

## A new species of *Curidia* (Crustacea: Amphipoda: Ochlesidae) from northeastern Brazil

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**SUMMARY:** A new species of *Curidia* from the Fernando de Noronha Chain (located off the northeastern Brazilian coast), and the continental shelf of Bahia State is described. *Curidia wakabarae* n. sp. is similar to *C. debrogania* Thomas, 1983 and *C. magellanica* Coleman and Barnard, 1991 in the maxillipedal palp, which is slender and has a long apical seta extending beyond the outer plate. It does, however, differ from these species in article 1 of antenna 1 not reaching the end of article 3, the ventrodiscal acute process of article 2 extending to 1/5 of first flagellar article 1, the absence of a posterodorsal acute carina on pereonite 7, and the apically rounded telson. This is the first record of Ochlesidae from the northeast Brazilian coast. A world key of the known *Curidia* species is given.

**Keywords:** taxonomy, Amphipoda, Ochlesidae, new taxa, Brazil, Fernando de Noronha Chain, Rocas Atoll, REVIZEE Program.

**RESUMEN:** UNA NUEVA ESPECIE DE *CURIDIA* (CRUSTACEA: AMPHIPODA: OCHLESIDAE) EN EL NORDESTE DE BRASIL. – Se describe una nueva especie de *Curidia* hallada en la cadena Fernando de Noronha (en el nordeste brasileño) y en la plataforma continental del Estado de Bahia. *Curidia* n. sp. es similar a *C. debrogania* y *C. magellanica* debido a la presencia de un fino palpo maxilipedal y una larga cerda apical extendida hacia afuera de la placa; no obstante se diferencia de estas especies por presentar en la antena 1, un proceso ventrodiscal agudo del artejo 1 que no alcanza el final del artejo 3, el artejo 2 con un proceso ventrodiscal agudo extendido a 1/5 del primer artejo flajelar 1, un diente agudo posterodorsal sobre el pereonito 7 y un telson apicalmente redondeado. Este es el primer registro de Ochlesidae en el nordeste brasileño. Adjunta se presenta una clave con las especies de *Curidia* conocidas.

**Palabras clave:** taxonomía, Amphipoda, Ochlesidae, Brasil, nuevo taxon, Cadena Fernando de Noronha, Atol de las Rocas, Bahia, programa REVIZEE.

### INTRODUCTION

Ochlesids are one of the groups of amphipods with very small and cryptic species, some being only 1.0 mm long and easily overlooked in collections (Thomas, 1993; Coleman and Lowry, 2006). According to Barnard and Karaman (1991) they are a geographically widespread and taxonomically diverse group. The large, conical shape and styliform nature of the mouthparts suggest a parasitic mode of existence of these animals (Thomas, 1993).

The family Ochlesidae was erected by Stebbing (1910) based on *Ochlesis innocens* being unique within the Gammaridae because it lacks the palp of the maxilliped. Since then, two genera have been described bearing a 2 or 1-articulate palp of the maxilliped. The first was *Ochlesodius* Ledoyer, 1982 from Madagascar, and the second was *Curidia* Thomas, 1983 from the Caribbean Sea. Barnard and Karaman (1987) erected the genus *Meraldia* based on *Ochlesis meraldi*, from South Australia, and used the differently shaped dorsal humps to separate this species.

In the same work, they included the family Ochlesidae within the Acanthonotozomatidae as the subfamily Ochlesinae. Later on, Watling and Thurston (1989) included this subfamily in the family Impheimediidae. However, Coleman and Barnard (1991a, b) re-established the status of the family Ochlesidae and described *C. magellanica* from the Magellan Strait, South America. Berge, Vader and Coleman (1999) proposed a cladistic analysis in which they synonymised Odiidae to Ochlesidae. However, Coleman and Myers (in preparation) questioned this classification through a cladistic analysis in which Ochlesidae and Odiidae do not group together as a monophyletic entity. Currently, the family Ochlesidae comprises four genera: *Curidia*, *Ochlesodius*, *Ochlesis*, and *Meraldia*, but only *Curidia* is known from the southwestern Atlantic Ocean.

This is the first record of the family Ochlesidae from the northeastern Brazilian coast (Fernando de Noronha Chain and Bahia State). A world key with the known *Curidia* species is given.

## MATERIAL AND METHODS

The samples analysed herein were collected by *N/O Antares* of the Brazilian Navy, and the supply boat *N/RB Astro Garoupa* of PETROBRAS (Petróleo do Brasil S/A), as part of the REVIZEE Programme coordinated by the Brazilian Environment Ministry. The main objective of the REVIZEE Programme was to perform a species inventory and to evaluate the sustainable yield of living resources from the Brazilian Exclusive Economic Zone ([www.mma.gov.br/revizee/](http://www.mma.gov.br/revizee/)). This area was subdivided into four regions (North, Northeast, Central and South) according to their oceanographic and biological properties and the dominant type of bottom. The specimens studied herein were collected in the Archipelago of Fernando de Noronha Chain, located off Natal State, during the campaigns of REVIZEE Benthos SCORE/Northeast 1998 and 2000, and off Bahia State during the campaigns of REVIZEE Benthos SCORE/Central 2002 (Fig. 1). The samples were collected with a 70-litre rectangular dredge pulled for 5 minutes at a speed of 2 knots. Specimens were preserved in 70% ethanol. Appendages and mouthparts of a dissected female were mounted on glass slides and sealed with CMC-10. The material is stored in the collections of the Museu Nacional, Rio de Janeiro (MNRJ) and the Departamento de Oceanografia da Universidade Federal de Pernambuco (DOCEAN).

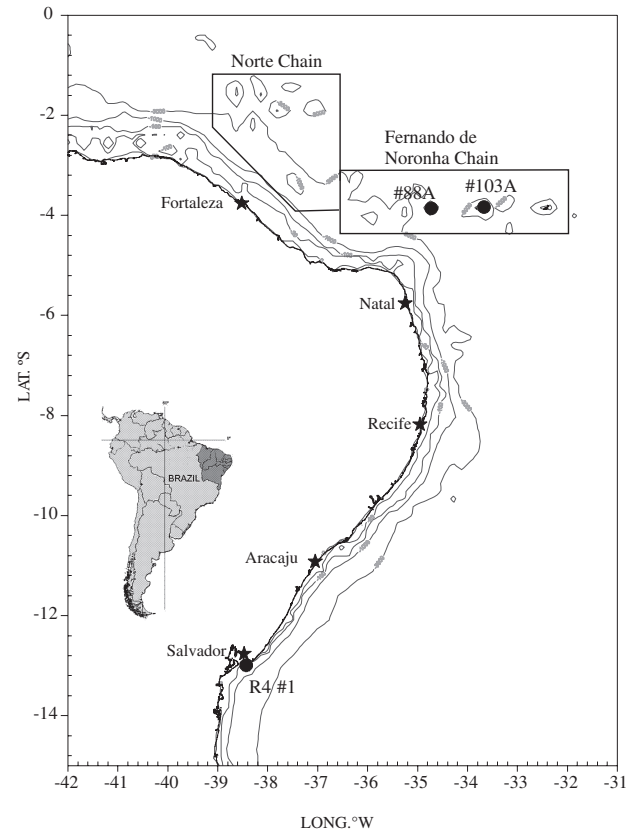


FIG. 1. – Map showing stations of the REVIZEE Benthos SCORE/Northeast and Central collections along the continental shelf of Brazil. Stars represent the capitals of the Brazilian States.

## SYSTEMATICS

Suborder GAMMARIDEA Latreille, 1816

Family OCHLESIDAE Stebbing, 1910

Genus *Curidia* Thomas, 1983

*Curidia wakabarae* n. sp.

(Figs. 2-5)

*Material examined.* Holotype: Fernando de Noronha Archipelago, Pequeno Island, Rio Grande do Norte, Brazil; REVIZEE Benthos SCORE/Northeast, Station #88A (3.83°S; 34.71°W), 1 female, 2.42 mm (dissected and draw), 04/VI/1998, MNRJ 20868. Paratypes: Fernando de Noronha Chain, Atol das Rocas, Rio Grande do Norte, Brazil; REVIZEE NE-III, Station #103A (3.829°S; 33.673°W), 1 male, DOCEAN 13500, 10/XII/2000. Bahia, Brazil; REVIZEE Benthos SCORE/Central, Station R4 #1 (13.075°S; 38.392°W), 1 female, 3.0 mm, 23/VI/2002, MNRJ 20869.

*Description.* Female, 2.42 mm. Body strongly compressed laterally, very thin dorsally. Head small, partially hidden by pereonite 1, rostrum normal; laterocephalic lobe acute. Pereonite 1 forming a rostrum-like anterior process. Pereonite 3 wider than pereonite 2. Pereonites 3-6 similar in width. Pereonite 7 shorter than pereonites 4-6 together, with a dorso-distal blunt spine. Antenna 1 about 0.19x as long as

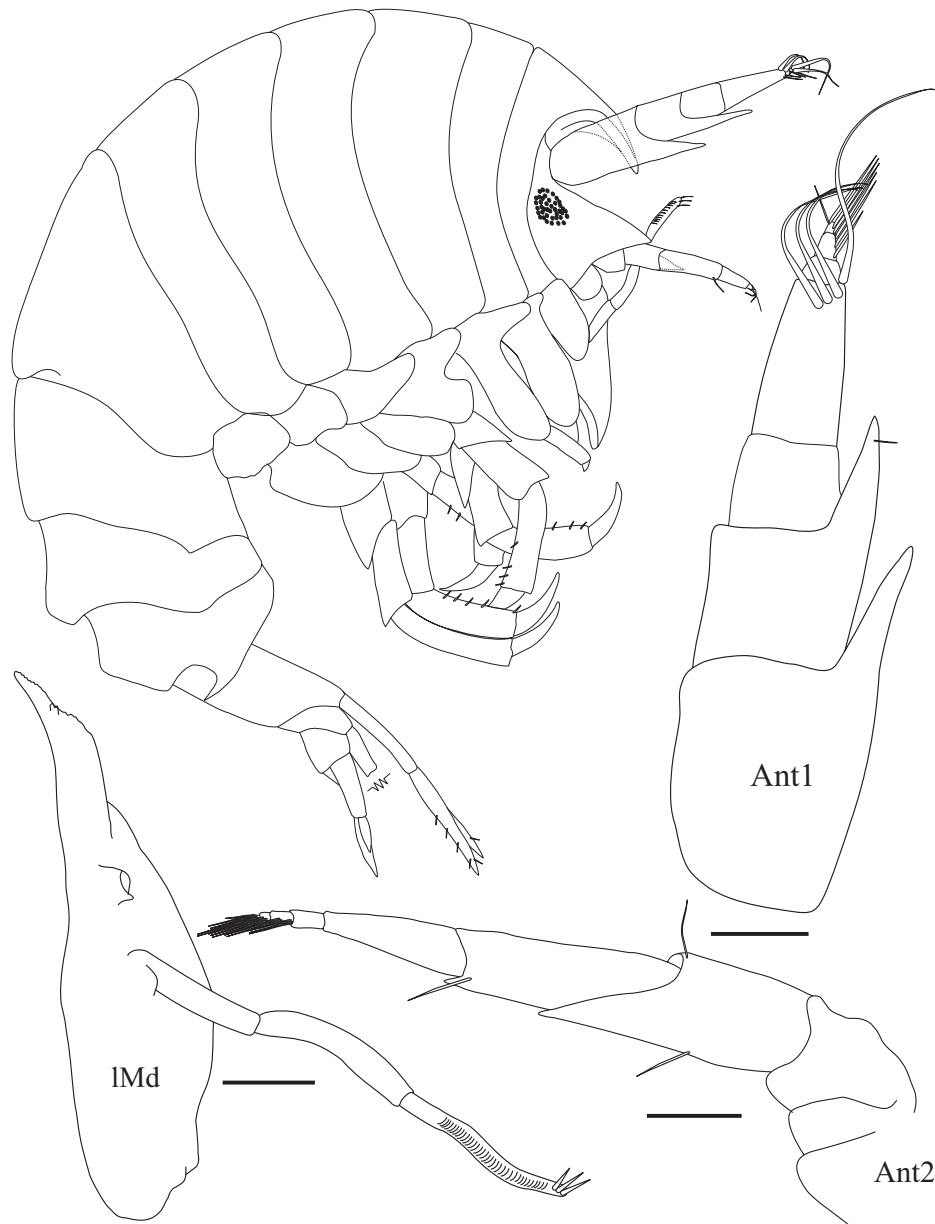


FIG. 2. – *Curidia wakabarae* n. sp., REVIZEE Benthos SCORE/Northeast, holotype female 2.42 mm, Fernando de Noronha Chain, Pequeno Island, Station #88A (3.83°S; 34.71°W), MNRJ 20868. Scale bar = 0.1 mm. Ant: antenna; IMd: left mandible.

body length; peduncular article 1 with ventrodistal acute process reaching end of article 2; peduncular article 2 with ventrodistal acute process extending to 1/5 of flagellar article 1; flagellum 4-articulate, article 1 with apical seta only, accessory flagellum absent. Antenna 2 peduncular article 4 with ventrodistal cusp extending halfway of article 5.

Mouthparts styliform, labrum elongated, tapering distally; mandible, incisor simple, left mandible with small lacinia mobilis; molar small, cup-like and weakly triturative; palp 3-articulate, article

1 short, 0.78 x as long as article 3, article 2 curved medially and 0.9 x as long as article 3; article 3 long with small facial ridges and 3 short spines distally. Maxilla 1 inner plate small, with 1 distal seta, outer plate elongate, with 5-6 spines distomedially and a row of lateral setules; palp 1-articulate, short with a long apical seta reaching end of row of lateral setules. Maxilla 2 inner plate twice wider than outer plate. Maxilliped palp 1-articulate, slender, with a long apical setae reaching end of outer plate; inner plate narrow (0.71 x of outer plate) with 3

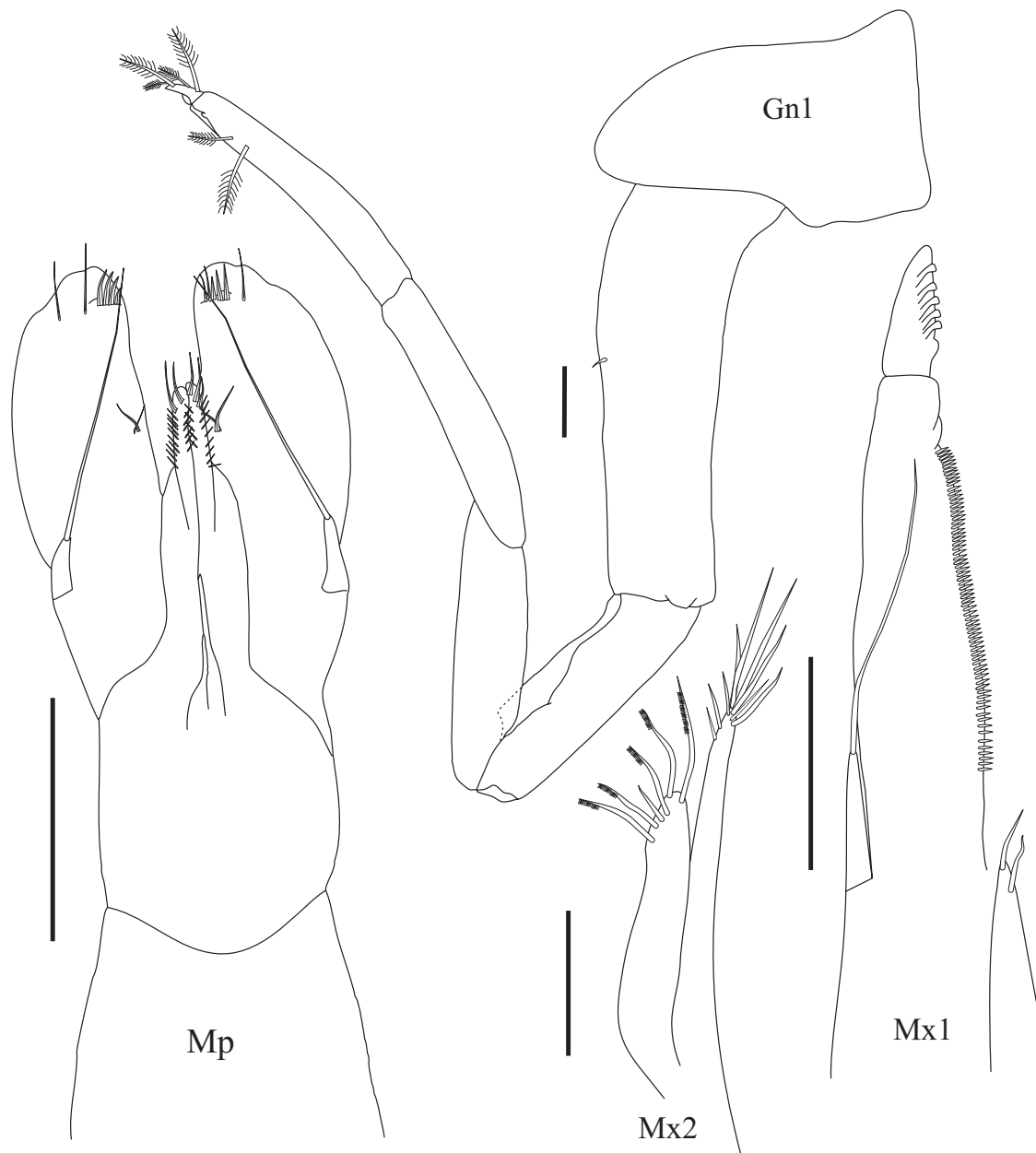


FIG. 3. – *Curidia wakabarae* n. sp., REVIZEE Benthos SCORE/Northeast, holotype female, 2.42 mm, Fernando de Noronha Chain: Pequeno Island, Station #88A (3.83°S; 34.71°W), MNRJ 20868. Scale bar = 0.1 mm. Gn1: gnathopod 1; Mp: maxilliped; Mx: maxilla.

seta distally and a row of setae medially; outer plate longer than inner plate, apical margin rounded with 5 subapical spines and 1 seta, inner margin with 2 facial setae.

Gnathopod 1 simple, coxa anterior margin rather straight, apically rounded; basis elongate, slender and shorter than merus and carpus together; merus, ischium, carpus and propodus subequal in length; propodus and dactylus with some plumose setae. Gnathopod 2 coxa deeper, ventrally rounded; basis slightly inflated with 4 setae on anterior margin; merus posterodistal angle with truncate proc-

ess; carpus with distal process reaching first third of propodus length; propodus slightly shorter than carpus; dactylus stout and bifid. Pereopod 3, coxa as deep as coxa 2, ventrally subacute, anteroproximal part with a process about 1/3 of length, anterior margin straight, posterior margin slightly produced; basis slightly increasing in width distally; ischium short and broad; merus with anterodistal acute process; carpus, propodus and dactylus missing. Pereopod 4, coxa broad, anteriorly excavate; basis to ischium similar to pereopod 3; carpus, propodus and dactylus missing. Pereopod 5, coxa broader

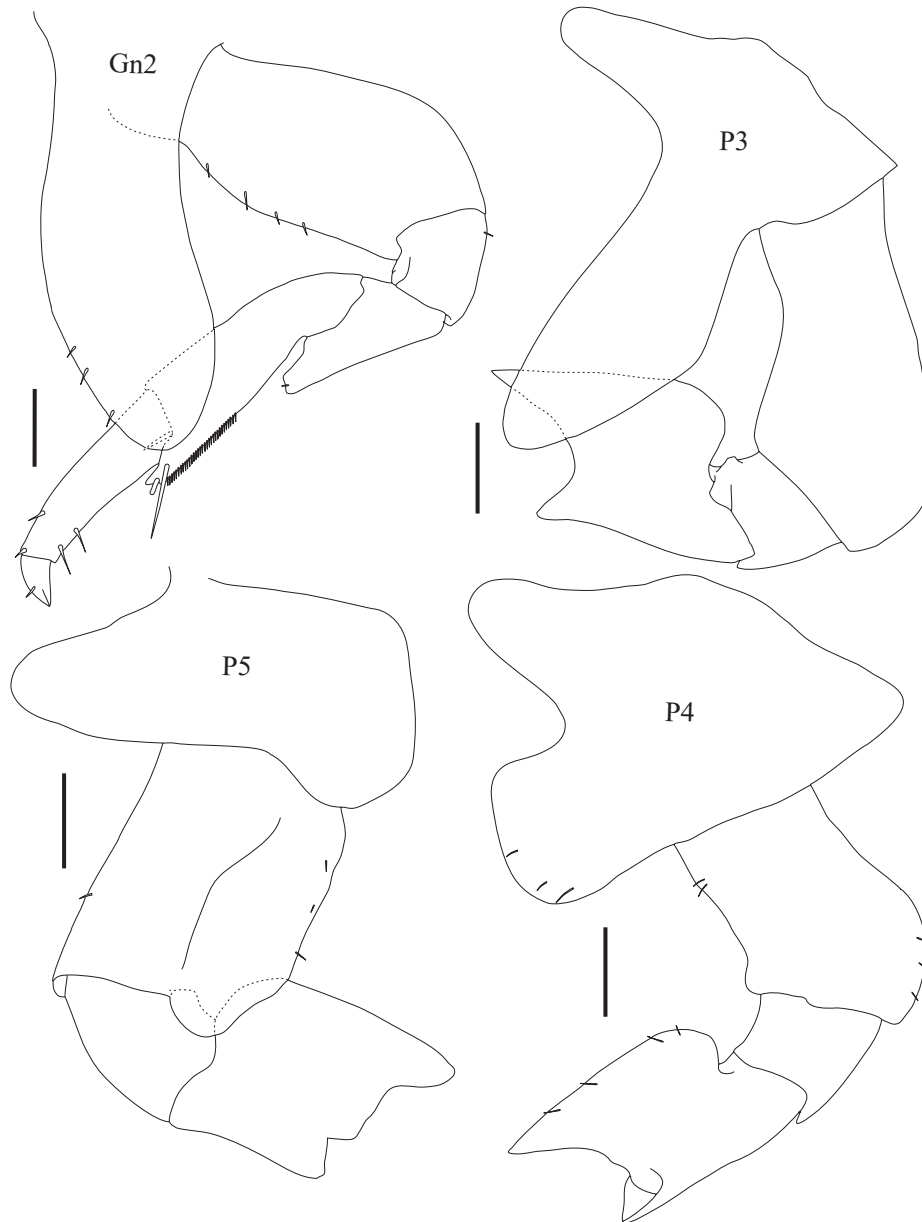


FIG. 4. – *Curidia wakabarae* n. sp., REVIZEE Benthos SCORE/Northeast, holotype female, 2.42 mm, Fernando de Noronha Chain, Pequeno Island, Station #88A (3.83°S; 34.71°W), MNRJ 20868. Scale bar = 0.1 mm. Gn2: gnathopod 2; P: pereopod.

than long, slightly excavate ventrally, anterior margin produced; basis broad with inconspicuous ridge on lateral face, posteroventral angle rounded, merus angle posteroventral produced. Pereopod 6, coxa wider than broad with 2 excavation ventrally; basis similar to pereopod 5; merus and carpus posteroventral angle produced; propodus 3.5 x as long as wide; dactylus more than 1/2 of propodus length. Pereopod 7, coxa with a small excavation ventrally; basis to dactylus similar to pereonite 6.

Pleonite 2 with obtuse mid-dorsal hump. Pleonite 3 with a narrow apically rounded mid-dorsal carina.

Epimeron 3 with pointed tooth. Uropod 1 extending beyond uropods 3, peduncle as long as ramus with one single apicolateral spine and 2 medial marginal spines, ramus lanceolate, subequal in length, outer ramus with 4 lateral and 3 medial spines, inner ramus with 3 lateral and 3 medial spines. Uropod 2 missing. Uropod 3 biramous, peduncle with single apicolateral spine; outer ramus about 0.5 x the inner ramus, with single medial spine; inner ramus with single lateral and 2 medial spines. Telson entire with single pair of lateral setae, 1.7 x as long as wide, apically rounded.

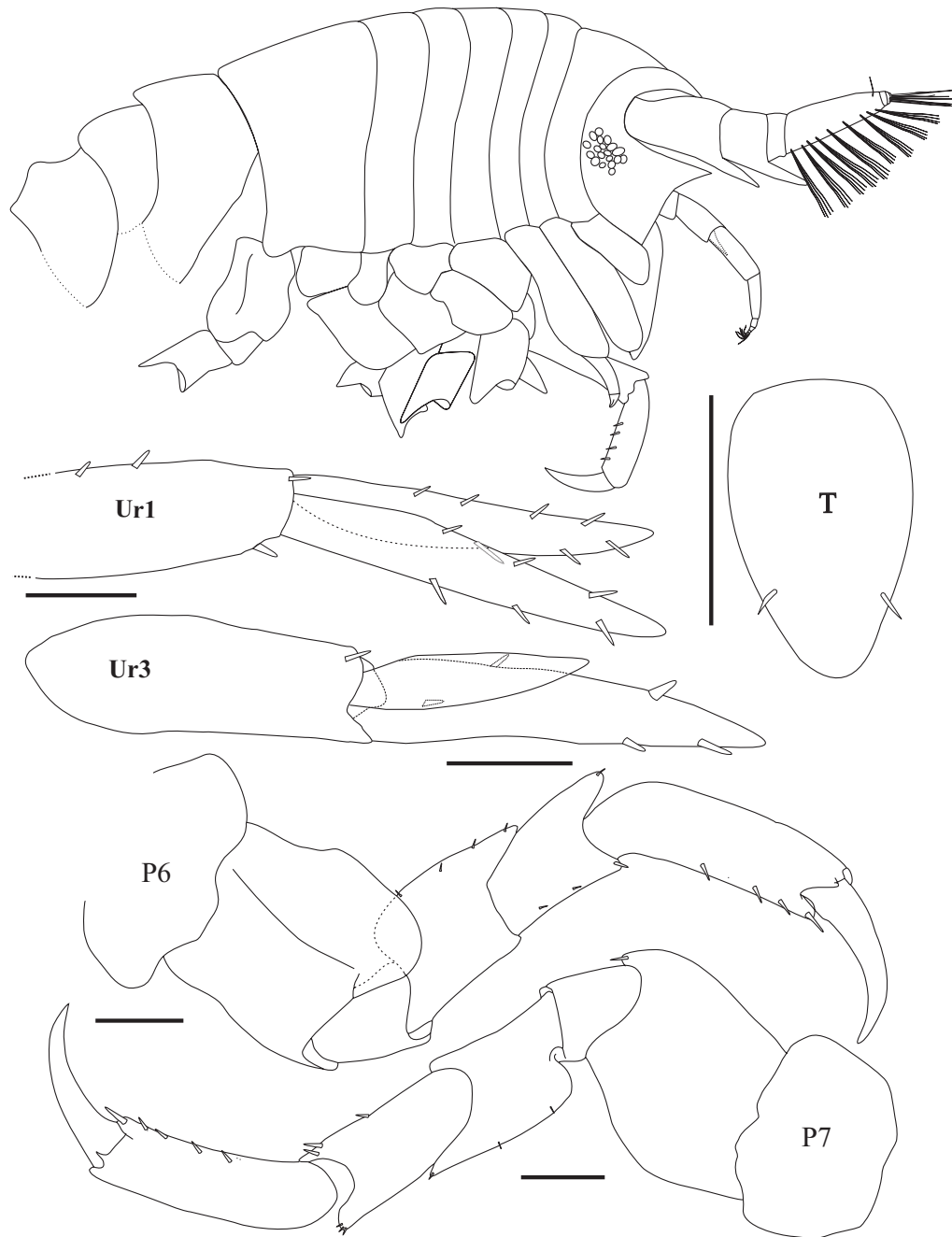


FIG. 5. – *Curidia wakabarae* n. sp., REVIZEE Benthos SCORE/Northeast, male, 0.91 mm, Atol das Rocas, Station #103A (3.829°S; 33.673°W), DOCEAN 13500. *Curidia wakabarae* sp.nov., holotype, female, 2.42mm, Fernando de Noronha Chain: Pequeno Island, Station #88A (3.83°S; 34.71°W), MNRJ 20868. Scale bar = 0.1 mm. Ur: uropod; P: pereopod; T: telson.

*Male (sexual dimorphism).* First antenna 0.34 x body length; flagellum with ventral setae only and pereonite 7 as long as pereonites 4-6.

*Etymology.* *Curidia wakabarae* n. sp. is named in honor of Dr. Yoko Wakabara (23.IV.1933 – 06.X.2006), who passed away recently and contributed immensely to the knowledge of the amphipod fauna from Brazil.

*Habitat.* *Curidia wakabarae* n. sp. was found in gravel sediment with sponges and algae ranging from 30-91 m depth. Temperature at the localities had been between 28.8 and 28.9°C and salinity between 36.2 and 36.7.

*Remarks.* *Curidia wakabarae* n. sp. is similar to *C. debrogania* from the Caribbean Sea and *C. magellanica* from Magellan Strait in the slender palp of

TABLE 1. – Comparison of selected characters of *Curidia* species. Information was taken from text and figures included in Thomas (1983), Coleman and Barnard (1991 b), Lowry and Myers (2003) and Coleman and Lowry (2006).

	<i>C. wakabarae</i> sp. nov.	<i>C. debrogania</i>	<i>C. magellanica</i>	<i>C. ramonae</i>	<i>C. knoxi</i>
Ventrodiscal acute process of peduncular article 2 of antennae 1	1/5 of flagellar article 1	1/2 or 1/3 of flagellar article 1	3/4 of flagellar article 1	1/3 of flagellar article 1	1/3 of flagellar article 1
Peduncular article 4 ventral spine present of antenna 2	1/2 of article 5	1/2 of article 5	Longer than article 5	2/3 of length flagellar article 5	Shorter than 1/2 of article 5
Maxillipedal palp	slender, 1/5 of outer plate	slender, 1/3 of outer plate	slender, 1/2 of outer plate	short and wide, 1/6 of outer plate	short and wide, 1/6 of outer plate
Apical seta on palp of maxilliped	long, 3.7 x as long as palp	long, 2.5 x as long as palp	long, 1.2 x palp	short, 0.2 x as long as palp	short, as long as palp
Posterodistal carina of pereonite 7	blunt	acute	acute	acute	acute
Length of pereonite 7 on females	0.6 x as long as pereonites 4-6 together	1.7 x as long as pereonites 4-6 together	0.46 x as long as pereonites 4-6 together	1.1 x as long as pereonites 4-6 together	0.6 x as long as pereonites 4-6 together
Telson tip	rounded	acute	acute	acute	acute

maxilliped with an apical long seta extending beyond the outer plate. However, it differs from both species in the peduncular article 2 of antennae 1 with ventromedial acute process reaching 1/5 of flagellar article 1, pereonite 7 with a posterodorsal blunt carina, and the apically rounded telson. It also differs from *C. debrogania* in gnathopod 1 basis slender, female pereonite 7 shorter than pereonites 4-6 together, and uropod 3 inner ramus about 1.7 x the outer ramus. A comparison of *Curidia wakabarae* n. sp. with the other four species of the genus can be found in Table 1.

**World key to species of *Curidia*\***

- 1 Peduncular article 4 of antenna 2 bearing a ventral acute process longer than or reaching 1/2 length of peduncular article 5, maxillipedal palp long and slender with an apical long seta extending beyond outer plate ..... 2
- Peduncular article 4 of antenna 2 bearing a ventral acute process shorter than 1/2 or reaching 2/3 length of peduncular article 5, maxillipedal palp short and wide with an apical very short seta . 4
- 2 Peduncular article 2 of antennae 1 with ventromedial acute process reaching 1/5 of flagellar article 1, pereonite 7 with a blunt posterodorsal carina, telson rounded apically ..... *Curidia wakabarae* n. sp.
- Peduncular article 2 of antennae 1 bearing a ventromedial acute process reaching 1/3 or more of flagellar article 1, pereonite 7 with an acute posterodorsal carina, telson acute apically ..... 3

- 3 Peduncular article 2 of antennae 1 with ventromedial acute process reaching 1/3 or 1/2 of flagellar article 1, coxa 1 truncated apically, pereonite 7 longer than pereonites 4-6 together ..... *Curidia debrogania* Thomas, 1983
- Peduncular article 2 of antennae 1 with ventromedial acute process reaching 3/4 of flagellar article 1, coxa 1 tapering distally, pereonite 7 shorter than pereonites 4-6 together ..... *Curidia magellanica* Coleman and Barnard, 1991
- 4 Pereonite 7 with well developed posterodorsal carina, uropod 3 with subequal rami ..... *Curidia ramonae* Lowry and Myers, 2003
- Pereonite 7 with small posterodorsal carina, uropod 3 with inner ramus slightly longer than half length of outer ramus ..... *Curidia knoxi* Lowry and Myers, 2003

\* The size of pereonite 7 can be sexually dimorphic, but some authors do not specify the sex of the specimens or find only one sex, so the information is not complete in some cases.

**DISCUSSION**

When described by Thomas (1983), the genus *Curidia* included a single species, *C. debrogania*, restricted to the Florida Keys, Caribbean Sea. Coleman and Barnard (1991b) revised the family Ochlesidae and described the second species, *C. magellanica*, enlarging the distribution of the genus to the Pacific Ocean, Magellan Strait. Later on, Lowry and

Myers (2003) described *C. knoxi* and *C. ramonae* to New Zealand Subantarctic and Papua New Guinea, respectively. Thus, *Curidia* is a widely distributed genus but it is rarely collected.

This first report of *Curidia* from the Brazilian coast and Fernando de Noronha Chain agrees with Thomas (1993), who states that though species of *Curidia* are rarely collected, they are probably more abundant and widely spread than is documented in the literature. Moreover, this is the seventh record of an amphipod species from the northeast oceanic banks. The previous records were *Quadrimeaera cristianae* Krapp-Schickel and Ruffo, 2000; *Q. chaelata* Senna and Serejo, 2007; *Q. rocasensis* Senna and Serejo, 2007; *Talorchestia tucurauna* (Müller, 1864) and *Ingolfiella rocaensis* Senna and Serejo, 2005 (Paiva *et al.*, in press), showing that the amphipod fauna from this area is very poorly known.

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