

# First Records of Odonata (insecta) From the Bodoquena Mountains, Mato Grosso do Sul, Brazil

Marina Schmidt Dalzochio<sup>1</sup>✉, Luiz Onofre Irineu de Souza<sup>†</sup>, Manoel Araújo Uchoa<sup>2</sup> & Janira Martins Costa<sup>3</sup>

1. Universidade do Vale do Rio dos Sinos, e-mail: [mahsdalzochio@gmail.com](mailto:mahsdalzochio@gmail.com) (Autor para correspondência✉). †*In Memoriam*. 2. Universidade Federal da Grande Dourados, e-mail: [uchoa.manoel@gmail.com](mailto:uchoa.manoel@gmail.com). 3. Universidade Federal do Rio de Janeiro - Museu Nacional, e-mail: [jmcosta@globo.com](mailto:jmcosta@globo.com).

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**Abstract.** In this study we report twenty-one species of Odonata from the Bodoquena Mountains, Mato Grosso do Sul, Brazil. This species were collected during two systematic inventories carried out at six streams of the region, located at deciduous and semideciduous Atlantic forest.

**Keywords:** Anisoptera; Inventory; Zygoptera.

## Novos registros de Odonata (Insecta) para Serra da Bodoquena, Mato Grosso do Sul, Brasil.

**Resumo.** Neste estudo relatou-se 22 espécies de Odonata da Serra da Bodoquena, Mato Grosso do Sul, Brasil. Estas espécies foram coletados durante dois inventários sistemáticos realizados em seis córregos da região, localizado na porção Decídua e Semidecídua da Mata Atlântica.

**Palavras-chaves:** Anisoptera; Inventário; Zygoptera.

**D**ragonflies and damselflies (Odonata) include about 6.500 extant species described from all zoogeographic regions (TRUMAN & ROWE 2009). There are about 1650 species described from Neotropical region (KALKMAN *et al.* 2008), A recent inventory of the Brazilian odonates reported 800 species for the country (SOUZA *et al.*, 2007). In fact, the occurrence of Odonata is documented in less than one-third of the Brazilian territory, because studies have been conducted in only a few tropical and subtropical areas (DE MARCO & VIANNA 2005), such as the states of Espírito Santo, Rio de Janeiro, and São Paulo.

In this paper we report twenty-two species of Odonata from Bodoquena Mountains, Central-West of Brazil, which is considered a priority area for biological conservation in Brazil (MMA 2007).

## MATERIAL AND METHODS

**Study area.** Serra da Bodoquena (21°08'02 "to 20°38'26" S and 56°48'31" to 56°44'28" W) is located in the mid-southern portion of Mato Grosso do Sul State, and extends from Miranda City to the north to Porto Murtinho City, to the south, including parts of Bodoquena, Bonito and Jardim (ICMBio 2011). It is a plateau steeply sloping to the Pantanal, consisting by carbonatic rocks (SALLUN-FILHO *et al.* 2004). The region is characterized by a mountain-chain (BOGGIANI *et al.* 1998), with altitudes that vary between 450 and 800 m. Climate is temperate humid with hot summers and two well-defined seasons. The average annual temperature varies between 20 and 22°C and annual rainfall varies between 1300 and 1700 mm. The highest rainfall occurs during October to April, with periods of drought during May to September (PCBAP 1997). Native vegetation is formed by deciduous and semideciduous Atlantic forest, Cerrado and savanna (FURTADO *et al.* 1982; SCREMIN-DIAS *et al.* 1999). The hydrography of the region is characterized by limestone Rivers with high alkalinity and low turbidity. The region is part of the

Paraguay River basin and is fed by streams such as the Salobra, Prata, Perdido, Formoso, Sucuri and Aquidaban.

**Collected data.** The material was collected during 16 expeditions to the Bodoquena Mountains in 2000, 2001, 2007 and 2008. The specimens were collected at six streams (Figure 1). Adults were collected with entomological nets with 15 cm in diameter and packed live in rectangular envelopes (12x8cm) of paper thin, following the LENCIONI'S methodology (2005). The sampling effort was collected with a active time search in each sampling area, which were usually between 9 and 15 hours of the day, always for the same person. Species identification was based on LENCIONI (2005, 2006), GARRISSON *et al.* (2006) and HECKMAN (2006, 2008).

For each record the following data are registered: Municipality, locality, latitude, longitude, water body information and acronym of the museum where it is deposited. The geographic coordinates data were obtained with a Garmim Plus GPS III and are expressed in lat-long.

The material is deposited at Museu da Biodiversidade da Universidade Federal da Grande Dourados, Mato Grosso do Sul, Brazil (MUGFD) and Zoology Collection of Universidade Federal do Mato Grosso do Sul, Brazil (ZUFMS).

For each species known records from South America and Brazil are presented based on LONGFIELD (1929); SANTOS (1944); COSTA (1978); SOUZA *et al.* (2002); LENCIONI (2005, 2006); HECKMAN (2006, 2008); SOUZA & COSTA (2006) and PESSACQ & COSTA (2007).

Codes for Brazilian states are as follow: Amazonas (AM); Pernambuco (PE); Amapá (AP); Rondônia (RO); Roraima (RR); Maranhão (MA); Bahia (BA); Mato Grosso (MT); Mato Grosso do Sul (MS); Espírito Santo (ES); Rio de Janeiro (RJ); São Paulo (SP); Goiás (GO); Minas Gerais (MG); Paraná (PR); Santa Catarina (SC); Rio Grande do Sul (RS).



Figure 1. Regional location of Serra da Bodoquena and six streams sampled at region.

## RESULTS AND DISCUSSION

### ZYGOPTERA

#### Coenagrionidae

##### *Acanthagrion apicale* Selys, 1876

BODOQUENA: Seco Stream, 20°41'41" S, 56°45'16" W, 1st order tributary of the Salobra River [ZUFMS]

DISTRIBUTION: Venezuela, Guyana, French Guiana, Colombia, Ecuador, Peru, Bolivia, Brazil (RO, AM, PA, MT)

##### *Acanthagrion ascendens* Calvert, 1909

BODOQUENA: Seco Stream, 20°41'41" S, 56°45'16" W, 1st order tributary of the Salobra River [ZUFMS]; Salobrinha Stream, 20°46'01" S, 56°46'37" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River, 20°40'59" S, 56°45'03" W, 3rd order tributary of the Miranda River [MUFGD; ZUFMS].

DISTRIBUTION: Colombia, Venezuela, Guyana, Surinam, Ecuador, Peru, Paraguay, Argentina, Brazil (RO, AM, AP, SP, MT, SC)

##### *Acanthagrion aepiolum* Tennessen, 2004

PORTO MURTINHO: Aquidaban Stream, 20°02'14" S, 56°55'36" W, headwaters of 3rd order tributary of the Paraguay River [MUFGD];

Distribution: Peru, Bolivia, Argentina, Brazil (RO, MG, SP)

##### *Argia croceipennis* Selys, 1865

BODOQUENA: Seco Stream, 20°41'41" S, 56°45'16" W, 1st order tributary of the Salobra River [ZUFMS]; Salobrinha Stream, 20°46'01" S, 56°46'37" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River, 20°40'59" S, 56°45'03" W, 3rd order tributary of the Miranda River [ZUFMS]. JARDIM: Perdido Stream, 21°26'59" S, 56°47'28" W, 2nd order tributary of the Apa Stream, [MUFGD]; BONITO: Laudejá Stream, 21°07'12" S, 56°45'24" W, 1st order Stream tributary of the Perdido Stream, [MUFGD]; PORTO MURTINHO: Aquidaban Stream, 20°02'14" S,

56°55'36" W, headwaters of 3rd order tributary of the Paraguay Stream [MUFGD].

DISTRIBUTION: Paraguay, Uruguay, Argentina, Brazil (RJ, SP, SC, RS)

JARDIM: Perdido Stream, 21°26'59" S, 56°47'28" W, 2nd order Stream tributary of the Apa Stream, [MUFGD]; BONITO: Laudejá Stream, 21°07'12" S, 56°45'24" W, 1st order Stream tributary of the Perdido Stream, [MUFGD]; PORTO MURTINHO: Aquidaban Stream, 20°02'14" S, 56°55'36" W, headwaters of 3rd order tributary of the Paraguay Stream [MUFGD]; BODOQUENA: Salobra River, 20°40'59" S, 56°45'03" W, 3rd order tributary of the Miranda Stream [MUFGD].

DISTRIBUTION: Brazil (RS)

##### *Argia tamoyo* Calvert, 1909

BODOQUENA: Seco Stream, 20°41'41" S, 56°45'16" W, 1st order tributary of the Salobra River [ZUFMS]; Salobrinha Stream, 20°46'01" S, 56°46'37" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River, 20°40'59" S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Bolivia, Brazil (MT, MG, RJ)

##### *Homeoura chelifera* (Selys, 1876)

BODOQUENA: Seco Stream, 20°41'41" S, 56°45'16" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River, 20°40'59" S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Bolivia, Brazil (BA, MG, ES, RJ, SP, PR, SC, RS)

##### *Telebasis willinki* Fraser, 1948

BODOQUENA: Salobra River, 20°40'59" S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Argentina, Uruguay, Paraguay, Brazil (RJ, SP, PR, SC, RS, MG, MT)

### Protoneuridae

##### *Neoneura ethela* Williamson, 1917

JARDIM: Perdido Stream, 21°26'59" S, 56°47'28" W, 2nd order Stream tributary of the Apa Stream, [MUFGD]; BONITO: Laudejá Stream, 21°07'12" S, 56°45'24" W, 1st order Stream tributary of the Perdido Stream, [MUFGD]; PORTO MURTINHO: Aquidaban Stream, 20°02'14" S, 56°55'36" W, headwaters of 3rd order tributary of the Paraguay Stream [MUFGD]; BODOQUENA: Seco Stream, 20°41'41" S, 56°45'16" W, 1st order tributary of the Salobra River [ZUFMS]; Salobrinha Stream, 20°46'01" S, 56°46'37" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River, 20°40'59" S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Bolivia, Paraguay, Argentina, Brazil (RS)

##### *Neoneura rubriventris* (Selys, 1860)

BODOQUENA: Seco Stream, 20°41'41" S, 56°45'16" W, 1st order tributary of the Salobra River [ZUFMS]; Salobrinha Stream, 20°46'01" S, 56°46'37" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River, 20°40'59" S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Venezuela, Guyana, Ecuador, Peru, Bolivia, Brazil (RR, PA, RO, RJ, SP, RS)

##### *Peristicta aeneoviridis* Calvert, 1909

BODOQUENA: Salobrinha Stream, 20°46'01" S, 56°46'37" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River, 20°40'59" S, 56°45'03" W, 3rd order tributary of the Miranda Stream [MUFGD; ZUFMS].

DISTRIBUTION: Argentina, Paraguay, Brazil (SP, MG)

##### *Epipleoneura venezuelensis* Rácenis, 1955

BODOQUENA: Seco Stream, 20°41'41" S, 56°45'16" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River,

20°40'59"S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Venezuela, Brazil (RO)

## ANISOPTERA

### Gomphidae

*Gomphoides infumatus* (Rambur, 1842)

PORTO MURTINHO: Aquidaban Stream, 20°02'14" S, 56°55'36" W, headwaters of 3rd order tributary of the Paraguay Stream [MUFGD];

DISTRIBUTION: Brazil (RJ)

*Progomphus amazonicus* Belle, 1973

BODOQUENA: Salobrinha Stream, 20°46'01" S, 56°46'37" W, 1st order tributary of the Salobra River [ZUFMS].

DISTRIBUTION: Brazil (AM, RO, RR)

*Progomphus montanus* Belle, 1973

PORTO MURTINHO: Aquidaban Stream, 20°02'14" S, 56°55'36" W, headwaters of 3rd order tributary of the Paraguay Stream [MUFGD];

DISTRIBUTION: Bolívia

### Libellulidae

*Elasmothemis williamsoni* (Ris, 1919)

BODOQUENA: Salobra River, 20°40'59"S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Guyana, French Guiana, Surinam, Brazil (MT)

*Erythrodiplax famula* (Erichson, 1848)

BODOQUENA: Salobra River, 20°40'59"S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Peru, Venezuela, Surinam, Guyana, French Guiana, Surinam, Argentina, Brazil (AM, AP, SP, PR, MS, GO)

*Macrothemis hemichlora* (Burmeister, 1839)

JARDIM: Perdido Stream, 21°26'59" S, 56°47'28" W, 2nd order Stream tributary of the Apa Stream, [MUFGD]; BONITO: Laudejá Stream, 21°07'12" S, 56°45'24" W, 1st order Stream tributary of the Perdido Stream, [MUFGD]; PORTO MURTINHO: Aquidaban Stream, 20°02'14" S, 56°55'36" W, headwaters of 3rd order tributary of the Paraguay Stream [MUFGD]; BODOQUENA: Salobrinha Stream, 20°46'01" S, 56°46'37" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River, 20°40'59"S, 56°45'03" W, 3rd order tributary of the Miranda Stream [MUFGD, ZUFMS].

DISTRIBUTION: Colombia, Ecuador, Peru, Venezuela, Surinam, French Guiana, Argentina, Brazil (RJ, SP, PR, SC, RS, MT, GO)

*Macrothemis heteronycha* Calvert, 1909

PORTO MURTINHO: Aquidaban Stream, 20°02'14" S, 56°55'36" W, headwaters of 3rd order tributary of the Paraguay River [MUFGD].

DISTRIBUTION: Brazil (RJ, SP, MT, ES, SC, RS, MG)

*Macrothemis imitans* Karsch, 1890

BONITO: Laudejá Stream, 21°07'12" S, 56°45'24" W, 1st order Stream tributary of the Perdido Stream, [MUFGD]; PORTO MURTINHO: Aquidaban Stream, 20°02'14" S, 56°55'36" W, headwaters of 3rd order tributary of the Paraguay Stream [MUFGD]; BODOQUENA: Salobrinha Stream, 20°46'01" S, 56°46'37" W, 1st order tributary of the Salobra River [ZUFMS]; Salobra River, 20°40'59"S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Venezuela, Guyana, Bolivia, Paraguay, Uruguay, Argentina, Brazil (RJ, SP, MT, MS, ES, SC, RS, MG)

*Orthemis schmidti* Buchholz, 1950

BODOQUENA: Salobra River, 20°40'59"S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Ecuador, Peru, Venezuela, French Guiana, Surinam, Bolivia, Brazil (AP, PA, MA, RO, MT)

*Tramea minuta* DeMarmels and Rácinis, 1982

BODOQUENA: Salobra River, 20°40'59"S, 56°45'03" W, 3rd order tributary of the Miranda Stream [ZUFMS].

DISTRIBUTION: Venezuela, Brazil (AM, MT)

Our work is an important contribution to the knowledge of the geographical distribution of Odonata species in Brazil, because it covers a previous geographical gap of information in the central Brazil (DE MARCO & VIANNA 2005). Although our work covers different hydrographic bases of the Serra da Bodoquena, it is important to note that most sampling areas were located around Parque Nacional da Serra da Bodoquena in fragments of deciduous and semideciduous Atlantic forest. Future surveys should be carried out in more conserved areas inside the park where we expect to add more species to the list presented here.

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