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FIRST RECORD OF *Odontodiaptomus thomseni* Brehm (1933) (COPEPODA, CALANOIDA) IN RIO GRANDE DO SUL STATE, BRAZIL

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ABSTRACT

This is the first record of the rare calanoid copepod *Odontodiaptomus thomseni* for Brazil since this species was described by Brehm (1933) from Uruguay. There were found 11 individuals in four sampling sites. This record extends beyond Uruguay River Basin and La Plata River Basin the distribution of this species.

Keywords: Zooplankton, few records, rare.

RESUMEN

Primer registro de Odontodiaptomus thomseni Brehm (1933) (Copepoda, Calanoida) en el estado de Rio Grande do Sul, Brasil. Este es el primer registro del raro *O. thomseni* para Brasil desde que esta especie fue descrita por Brehm (1933) de Uruguay. Este registro se extiende más allá de la cuenca del río Uruguay y la cuenca del río La Plata la distribución de esta especie.

Palabras clave: Zooplancton, pocos registros, rara.

The lack of records of freshwater copepod *Odontodiaptomus thomseni* led to its inclusion in the Red List of threatened species (IUCN) category of data deficient (IUCN, 2022). The first and valid record for *O. thomseni* is that of its original description by Brehm (1933) from Uruguay. Samples taken in 2010 allowed to produce the second record for *O.thomseni* in Salto Grande reservoir, which is located in the lower stretch of the Uruguay River, between Uruguay and Argentina, within at the La Plata River Basin (Perbiche-Neves et al, 2012). In this occasion, the author´s found just three specimens (two males and one female).

This note presents the first record of *O. thomseni* in Guaíba Lake (29º55' to 30º37' S and 50° 56' to 51° 46' W), Rio Grande do Sul state, Brazil, handing an updated scenario of its geographic distribution besides the Uruguay River Basin. Also, is the third official record since its description by Brehm (1933), confirming its rarity but not too restricted geographic distribution. The Guaíba Lake is formed mainly by the rivers Jacuí, Caí, Sinos and Gravataí, which together drain the second major area of the state, back just to Uruguay river basin. The Lake has an area of 2,459.91 km², covering the total or partial areas of 14 municipalities, and with an estimated human population for the basin whith approximately 1,285,614 inhabitants, with a density of 523 inhabitants / km^2.

Plankton samples were collected on August in 2018, from four sites: site 1 (29°57'46.6"S and 51°20'45.1"W), site 2 (9°58'32.4"S and 51°15'20.1"W), site 3 (30°00'46.6"S and 51°13'07.5"W), and site 4 (29°56'34.5"S and 51°16'03.7"W) (Fig. 1). The organisms were collected by vertical and horizontal hauls with samplings undertaken on each sampling occasion to form a 300 L composite sample. The samples were filtered through a zooplankton net (68 µm) and preserved in 4% formalin.

Fig. 1. Records of *O. thomseni*. The original description by BREHM (1933) was from Uruguay. The circle shows the rediscovered of *O. thomseni* after 77 years by Perbiche-Neves (2012) from Salto Grande Reservoir (Uruguay and Argentina) and the squares mark the present new records from Rio Grande do Sul State, South of Brazil.

Fig. 2. *Odontodiaptomus thomseni* from Guaíba Lake, Rio Grande do Sul State, Brazil. A general view of male, and B right and left fifth legs, frontal view.

A total of 11 individuals was identified from four sites analyzed. Three individuals (three males) were deposited in the Museum of Zoology in the UNISINOS University (samples MZUNISINOS Cru0001, MZUNISINOS Cru0002). A general view of the collected *O. thomseni* males specimens are shown in Fig. 2A and B. The taxonomic diagnosis using scanning electron microscopy as well as light microscope observations can be found in Perbiche-Neves et al. (2012).

All four collection points where we recorded *O. thomseni* were located on the shores of Lake Guaíba, which experiences seasonal fluctuations in water levels and has extensive areas colonized by flooded arboreal vegetation and aquatic macrophytes. In 2010, Perbiche-Neves et al. (2012) collected specimens of *O. thomseni* in the Salto Grande reservoir, which is located on the border of Uruguay (Salto Grande Province) and Argentina. The water quality at the collection site was generally characterized by deep, warm (> 28 ºC), and well-oxygenated waters (> 6.00 mg/L) that exhibited high levels of nutrients (total nitrogen > 611.00 mg/L and phosphorus > 36.00 mg/L) and phytoplankton biomass (> 4.30 mg/L).

Odontodiaptomus (Kiefer, 1936) genera contains only three species: *O. thomseni* (Brehm, 1933), *O. michaelseni* (Mrázek, 1901) and *O. paulistanus* (Wright, 1936). With the exception of *O. paulistanus*, the other two species are rare, and we know nearly nothing regarding their geographical distribution, biology, and ecological. As mentioned, this is the third record of *O. thomseni*. About the congeners, *O. michaelseni* have been only recorded in areas close to the mouth of the Rio da Prata, in Uruguay and Argentina, and was not found since it is ordinal description. *O. paulistanus* is relatively common in Brazil, it has been recorded in water bodies in the state of Minas Gerais (Wright, 1936, 1937), Paraná (Lopes et al., 1997; Lansac-Tôha et al., 2009), and São Paulo (Matsumura-Tundisi & Tundisi, 2011). Of all cited studies for O. *paulistanus*, most part are included in the La Plata Basin, but few not, are from basins that run direct to the coast. This new record indicates that

the species has a somewhat broader geographic distribution, but still quite restricted considering the continent or the Neotropical Region. This is valid for the genus *Odontodiaptomus*, although it has only three species.

The Neotropical Region support the third richest diaptomid fauna in the world, with 82 species (Boxshall Defaye, 2008). In Brazil, there are 57 species of freshwater diaptomids describe at moment. However, this number is certainly underestimated, since knowledge of the Brazilian freshwater copepod fauna is disparate if we consider the artificial and natural habitats separately. Much of the knowledge we have about copepods comes from artificial lakes formed by damming medium and large rivers is large.

In addition, the record of *O. thomseni* in Guaíba Lake is part of an environmental consultancy work, in which the company carried out a regional inventory of aquatic communities, including zooplankton. Two important points should be highlighted in this regard: (i) a good formation of the taxonomist specialist to identify species in consulting companies, and (ii) the use of gray literature, which are documents produced in the governmental, academic, commercial spheres, which can be published in scientific journals, and contribute to the knowledge of the species.

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