

# Extension of the known distribution of *Aegla strinatii* Türkay, 1972 and a checklist of decapod crustaceans (Aegliidae, Palaemonidae and Trichodactylidae) from the Jacupiranga State Park, South of São Paulo State, Brazil

Sergio Schwarz da Rocha and Sergio Luiz de Siqueira Bueno

(SSR) Universidade Federal do Recôncavo da Bahia, Rua Rui Barbosa, 710, CEP: 44380-000, Cruz das Almas, BA, Brasil. E-mail: ssrocha@ufrb.edu.br

(SLSB) Universidade de São Paulo, Rua do Matão, trav. 14, no. 101, CEP: 05508-090 São Paulo, SP, Brasil. E-mail: sbueno@ib.usp.br

## Abstract

There are over 120 species of freshwater decapod crustaceans in Brazil. This paper contributes to the knowledge of the species richness and distribution of decapod crustaceans from Jacupiranga State Park, South of São Paulo State. The main objectives were to investigate the geographical distribution of *A. strinatii* and to generate a checklist of the decapod species collected from the sampling sites. Sixteen sampling sites were investigated during the year of 2007 and four species were collected. The present report represents a new record of *A. strinatii* from São Paulo State and adds three more localities at Jacupiranga State Park where the occurrence of *T. fluviatilis* is confirmed.

Key words: Crustacea, Decapoda, Ribeira do Iguape, São Paulo

## Introduction

Freshwater decapod crustaceans constitute a group of macroinvertebrates of high ecological and economic importance (Magalhães, 1999; Almeida *et al.*, 2008). Recently, Almeida *et al.* (2008) reported 117 described species of freshwater decapods registered from Brazil. Considering some new species recently described in the families Aegliidae Dana, 1852 (Santos *et al.*, 2009; 2010; Bond-Buckup *et al.*, 2010a, b) and Pseudothelphusidae Ortmann, 1893 (Magalhães, 2010; Magalhães and Türkay, 2010) and the first record of *Macrobracium aracamuni* Rodríguez, 1982 from Brazilian

territory (Mantelatto *et al.*, 2008) this number to the present has certainly exceeded 120 species.

In the past decade, knowledge on the species richness and distribution of freshwater decapod crustaceans in the State of São Paulo have increased substantially and was investigated by Melo (2003), Rocha and Bueno (2004), Magalhães *et al.* (2005), Mossolin and Mantelatto (2008) and Mossolin *et al.* (2010). Therefore, the freshwater decapod fauna in the State of São Paulo is well known when compared to other Brazilian regions, especially after the collections for inventorying the carcinofauna conducted as part of the BIOTA-FAPESP Program (Magalhães *et al.*, 2005).

Among families of freshwater decapod reported from the State of São Paulo (see Melo, 2003 for review), Aeglidae, Palaemonidae Rafinesque, 1815 and Trichodactylidae H. Milne Edwards, 1853 stand out due to their great diversity and wide distribution throughout this State (Magalhães, 1999; Rocha and Bueno, 2004, Mossolin and Mantelatto, 2008; Mossolin *et al.*, 2010).

The family Aeglidae has approximately 70 freshwater species endemic to temperate and subtropical regions of continental South America (Schmitt, 1942; Bond-Buckup and Buckup, 1994; Santos *et al.*, 2009; 2010; Bond-Buckup, 2003; Bond-Buckup *et al.*, 2010a, b). Currently, ten aeglid species have been reported from the State of São Paulo (Rocha and Bueno, 2004) where some of them show high endemism, and inhabit karstic regions, as in the Ribeira do Iguape River Basin (Rocha *et al.*, 2010).

Palaemonidae is the most abundant family of freshwater prawns in Brazilian continental waters (Sampaio *et al.*, 2009). Among all five genera within this family *Macrobrachium* Bate, 1868 is the most representative with 17 species reported from Brazilian territory (Pileggi and Mantelatto, 2010; Mossolin *et al.*, 2010). Currently, 10 of these species are recorded from the State of São Paulo (Melo, 2003; Pileggi and Mantelatto, 2010).

The family Trichodactylidae is considered one of the eight exclusively freshwater crab families with 51 species distributed through Mexico, Central and South America (Yeo *et al.*, 2008). The genus *Trichodactylus* Latreille, 1828 is represented in Brazil by nine species, of which four occur in the state of São Paulo (Magalhães, 2003, Mossolin and Mantelatto, 2008).

In this study, we present the results of the faunal survey of the freshwater decapod from Jacupiranga State Park, South of São Paulo State. The main objectives were to investigate the geographical distribution of *A. strinatii* Türkay, 1972 and to generate a checklist of the decapod species from the streams and rivers investigated.

## Materials and Methods

Fieldwork was carried out at the Jacupiranga State Park, São Paulo State, and some adjacent areas during the year of 2007. The Jacupiranga State Park is considered the second largest protected area in the State, with 150,000 acres. The hydrography of the region varies from rivers headwaters, waterfalls, fast-flowing mountain streams to lowland rivers (Clauzet, 1999).

The coordinates of each sampling site were recorded accurately using a GPS (Global Positioning System). All decapod specimens sampled in this survey were identified according to Melo (2003) and Bond-Buckup and Buckup (1994). Voucher materials from this study were deposited at the Museu de Zoologia (MZUSP), University of São Paulo.

## Results and Discussion

Sixteen sampling sites were investigated and the results of this survey are showed in Table I. Decapod species collected were *Aegla strinatii*, *Macrobrachium potiuna* (Müller, 1880), *Macrobrachium olfersi* (Wiegmann, 1836) and *Trichodactylus fluviatilis* Latreille, 1828.

Specimens of *A. strinatii* were sampled in only two locations: the Ostras stream and the Rolado Cave System. This species has up to now been reported from its type locality (Ostras stream, Tapagem Cave — also known as Devil's Cave) (Türkay, 1972; Rocha and Bueno, 2004) and the River Ribeira de Iguape (Bond-Buckup and Buckup, 1994). Thus, the present report represents a new record of *A. strinatii* from São Paulo State. The species is troglophile, that is, self-sustained populations are found inside and outside caves, with free transit between both environments (Rocha and Bueno, 2004; Rocha *et al.*, 2010). However, it is important to emphasize that no specimens of *A. strinatii* were found in the Ostras stream after its resurgence from Tapagem Cave (Table I). Dra. Georgina Bond-Buckup also found

no aeglids when sampling in this same locality on 21/oct/2000 (Bond-Buckup, G.: personal communication). Therefore, Tapagem Cave which is the second largest cave in São Paulo State, with 6,237 meters, may represent an obstacle that limits the distribution of *A. strinatii* downstream Ostras stream. Further investigations and surveys inside Tapagem Cave are necessary to elucidate the extent of occurrence of the species inside the cave and the existence of geographical barriers.

Specimens of *T. fluviatilis* were found in 7 of the 16 sampling sites (Tab. 1). The presence of *T. fluviatilis* at Jacupiranga State Park was already reported by Rocha and Bueno (2004) from Ostras stream and Tapagem Cave. Thus, the present study adds three more localities (Tab. 1) where the occurrence of this species is confirmed.

According to Magalhães (2003) trichodactylid crabs inhabit coastal-plain Rivers at altitudes up to 300 meters. However,

specimens of *T. fluviatilis* have been collected at altitudes up to 960 meters (Rocha and Bueno, 2004; Gomides *et al.*, 2006; Mossolin and Mantelatto, 2008; present study). The ability to complete their life cycle independently of the marine environment (direct development) is an important advantage in the conquest of continental waters and river headwaters located at high altitudes of inland habitats (Rocha and Bueno, 2004).

*Macrobrachium olfersii* was captured at only 1 site while *M. potiuna* was collected at 7 sites. The limited distribution of *M. olfersii* may be related to its type of larval development, in which larvae is dependent of estuarine waters to complete their development (Rocha and Bueno, 2004). On the other hand, *M. potiuna*, which is considered a continental species, physiologically independent of estuarine water, can colonize greater number of inland environments.

**Table 1.** Decapod crustaceans sampled during the assessment carried out at the Jacupiranga State Park and adjacent areas. (\*) inside Jacupiranga State Park borders; (\*\*) outside Jacupiranga State Park borders.

Sampling site	Geographical coordinates	Species
Ostras stream (site 1)* (Tapagem Cave entrance)	24° 38' 16,2"S - 48° 24' 05,2"W	<i>Aegla strinatii</i> <i>Macrobrachium potiuna</i> <i>Trichodactylus fluviatilis</i>
Ostras stream (site 2)*	24° 38' 34,1"S - 48° 23' 43,5"W	<i>A. strinatii</i>
Ostras stream (site 3)* (resurgence of Tapagem Cave)	No coordinates available	<i>M. potiuna</i> <i>T. fluviatilis</i>
Mouth of Ostras stream (site 4)* (near River Ribeira de Iguape)	24° 36' 01,3"S - 48° 23' 36,1"W	<i>Macrobrachium olfersii</i> <i>T. fluviatilis</i>
Unnamed stream #1 (site 1)*	24° 38' 09"S - 48° 24' 18"W	<i>M. potiuna</i> <i>T. fluviatilis</i>
Unnamed stream #1 (site 2)*	24° 37' 59,2"S - 48° 24' 18,0"W	<i>M. potiuna</i> <i>T. fluviatilis</i>
Rolado Cave I*	24° 38' 59,2"S - 48° 24' 05,4"W	<i>A. strinatii</i>
Rolado Cave II*	24° 38' 59,2"S - 48° 24' 05,4"W	<i>A. strinatii</i>
Rolado Cave III*	24° 38' 59,2"S - 48° 24' 05,4"W	<i>A. strinatii</i>
Unnamed stream #2 (site 1)*	24° 39' 03,3"S - 48° 23' 35,0"W	No decapod sampled
Unnamed stream #2 (site 2)*	24° 38' 59,1"S - 48° 23' 35,1"W	No decapod sampled
River Arivá*	24° 38' 09,4"S - 48° 24' 33,3"W	<i>M. potiuna</i> <i>T. fluviatilis</i>
Unnamed stream #3*	24° 38' 22,8"S - 48° 24' 39,9"W	<i>M. potiuna</i> <i>T. fluviatilis</i>
Frias Cave*	No coordinates available	<i>M. potiuna</i>
Sapatu Waterfall **	24° 36' 05,0"S - 48° 21' 31,3"W	No decapod sampled
River Nhunguara**	24° 35' 24,6"S - 48° 25' 58,6"W	No decapod sampled

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