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New species and first record of *Alloniscus* Dana, 1854 (Isopoda: Oniscidae: Alloniscidae) from Brazil

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ABSTRACT

The genus *Alloniscus* Dana, 1854 includes 23 known species occurring exclusively in littoral habitats. The genus has never been recorded from the Atlantic coastal region of the Americas. This work describes the new species *Alloniscus buckupi* n. sp. from João Pessoa, Paraíba, Brazil, and provides the first record of the genus from the Atlantic coastal region.

KEY WORDS

Coastal region, Neotropical region, taxonomy, Paraíba.

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INTRODUCTION

The terrestrial isopods comprise more than 3,700 species occurring in several terrestrial habitats worldwide, except at the poles (Schmalfuss, 2003; Sfenthourakis and Taiti, 2015). The family Alloniscidae was erected by Schmidt (2003) to include the genus *Alloniscus* Dana, 1854. The family is mainly characterized by the presence of respiratory areas on pleopod 1–5 exopods and dactylar seta with enlarged knife-shaped tip (Schmidt, 2003, 2008). The genus *Alloniscus* Dana, 1854 has a circumtropical distribution and comprises 23 species distributed exclusively in the littoral habitats of the Indian and West Pacific Oceans (Schmalfuss, 2003; Schmidt, 2003).

Until the moment, the genus is not recorded in the Atlantic coasts of the Americas (Schmidt, 2003).

In this work we describe a new species of the genus *Alloniscus* from João Pessoa, Paraíba, Brazil, and report the first record of the genus from Atlantic coast of South America.

MATERIAL AND METHODS

The material was stored in 75% ethanol and identifications were based on morphological characters. The species were illustrated with the aid of a camera lucida mounted on Olympus CH-2 microscopes. The illustration of the habitus was obtained with the aid of a camera Sony DSC-W800 mounted on Biofocus SQF-L-BI microscope. The final illustrations were prepared using the software GIMP with the method proposed by Montesanto (2015, 2016). The material used in this study is deposited in the Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil (MZUSP).

SYSTEMATIC ACCOUNT

Family Alloniscidae Schmidt, 2003

Genus *Alloniscus* Dana, 1854

Type species. *Alloniscus perconvexus* Dana, 1854 by monotypy.

Alloniscus buckupi Campos-Filho
& Cardoso n. sp.
(Figs. 1–4)

Type material. Holotype: 1 ♂ (parts in micropreparations) (MZUSP 36762), Brazil, Paraíba, João Pessoa, Praia de Cabo Branco, 7°07'25"S 34°49'23"W, VIII.2017, leg. S. Vaiciulyte. Paratypes: 3 ♀ (MZUSP 36763), same data as holotype.

Description. Maximum body length: ♂ 5.5 mm, ♀ 6 mm. Body outline as in Fig. 1A. Color light brown. Cephalon and antenna with irregular unpigmented spots; pereonites and epimera 1–7 gradually more pigmented on posterior portions, pereonites 1–3 with many unpigmented spots; pleon, telson and uropods strongly pigmented. Body convex; pereonites 1 and 2 epimera directed frontwards, 3–7 gradually more directed backwards; posterior margin of pereonite 7 strongly arched (Fig. 1A). Dorsum covered with ovoid-shaped scale setae (Fig. 1B), and fan-shaped narrowed on middle on posterior portions of pereonites (Fig. 1C). Cephalon (Fig. 1D) with lateral lobes well-developed, frontal line present, suprantennal line bent downwards on middle; eyes composed of eight ommatidia. Pleonites 3–5 epimera outline continuous with that of pereonite 7, acute and directed backwards. Pereonites bearing glandular pores (Fig. 1E). Telson (Fig. 1F) triangular, lateral sides strongly concave, apex acute. Antennula (Fig. 1G) with articles subequal in length, distal article bearing many aesthetascs on distal margin. Antenna (Fig. 1H) stout, not reaching the posterior margin of pereonite 1; flagellum of three articles subequal in length, second and third articles with lateral aesthetascs. Mandibles with molar penicil of 12 branches, left mandible (Fig. 2A) with 2+1 penicils, right mandible (Fig. 2B) with 1+1 penicils. Maxillula (Fig. 2C) inner endite with two long hairy penicils, distal margin slightly triangular; outer endite of 4+5 teeth (2 or 3 slightly cleft on apex) plus accessory tooth and slender setae between inner and outer set of teeth. Maxilla (Fig. 2D) outer lobe slightly wider than inner lobe, covered with thin setae; inner lobe rounded, covered with thick setae. Maxilliped (Fig. 2E) endite subrectangular, distal margin slightly rounded, medial seta surpassing distal margin, small knob-like penicil on ventral margin without minute setae. Pereopods 1–7 short and stout, carpus 1 with longitudinal antennal grooming brush, pereopod 6 ischium and merus, and pereopod 7 base with water conducting system;

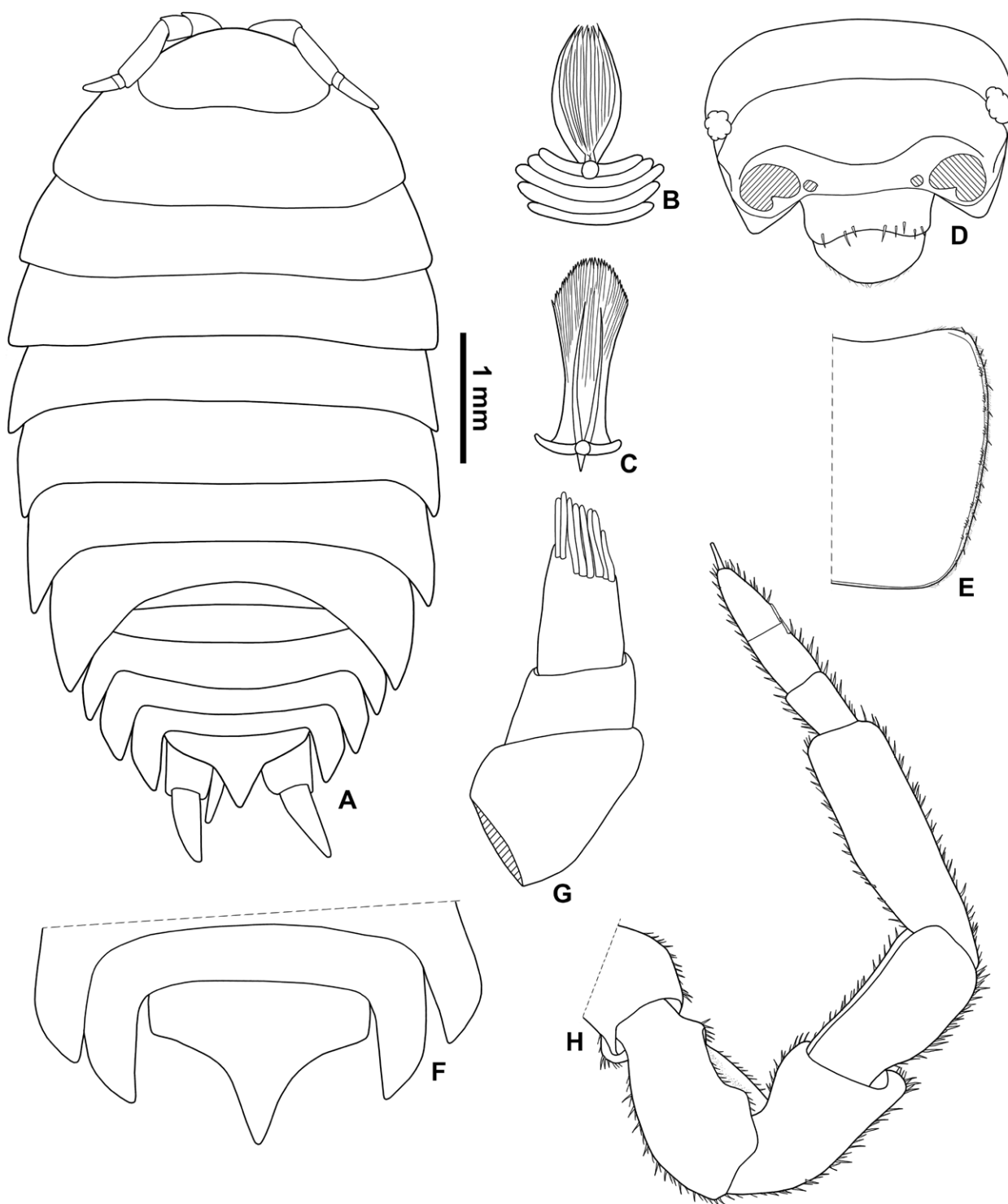


Figure 1. *Alloniscus buckupi* Campos-Filho & Cardoso n. sp., holotype. A, habitus, dorsal view; B, dorsal scale-seta; C, posterior scale-seta of pereonites; D, cephalon in frontal view; E, pereonite 1 epimeron; F, pleonites 4 and 5, and telson; G, antennula; H, antenna.

dactylus with inner claw about half of outer claw length, ungual and dactylar seta simple. Uropod (Fig. 2F) protopod subquadrangular, protopod and exopod grooved on outer margin bearing glandular pores, endopod inserted proximally, exopod and endopod

subequals in length. Pleopods 1–5 exopods with large respiratory areas.

Male: Pereopods 1–5 merus and carpus densely fitted with long setae on sternal margin (Fig. 3A); pereopod 7 ischium slightly depressed on proximal sternal margin

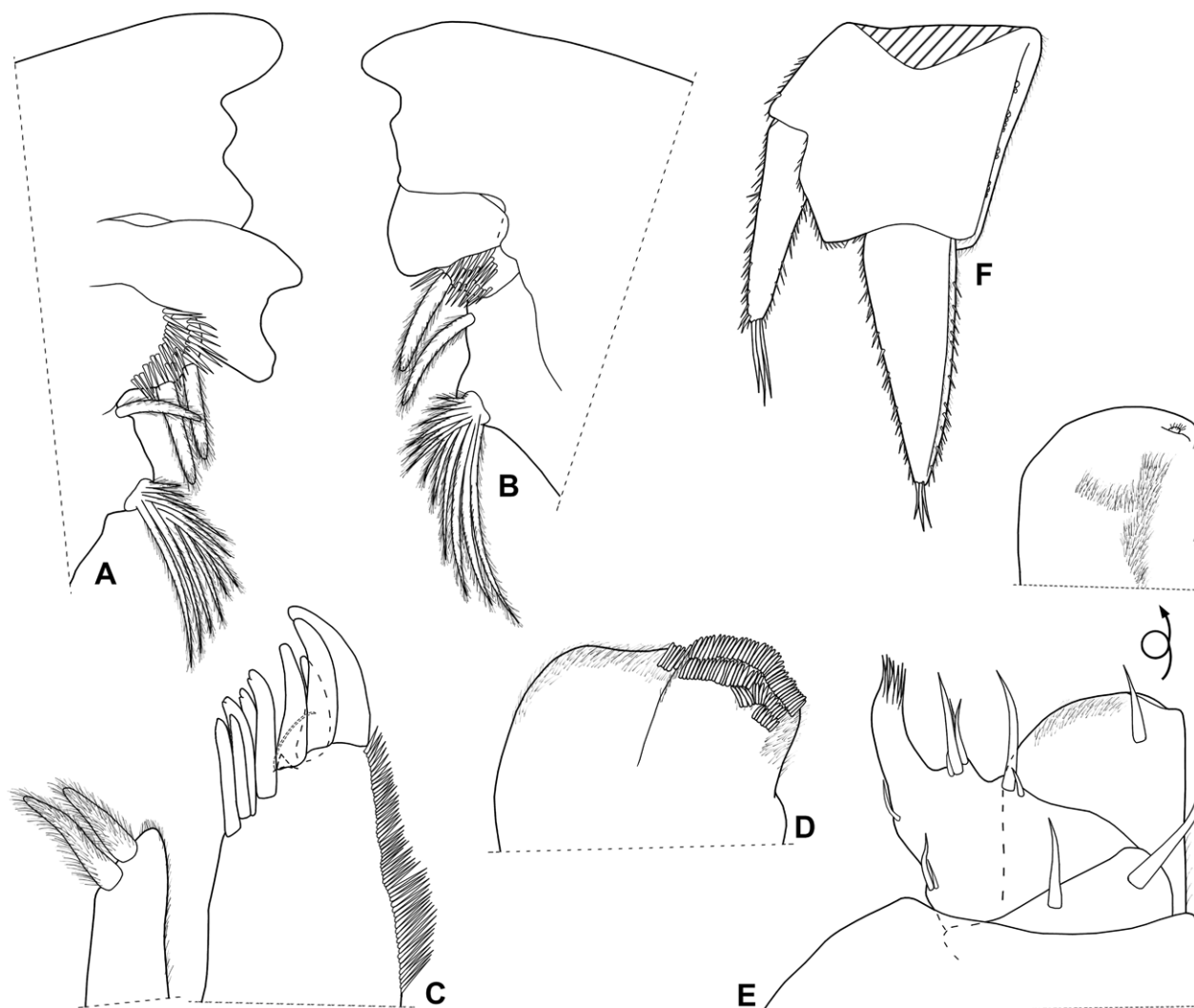


Figure 2. *Alloniscus buckupi* Campos-Filho & Cardoso n. sp., paratype. A, left mandible; B, right mandible; C, maxillula; D, maxilla; E, maxilliped; F, uropod.

bearing many setae (Fig. 3B). Genital papilla (Fig. 3C) with triangular frontal shield and two subapical orifices. Pleopod 1 exopod (Fig. 3D) heart-shaped bearing many setae on inner and outer margins; endopod (Fig. 3C) almost twice as long as exopod, distal portion narrow bearing small setae on median margin. Pleopod 2 (Fig. 3E) exopod triangular, outer margin strongly concave bearing many setae; endopod flagelliform, longer than exopod. Pleopod 3 and 4 exopods as in Fig. 3F, G. Pleopod 5 exopod (Fig. 3H) triangular, outer margin slightly convex bearing many setae, distal portion right-angled.

Etymology. The new species is named after Professor Dr. Ludwig Buckup for his contributions to the knowledge of Crustacea.

Remarks. As mentioned, the genus *Alloniscus* includes 23 species: *Alloniscus allspachi* Nunomura, 2001 from Saipan Island, Micronesia; *Alloniscus balssi* (Verhoeff, 1928) from Japan and Korea; *Alloniscus boninensis* Nunomura, 1984 from Bonin Islands, Japan; *Alloniscus gerardi* Arcangeli, 1960 from Dar-es-Salaam, Tanzania; *Alloniscus maculatus* Nunomura, 1984 from Yonakuni Island, Okinawa, Japan; *Alloniscus marinus* Collinge, 1920 from South Africa; *Alloniscus mirabilis* (Stuxberg, 1875) from California, USA; *Alloniscus nacreus* Collinge, 1922 from Madagascar; *Alloniscus nicobaricus* Budde-Lund, 1885 from Nicobar, Maldives and Andaman Islands, Indian Ocean; *Alloniscus oahuensis* Budde-Lund, 1885 from tropical coastal regions of the Indian and Pacific oceans; *Alloniscus pallidulus* Budde-Lund, 1885 from Australia, Indonesia,

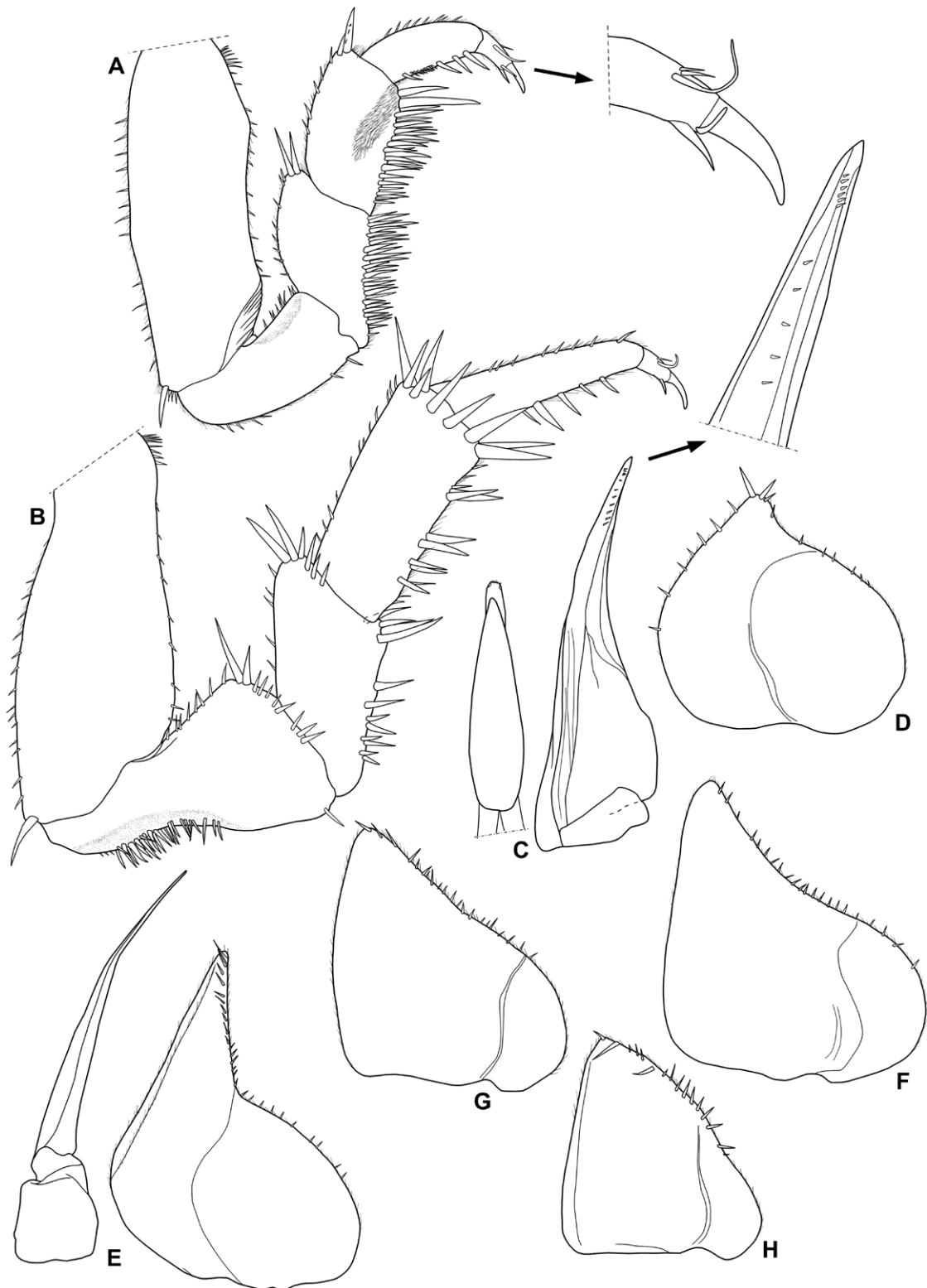


Figure 3. *Alloniscus buckupi* Campos-Filho & Cardoso n. sp., holotype. A, pereopod 1; B, pereopod 7; C, genital papilla and pleopod 1 endopod; D, pleopod 1 exopod; E, pleopod 2; F, pleopod 3 exopod; G, pleopod 4 exopod; H, pleopod 5 exopod.

Malaysia and province of West Papua; *Alloniscus pardii* Arcangeli, 1960 from Indochina; *Alloniscus perconvexus* Dana, 1856 from Pacific coast of Canada to Mexico; *Alloniscus pigmentatus* Budde-Lund, 1885 from

Madagascar, Indian Ocean (Aldabra, Chagos, Comoro, Maldives, and Seychelles), Mozambique and southern China; *Alloniscus priolensis* Arcangeli, 1960 from Priole Island, east coast of Sumatra; *Alloniscus robustus* Ferrara,

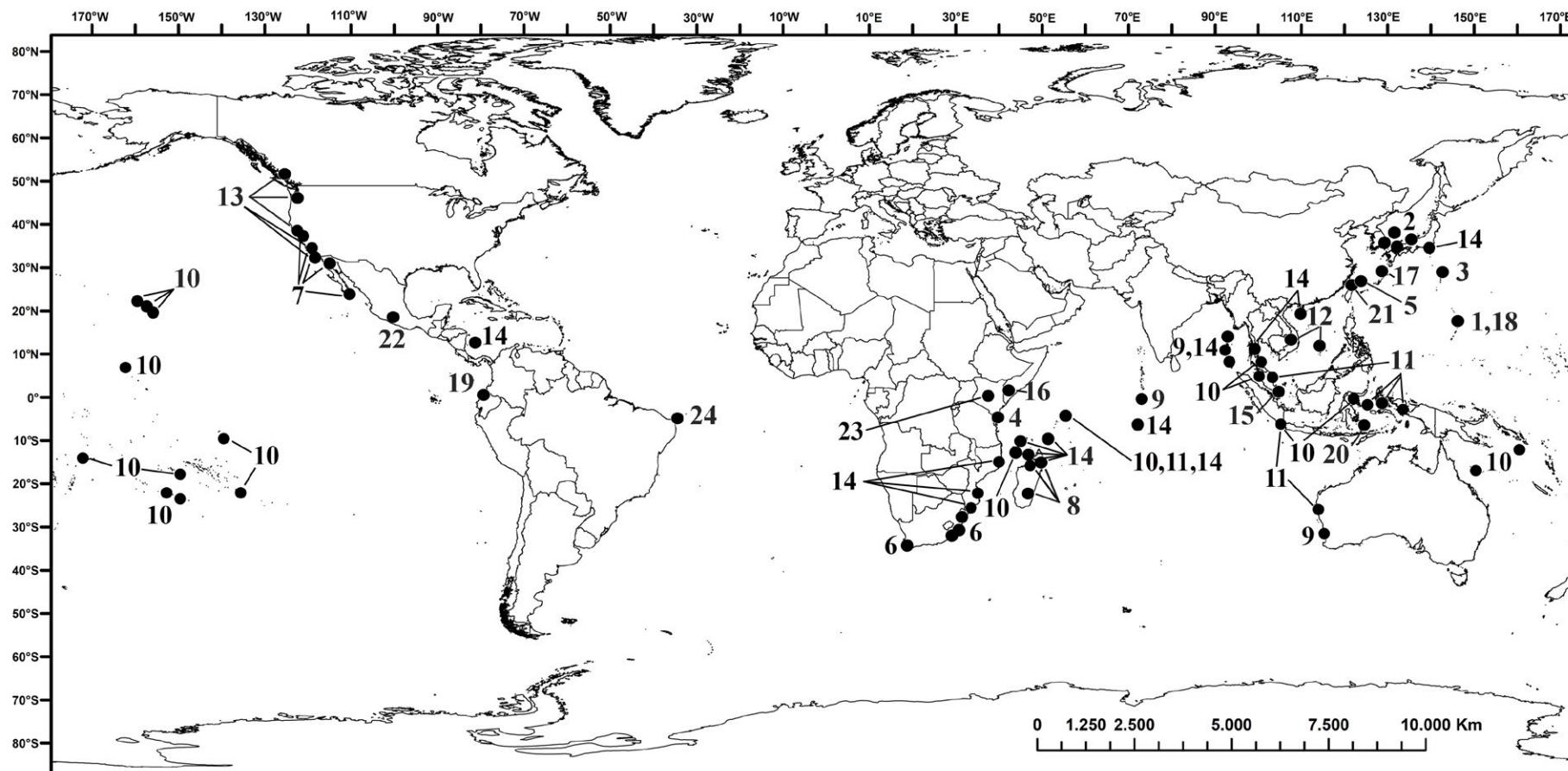


Figure 4. Distribution map of *Alloniscus* Dana, 1854: 1, *A. allspachi* Nunomura, 2001; 2, *A. balssi* (Verhoeff, 1928); 3, *A. boninensis* Nunomura, 1984; 4, *A. gerardi* Arcangeli, 1960; 5, *A. maculatus* Nunomura, 1984; 6, *A. marinus* Collinge, 1920; 7, *A. mirabilis* (Stuxberg, 1875); 8, *A. nacreus* Collinge, 1922; 9, *A. nicobaricus* Budde-Lund, 1885; 10, *A. oahuensis* Budde-Lund, 1885; 11, *A. pallidulus* Budde-Lund, 1885; 12, *A. pardii* Arcangeli, 1960; 13, *A. perconvexus* Dana, 1856; 14, *A. pigmentatus* Budde-Lund, 1885; 15, *A. priolensis* Arcangeli, 1960; 16, *A. robustus* Ferrara, 1974; 17, *A. ryukyuensis* Nunomura, 1984; 18, *A. saipanensis* Nunomura, 2001; 19, *A. salinarum* Vandel, 1968; 20, *A. schaedleri* Arcangeli, 1960; 21, *A. silvestrii* Arcangeli, 1960; 22, *A. thalassophilus* Rioja, 1964; 23, “*Alloniscus*” *simplex* Schmölzer, 1974; and 24, *Alloniscus buckupi* Campos-Filho & Cardoso n. sp.

1974 from Sar Uanle, Somalia; *Alloniscus ryukyuensis* Nunomura, 1984 from Ryukyu Island, Japan; *Alloniscus saipanensis* Nunomura, 2001 from Saipan Island, Micronesia; *Alloniscus salinarum* Vandel, 1968 from Guayas, Ecuador; *Alloniscus schaedleri* Arcangeli, 1960 from Indonesia; *Alloniscus silvestrii* Arcangeli, 1960 from Taiwan; *Alloniscus thalassophilus* Rioja, 1964 from Guerrero, Mexico; and “*Alloniscus*” *simplex* Schmölzer, 1974, with dubious genus allocation (Fig. 4) (see references in Schmalfuss, 2003).

The material of the new species was collected during a drizzle, which seems to have enable the animals to be exposed to the environment and becoming visible. Probably, this endogenous behaviour occurs in response to water loss due the high solar intensity of the place.

Alloniscus buckupi n. sp. differs from their congeners by antennula with aesthetascs inserted distally, shape of male pereopod 7 ischium, and shape of male pleopods 1–5.

As mentioned by Schmidt (2008), a taxonomic revision of the genus is necessary to determine the actual number of species. In addition, such revision would provide a better understanding of the morphological characteristics of the genus into an actual taxonomic context.

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