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Updated checklist of Hemerobiidae (Neuroptera) from Brazil and new distributional records in the Neotropical Region

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ABSTRACT

Hemerobiidae (Insecta, Neuroptera) is a cosmopolitan clade that comprises about 600 described species distributed into 26 genera. Since the publication of revisions to *Hemerobius*, *Megalomus*, *Nusalala* and *Nomerobius*, new records have been added in literature and taxonomic modifications have occurred at the genus level. The aim of this study was to update a checklist of Hemerobiidae species from Brazil and of specimens deposited at Coleção de Invertebrados do Instituto Nacional de Pesquisa da Amazônia (INPA), Manaus, Brazil; in order to summarize the geographical data of species in Brazilian states and in the Neotropical Region and to present new distributional data. The INPA collection holds 19 nominal species (55.2% of the all specimens identified at species level) of hemerobiids into eight genera and six subfamilies, mainly from the Neotropical Region; the remaining studied specimens were identified to the genus level. *Megalomus marginatus* is reported for the first time in Brazil and *Nusalala dispar* in Ecuador. Moreover, ten new records for the Brazilian states are presented: two to *Nusalala tessellata* and *Hemerobius*, and one each to *Megalomus impudicus*, *Notiobiella maculata*, *Sympherobius ariasi*, *Megalomus*, *Nusalala* and *Sympherobius*.

KEYWORDS: *Hemerobius*, INPA, *Megalomus*, *Nomerobius*, *Nusalala*.

Checklist dos Hemerobiidae (Neuroptera) do Brasil e novos registros de distribuição para a Região Neotropical

RESUMO

Hemerobiidae (Insecta, Neuroptera) é um clado cosmopolita com cerca de 600 espécies descritas e distribuídas em 26 gêneros. Eles são predadores de afídeos, coccídeos e outros insetos de corpo macio. Após a publicação das revisões de *Hemerobius*, *Megalomus*, *Nusalala* e *Nomerobius* ocorreram modificações taxonômicas em nível de gênero e novos registros de distribuição geográfica. O objetivo deste estudo é produzir uma lista das espécies de Hemerobiidae do Brasil e dos espécimes depositados na Coleção de Invertebrados do Instituto Nacional de Pesquisa da Amazônia (INPA), Manaus, Brasil, de forma a sumarizar os dados geográficos das espécies em estados brasileiros e na Região Neotropical e, apresentar novos dados de distribuição geográfica. No INPA existem 19 espécies nominais de Hemerobiidae (55,2% dos exemplares estudados) de oito gêneros e seis subfamílias; o restante dos espécimes estudados foi identificado em nível genérico. *Megalomus marginatus* é relatada pela primeira vez para o Brasil e *Nusalala dispar* para o Equador (Celica). Além disso, dez novos registros para os estados brasileiros são apresentados: dois para *Nusalala tessellata* e *Hemerobius*, um para *Megalomus impudicus*, *Notiobiella maculata*, *Sympherobius ariasi*, *Megalomus*, *Nusalala* e *Sympherobius*.

PALAVRAS-CHAVE: *Hemerobius*, INPA, *Megalomus*, *Nomerobius*, *Nusalala*.

INTRODUCTION

Hemerobiidae (Insecta, Neuroptera) is a cosmopolitan clade popularly known as the brown lacewings. They are well known as predators of larvae and adults of small soft-bodied arthropods (Neuenschwander *et al*. 1975; New 1975) like aphids and coccids, among others (Penny and Monserrat 1983). Presently, there are about 600 described species of hemerobiids, which surely represent only a fraction of extant species, distributed into 26 genera and 10 subfamilies (Oswald 1993, 1994). In the Neotropics there are records of about 100 species (Monserrat 1990, 1996, 1997, 1998, 2000; Oswald 1990) into 14 genera and eight subfamilies (Oswald 1993, 1994; Monserrat and Deretsky 1999). Most of these are species are uncommon and are represented by few individuals in collections.

Catalogues of the Neotropical fauna of Neuroptera were published by Stange (1967) and Penny (1977). Monserrat (1990) published a catalogue of the world fauna of Hemerobiidae and the number of species of these predators in the Neotropics and their distribution have changed significantly. These changes mainly occurred after revisions of *Hemerobius* L. and *Megalomus* Rambur from Latin America and of *Nusalala* Navás of the Neotropics (Monserrat 1996, 1997, 2000) and some isolated papers that reported new records and descriptions of new species. Machado and Martins (2016) summarized the information about the fauna of the Brazilian Hemerobiidae.

Wilson (2002) stated that species are the basic unit of biodiversity. Therefore, strategies for biodiversity conservation should be based on information about species' distributions (Hortal *et. al.* 2008). A great deal of biological diversity is still waiting to be formally described and cataloged (Whittaker *et al.* 2005). In addition, there is an inadequate knowledge of living organism distributions at the global (i.e. Linnean shortfall), regional, and even local level, the Wallacean shortfall (Brown and Lomolino 1998; Lomolino 2004). Most taxa require sampling in much of the world and this situation also applies to the Neotropical Hemerobiidae.

The aim of this study was to update a checklist of the Hemerobiidae species from Brazil based on bibliography sources and studied specimens deposited at Coleção de Invertebrados do Instituto Nacional de Pesquisa da Amazônia (INPA), Manaus, Brazil, to present new distributional records for some species, and to summarize the geographical data of species in Brazil and Neotropical regions.

MATERIALS AND METHODS

The list of species of the Hemerobiidae from Brazil as presented here has been compiled from data resulting from studies published between 1965 and 2016, and from data resulting from a visit of the first author to the INPA Collection, which took place in December 2014 (Table 1).

Observations were made under magnification using a stereomicroscope (MZ 9.5, Leica, Swiss); color images were obtained with a digital camera (DFC 295, Leica, Germany) attached to a stereomicroscope (M205C APO, Leica, Singapore). Serial images from different layers were combined with Helicon Focus software (version 5.3) and figures were prepared using Adobe Photoshop software (version 11.0).

The genitalia were hot-macerated in a 10% KOH solution for about 15 minutes and subsequently immersed, for one hour, in a 10% $C_2H_4O_2$ solution for neutralization. The genitalia structures were studied and stored in glycerin in glass microvials placed on the same pin of the respective specimens. Species identifications were based on Monserrat (1984, 1996, 1997, 2000); Monserrat and Penny (1983) and Oswald (1990, 1993).

In the text, subfamilies, genera and species from Brazil were organized in alphabetical order; related references and collecting sites of Neotropical species were provided. The lists of synonyms were omitted and remitted to available literature.

The following abbreviations related to the names of Brazilian States were used: AC = Acre, AM = Amazonas, BA = Bahia, DF = Distrito Federal, ES = Espírito Santo, GO = Goiás, MA = Maranhão, MG = Minas Gerais, MT = Mato Grosso, PA = Pará, PR = Paraná, RJ = Rio de Janeiro, RO = Rondônia, RS = Rio Grande do Sul, SC = Santa Catarina and SP = São Paulo.

The distribution data of the Neotropical species of Hemerobiidae were included in distribution maps prepared with the software DIVA-GIS 7.5.0. The distributions of species in each country and even in Brazilian states are not accurate because most of the studied species did not have geographic coordinate data on the labels.

RESULTS

In December 2014, there were 230 specimens of Hemerobiidae of six subfamilies, eight genera and nineteen nominal species of Hemerobiidae housed in the INPA Collection (Table 1), including new occurrences in Brazil and Ecuador (indicated by *) and to Brazilian states (**).

The majority (53.0%) of the specimens housed in the INPA Collection were collected in Chile, followed by Brazil (35.2%), Ecuador (9.6%) and the USA (2.2%).

There are few Hemerobiidae specimens collected in areas of the Brazilian Amazon deposited in the INPA Collection and they correspond to 12.3% of the total of the material collected at Brazil and 5.6% of the total of Hemerobiidae specimens deposited there. About 50% of the total of Brazilian hemerobiids deposited at the INPA Collection is from Nova Teutônia, in the municipality of Seara, in Santa Catarina State.

Table 1. List of Hemerobiidae (Insecta, Neuroptera) species housed in the Instituto Nacional de Pesquisas da Amazônia Invertebrate Collection (INPA), Manaus, Brazil, in December 2014. AM= Amazonas, BA= Bahia, GO= Goiás, MA= Maranhão, MG= Minas Gerais, MT= Mato Grosso, PA= Pará, PR= Paraná, RJ= Rio de Janeiro, RO= Rondônia, RS= Rio Grande do Sul, SC= Santa Catarina and USA= United States of America. *= new record from country; **= new record from Brazilian states.

Subfamily, genus, specie	Author, year	n	country
Drepanepteryginae			
Gayomyia	Banks, 1913		
G. falcata	(Blanchard, 1851)	2	Chile
Hemerobiinae			
Hemerobius	Linnaeus, 1758		
H. bolivari	Banks, 1910	30	Ecuador, Chile, Brazil (PR, SC)
H. chilensis	Nakahara, 1965	2	Chile
H. tolimensis	Banks, 1910	2	Ecuador
Hemerobius sp.		41	USA, Ecuador, Chile, Brazil (AM**, RO, BA**, PR, SC)
Megalominae			
Megalomus	Rambur, 1842		
Me. flinti	(Nakahara, 1965)	7	Chile
Me. impudicus	(Gerstaecker, 1888)	20	Ecuador, Brazil (MG, SC, RS**)
Me. marginatus	Banks, 1910	1	Brazil* (RS)
Me. rafaeli	Penny & Monserrat, 1983	1	Brazil (AM)
Me. stangei	González Olazo, 1981	2	Chile
Megalomus sp.		5	Chile, Brazil (MA**, PR)
Microminae			
Micromus	Rambur, 1842		
Mi. posticus	(Walker, 1853)	1	USA
Mi. subanticus	(Walker, 1853)	1	USA
Nusalala	Navás, 1913		
Nu. dispar	(Banks, 1910)	4	Ecuador*
Nu. neotropica	(Esben-Petersen, 1914)	1	Brazil (SC)
Nu. tessellata	(Gerstaecker, 1888)	27	Ecuador, Brazil (RO, BA, MT**, GO**, RJ, PR, SC)
Nusalala sp.		2	Brazil (MA**, GO)
Notiobiellinae			
Notiobiella	Banks, 1909		
No. maculata	Monserrat & Penny, 1983	3	Brazil (AM, PA**)
No. paddiae	Monserrat, 1984	1	Brazil (AM)
Sympherobiinae			
Nomerobius	Navás, 1916		
Nom. psychodoides	(Blanchard, 1851)	3	Chile
Nom. signatus	(Hagen, 1861)	18	Chile
Nomerobius sp.		2	Chile
Sympherobius	Banks, 1904		
S. ariasi	Penny & Monserrat, 1983	1	Brazil (MG**)
Sympherobius sp.		53	Chile, Brazil (AM, MA**)

DISCUSSION

The results obtained reveal the incipient nature of knowledge of Hemerobiidae in Brazil, which comprises about 20% of species of the Neotropical Hemerobiidae. The need is evident for further collection efforts in order to get a good representation of the Brazilian and Amazonian faunas.

In the INPA Collection there are four specimens of *Nusalala dispar* (Banks, 1910) (Figure 1) that had only been found in Colombia, Hawaii, and Venezuela (Penny 1977; Monserrat 1990, 2000). This study extends the range of *N. dispar* to Ecuador (Celica), about 1,100 km to the southwest in relation to the previous records. The specimens examined in this study match the description of *N. dispar* and are easily

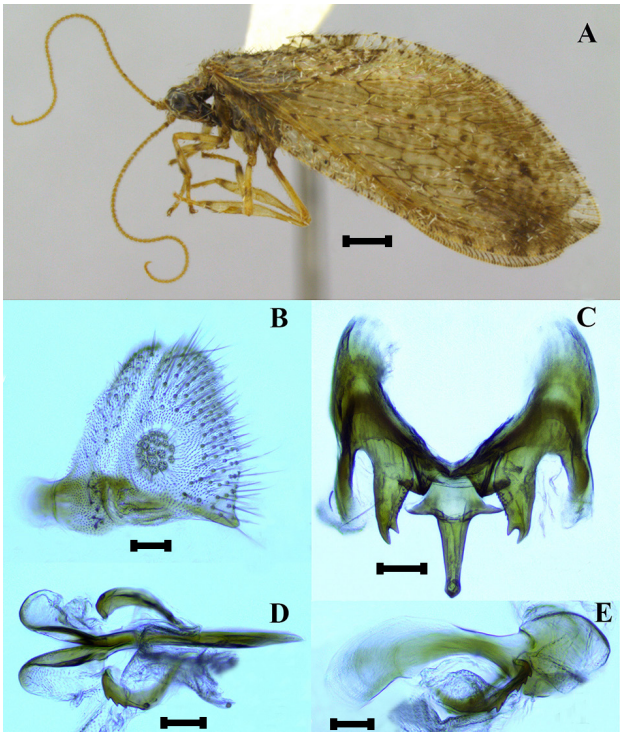

Figure 1. *Nusalala dispar* (Banks, 1910) (Neuroptera, Hemerobiidae). A. *Habitus*, scale bar= 1 mm; B. Ninth tergite and ectoproct, lateral view; C. Gonarcus, dorsal view; D. Parameres, dorsal view; E. Parameres, lateral view. Scale bar in B-E= 0.1 mm. This figure is in color in the electronic version.

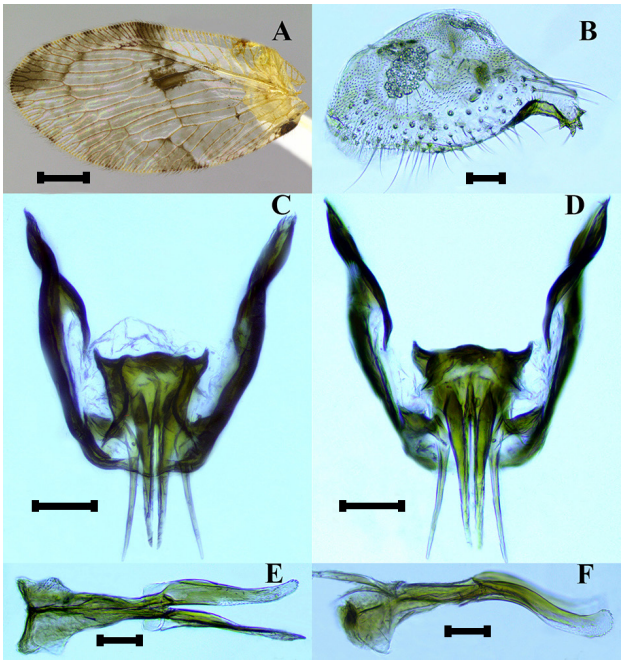

Figure 2. *Megalomus marginatus* (Gerstaecker, 1888) (Neuroptera, Hemerobiidae). A. Forewing, scale bar= 1 mm; B. Ectoproct, lateral view; C. Gonarcus, dorsal view, D. Gonarcus, ventral view; E. Parameres, dorsal view, F. Parameres, lateral view. Scale bar in B-F= 0.1 mm. This figure is in color in the electronic version.

recognized by the morphological characteristics of male terminalia (Figures 1B–E), as described by Monserrat (2000).

The INPA Collection has only one damaged specimen of *Megalomus marginatus* Banks, 1910 with intact terminalia (Figure 2), collected at Rio Grande do Sul State, Brazil. Previous records indicate that its distribution was restricted to Panama, Colombia and Venezuela (Penny 1977; Monserrat 1990, 1997) and, thus, this finding extends the distribution range of *M. marginatus* to Brazil (RS), about 4,400 km southeastern of previous records. The terminalia of the studied specimen matches the description of *M. marginatus* and is easily recognized by the morphology of the male ectoproct, gonarcus and parameres (Figures 2B–E), as described by Monserrat (1997).

The specimens of *Hemerobius* and *Sympherobius* were identified to the genus level along with some damaged specimens of *Nusalala* and *Megalomus* (Table 1). *Megalomus*, *Nusalala*, and *Sympherobius* are reported for the first time in the state of Maranhão and *Hemerobius* in the states of Amazonas and Bahia; these genera were easily recognized with the identification key proposed by Oswald (1993).

Moreover, five new records for the Brazilian states are presented: *Nusalala tessellata* (Gerstaecker, 1888) in Mato Grosso and Goiás, *Megalomus impudicus* (Gerstaecker, 1888) in Rio Grande do Sul, *Notiobiella maculata* Monserrat & Penny, 1983 in Pará and *Sympherobius ariasi* Penny & Monserrat, 1983 in Minas Gerais (Table 1).

The specimens of *Nomerobius signatus* (Hagen, 1888) (Figure 3) examined in this study were recognized by the shape of the apex of the ninth sternite (Figures 3B–D) and by the anteroventral margin of the male ectoproct (Figure 3B), as described by Oswald (1990). Most of specimens of *N. signatus* showed variation in number and position of microsetae along the shaft and apex of the terminal process of the ninth sternite (Figures 3C–D), which was interpreted as intraspecific variation.

List of species of Hemerobiidae from Brazil

Subfamily Hemerobiinae

Hemerobius bolivari Banks, 1910

Synonyms see Monserrat (1996): 447-449. Material examined: see Table 1.

Distribution (Figure 4A). **Brazil (RO, DF, MG, SP, RJ, PR, SC, RS)**, Mexico, Guatemala, Costa Rica, Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia, Chile, Argentina, Paraguay, Uruguay (Penny 1977; Nakahara 1965;

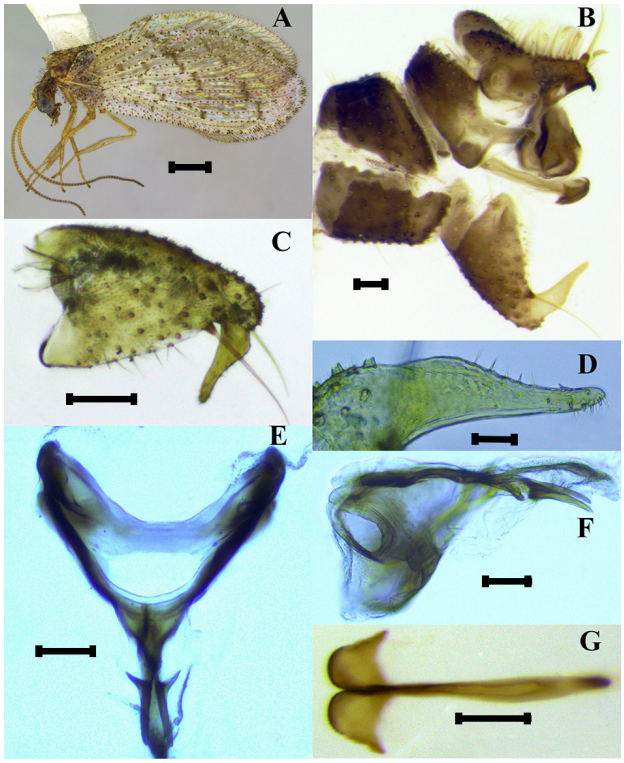

Figure 3. *Nomerobius signatus* (Hagen, 1888) (Neuroptera, Hemerobiidae). A. *Habitus*, scale bar= 1 mm; B. Apex of male abdomen, lateral view; C. Ninth sternite, lateral view; D. Apex of the terminal process of the ninth sternite, lateral view; E. Gonarcus, dorsal view; F. Gonarcus, lateral view; G. Parameres, dorsal view. Scale bar in B-G= 0.1 mm. This figure is in color in the electronic version.

Penny and Monserrat 1983; Monserrat 1990, 1996, 1998; Lara and Freitas 2003; Lara *et al.* 2010; Oliveira *et al.* 2013).

Hemerobius domingensis Banks, 1941

Distribution (Figure 4A). **Brazil (SP, PR)**, Cuba, Dominican Republic (Penny 1977; Monserrat 1990, 1996; Lara and Freitas 2003).

Hemerobius exceptatus Nakahara, 1965

Distribution (Figure 4A). **Brazil (RJ, SC)**, Colombia, Venezuela, Peru (Penny 1977; Nakahara 1965; Monserrat 1990, 1996, 1998).

Hemerobius gaitoi Monserrat, 1996

Distribution (Figure 4A). **Brazil (MG, SP, PR, RS)**, Mexico, Guatemala, Dominican Republic, Costa Rica, Panama, Venezuela, Ecuador (Monserrat 1996, 1998, 2002; Lara and Freitas 2003; Silva *et al.* 2015).

Hemerobius hernandezi Monserrat, 1996

Distribution (Figure 4A). **Brazil (MG, RS)**, Mexico, Guatemala, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Paraguay (Monserrat 1996, 1998, 2002; Silva *et al.* 2015).

Subfamily Megalominae

Megalomus impudicus (Gerstaecker, 1888)**

Synonyms see Monserrat (1997): 146-147. Material examined: see Table 1.

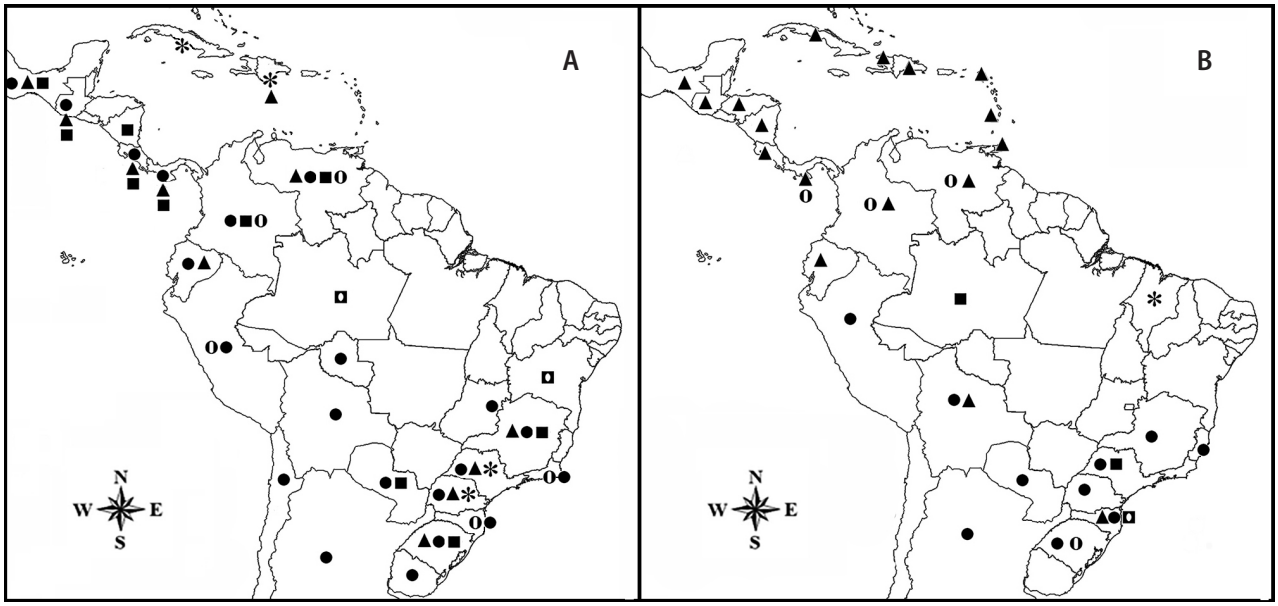

Figure 4. Geographical distribution of the species Hemerobiidae (Neuroptera) recorded to Brazil and their occurrence in the Neotropics. A. *Hemerobius bolivari* Banks, 1910 (•), *Hemerobius domingensis* Banks, 1941 (*), *Hemerobius exceptatus* Nakahara, 1965 (º), *Hemerobius gaitoi* Monserrat, 1996 (▲), *Hemerobius hernandezi* Monserrat, 1996 (▪) and *Hemerobius* sp. (▫); B. *Megalomus impudicus* (Gerstaecker, 1888) (•), *Megalomus marginatus* Banks, 1910 (º), *Megalomus minor* Banks, 1905 (▲), *Megalomus rafaeli* Penny & Monserrat, 1983 (▪), *Megalomus ricoi* Monserrat, 1997 (▫); and *Megalomus* sp. (*).

Distribution (Figure 4B). **Brazil (MG, ES, SP, PR, SC, RS)**, Peru, Bolivia, Argentina, Paraguay (Penny 1977; Monserrat 1990, 1997; Lara *et al*. 2010; Oliveira *et al*. 2013). Remarks: This note extends the distribution range of *Megalomus impudicus* to Rio Grande do Sul State, Brazil.

Megalomus marginatus Banks, 1910*

Material examined: see Table 1 and Figure 2.

Distribution (Figure 4B). **Brazil (RS)**, Panama, Colombia,Venezuela (Penny 1977; Monserrat 1990, 1997). Remarks: This note extends the distribution range of *Megalomus marginatus* to Brazil (RS), about 4,400 km to the southeast from the previous records.

Megalomus minor Banks, 1905

Synonyms see Monserrat (1997): 149-150.

Distribution (Figure 4B). **Brazil (SC)**, Mexico, Cuba, Haiti, Dominican Republic, Guatemala, Honduras, Nicaragua, Saint Vincent and Grenadines, Trinidad & Tobago, West Indies, Costa Rica, Panama, Colombia, Venezuela, Ecuador, Bolivia (Penny 1977; Monserrat 1990, 1997, 2002).

Megalomus rafaeli Penny & Monserrat, 1983

Material examined: see Table 1.

Distribution (Figure 4B). **Brazil (AM, SP)** (Penny and Monserrat 1983; Monserrat 1997; Lara *et al*. 2010).

Megalomus ricoi Monserrat, 1997

Distribution (Figure 4B). **Brazil (SC)** (Monserrat 1997).

Subfamily Microminae

Nusalala erecta Navás, 1913

Synonyms see Monserrat (2000): 120.

Distribution (Figure 5A). **Brazil** (was not possible find the state(s)), Ecuador, Peru, Argentina, Paraguay (Penny 1977; Monserrat 1990, 2000, 2002, 2004).

Nusalala ilusionata Monserrat, 2004

Distribution (Figure 5A). **Brazil (PR, RS)** (Monserrat 1990, 2000, 2004).

Nusalala neotropica (Esben-Petersen, 1914)

Synonyms see Monserrat (2000): 99. Material examined: see Table 1 and Figure 1.

Distribution (Figure 5A). **Brazil (BA, RJ, SC)**, Colombia, Venezuela, Ecuador, Peru, Bolivia, Argentina, Paraguay (Penny 1977; Monserrat 1990, 2000).

Nusalala tessellata (Gerstaecker, 1888)**

Synonyms see Monserrat (2000): 115-116. Material examined: see Table 1.

Distribution (Figure 5A). **Brazil (RO, MT, GO, DF, MG, ES, SP, RJ, PR, SC, RS)**, Mexico, Guatemala, Dominica, Porto Rico, British Virgin Islands, Trinidad & Tobago, Honduras, Costa Rica, Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia, Paraguay, Argentina (Penny 1977;

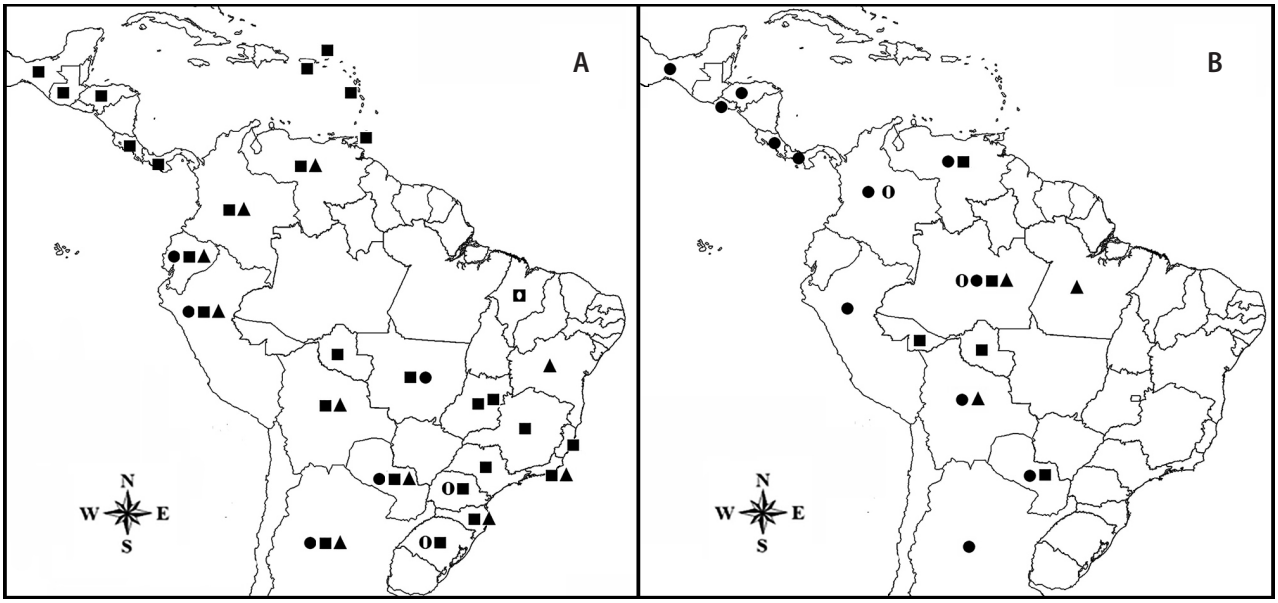

Figure 5. Geographical distribution of the species Hemerobiidae (Neuroptera) recorded to Brazil and their occurrence in the Neotropics. A. *Nusalala erecta* Navás, 1913 (•), *Nusalala ilusionata* Monserrat, 2004 (º), *Nusalala neotropica* (Esben-Petersen, 1914), (▲), *Nusalala tessellata* (Gerstaecker, 1888) (▪) and *Nusalala* sp. (▫); B. *Notiobiella brasiliensis* Monserrat & Penny, 1983 (º), *Notiobiella cixiiformis* (Gerstaecker, 1888) (•), *Notiobiella maculata* Monserrat & Penny, 1983 (▲) and *Notiobiella paddiae* Monserrat, 1984 (▪).

Monserrat 1990, 2000, 2002, 2004; Penny and Monserrat 1983; Lara and Freitas 2002; Lara *et al*. 2010; Oliveira *et al*. 2013). Remarks: This note extends the distribution range of *Nusalala tessellata* to Mato Grosso and Goiás States, Brazil.

Subfamily Notiobiellinae

Notiobiella brasiliensis Monserrat & Penny, 1983

Distribution (Figure 5B). **Brazil (AM)**, Colombia (Monserrat and Penny 1983; Penny and Monserrat 1983; Monserrat 1990).

Notiobiella cixiiformis (Gerstaecker, 1888)

Synonyms see Monserrat (1984): 89 and Monserrat (1996): 404.

Distribution (Figure 5B). **Brazil (AM)**, Mexico, El Salvador, Honduras, Costa Rica, Panama, Colombia, Venezuela, Peru, Bolivia, Argentina, Paraguay (Nakahara 1965, Penny 1977; Monserrat and Penny 1983; Monserrat 1984, 1990, 1998, 2002; González Olazo 1992).

Notiobiella maculata Monserrat & Penny, 1983**

Material examined: see Table 1.

Distribution (Figure 5B). **Brazil (AM, PA)**, Bolivia (Monserrat and Penny 1983; Penny and Monserrat 1983; Monserrat 1990, 1998). Remarks: This note extends the distribution range of *Notiobiella maculata* to Pará State, Brazil.

Notiobiella paddiae Monserrat, 1984

Material examined: see Table 1.

Distribution (Figure 5B). **Brazil (AM, AC, RO)**, Venezuela, Paraguay (Monserrat and Penny 1983; Penny and Monserrat 1983; Monserrat 1984, 1990).

Subfamily Sympherobiinae

Nomerobius psychodoides (Blanchard, 1851)

Synonyms see Oswald (1990): 21. Material examined: see Table 1.

Distribution (Figure 6). **Brazil (PA, SP)**, Peru, Chile, Argentina, Uruguay (Nakahara 1965; Penny 1977; Penny and Monserrat 1983; Monserrat 1990, 1998, 2003, 2008; Oswald 1990; González Olazo 1992; Lara *et al*. 2010).

Sympherobius amazonicus Penny & Monserrat, 1983

Distribution (Figure 6). **Brazil (AM)** (Penny and Monserrat 1983; Monserrat 1990).

Sympherobius ariasi Penny & Monserrat, 1983**

Material examined: see Table 1.

Distribution (Figure 6). **Brazil (AM, PA, MG, SP)** (Penny and Monserrat 1983; Monserrat 1990). Remarks: This note extends the distribution range of *Sympherobius ariasi* to Minas Gerais State, Brazil.

Sympherobius gayi Navás, 1910

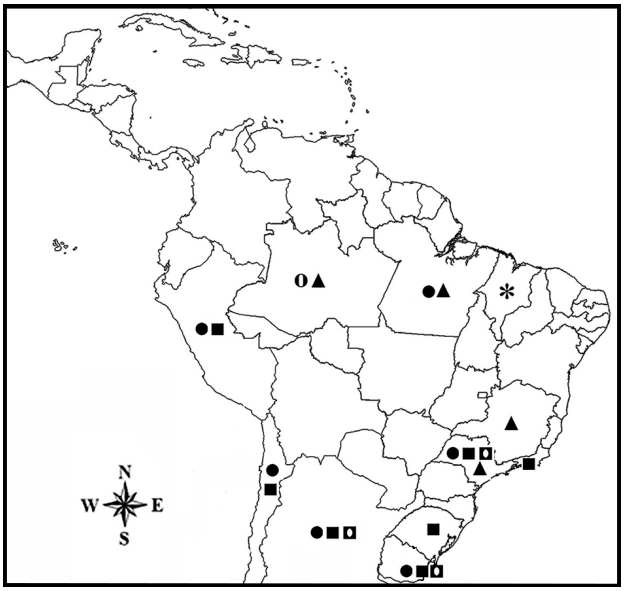

Figure 6. Geographical distribution of the species *Nomerobius psychodoides* (Blanchard, 1851), *Sympherobius amazonicus* Penny & Monserrat, 1983 (o), *Sympherobius ariasi* Penny & Monserrat, 1983 (▲), *Sympherobius gayi* Navás, 1910 (▪), *Sympherobius mirandus* Navás, 1920 (▫) and *Sympherobius* sp. (*) recorded to Brazil and their occurrence in the Neotropics.

Synonyms see Monserrat (1998): 131-132.

Distribution (Figure 6). **Brazil (SP, RJ, RS)**, Peru, Chile, Argentina, Uruguay (Nakahara 1965; Penny 1977; Monserrat 1990, 1998, 2003, 2008; Monserrat and Deretsky 1999).

Sympherobius mirandus (Navás, 1920)

Synonyms see Monserrat (1990): 237.

Distribution (Figure 6). **Brazil (SP)**, Argentina, Uruguay (Penny 1977; Monserrat 1990, 1998, 2008; Lara and Perioto 2003; Lara *et al*. 2010).

CONCLUSIONS

This checklist contributes to expansion and summarization of knowledge of the Hemerobiidae fauna from Brazil. The data presented here indicate that, for the hemerobiids, it is necessary to expand the collection efforts to improve its representativeness in Brazilian collections.

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