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Northward expansion of the giant river prawn *Macrobrachium rosenbergii* (De Man, 1879) along Amazonian coast, with the first record in the State of Amapá, North Brazil

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Resumo - Expansão ao norte do camarão gigante da Malásia *Macrobrachium rosenbergii* (De Man, 1879) ao longo da Costa Amazônica, com o primeiro registro no estado do Amapá, norte do Brasil

Nesta nota científica, a presença do camarão gigante da Malásia *Macrobrachium rosenbergii* (De Man, 1879) é registrada pela primeira vez na zona costeira do estado do Amapá. Esse é o registro mais ao norte dessa espécie exótica ao longo da costa brasileira. Adicionalmente, nosso resultado reforça a necessidade de programas de monitoramento para avaliar os potenciais impactos dessa espécie sobre a comunidade nativa.

Palavras-chave: espécies exóticas; água doce; camarões; região amazônica.

Abstract

In this research note the presence of the giant river prawn *Macrobrachium rosenbergii* (De Man, 1879) is recorded for the first time in the coastal zone of the state of Amapá. This is the northmost record of this non-native species along the Brazilian coast. Also, our finding highlighted the importance of monitoring programs to evaluate the potential impacts of this species on the native community.

Keywords: non-native species; freshwater; prawns; Amazonian region.

Resumen - Expansión hacia el norte del camarón gigante de río Macrobrachium rosenbergii (De Man, 1879) a lo largo de la costa amazónica, con el primer registro en el estado de Amapá, norte de Brasil

En esta nota de investigación se registra por primera vez la presencia del camarón gigante de río *Macrobrachium rosenbergii* (De Man, 1879) en la zona costera del estado de Amapá. Este es el registro más septentrional de esta especie no nativa en la Costa Brasileña. Además, nuestro hallazgo resaltó la importancia de los programas de monitoreo para evaluar los posibles impactos de esta especie en la comunidad nativa.

Palabras clave: especie no nativa; agua dulce; camarones; región Amazónica.

Macrobrachium rosenbergii (De Man, 1879) is a freshwater prawn native from southern and southeastern Asia, parts of Oceania, and some Pacific islands (New, 2002), which is known as giant river prawn, Indo-Pacific freshwater prawn or giant Malaysian prawn. Due to its size and commercial value, *M. rosenbergii* has been introduced in more than 40 countries and become one of the most farmed freshwater species worldwide with a production representing 3% of the total crustacean global production (FAO, 2018).

In Brazil, this species was introduced in the late 1970s for cultivation experiments at the Department of Oceanography of the Federal University of Pernambuco, which imported post-larvae from Hawaii (Cavalcanti, 1998). As cultivation improved, it has expanded to several Brazilian regions and, nowadays, this species is farmed in fifteen states (Oliveira & Santos, 2021). However, failures in both management and monitoring at

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the same farms had allowed the escape of the *M. rosenbergii* individuals to the natural environment (Barros & Silva, 1997; Chaves, Zara & Paschoal, 2023).

Until now, this exotic species had been recorded into wild at nine Brazilian states: Paraná (Gazola-Silva, Melo & Vitule, 2007; Silva, Ballester & Cunico, 2020), São Paulo (Oliveira & Santos, 2021), Rio de Janeiro (Moraes et al., 2017), Minas Gerais (Chaves, Zara & Paschoal, 2023), Sergipe (Oliveira & Santos, 2021), Ceará (Oliveira & Santos, 2021), Piauí (Loebmann, Mai & Lee, 2010), Maranhão (Oliveira & Santos, 2021) and Pará (Barros & Silva, 1997; Freire & Silva, 2008; Silva-Oliveira, et al. 2011; Cavalcanti, Silva & Martinelli-Lemos, 2012; Nóbrega, Bentes & Martinelli-Lemos, 2013; Lima et al., 2015; Iketani et al., 2016; Alves-Júnior et al., 2024; Ramos et al., 2024). In this research note, we report for the first time the presence of the giant river prawn *M. rosenbergii* at the state of Amapá, expanding its occurrence northward along the Brazilian coast.

The Bailique Archipelago (Figure 1) is a district of the Macapá city (capital of the Amapá state), composed of eight islands, only two of which are inhabited, and has an area of 630 km². It is located at the mouth of the Amazon River and suffers a continuous process of erosion, with cliffs collapsing, due to the influence of tides and currents (Sudam, 2024). Local climate is tropical monsoon (Am category on the Köppen's climate classification), with an average annual temperature of 27.4°C and annual precipitation of approximately 2500 mm (Alvares et al., 2014). The archipelago's economy is entirely rural (Vieira & Araújo-Neto, 2006; Sudam, 2024) and the fishery, especially of shrimps and prawns, is the main activity carried out by traditional population, providing an important means of subsistence, in particular for low-income populations of estuarine areas (Vieira & Araújo-Neto, 2006; Almeida, Soares, Lima & Santos, 2013; Sudam, 2024). The Amazon river prawn *Macrobrachium amazonicum* (Heller, 1862) is the species of greatest economic importance to local fishermen, being the main target prawn species. The species also performs ecological functions as a component of the trophic chain, contributing to the diet of fish (Vieira & Araújo-Neto, 2006).

Figure 1. Map of the Bailique Archipelago, state of Amapá, and surroundings showing the location of the communities where *Macrobrachium rosenbergii* (De Man, 1879) were caught and the chronology of records.

In June 2024, fishermen from the Bailique Archipelago reported catching different prawn species, larger than the native ones (i.e., *M. amazonicum*) and with longer blue claws (Figure 2a), using a gillnet near the community of Limão do Curuá (0°45'53" N; 50°10'14" W). After analyzing photos sent by local fishermen, it was possible to confirm that the specimens exhibited the key characteristics for the identification of the species as *Macrobrachium rosenbergii* (Holthuis & Ng, 2010): a long, upward-curving rostrum with a distinct basal crest, chelipeds large and deep bluish in color covered by spines along their length, and a distinct velvety pubescence on the movable finger (Figure 2). In January 2025, the same fishermen reported that the *M. rosenbergii* started also to be caught at both Igarapé do Meio (0°54'47" N; 50°04'27" W) and Igarapé Novo (0°28'18" N; 50°33'30" W) in the municipality of Itaubal, when were also reported the presence of ovigerous females (Figure 2b). According to local fisherman, this species has been caught since then; small individuals are commonly caught with both prawn traps (locally known as "matapi"), castnets and gillnets, while the bigger ones by hand searching below submerged log trees.

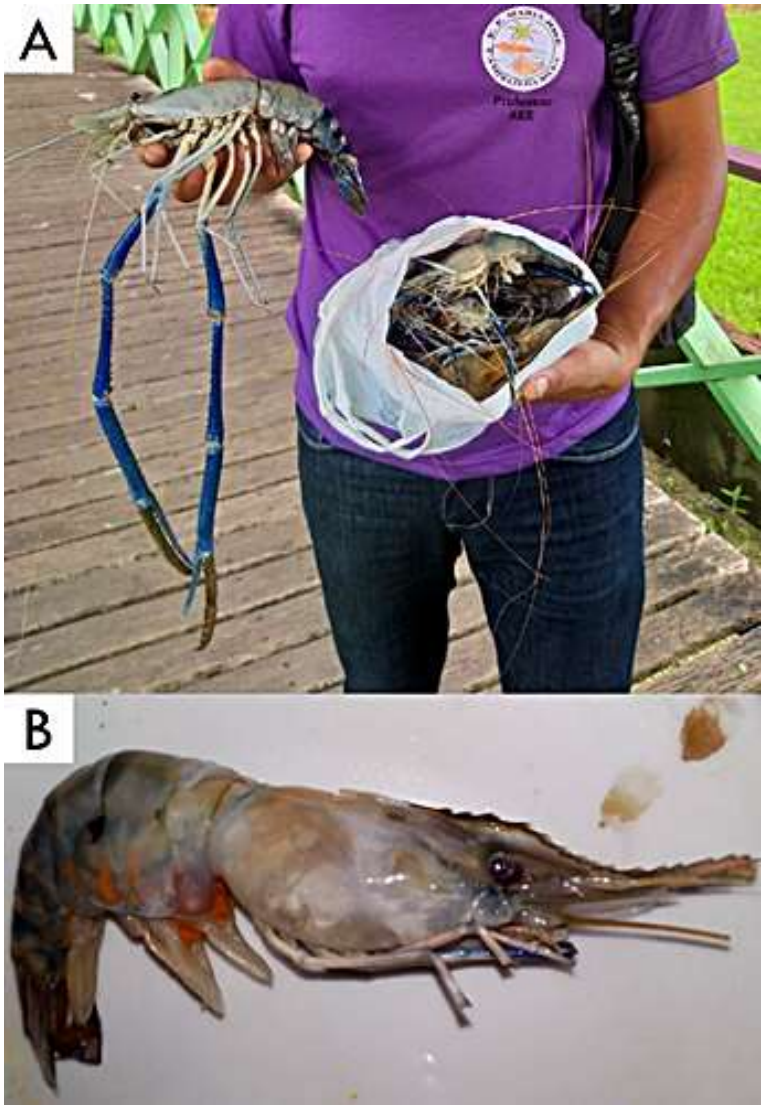

Figure 2. Local fisherman showing a blue clawed (BC) male of *Macrobrachium rosenbergii* (De Man, 1879) caught at the Igarapé do Meio community (A) and an ovigerous female of *M. rosenbergii* caught on January 2025 at same locality (B).

There is no cultivation system of *M. rosenbergii* in the region, not even in the state of Amapá (see Oliveira & Santos, 2021), which could have favored the escape of species to the natural environment. Thus, the presence of *M. rosenbergii* in the coastal water of Amapá is likely due to distributional spreading from other localities where this non-native species is already established. For instance, in the state of Pará, this species is well-established and reproducing at least during the last 10 years (Iketani et al., 2016), where become the most common prawn species caught by local fisherman (Freire & Silva, 2008; Alves-Junior et al., 2024). It is well known that the species *M. rosenbergii* requires access to adjacent areas of brackish water for achieving complete larval development and reproductive cycle (Pinheiro & Hebling, 1998). Thus, it is quite plausible that the presence of this species at Amapá coast is due to larval transport from established populations at Pará coast by the North Brazilian Current, which flows from east to west along the North Brazilian coast.

The introduction of non-native species has been pointed out as the second major cause of biodiversity loss worldwide (Bellard, Cassey & Blackburn, 2016). In the case of the *M. rosenbergii*, this species is the biggest prawn in the world, with males growing up to 330 mm in body length and weighing over 600 g (New, 2002). Furthermore, the species is also characterized by a very high fecundity, with c. 80 000 eggs per female (the highest in the genus) (Murienne, Chevalier & Clavier, 2022). This great size and high fecundity allied to agonistic behavior can lead this non-native species to outcompete with native species for food and space. Studies evaluating the impacts of the giant river prawn on native prawns are nonexistent. However, the Bailique's fishermen have related a decrease in the catch of the Amazon river prawn after arrival of the giant Malaysian prawn. Thus, our findings reinforce the urgent need of a monitoring program to evaluate the distribution of this species as well its potential impacts on native communities, especially in this mega-diverse environment as the Amazonian rivers.

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