

***Keratella lenzi* (Hauer, 1953): a new occurrence for Acre State, Brazil, specifically in Igarapé Jesumira located in Parque Nacional da Serra do Divisor**

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Resumo

***Keratella lenzi* (Hauer, 1953): uma nova ocorrência no estado do Acre, Brasil, especificamente no Igarapé Jesumira localizado no Parque Nacional da Serra do Divisor.** Rotíferos são importantes componentes do plâncton de águas continentais e, ocupam o nicho ecológico de pequenos filtradores. A ampla distribuição deste grupo em planícies de inundação deve-se ao fato de sua tolerância às mudanças ambientais, causadas especialmente pelas águas altas e, por conseguinte diversificação dos nichos. Todavia, a biodiversidade destes ambientes ainda é desconhecida, especialmente no Noroeste do Estado do Acre. Os organismos foram coletados usando rede de plâncton com malha de abertura de 50µm e, conservados em solução de formol a concentração de 4%. Este trabalho registrou a primeira ocorrência de *Keratella lenzi* no Estado do Acre, identificada nas amostras de plâncton do Igarapé Jesumira (7°28'10,2"S e 73°33'54,6").

Unitermos: Igarapé Jesumira, *Keratella lenzi*, Rotifera

Abstract

Rotifers are very important freshwater plankton, and they occupy an ecological niche of small filter feeders. The extent of their distribution includes floodplains, because they tolerate environmental changes caused by an increase in water levels that leads to a diversification of niches. However, the biodiversity of floodplains is still poorly known, especially in Northeast Brazil in the state of Acre. The organisms were collected using pond nets with a 50µm mesh size, and they were preserved in 4% formaldehyde. This paper registers the first occurrence of *Keratella lenzi* in Acre State. The species was identified in plankton samples from Igarapé Jesumira (7°28'10.2"S and 73°33'54.6").

Key words: Igarapé Jesumira, *Keratella lenzi*, rotifers

Introduction

In aquatic ecosystems, rotifer fauna is generally the most diverse group among the freshwater invertebrates, and it is still relatively poorly known (Segers and Shiel, 2003). This Phylum shows basic characteristics: bilaterally symmetry; body has more than two cell layers, tissues and organs; body cavity is a pseudocoelom; body possesses a complete gut with an anus; body is covered by an external layer of chitin called a lorica; and there is a nervous system with a brain and paired nerves, but no circulatory or respiratory organs. Reproduction is mostly parthenogenetic, otherwise sexual and gonochoristic, and they feed on bacteria and protists, or are parasitic (Segers, 2004).

The classification of this species is Kingdom Animalia, Phylum Rotifera, Class Monogononta, Order Ploimida, Family Brachionidae, Genus *Keratella*. *Keratella*, like all rotifers, are pseudocoelomates (Miquelis et al., 2000; Brusca and Brusca, 2003).

In general, the organisms of these aquatic microfauna inhabit floodplains. The river-floodplain systems undergo a marked temporal variation due to physical, chemical and biological factors associated with alternating flooding and dry phases, where these modifications are influenced by the hydrological regime of the main river (Junk et al., 1989), causing the organisms to migrate from the principal river to lakes or bayous, environments that are common in Amazonian waters.

The Amazonian waters have about seven species of *Keratella* with two varieties according to studies conducted by Robertson and Hardy (1984) in Amazonas and Pará, and Sendacz and Melo-Costa (1991) in Amazonas and Acre, and also Keppeler (2003) and Keppeler and Hardy (2004) in Acre and Amazonas. Thus, the present work contributes to the citation of another new rotifer occurrence in the state of Acre.

Material and Methods

Rotifers were collected in Igarapé Jesumira (7°28'10.2"S and 73°33'54.6") using pond nets (Wetzel and Likens, 1991) with a 50µm mesh size (Segers,

1993) and were preserved in 4% formaldehyde. In the laboratory, the samples were examined, and specimens were photographed using a Bioval binocular microscope, Model L2000A, equipped with a digital camera designed specially for microscopes, with Image Output USB and Max Resolution 640×480, Color Max 1.64 million 24-bit color, and automatic range of wave adjustment. The windows 2000-XP (Professional-SP4) operating system were employed on an Intel Celeron Acer Aspire 3690-2023 notebook.

The limnological characterization of the aquatic environment was carried out according to the temperature, pH, dissolved oxygen and turbidity, utilizing a Troll 9500 multiparametric limnological probe. Transparency was determined with a Sechii disk, and depth was measured with a previously marked ruler.

Results and Discussion

This paper registers the first occurrence of *Keratella lenzi* in Acre State in Igarapé Jesumira located (7°28'10.2"S and 73°33'54.6"). The limnologic characteristics of the environment are shown in Table 1.

This species is in synonymy with the following organisms according to Xaiqin (2007) and Segers (2007): *Keratella valga* f. *brehmi* Ahlstrom, 1943; *Keratella valga* f. *aspina* Edmondson and Hutchinson, 1934). However, Segers (2007) named it *Keratella lenzi* (Figure 1).

TABLE 1: Mean ± SD values for limnologic characteristics of Igarapé Jesumira.

	Littoral zone	Limnetic zone
Temperature (°C)	24.17±2.19(n=3)	24.01±2.20(n=3)
Dissolved oxygen (mg.L ⁻¹)	8.61±0.65(n=3)	8.00±0.32(n=3)
pH	6.50±0.37(n=3)	6.42±0.28(n=3)
Turbidity (UNT)	39.50±7.14(n=3)	27.86±11.84(n=3)
Transparency (m)	0.26±14.84 (n=3)	0.55±10.90 (n=32)
Depth (m)	0.31±0.21(n=3)	0.73±0.11(n=3)



FIGURE 1: *Keratella lenzi* registered in Igarapé Jesumira.

The measurements of the specimen registered are: 60µm in width; 160µm in length; spines apical and larger: 40µm in length; spines lateral and smaller: 30µm.

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References

- Brusca, R. C.; Brusca, G. J. 2003. **Invertebrates**. Sinauer Associates, Sunderland, USA, 936pp.
- Junk, W. J.; Bailey, P. B.; Sparks, R. E. 1989. The flood pulse concept in river-floodplain systems. **Canadian Special Publication of Fisheries and Aquatic Sciences**, **106**: 110-127.
- Keppeler, E. C. 2003. Comparative study of the zooplankton composition of two lacustrine ecosystems in southwestern Amazonia. **Acta Scientiarum**, **25** (2): 471-481.
- Keppeler, E. C.; Hardy, E. R. 2004. Vertical distribution of zooplankton in the water column of Lago Amapá, Rio Branco, Acre State, Brazil. **Revista Brasileira de Zoologia**, **21** (2): 169-177.
- Miquelis, A.; Martin, J-F.; Carson, E. W.; Brun, G.; Gilles, A. 2000. Performance de l'hélice E23 du 18S ADNr pour les relations phylogénétiques entre et au sein du clade Rotifera-Acanthocephala. **Comptes Rendus de l'Académie des Sciences – Series III – Sciences de la Vie**, **323** (10): 925-941.
- Robertson, B. A.; Hardy, E. R. 1984. Zooplankton of Amazonian lakes and rivers. In: Sioli, H. (Ed.). **Amazon: Limnology and Landscape. Ecology of a Mighty Tropical river and its basin: Monographiae biologica**. Junk Publishers, Boston, USA, p.337-352.
- Segers, H. 1993. Rotifera of some lakes in the floodplain of the River Niger (Imo State, Nigeria). I. New species and other taxonomic considerations. **Hydrobiologia**, **250**: 39-61.
- Segers, H. 2004. Rotifera: Monogononta. In: Yule, C. M.; Yong, H. S. (Eds). **Freshwater invertebrates of the Malaysian region**. Academy of Sciences of Malaysia, Kuala Lumpur, Malaysia, p.106-120.
- Segers, H. 2007. Annotated checklist of the rotifers (Phylum Rotifera) with notes on nomenclature, taxonomy and distribution. **Zootaxa**, **1564**: 1-104.
- Segers, H.; Shiel, R. J. 2003. Microfaunal diversity in a biodiversity hotspot: new rotifers from southwestern Australia. **Zoological Studies**, **42** (4): 516-521.
- Sendacz, S.; Melo-Costa, S. 1991. Caracterização do zooplâncton do rio Acre e lagos Lua Nova, Novo Andará e Amapá (Amazônia, Brasil). **Revista Brasileira de Biologia**, **51**: 463-470.
- Wetzel, R. G.; Likens, G. E. 1991. **Limnological analysis**. Springer-Verlag, New York, USA, 391pp.
- Xaiqin, X. 2007. **The World of Protozoa, Rotifera, Nematoda and Oligochaeta**. Available at <<http://www.nies.go.jp/chiiki1/protoz/morpho/rotifera/r-kerat1.htm>>. Accessed in September 5th, 2009.