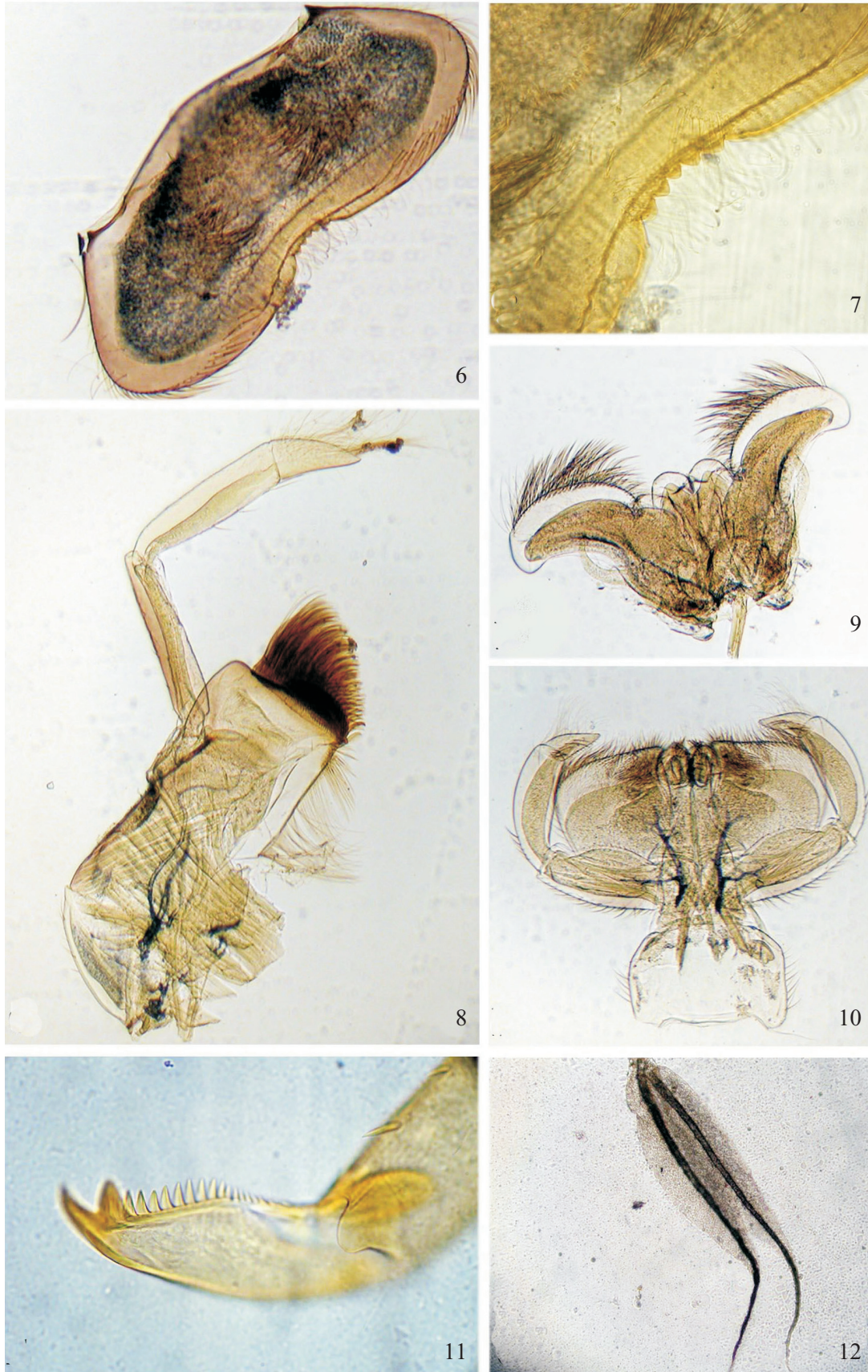
Remarks. First record from Brazil.

***Simothraulopsis janae* Mariano, 2010**

Previous distribution. BRAZIL: São Francisco River Basin (BA).

Material. PERNAMBUCO: Amaraji, (Rio Amaraji próximo a Usina Amaraji, 8°21'48.9"S 35°28'49.0"W, 320m), 12 ♂ (light trap), 20.I.2011, L.R.C. Lima, G. Nicacio cols. (UFPE); Ribeirão, (Rio Amaraji, Cachoeira do Amor, 8°26'34.1"S 35°24'22.1"W, 124m), 6 ♂ (light trap), 05.II.2011, L.R.C. Lima, G. Nicacio cols. (UFPE).





Figs. 6–12. *Lisetta ernsti* Thomas & Dominique, 2005. 6, labrum; 7, anterior margin of labrum; 8, maxilla; 9, hypopharynx; 10, labium; 11, tarsal claw I; 12, gill IV.



Figs. 13–18. *Simothraulopsis (Maculognathus) sabalo* Kluge, 2007. 13, male imago l.v.; 14, nymph d.v.; 15, hind wing; 16, left mandible; 17, genitalia v.v.; 18, tarsal claw I (d.v. dorsal view; v.l. lateral view; v.v. ventral view).

### *Terpides sooretamae* Boldrini & Salles, 2009

Previous distribution. BRAZIL: Araguaia-Tocantins Basin (MT) and Atlântico Sudeste Basin (ES).

Material. PERNAMBUCO: Bonito, (Rio Verde, Camping Bonito Ecoparque, 8°31'58.6"S 35°43'26.3"W), 4 nymphs, 1 F (reared), 1 M (reared), 27.I.2010, L.R.C. Lima coll. (UFPE); Bonito, (Rio Verde, Camping Acampamento do Mágico, 8°30'46.8"S 35°43'14"W), 3 nymphs, 28.I.2010, L.R.C. Lima, G. Nicacio cols. (UFPE); São Benedito do Sul, (Cachoeira Poço do Caboclo, 8°45'53.4"S 35°55'16.1"W, 532m), 2 nymphs, 2 M (reared), 2 F (reared), 26.II.2011, L.R.C. Lima, F.F. Salles cols. (UFPE).

### Polymitarciidae

#### *Campsurus duplicatus* Spieth, 1943

Previous distribution. BRAZIL: Amazon Basin (AM).

Material. PERNAMBUCO: Amaraji, (Rio Amaraji próximo a Usina Amaraji, 8°21'48.9"S 35°28'49.0"W, 320m), 1 F (light trap), 1 M (light trap), 20.I.2011, L.R.C. Lima, G. Nicacio cols. (UFPE).

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